# **Randomized Controlled Trial of the Effects of the Big Brothers Big Sisters Community-Based Mentoring Program on Crime and Delinquency:** Four-Year Findings

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Texas Juvenile Justice Department

[a] This data was provided by and belongs to the Juvenile Court Judges' Commission (JCJC). Any further use of this data must be approved by the JCJC. Points of view or opinions contained within this document are those of the authors and do not necessarily represent the official position of the JCJC. This data was retrieved from the Pennsylvania Juvenile Case Management System and is reflective of information entered by county juvenile probation departments.

# Statement of Research Integrity and Independence

David DuBois chairs the Research Advisory Committee of Big Brothers Big Sisters of America (BBBSA), and Carla Herrera is a member of this committee.

Drs. DuBois and Herrera also have served as paid consultants to BBBSA in various capacities.

The content of this report, however, is solely the responsibility of the authors and does not necessarily represent the views or positions of BBBSA or those of any of the agencies that supported access to juvenile justice records for the research.

Neither BBBSA nor any of the juvenile justice agencies, furthermore, exercised any control over the report's contents or conclusions.

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# Executive Summary

This report provides findings from the final, 4-year assessment of youth outcomes for a randomized controlled trial of the Big Brothers Big Sisters of America (BBBSA) Community-Based Mentoring (CBM) program. The trial examines effects of the CBM program on delinquent/criminal behavior as well as risk and protective factors for, and later correlates of, such behavior. From February 2018 to February 2020, 1,358 youth ages 10 and older were enrolled in the study at 17 BBBSA agencies across the U.S. The analytic sample for this final report consists of 1,353 youth: 1,011 (75%) assigned to the treatment group (i.e., immediate eligibility for mentoring through the program); and 342 (25%) assigned to the control group (i.e., eligibility for mentoring through the program after the 4-year study period). Each participating youth and their parent completed surveys at study enrollment, at an 18-month follow-up (see DuBois et al., 2022), and at a 4-year follow-up (response rates of 77.4% for completion of the youth and/or parent survey and 69.8% for completion of both the youth and parent surveys). Administrative records of juvenile justice involvement also were collected and used to assess arrests (identified arrest data were obtained for 64% of the sample, and deidentified data were obtained for an additional 9% of the sample).

By the 4-year follow-up, 68 percent of youth in the treatment group had been paired with a mentor through the CBM program at some point since study enrollment with an average duration for their first (or only) match at follow-up of 22.5 months; 19.8 percent reported in the survey that they were still matched with a mentor.

Intent-to-treat analyses (i.e., including the entire sample, regardless of mentored status of those in the treatment group) indicated statistically significant differences favoring the treatment group on three of four primary hypothesized outcomes: youth and/or parent report of property-related delinquent behavior (26.4% of youth in the treatment group vs. 34.1% of youth in the control group) and violence-related delinquent behavior (29.6% vs. 43.0%) during the 2.5-year period between the 18-month and 4-year follow-ups and youth-reported recurring substance use in the past 6 months (18.2% vs. 31.4%). There was not a statistically significant effect on the primary hypothesized outcome of arrests at the 4-year follow-up (9.4% for the treatment group and 13.4% for the control group); with Benjamini-Hochberg control for a false discovery rate of 5%, the findings for violence-related delinquent behavior and substance use, but not property-related delinquent behavior, remained significant. For the secondary hypothesized outcomes, statistically significant differences ($p < .05$) favoring the treatment group were found on: (1) measures of risk factors for delinquent/criminal behavior, specifically, negative peer associations, aggressive behavior, and depressive symptoms; (2) measures of protective factors for delinquent/criminal behavior, namely, self-control, conventional values, social skills, coping efficacy, grit, self-advocacy, hopeful future expectations, goal setting and pursuit, perceived social support from a significant other, parental involvement, parental use of inconsistent discipline, self-esteem, positive affect, life satisfaction, and academic performance (composite of parent- and youth-

reported grades); and (3) measures of correlates of delinquent/criminal behavior particularly relevant for older youth, specifically, suicidal ideation (16.6% and 28.4% for treatment and control groups, respectively), substance abuse, network support for education/career goals, occupational identity, progress toward education/career goals, and discontinuing high school before graduation (3.1% and 6.9%, respectively). Differences favoring the treatment group also approached statistical significance ($p < .10$) for measures of skipping school, spark development, and availability of an extra-familial adult with whom to discuss the future. The remaining 19 outcomes for which differences between treatment and control groups did not reach or approach statistical significance included one measure of a risk factor (school misbehavior), nine measures of protective factors (e.g., involvement in youth organized activities), and, finally, nine measures of later correlates of delinquent/criminal behavior, effects for several of which were able to be assessed only for a relatively small subset of youth based on age (e.g., college attendance) or other developmental considerations (e.g., being sexually active).

The current findings provide support for the effectiveness of the BBBSA CBM program for reducing youth involvement in problem behaviors that are of central concern for delinquency and crime prevention. The lack of support for an associated lower likelihood of arrest may be attributable, in part, both to methodological considerations (e.g., reduced data availability for this outcome) and to more substantive factors (e.g., well-documented systemic biases that can influence susceptibility of young persons to arrest independent of the extent of their involvement in illegal behavior). Importantly, the present results also largely align with the capacity of the BBBSA CBM program to realize its aim of promoting overall positive youth development and resilience. The potential for mentoring received through the program to improve longer-term outcomes associated with the later stages of adolescence and the transition to adulthood, however, is in need of further investigation.

Little Ankita

# Background

Little Jay & Big Ashley

# Background

The societal costs of both juvenile and adult crime in the U.S. are staggeringly high (Welsh et al., 2008; Wickramasekera et al., 2015). Equally concerning is the reality that negative encounters with the justice system are not equally distributed in the U.S.—African Americans and those with the fewest resources (e.g., those experiencing poverty) are more likely to be incarcerated than their more advantaged counterparts (Western & Pettit, 2010). Solving such an entrenched and multi-faceted problem requires more than one approach—but, it is clear that stepping in early to counter less serious issues in childhood and prevent others from ever developing should be part of whatever approaches are taken.

Program-based ("formal") mentoring for youth has received strong support from both private and public funders as a crime prevention strategy. Priority populations for mentoring programs frequently overlap with those most likely to become involved in the justice system as juveniles and incarcerated as adults, such as young people from impoverished backgrounds, those belonging to historically marginalized racial or ethnic groups, and those with family histories of incarceration.

Evaluations of mentoring programs for youth, on the whole, have yielded encouraging evidence of benefits for participating young persons in a number of areas including social functioning, academics, and risky behaviors (DuBois et al., 2011; Raposa et al., 2019). These studies, however, have several limitations. First, many evaluations have used quasi-experimental as opposed to randomized controlled designs (see DuBois et al., 2002, 2011; Raposa et al., 2019), the former being notably more susceptible to threats to internal validity and thus biased estimates of program effects (Shadish et al., 2002). Second, the programs evaluated have often included additional components, such that it is not possible to distill the effects of mentoring per se (DuBois et al., 2011). Third, most of the evidence to date comes from fairly small-scale evaluations of programs implemented at a single site. This leaves as a critically important question the effectiveness of mentoring programs under real-world implementation conditions that are typical of scaled-up interventions, especially in view of evidence of an observed drop-off in desired program effects under these circumstances (for discussion, see DuBois, 2017).

Research addressing the potential of mentoring programs for youth to contribute to crime and delinquency prevention, more specifically, has also shown promise (for a review, see Hawkins et al., 2020), but is also limited for a number of reasons. First, remarkably few evaluations of mentoring programs have included measures of contact with law enforcement or the courts (e.g., arrests; DuBois et al., 2011; Hawkins et al., 2020). This is particularly true for evaluations of programs without additional non-mentoring components and for those that are oriented toward primary prevention as opposed to curbing recidivism among youth with existing arrests (see DuBois, 2022 for a meta-analysis of programs with the latter aim). In a notable exception, a recent randomized controlled trial (RCT) of the Fostering Healthy Futures for Teens program (Taussig,

2021)—a 9-month intensive mentoring program for 8th and 9th graders with open child welfare cases—included collection of court records for study participants. Intent-to-treat analyses for the full study sample (*N* = 245) indicated lower likelihood of a post-program court charge for those assigned to the program, but this difference was not statistically significant. In analyses of youth in two of the four study cohorts that predated the pandemic and a change in Colorado's expungement laws that affected collection of court records, the treatment-control difference on this outcome approached statistical significance. In addition, a recent multisite RCT of the YMCA's Reach & Rise therapeutic mentoring program (Jarjoura et al., 2022) involving over 550 youth did not find significant effects on arrests assessed at the end of the program, based on either administrative records or parent report. However, differences were again in directions favoring the treatment group (which included both youth receiving the standard version of the program and those receiving a potentially enhanced version). Second, when evaluations have included other relevant measures (e.g., self-reports of delinquent behavior), results have been mixed, with several studies failing to find evidence of effects on these measures (e.g., Herrera et al., 2013; De Wit et al., 2007; Taussig, 2021) or finding evidence of effects that are inconsistent across such measures (e.g., Herrera et al., 2023). Third, the time frames over which outcomes have been assessed typically do not encompass peak years of risk for delinquent behavior or juvenile justice system involvement and/or the full duration of program participation, both of which could lead to underestimates of effects. Illustratively, in a multi-site RCT of the Big Brothers Big Sisters (BBBS) school-based mentoring program, 85% of the participants were in 4th through 6th grades at the start of the study, and participants were followed for only one and a half school years (Herrera et al., 2007). Similarly, in the landmark Public/Private Ventures (P/PV) RCT of the BBBS community-based mentoring program, participants were, for the most part, between 10 and 13 years old (79% of the sample) and were followed for only 18 months (Tierney et al., 1995). The above-referenced RCT of two BBBS agencies followed 9- to 14-year-olds for only 13 months (Herrera et al., 2023). Risk for involvement in the juvenile justice system and many delinquent behaviors do not peak until later ages than those encompassed by these and other studies. For example, substance use initiation peaks at age 18 (Vega et al., 2002). Finally, for the most part, existing evaluations have not been designed with an explicit goal of gauging the potential for mentoring programs to induce favorable change in risk and protective factors for delinquent or criminal behavior and justice system involvement. There is thus a need for greater understanding of the potential for mentoring programs to influence the wide range of aspects of development and adaptation that can predict susceptibility to, or protection against, the emergence of delinquent and criminal behavior in later stages of adolescence and early adulthood—a peak period for involvement in the justice system.

The present study, an RCT of the Big Brothers Big Sisters of America (BBBSA) Community-Based Mentoring (CBM) program, was intended to address each of the foregoing limitations.[1] BBBSA is the largest mentoring organization in the U.S. In 2020, over 230 BBBSA agencies served 109,254 youth nationwide, with over 90 percent being between 9 and 18 years old (Porzig, 2021). Most youth served by the organization are facing one

[1] This report includes, in part, text included in the interim report for the study (DuBois et al., 2022).

or more forms of adversity. Illustratively, in 2019: 73% were eligible for free lunch; 15% had one or more parents incarcerated; 35% lived with a family member experiencing mental health concerns; and 26% had a family member struggling with substance abuse (Iorio, 2020). In the CBM program, which is the flagship program of the organization, adult volunteers and youth are expected to spend time together one-on-one in community-based activities for a minimum of 1 year. The program was created over a century ago to stem juvenile delinquency (Baker & Maguire, 2005), but over time has developed a broader aim of promoting the overall positive development of participating youth in areas such as academic achievement, self-esteem, and social competence. The Washington State Institute for Public Policy (WSIPP, 2018) reported an estimated cost per youth for a year of services in the CBM program of $1,765. Another recent study, relying on a BBBS agency in the mid-Atlantic region, estimated a higher marginal cost of $2,498 to add a mentoring relationship (i.e., "match") to a caseload for 12 months (Alfonso et al., 2019). These marginal costs were much higher in the first month of a match ($1,398) than the following 11 months ($1,100 total or $100 per month), reflecting significant staff time devoted to recruitment, screening, enrollment, and matching.

Youth are most often referred to the CBM program by their parents or caregivers (referred to as "parents" hereafter). Both the youth and parent are interviewed by an agency staff person to ensure appropriateness for the program and gather information to assist in pairing the youth with an appropriate mentor. Mentors in the CBM program are adult volunteers from the surrounding community who are screened by the agency, a process which includes a criminal background check, interview, reference check, and home assessment (see Method for more details).

Using the available pool of approved volunteers, the agency seeks to identify a suitable volunteer to pair with each youth. Typically, this match is created based on gender (i.e., mentor and youth with the same expressed gender), location (proximity of volunteer and youth residences), and shared interests, while also considering any family and/or volunteer preferences. Each prospective match requires approval by both the volunteer and the youth's family. Youth often are successfully matched with a volunteer within a few months of program enrollment. The wait can be significantly longer, however, depending on the agency's ability to find a suitable volunteer. For example, men are particularly difficult for most mentoring programs to recruit, so boys are more likely to be on program waitlists than girls (Garringer et al., 2017). Once a match is established, the youth (referred to as a "Little Brother/Sister" or "Little") and volunteer (referred to as a "Big Brother/Sister" or "Big") are expected to spend time together a few times a month in activities and locations of their choosing (DuBois & Friend, 2017). Matches generally are encouraged to continue beyond the 1-year minimum and can extend until the youth ages out of the program (i.e., 18 years of age in many agencies). Program staff roles include recruiting, screening, and training mentors, enrolling youth, matching youth and volunteers, providing ongoing support and monitoring for each match through regular check-ins with the volunteer, parent, and youth, and implementing a closure process when matches end (DuBois & Friend, 2017). In 2020, BBBSA reported that about three-quarters of matches in the CBM program (74.5%) reached the 1-year minimum and that the average length of matches that had closed was just over 2 and a half years (Porzig, 2021).

The mentor-youth relationship and the interactions that contribute to its development are central

in BBBSA CBM—an emphasis that is consistent with Rhodes' (2005) theoretical model of youth mentoring. This model posits that mentoring interactions can provide youth with a positive, supportive role model and opportunities to develop new skills that support identity development and social-emotional and cognitive growth. These processes are assumed to depend on the development of a strong, trusting relationship between the mentor and youth (Rhodes, 2005). The mentor-youth relationship is also typically viewed as important in other types of mentoring programs. However, in these programs, other, more instrumental aspects of mentor-youth interactions—for example, academic activities in programs focusing on educational outcomes (Larose & Tarabulsy, 2005) and peer interactions in group mentoring programs (Kuperminc & Thomason, 2013; Kuperminc & Deutsch, 2021)—are also often conceptualized as being of central importance for achieving desired outcomes.

The BBBSA CBM program was not subjected to rigorous testing until the earlier-referenced P/PV RCT of the program in the early 1990s that included 1,138 youth (Tierney et al., 1995). At the 18-month follow-up, relative to those assigned to the wait-list control group, those assigned to the treatment group (i.e., immediate eligibility for mentoring through the program) were significantly less likely to report aggressive behavior and initiation of drug and alcohol use and skipped fewer days of school. Treatment group youth also showed improvement relative to control group youth in self-reported grades and perceptions of their ability to do schoolwork, and some aspects of their reports of relationships with parents and peers. The study did not, however, find impacts in several areas tested, including stealing, damaging property, valuing of school, hours spent on homework or reading, various aspects of parent and peer relationship quality, global feelings of self-worth, self-confidence, perceived social acceptance, and engagement in social and cultural enrichment activities. A more recent RCT of the CBM program in two BBBSA agencies involving 654 youth, referenced above (Herrera et al., 2023), found evidence at a 13-month follow-up of favorable impacts of assignment to the treatment group on youth-reported depressive symptoms but not on the other youth-reported academic, social or behavioral outcomes tested. When parent-report outcomes were considered, youth in the treatment group were rated more favorably than those in the control group on the Emotional Symptoms, Conduct Problems, and Peer Problems subscales of the Strengths and Difficulties Questionnaire, as well as the Total Difficulties composite score (Goodman, 1997). Two studies assessed the long-term effects of the program, more than 20 years after involvement in the original P/PV RCT (see Bell & Petkova, 2024; DuBois et al., 2024) and reported results suggestive of potential benefits relating to arrest while a juvenile (DuBois et al., 2024) and having attended college (Bell & Petkova, 2024). Results of intent-to-treat analyses were not significant for several other outcomes, such as adult arrest (DuBois et al., 2024), incarceration (Bell & Petkova, 2024), and wages (Bell & Petkova, 2024) during adulthood. However, after the 18-month follow-up period of the P/PV study, agencies were allowed to match youth in the control group. This may have affected the ability to discern significant long-term intent-to-treat effects. The studies also assessed program effects decades after youth's program involvement ended so provide limited information about the more near-term effects of the program as youth entered latter stages of adolescence and transitioned to adulthood.

The P/PV study was extremely influential, and the BBBSA CBM program continues to be one of the

most popular in the U.S. However, the program has experienced notable changes since the study was conducted (BBBSA, 2013). Standards for the content and timing of match support (i.e., contacts agency staff have with mentors, youth, and parents during the mentoring relationship) have evolved over time in ways that arguably could both enhance and decrease program benefits. It also appears that fewer mentor-youth ("match") meetings are now typically required, with 6 of the 8 agencies in the P/PV study asking mentors to meet weekly with youth (Tierney et al., 1995) and none of the agencies in the current study expecting more than a minimum of two meetings per month. Today, most BBBSA agencies also use a national web-based management information system (MIS) that tracks demographics, match support contacts, and other key aspects of service provision; indices of match quality administered to the volunteer and youth and outcome measures completed at the start of the match and annually thereafter by youth also have been introduced. This type of monitoring of program implementation was found in a meta-analysis to be associated with stronger estimated effects of mentoring programs on youth outcomes (DuBois et al., 2002). Finally, many agencies are now receiving funding that supports services to youth at higher risk for delinquent/criminal behavior, such as those having a parent or other family member who has been incarcerated. Such changes further underscore the need for an updated evaluation of the program's effectiveness.

The P/PV study also lacked multiple informants (all outcomes were self-reported) and included a relatively small number of agencies that lacked diversity (all 8 agencies were fairly large and located in sizable urban areas). In addition, the study has been criticized for not including more "objective" administrative records in assessing outcomes (Roberts et al., 2004). To address these concerns, the current evaluation includes outcomes assessed using multiple informants (youth and parent) and administrative records (i.e., youth arrest) as well as a larger, more representative group of agencies. It also includes more intentional and comprehensive measurement of risk and protective factors for delinquent behavior/justice system involvement (e.g., association with peers involved in problem behavior, self-control). In the present study, youth are being followed for 4 years, during which time control group youth are not eligible for matching. The study's findings thus better capture effects of a "full dose" of program participation (i.e., the entire duration of BBBSA CBM mentoring relationships, which often extend over multiple years) as well as effects of the program that may emerge during later stages of adolescence in which there is greater risk for delinquent behavior, substance use, and juvenile justice system involvement. A final important consideration distinguishing the current trial from the earlier P/PV study is that study hypotheses and methodology, including procedures for testing of program effects, were specified prior to initiation of the research and registered publicly on the Open Science Framework (DuBois, 2016).

The present study assessed youth outcomes at two time points: 18 months and 4 years after study enrollment. Findings from the 18-month follow-up were presented in an earlier interim report (DuBois et al., 2022). Eighteen months after program enrollment, significant intent-to-treat impacts were found on two of four primary hypothesized outcomes: arrest and any substance use as reported by the youth. Effects did not reach or approach significance for the other two primary outcomes of property-related and violence-related delinquent behavior.

It also is important to note that arrest was assessed through youth- and parent-report due to a delay in securing official records of arrest. With respect to secondary hypothesized outcomes (i.e., risk and protective factors for delinquent/criminal behavior), significant effects favoring the treatment group were found for one of five risk factors tested (aggressive behavior, combining youth- and parent-report) as well as 10 of 26 protective factors tested: self-control using a combination of youth- and parent-report, social skills, grit, self-advocacy, hopeful future expectations, school engagement, and college exploration, all as reported by youth, and family functioning and parental monitoring and supervision as reported by the youth's parent.

The 4-year follow-up that is the focus of this report surveyed the same families and included the same outcomes assessed at 18 months, in addition to several outcomes associated with delinquent/criminal behavior that are more relevant for the older adolescents in our sample (e.g., suicidal ideation, dating violence, discontinuing high school before graduating, substance abuse). Administrative records were also obtained, assessing arrests from baseline throughout the 4-year follow-up period.

This report summarizes results for tests of the following sets of primary and secondary hypotheses using survey data collected at enrollment and 4 years after enrollment, and arrest records:

### Primary H1:
Program participation will decrease the likelihood that youth will have a court-related arrest for any of the following types of offenses during the 4-year period after study enrollment: person offense, property offense, drug law violation, public order offense, or status offense (i.e., a dichotomous variable indicating whether the youth has had an arrest for any of the indicated types of offenses);

### Primary H2:
Program participation will decrease the likelihood of youth involvement in both property-related and violence-related delinquent behavior during the period between study enrollment and the preceding 2.5 years at the 4-year follow-up (i.e., dichotomous measures indicating involvement or not in each type of delinquent behavior as reported by the youth or parent and described in Appendix 3);

### Primary H3:
Program participation will decrease the likelihood of youth involvement in recurring substance use (i.e., alcohol use to the point of drunkenness "at least once every week or two," illicit drug use "at least once a month," or tobacco/vaping "at least once or twice a week") during the preceding 6 months at the 4-year follow-up (i.e., a dichotomous measure indicating whether or not the youth reports substance use as defined above);

### Secondary H1:
Program participation will decrease risk factors for delinquent/criminal behavior as assessed 4 years after enrollment (i.e., school misbehavior; truancy; aggressive behavior; association with deviant peers; depressive symptoms);

### Secondary H2:
Program participation will increase protective factors for delinquent/criminal behavior as assessed 4 years after enrollment in the

following four broad areas:[2] **(1) personal resources** (i.e., self-control; conventional values; social skills; coping efficacy; spark development; grit; self-advocacy; hopeful future expectations; goal setting and pursuit); **(2) social-contextual resources** (i.e., family members, friends, and significant other perceived social support; family functioning; parenting behaviors; involvement in out-of-school activities; volunteering); **(3) mental health and wellbeing** (i.e., self-esteem; happiness/positive affect; life satisfaction) and **(4) academic engagement and performance** (i.e., school engagement; academic performance; college exploration; career exploration); and

### Secondary H3:

Program participation will have a favorable influence on longer-term potential correlates of delinquent/criminal behavior during adolescence as assessed 4 years after enrollment in the following areas: **(1) mental health** (i.e., lower likelihoods of having suicidal ideation and making a suicide attempt; lower level of substance abuse); **(2) education and career** (i.e., lower likelihood of discontinuing education prior to receiving a high school diploma; higher likelihoods of having a specific job/career goal, having a special interest related to a future job/career, being engaged in post-secondary education, training, or employment, and college attendance; greater degrees of occupational identity, availability of an extra-familial adult with whom the youth can discuss their future, network support for education/career goals, and progress toward education/career goals); **(3) risky and problem behavior/health** (i.e., less perpetration of dating violence; lower likelihoods of sexual intercourse without a condom, pregnancy, and having an STI); and **(4) transition to adult independence** (i.e., higher likelihood of having a stable living situation). Several of these outcomes were able to be examined only for subsets of the overall sample for whom they were relevant (e.g., those who reported being sexually active).

[2] The categorization of the hypothesized protective factor outcomes into subdomains was not part of the pre-specified protocol for study design and analyses and is included in this report only for sake of exposition.

Little Shenia

# Method

Little Shenia & Big Selina

# Method

## Site Selection

As described in DuBois et al. (2022), BBBSA agencies were selected for invitation to participate in this research with the aim of having the resulting group of agencies be as representative as possible of the BBBSA network of agencies in terms of size (i.e., large-, mid-, and small-sized agencies as designated by BBBSA based on numbers of youth served) and other potentially relevant operational and performance characteristics (i.e., proportion of youth served who participate in the CBM program, percentage of expected support contacts completed for youth served in the CBM program, and percentage of CBM mentoring relationships sustained for at least 1 year), characteristics of youth served in the CBM program (i.e., age, gender, family structure and income, percentage with an incarcerated parent), age of volunteer mentors in the CBM program, and geographic location (urban versus non-urban; Northeast, Southwest, Southeast, Midwest, or West). Details regarding the selection of agencies are provided in the interim report of study findings (DuBois et al., 2022). Participation was voluntary, with a total of 54 agencies invited and 17 agreeing to participate.

The 17 participating agencies (listed in Table 1) had been affiliated with BBBS from 5 to 106 years and were medium to large in size. They served close to 200 or more youth annually in their CBM programs, with the exception of two smaller agencies that each served fewer than 100 youth. Nine agencies operated out of one location, while eight oversaw one or more satellite locations. Agencies served a wide age range of youth, starting as young as five years old and typically serving youth until they turned 18 (seven continued to serve youth into young adulthood, with one agency serving youth up to age 25).

## Study Enrollment, Randomization, and Baseline Data Collection

The parent of each youth who presented to a participating agency within the study enrollment period (February 2018 through February 2020) and met *program* eligibility criteria (e.g., living in the agency's catchment area) was assessed for *study* eligibility. Study eligibility criteria consisted of: a) youth being 10 years of age or older to ensure they could complete study surveys; b) youth not having a sibling who was already a study participant, to avoid the potential for contamination if siblings were assigned to different groups; c) youth not having a severe learning, cognitive, or other intellectual disability as reported by the parent; d) parent both speaking and reading either English or Spanish; e) youth never having been previously matched with a mentor through any of the agency's programs; f) youth not having a sibling already receiving services from the agency; and g) youth not falling into a group that the agency excluded from study participation based on agreement with the research team (e.g., some agencies chose to omit one or more service regions from participation). Of 5,379 youth assessed for eligibility, 3,604 (67.0%) were excluded due to not meeting inclusion criteria (see CONSORT diagram in Figure 1). Youth age accounted for the majority of the exclusions (68.6%), followed by agency exclusions due to prior agreement (16.4%).

**Table 1:** Participating Agencies

| Agency | Location | Number of Study Participants | Number of CBM Youth Served in 2019[a] |
|---|---|---|---|
| Catholic Big Brothers Big Sisters of Los Angeles | Los Angeles, CA | **84** | **300** |
| Big Brothers Big Sisters of Colorado | Englewood, CO | **79** | **880** |
| Nutmeg Big Brothers Big Sisters[b] | Hartford, CT | **132** | **508** |
| Big Brothers Big Sisters of Delaware | Wilmington, DE | **64** | **340** |
| Big Brothers Big Sisters of Broward County | Ft. Lauderdale, FL | **76** | **411** |
| Big Brothers Big Sisters Miami[c] | Miami, FL | **<10** | **617** |
| Big Brothers Big Sisters of Central Illinois[c] | Decatur, IL | **22** | **298** |
| Heart of Illinois Big Brothers Big Sisters | Peoria, IL | **54** | **217** |
| Big Brothers Big Sisters of Illinois Capital Region[d] | Springfield, IL | **46** | **48** |
| Kansas Big Brothers Big Sisters | Wichita, KS | **245** | **1,842** |
| Big Brothers Big Sisters of Central Missouri | Columbia, MO | **26** | **201** |
| Big Brothers Big Sisters Mountain Region | Santa Fe, NM | **71** | **390** |
| Big Brothers Big Sisters of the Capital Region | Albany, NY | **37** | **273** |
| Big Brothers Big Sisters Independence | Philadelphia, PA | **142** | **1,030** |
| Big Brothers Big Sisters of El Paso | El Paso, TX | **51** | **174** |
| Big Brothers Big Sisters Lone Star | Irving, TX | **213** | **3,165** |
| Big Brothers Big Sisters of the Tri-State | Huntington, WV | **<10** | **85** |

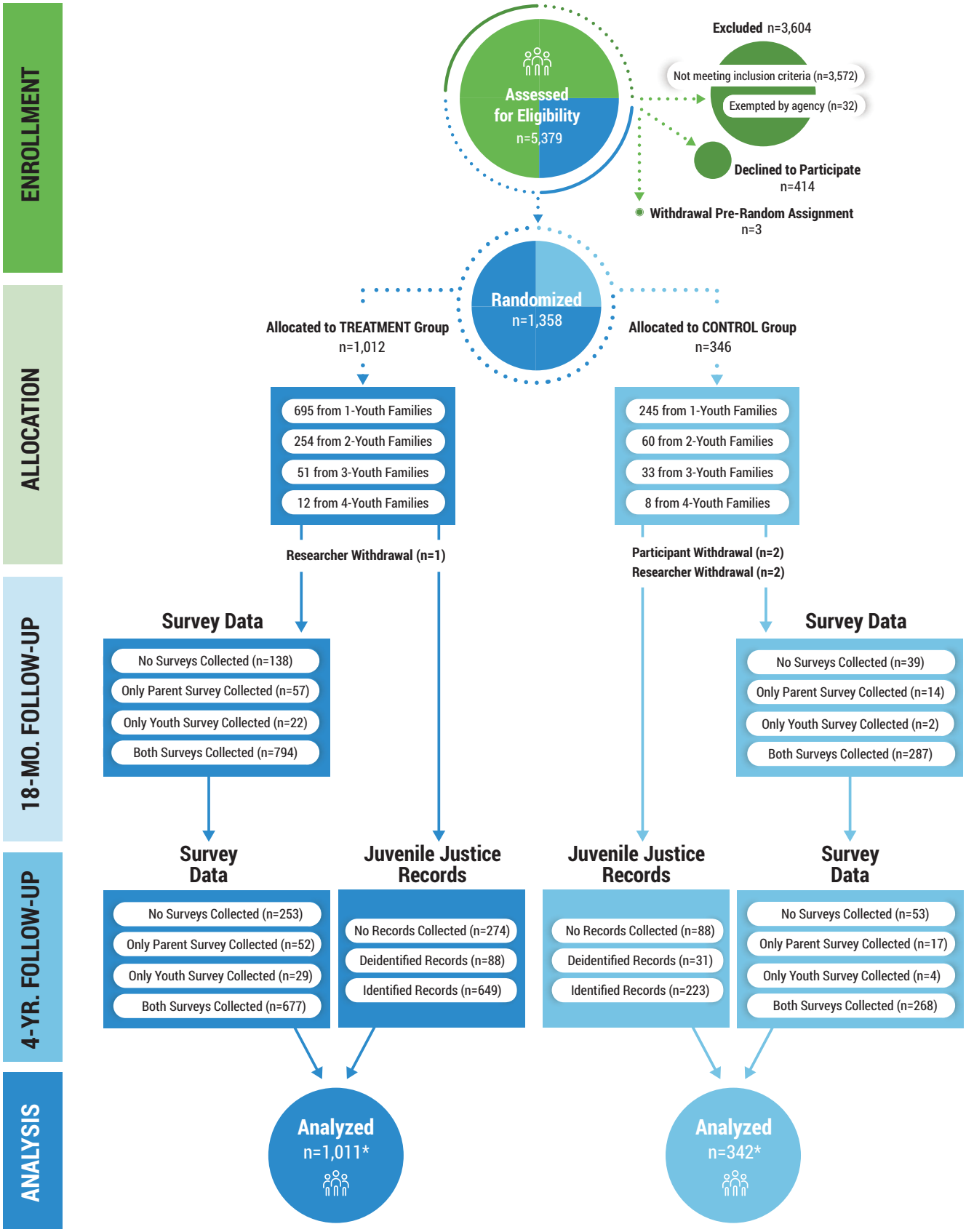
[a] Number of youth served is the total number of youth who were in a match in the program at any time during the year. This number thus includes all continuing matches already in existence at the start of 2019 and is not limited to newly served youth (i.e., those matched with a mentor) during the year.

[b] In 2022, Nutmeg Big Brothers Big Sisters changed their name to Big Brothers Big Sisters of Connecticut.

[c] This agency joined the study after the start of enrollment.

[d] Big Brothers Big Sisters of Illinois Capital Region closed after having begun to enroll participants in the study. Big Brothers Big Sisters of Central Illinois then joined the study after it assumed responsibility for families served by the closing agency and continued enrolling youth in the study.

**Figure 1:** CONSORT Diagram




*Multiple imputation was used to account for missing data at follow-up. See text for details.

Each agency also was allowed to exclude a small number of study-eligible youth from the research —up to 4% of their total recruitment goal—prior to consent and random assignment for any reason deemed appropriate (e.g., perceived high need of the youth). In total, 32 youth were excluded from study participation by the agencies through this provision.

If a youth was study eligible, their parent was informed that they had the option to either: a) proceed with program enrollment, with the understanding that, during their 4 years of study participation, the youth could be matched with a Big Brother/Sister only if they were one of the 3 out of 4 study youth who were selected by lottery to receive services; or b) wait for up to 18 months beyond the agency's normal wait time to complete program enrollment and become eligible to be matched with a Big Brother/Sister, in which case the parent would be provided a list of referrals to non-mentoring youth programs in the community and a tip sheet for connecting youth with supportive adults.[3] Those who agreed to potential study participation met, along with their children, with BBBS staff as they would have normally as part of program enrollment. During this meeting, program staff obtained formal parent consent and youth assent, each being required for study participation. Families were also asked for their consent for the research team to collect juvenile justice administrative records for participating youth. This request was separate from study consent, so families could consent to participation in the study without also consenting to the release of juvenile justice records. As part of the consent process, parents and youth were informed that the research team had obtained a Certificate of Confidentiality by the National Institute of Child Health and Development, which ensured that the team could not be forced, even by a court subpoena, to disclose any information that might identify the child or parent.

Each agency was also given the option of recruiting youth from its existing waitlist (i.e., those for whom program enrollment had been completed but who had not yet been matched with a Big Brother/Sister as well as those for whom inquiry was initiated prior to study launch, but program enrollment had not yet been completed). In these instances, a phone call was made to the youth's parent for study recruitment, and consent/assent was obtained in an in-person meeting as with new inquiries to the program. A total of 136 youth were enrolled in the study in this way.

Overall, parent consent and youth assent for study participation was obtained from slightly over three-quarters of those approached (76.5% see Figure 1). Of those families who consented into the study, a total of 90.5% provided additional consent for the release of juvenile justice administrative records as part of their study involvement.

Following consent/assent, program staff administered baseline surveys to the parent (on paper) and youth (reading questions aloud while the youth marked their responses on paper behind a privacy screen). Parents also completed a brief "administration survey" to guide and streamline follow-up survey administration, answering questions such as: In what format would you/your child like to complete your follow-up survey (online/paper)? In what language? Will you/your child have access to a computer? Will he/she need assistance? Parent baseline surveys were administered in either English (93%) or Spanish

[3] These materials also were provided to parents of all youth who enrolled in the study, regardless of assignment to control or treatment group, in response to a request by the Institutional Review Board overseeing the conduct of the study.

(7%), and the parent and youth each received a $10 incentive for completing their survey.

Random assignment to study group was conducted following the survey assessments. For youth who were enrolling with one or more study-eligible siblings, the siblings were yoked for random assignment (i.e., siblings all received the same group assignment). A total of 418 youth entered the study with at least one sibling (157 families enrolled two youth in the study; 28 enrolled three youth; and five enrolled four youth in the study). The sample allocation ratio was 3:1 in favor of the treatment group (i.e., 3 times as many youth, or sibling sets, were assigned to the treatment as the control group), stratified by agency. Agencies were provided with sets of sealed opaque envelopes that contained notification of assignment to either the treatment or control group. Each agency received a number of envelopes equal to its targeted study enrollment number, plus 20%. Envelopes were consecutively numbered. Prior to enrolling a youth into the study, the staff person involved was asked to sign out an envelope through the agency's Research Liaison (i.e., BBBS staff person who served as liaison with the research team), recording the envelope's number and the family with which the envelope was being used. Staff opened the envelope in the presence of the parent and youth and shared the group assignment with them. It should be noted that although direct determination of random assignment by the researchers would have been ideal from a methodological standpoint, this was not feasible due to logistical constraints associated with integrating the process into existing agency operations which would have imposed undue burden on staff (e.g., needing to arrange for additional meetings with families).

For youth assigned to the treatment group, agencies used standard procedures to continue the program enrollment process and match the youth with a volunteer mentor as soon as an appropriate one was identified. Youth assigned to the control group were not eligible to be matched with a Big Brother/Sister by the agency until the end of the youth's 4-year participation in the study. All control group youth and their parents received the above-referenced list of non-mentoring youth-serving organizations in the community and tip sheet for connecting youth with supportive adults. They also received an additional $50 to compensate for the time invested in program enrollment and could participate in agency "waitlist activities" (i.e., activities for youth who are waiting to be matched with a mentor). Waitlist activities included sporting events, "Big for the day" events, gym programs, and educational activities. These activities were offered by about half of participating agencies with a frequency ranging from twice a year (one agency) to every month (two agencies).[4]

All study procedures were approved by UIC's Institutional Review Board (IRB). A total of 1,358 youth were randomized to study condition, with 1,012 youth assigned to the treatment group and 346 assigned to the control group. Five youth were withdrawn from the study following randomization: three were withdrawn by the researchers due to subsequently being determined to be ineligible due to age (2) or cognitive ability to complete the survey (1); in addition, two parents withdrew their child in response to the child being randomly assigned to the control group. This resulted in a study sample of 1,353 youth, with 1,011 in the treatment group (74.7%) and 342 (25.3%) in the control group.

[4] On the 18-month follow-up survey, 28.8% of parents in the treatment group reported having used the list of youth-serving organizations; the corresponding percentage for the control group was 21.3%. About one in four parents of youth in each group reported having used the tip sheet for connecting youth to supportive adults (24.2% and 22.7% for treatment and control groups, respectively). With respect to participation in BBBS agency waitlist activities, the percentages of parents reporting participation of their child in one or more of these activities was 18.4% for the treatment group and 13.3% for the control group.

## 4-Year Follow-up Surveys

Each participating youth and parent was approached for re-assessment regardless of services received at two follow-up periods: 18 months after the date of the youth's study enrollment (see DuBois et al., 2022) and 4 years after enrollment. Prior to the 4-year assessment, families were sent "thank-you" cards with a $10 gift card in appreciation for their study participation; birthday cards for youth and annual holiday cards also were sent. By the scheduled time of their 4-year survey (i.e., 4 years after date of enrolling in the study), 15.4% of youth participants (*n* = 208) had become 18 years of age and thus needed to be reconsented as non-minors/adults to continue participation in the study and thus complete the 4-year survey. Three-quarters (75.4%, *n* = 157) of these youth were able to be contacted and reconsented.

As was the case for the 18-month follow-up, nearly all youth completed their 4-year follow-up survey online using a secure web-based platform (REDCap; see below for details on the small numbers completing paper surveys by mail). Youth and their parents each received $40 for completing their follow-up surveys. The parent of each youth in the control group (or the youth themselves for those who had already turned 18) received an additional $50 to support involvement of the youth in alternative activities. Those administering surveys were not blinded to study condition of the youth as this was impractical due to the treatment group survey including content specific to that condition (e.g., questions about the youth's mentoring relationship). Questions about the youth's mentoring relationships were positioned at the end of the youth and parent surveys so as to safeguard against potential bias in responses on outcome measures that could have been introduced by having questions about mentoring relationships asked prior to these measures.

Families were contacted by a combination of phone, email, and text messages by the research team. Up to six "packets" of contacts (with three varied contacts in each packet), separated by 7 to 10 days, were used to contact each family. Researchers also reached out to secondary contacts provided by participants at study enrollment and used Lexis Nexis to facilitate contact with families. Families that were unresponsive to initial efforts were contacted toward the end of data collection in a final effort to collect follow-up surveys.

Researchers succeeded in collecting 4-year surveys from: 72.3% of youth and 74.9% of parents; 77.4% of families in which youth and/or parent responded; and 69.8% of families in which both youth and parent responded (see Figure 1). Less than 1% of youth and parents completed their 4-year surveys on paper rather than online; and about 5.5% of parents completed their survey in Spanish. Survey completion rates were similar for treatment and control groups, with the youth and/or parent survey completed for 75% of the treatment group and 84.5% of the control group.

All primary hypothesized outcomes and the overwhelming majority of secondary hypothesized outcomes collected through participant surveys were assessed either exclusively using youth survey data or a combination of youth and parent survey data. Therefore, attrition is arguably most important to consider with respect to the proportion of the sample for which youth survey data were available as well as the proportion for which either youth or parent survey data were available given that for these participants there was non-missing data at follow-up as a basis for assessing nearly all the hypothesized outcomes.

For youth surveys alone, the combination of overall and differential rates of attrition approaches but does not fully satisfy boundaries used by the U.S. Department of Education's What Works Clearinghouse (WWC, 2022) for designating studies as demonstrating low attrition under optimistic assumptions:[5] the overall and differential rates of attrition for youth surveys are 27.7% and 9.7%, respectively, whereas the WWC threshold for low differential attrition with an overall attrition rate of 28%, is 8.6%. When considering response rates for youth *and/or* parent survey data, the study meets the WWC's optimistic threshold: the study's overall and differential rates of attrition are 22.6% and 9.5%, respectively, which essentially equates to the WWC boundary of overall and differential attrition rates of 23% and 9.5%.

Table A in Appendix 1 provides descriptive statistics on baseline measures for those with and without 4-year survey data. As indicated in the table, there are only two measures for which there is a difference between the two groups that reaches ($p < .05$) or approaches ($p < .10$) statistical significance: youth race/ethnicity and violence-related delinquent behavior in the past year.[6] Specifically, those without 4-year outcome data are more likely to be Hispanic and to have a youth or parent report at study baseline having engaged in violence-related delinquent behavior in the past year. It can be seen in the table that youth without 4-year outcome data also tended to fare at least slightly more poorly on other baseline measures that tap into problem behavior (e.g., property-related delinquent behavior, skipping school); likewise, they are somewhat more likely to have a history of arrest as indexed either by administrative records or survey reports.

Table B in Appendix 1 includes a table that provides descriptive statistics for those without and with 4-year outcome data broken down by treatment and control groups. As shown in the table, there are only two baseline characteristics for which the difference between those with and without 4-year outcome data varies significantly between the treatment and control groups: violence-related delinquent behavior and youth risk exposure. In each case, the difference was larger for the control group (i.e., 56.6% vs. 33.6% with baseline report of violence-related delinquent behavior for youth without and with 4-year outcome data, respectively, and mean scores of 8.15 vs. 6.78 on the measure of risk exposure) than for the treatment group (i.e., 40.3% vs. 37.3% for baseline report of violence-related delinquent behavior for youth without and with 4-year outcome data, respectively, and equivalent mean scores of 7.30 on the measure of risk exposure).[7]

[5] WWC optimistic assumptions for assessing level of attrition seem most applicable given the notably lower rates of overall and differential attrition at the 18-month follow-up and thus the availability of data from this earlier follow-up to use as a substantially more informative basis for imputing missing data at the 4-year follow-up than would have been the case when relying on baseline data alone.

[6] The lower representation of Hispanic youth among those with 4-year survey data may be attributable to challenges that we experienced contacting several Hispanic families at the 4-year follow-up; in some instances, these challenges appear to have been due to the family no longer residing in the U.S.

[7] Keeping in mind the higher 4-year survey response rate that was achieved for the control group, we suspect that the higher level of payment to this group (i.e., the additional $50 for seeking alternative programs for youth) was particularly likely to be a "difference maker" in cases in which the youth exhibited a somewhat greater tendency toward problem behavior (at least as captured by this measure) and/or level of risk (e.g., parental substance abuse, youth learning disability), resulting in those who were non-respondents at the 4-year follow-up having started the study with more difficulties, as captured by these two measures, relative to those in the treatment group. How this might then play out for program effects is unclear. It could be, however, that the resulting underrepresentation of youth with somewhat elevated initial behavioral difficulties and risk levels in the treatment group, if not addressed (i.e., through imputation of their outcomes at the 4-year follow-up as is done in this study's primary and pre-specified analyses) would tend to depress estimates of program benefit, given that research on the whole tends to suggest greater effectiveness of mentoring programs for such youth (see, e.g., DuBois et al., 2002, 2011). This would be consistent with the trend for our supplementary complete-case analyses of impact (see Results section of this report) to suggest slightly weaker effects when simply excluding all youth without 4-year outcome data.

To summarize, differences in the measured baseline characteristics and backgrounds of youth with and without 4-year outcome data are relatively limited overall and in interaction with treatment versus control group status. Nonetheless, the differences that are evident underscore the importance of accounting for them with a state-of-the-art approach for minimizing bias attributable to missing data (i.e., multiple imputation) rather than a more simplistic approach such as complete-case analysis in which it is implicitly assumed that any differences between those with missing outcome data and those with complete data are not consequential for estimates of intervention impact.

## Administrative Records

In efforts to collect administrative records of youth involvement with juvenile justice authorities, we attempted to establish partnerships with authorities serving all the counties represented in the study. Participating agencies served youth in 13 states, across 80 counties. In three cases (Texas, Illinois and Florida), one juvenile justice agency served more than one BBBS agency. We created memoranda of understanding (MOUs) with each partnering authority and requested data for: (1) those youth who were still minors at the time of records collection and whose caregiver had provided permission for records collection; and (2) those who had turned 18 at the time of collection, but had provided permission for records collection when being reconsented as adult participants. The number of participants for whom permission as adults was required for records collection was substantially larger than the number requiring reconsent as part of the 4-year survey. This was due to many additional participants having reached age 18 by the time it became logistically feasible to request juvenile justice records, due to a delay in executing a Data Use Agreement with the relevant governmental agency or other logistical considerations on the part of the agency. We were able to obtain permission for records collection from about half of these participants who were no longer minors, and there was a loss of permission for records collection for about 88 participants due to this complication. In most cases, this limitation applied only to records covering the full 4-year follow-up period due to records for the first 18 months of this period having been collected at an earlier date.

Records were requested covering the following periods: (1) baseline (any records prior to enrollment); (2) the 18-month follow-up period (any records between enrollment and the 18-month follow-up); and (3) the 4-year follow-up period (any records between the 18-month and 4-year follow-up). In total, we were able to obtain records for participating youth from all but one state (i.e., Delaware, representing three counties serving about 4.7% of our sample), and portions of Colorado covering about 2.7% of our sample. Authorities from two participating states (i.e., New Mexico and Florida) provided deidentified data covering about 11.4% of our sample. In total, we received records data for 79.4% of our sample (70.6% identified; 8.8% deidentified) covering the period from before enrollment (“baseline”) through 18 months after enrollment and 73.2% of our sample (64.4% identified; 8.8% deidentified) covering enrollment through 4 years after enrollment. At the 4-year follow-up, either identified or deidentified administrative records were collected for 72.9% of Treatments and 74.3% of Controls.

For administrative records, the study’s overall and differential attrition rates (considering all records or only identifiable records) are within the WWC

attrition standards under cautious assumptions, which is required to meet WWC's highest possible rating of "Meets WWC Group Design Standards without Reservations."

In many cases, administrative records had not been provided prior to publishing the interim report for the study (DuBois et al., 2022). Thus, in that report, analyses testing effects on arrest relied on youth and caregiver reports. For this reason, the current report shares both 4-year and 18-month findings for arrest using administrative records.

We also used Lexis Nexis Accurint to search for possible adult records of arrest for participants who had reached age 18 prior to the date of their 4-year follow-up. This identified an arrest prior to 4-year follow-up for only one participant. It should be noted, however, that this search was likely affected by delays in records appearing on Lexis Nexis Accurint.

## Agency Survey

Beginning in February of 2021, we administered a phone survey to each participating agency. The survey asked about the agency's size and history, characteristics of youth and volunteers serving as Big Brothers/Big Sisters, program practices, and finances. Participating agencies, with only minor exceptions, reported following BBBS Standards of Practice (i.e., guidelines that describe practices that must be adhered to among BBBS agencies unless exceptions are granted by BBBSA) in seven key practice areas (i.e., staff training, youth enrollment, matching, orientation and training, youth outcomes development plan, support and supervision, and closure). See Appendix 2 of this report for an overview of the BBBS Standards and the interim report of study findings for additional details on agency survey responses (DuBois et al., 2022).

The initial study plan as registered on the Open Science Framework specified an omnibus measure of involvement in delinquent behavior as a primary hypothesized outcome. This outcome was subsequently replaced by two separate primary hypothesized outcomes of involvement in property- and violence-related delinquent behavior, respectively, as indicated above.[8]

[8] This decision to specify separate primary hypothesized outcomes for involvement in property- and violence-related delinquent behavior was based on factor analyses of baseline data which supported distinguishing between the two types of delinquent behavior and thus creating separate indices of each. Three items from the originally planned omnibus measure of delinquent behavior were not included in either of these indices. These items asked about running away, deliberately damaging someone else's property, and painting graffiti or signs on someone else's property or in a public place and failed to load with either the property- or violence-related behaviors in factor analyses. Additional concerns included running away being a status offense that did not fit conceptually with either set of delinquent behaviors, the possibility that painting graffiti could also have captured "sanctioned" art (e.g., public murals), and the potential for reports of deliberately damaging someone else's property to refer to lower-level mischief, as the endorsement rate for this item was quite high relative to others.

## Outcomes Assessed

The pre-specified outcomes listed below were assessed through the youth and/or parent surveys or, in the case of arrest, through administrative records. Further detail on the measurement and scoring of each outcome at both baseline and follow-up is provided in Appendix 3.

### Primary Hypothesized Outcomes

- ✔ Arrest
- ✔ Property-related delinquent behavior
- ✔ Violence-related delinquent behavior
- ✔ Substance use

### Secondary Hypothesized Outcomes: Risk Factors for Delinquent/Criminal Behavior

- ✔ Negative peer associations
- ✔ School misbehavior[a]
- ✔ Skipping school[a]
- ✔ Aggressive behavior
- ✔ Depressive symptoms

### Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior

#### PERSONAL RESOURCES

- ✔ Self-control
- ✔ Conventional values
- ✔ Social skills
- ✔ Coping efficacy
- ✔ Spark development
- ✔ Grit
- ✔ Self-advocacy
- ✔ Hopeful future expectations
- ✔ Goal setting and pursuit

#### SOCIAL-CONTEXTUAL RESOURCES

- ✔ Perceived social support: Family members
- ✔ Perceived social support: Friends
- ✔ Perceived social support: Significant other
- ✔ Family functioning
- ✔ Parenting behaviors: Involvement
- ✔ Parenting behaviors: Positive parenting
- ✔ Parenting behaviors: Poor monitoring and supervision
- ✔ Parenting behaviors: Inconsistent discipline
- ✔ Involvement in organized youth activities
- ✔ Volunteering

#### MENTAL HEALTH AND WELL-BEING

- ✔ Self-esteem
- ✔ Positive affect
- ✔ Life satisfaction

#### ACADEMIC ENGAGEMENT AND PERFORMANCE

- ✔ School engagement[a]
- ✔ Academic performance
- ✔ College exploration
- ✔ Career exploration

# Outcomes Assessed *(continued)*

## Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up

### MENTAL HEALTH

- ✔ Suicidal ideation
- ✔ Suicide attempt
- ✔ Substance abuse

### RISKY AND PROBLEM BEHAVIOR/HEALTH

- ✔ Perpetrating dating violence[a]
- ✔ Sexual intercourse without a condom[a]
- ✔ Pregnancy[a]
- ✔ Sexually transmitted infection[a]

### TRANSITION TO ADULT INDEPENDENCE

- ✔ Stable living situation

### EDUCATION AND CAREER

- ✔ Discontinuing high school before graduation
- ✔ Engagement in post-secondary education, training, or employment[a]
- ✔ College attendance[a]
- ✔ Occupational identity
- ✔ Special interest related to future job/career
- ✔ Specific job/career goal
- ✔ Availability of extra-familial person to discuss future
- ✔ Network support for education/career goals[a]
- ✔ Progress toward education/career goals[a]

[a] This measure was assessed only for the portion of the sample for which it was relevant at the 4-year follow-up due to considerations such as whether the youth was no longer in K-12 schooling (e.g., college attendance) or reported having been sexually active in the preceding 4 years (e.g., sexual intercourse without a condom). Details can be found in Appendix 3.

## Data Analyses

Analyses to test primary and secondary study hypotheses were conducted in accordance with an analysis plan that was shared on Open Science Framework prior to initiation of the study, except where noted below. Generalized linear and nonlinear mixed-effects models (Bryk & Raudenbush, 1992; Fitzmaurice et al., 2004) were used to test study hypotheses, as these models can account for dependence among outcomes due to nesting of youth within both sites and families (i.e., siblings) as well as varying distributions of outcomes (i.e., binary and continuous). Random intercepts were used to account for clustering (i.e., non-independence) of study participants within sites as well as families within sites (Hedeker et al., 1994); impact coefficients were modeled as fixed. The multiple tests associated with primary hypotheses were conducted using the Benjamini-Hochberg (1995) family-wise adjustment, advocated by the WWC, to control for Type I error with the false discovery rate set to .05.

Pre-specified covariates for tests of primary hypotheses included youth demographics (i.e., age, gender, race/ethnicity, family structure, family income), baseline values of each primary outcome (i.e., history of court-related arrest pre-dating study enrollment, delinquent behavior, and substance use) and youth and parent reports of the youth's history, if any, of contacts with law enforcement not leading to arrest. Also included as planned covariates were any other study measure for which there was evidence of a non-negligible association at baseline with treatment/control-group status (see Table 3 in Results); the criterion used and pre-specified was a standardized mean difference effect size of .05 or greater (WWC, 2011).[9]

The same pre-specified covariates were used in tests of secondary hypotheses. When testing effects on risk and protective factors for delinquent/criminal behavior that were assessed at study baseline, scores on the outcome measure at baseline also were included as a covariate. For outcomes assessed only at the 4-year follow-up, in lieu of baseline scores on the measure which were not available, the baseline measure that was most strongly correlated with the outcome (and not otherwise already included as a covariate) was included as a covariate. In addition, for suicidal ideation, suicide attempts, perpetrating dating violence, and sexually transmitted infection, youth were asked to retrospectively report on the outcome for the period of time prior to their study involvement (i.e., more than 4 years ago); these retrospective measures were included as additional covariates for the corresponding outcomes.

In supplementary analyses, the main analyses described above were repeated with the coefficient indicating effect of assignment to treatment specified as a randomly varying parameter. The main analyses also were repeated including only those youth with 4-year survey outcome data (i.e., a completed youth or parent survey); in other words, these were complete-case analyses that did not use multiple imputation.[10] Findings from both sets of supplementary analyses are summarized in the Results.

[9] Our approach in controlling for these types of measures is more conservative than WWC Standards, which require this type of control only for non-RCT designs and for RCT studies in which the combination of overall and differential attrition is high, which as noted is not the case for this study at the 4-year follow-up.

[10] A 2010 National Research Council report, "The Prevention and Treatment of Missing Data in Clinical Trials," was generally unfavorable regarding complete-case analysis, especially in cases of "appreciable" amounts of missing data as is true of our 4-year outcomes, noting in part: "Furthermore, when missingness is appreciable, rejection of incomplete cases will involve a substantial waste of information and increase the potential for significant bias" (p. 55). On the other hand, there are legitimate concerns about missing data imputation being misused for purposes of "p-hacking"—that is, analytic and other strategies (e.g., selective reporting) that intentionally favor findings that reach statistical significance (Stefan & Schönbrodt, 2023).

Missing data on outcome measures at the 4-year follow-up were addressed using multiple imputation (Rubin, 1987), as the assumption of ignorable missingness (i.e., missing at random) is reasonable in the context of the rich set of baseline covariate measures that were available for imputation. The pre-study analysis plan did not specify the particular approach to be used for multiple imputation. As recommended by Sullivan et al. (2018), multiple imputation was conducted separately for the control and treatment groups. Multiple imputation also followed the recommendation that "For the imputation of a particular variable, the model should include variables in the complete-data model, variables that are correlated with the imputed variable, and variables that are associated with the missingness of the imputed variable." (Liu & De, 2016).
More specifically, the variables used for imputation of each outcome as assessed at the 4-year follow-up therefore included: 1) all planned covariates and the additional baseline measures that, as described above, were included in the outcome analyses due to a baseline difference between the treatment and control groups that exceeded the prespecified threshold; and 2) any other measures from the baseline or the 18-month follow-up assessment that demonstrated a statistically significant ($p < .05$) association with either the outcome being imputed at the 4-year follow-up or the status of that outcome's missingness at four years. For outcomes that were based on both youth- and parent-report data (e.g., delinquent behavior), values on the two measures involved for each outcome were imputed separately prior to computing the relevant outcome. This permitted taking advantage of youth report on an outcome at the 4-year follow-up as an additional variable in the model for imputing the parent-reported outcome in those instances in which the youth, but not the youth's parent, completed the 4-year survey and, vice-versa, for imputing youth report on an outcome for which the parent, but not the youth, completed the 4-year survey. For measures that were not applicable to the entire sample at the 4-year follow-up (e.g., college attendance), missing data were *not* imputed for those youth who likely would not have been included in the portion of the sample for whom the measure was scored, had 4-year survey data been available (e.g., youth less than 19 years of age in the case of college attendance). These measures are noted above in the section on Outcomes Assessed, with specific groups excluded for each measure indicated in Appendix 3. Further details on determining the youth for whom scores on these outcomes were relevant for imputation are available from the authors on request.

For the primary outcome of arrest between baseline and the 4-year follow-up, the following additional variables were used in imputation to enhance precision: rates of arrest during the 4-year follow-up period for treatment and control groups for youth served by the same BBBS agency as well as corresponding rates for history of arrest prior to study participation (this information was expected to be particularly helpful for youth from sites for which only deidentified arrest data were obtained); and both dichotomous indicators of any reported arrest and number of reported arrests from the youth and parent from baseline, 18-month, and 4-year follow-up assessments.

Small percentages of the sample also were missing data on various youth- and parent-report measures at baseline (i.e., less than 5% for all measures, except parent report of whether the youth was in a formal mentoring program in the past year; this variable was missing for 7.5% of participants, seemingly due to some parents reading the reference to their child's participation in

a mentoring program in the stem and skipping the question entirely without selecting the response to affirm that the youth had not been in a program). Multiple imputation also was used to address these missing data.

Multiple imputation was performed with PROC MI in SAS using the FCS statement, which specifies a multivariate imputation by fully conditional specification methods. The specified method was predictive mean matching in the case of continuous measures and logistic regression in the case of dichotomous measures. A total of 50 imputations were conducted.

The resulting datasets were analyzed via PROC MIXED and PROC GLIMMIX for continuous and dichotomous outcomes, respectively, using maximum likelihood estimation, in accordance with the specifications described above to evaluate the effect of being randomly assigned to the treatment group (i.e., immediate eligibility for the BBBS program) on each outcome specified in primary and secondary study hypotheses. Results were then integrated using PROC MIANALYZE to yield a single estimate of effect for each outcome.

Effect sizes were computed as standardized mean differences in the case of continuous outcomes (i.e., model-estimated difference in means between treatment and control groups divided by the pooled standard deviation of the outcome at the 4-year follow-up).

For dichotomous outcomes, effect size was estimated using the Cox index, a metric which aims to yield effect sizes comparable to Hedges' *g* for continuous outcomes (Sánchez-Meca et al., 2003). The Cox index has been noted to be sensitive to the base rate of the outcome and prone to yielding large effect sizes for base rates close to 0 or 100 percent (WWC, 2022). For this reason, and because practitioners and policymakers may find raw percentages to be more informative and interpretable than a converted effect size, for each dichotomous outcome, the percentages of control and treatment participants with a score of "1," or "yes," on the outcome (e.g., substance use) are also reported (WWC, 2022). These percentages are model estimated and evaluated at the sample mean of all other model predictors.


Little Cushmeer

# Results

Little Chyna & Big Alyssa

# Results

## Mentor Characteristics

Characteristics of the mentors matched with youth in the treatment group were collected through their program applications and provided by the agencies. The volunteers ranged in age from 18 to 78 years old and on average were 32.3 years old at match start. A little over half were male (53.7%). Most identified as straight (93.3%), with 3.8% identifying as bisexual and 3.1% as gay or lesbian. Most of the mentors identified as White or Caucasian (58.9%), with 15.7% identifying as Black or African American, 12.4% as Hispanic or Latinx, 5.1% as Asian, 0.8% as Native American, 0.2% as Middle Eastern, and 6.7% as some other race or ethnicity. Mentors worked in a wide range of occupations, with the most common being business (18.1%), technical professions (8.7%), finance (8.0%), medicine (7.4%), education (6.4%), human services (5.4%), military (4.8%), law (3.6%), and government (3.4%). The remaining mentors were in other occupations (22.1%) or were students (9.2%), retired (2.3%), or unemployed (0.6%).

## Mentoring Relationships

BBBS records indicated that 3 youth in the control group (across three different agencies) had been matched with a BBBS mentor by their 4-year follow-up: one was matched about 3 years after study enrollment; one about a month after enrollment; and in one case, staff errantly granted an exception after random assignment. In addition, about 17.6% of parents of control group youth reported that their child had met with a mentor outside of the BBBS program at some point in the past 2.5 years (i.e., since the 18-month follow-up; 10.2% in a one-to-one program and 7.4% in a group mentoring program).[11] Based on parent report, these relationships had lasted an average of 23.7 months at the time of the 4-year follow-up.[12]

BBBS records revealed that a little over two-thirds (68%) of youth in the treatment group (*n* = 687) had been matched by the scheduled time of their 4-year follow-up (35 of these youth were matched with their first mentor after their 18-month follow-up), leaving 324 youth (32%) in the treatment group not having been matched by that point in time. This rate of unmatched treatments is higher than that reported in the original RCT of the BBBS CBM program (Tierney et al., 1995). In that study, about 25% of youth assigned to the treatment group had not been matched by 18 months. BBBS records further indicated that 97 treatment youth had been in two matches; 7 in three; and 1 in four BBBS matches. That is, 105 of the 687 matched treatment youth (about 15%) had been rematched after their first match ended. The average duration of the youth's first match (or only match, for those with only one mentor) was 22.5 months, with a maximum length of 47 months. Close to three-quarters (71.6%) of youth's first matches were 12 months or longer. The average total duration of combined matches was 24.8 months.

[11] By the 18-month follow-up, 40 of the parents of youth in the control group (13.3%) reported that their child had met with a mentor outside of the BBBS program (24 in a one-to-one mentoring program and 16 in a group mentoring program).

[12] Duration was calculated from the inception of these mentoring relationships, which could have been prior to study enrollment in some cases. Thus, this average reflects total relationship length, not simply relationship duration since the 18-month follow-up.

By the 4-year follow-up, 235 (33%) of the 703 treatment youth who completed the survey reported that they had been in a BBBS match in the previous 2.5 years; 139 of the youth completing the survey (19.8%) reported that they were still meeting with their mentor at that time. Of those youth whose matches had ended, 48 reported that they were still in contact with their mentor.

For each youth in the treatment group who was unmatched by their 18-month follow-up,[13] agencies were asked to review the potential reasons for not matching listed in Table 2 (see below) and, working down the list, select the first reason that applied to the youth (i.e., although a youth could be unmatched for more than one reason, this approach was used to minimize agency reporting burden). As shown in the table, agencies reported that about one third of unmatched treatment youth (34%) were not matched because the agency lost contact with the family (23 of these 122 cases were from the agency that closed and transferred its cases to a new agency); 18% were reported to be unable to be matched due to a shortage of

[13] There are 35 treatment youth who were matched more than 18 months after enrollment but are included in this table because they had not been matched by the 18-month follow-up, when we collected this information.

**Table 2:** Reasons Youth Assigned to the Treatment Group were Unable to be Matched

| Reason | Total Number of Treatment Youth | Percent Unmatched |
|---|---|---|
| Family moved out of service area | 17 | 5% |
| Family withdrew from consideration for matching (e.g., youth lost interest) | 51 | 14% |
| Agency lost contact with family | 122 | 34% |
| Program ineligibility discovered prior to matching or eligibility status changed prior to matching | 17 | 5% |
| Parent or child rejected potential Big(s) presented by agency | 5 | 1% |
| Youth did not meet preferences of otherwise suitable volunteer(s) (e.g., volunteer wanted to work with older child) | 4 | 1% |
| Shortage of volunteers matched to youth's gender | 66 | 18% |
| Shortage of volunteers sufficiently close to youth's home | 30 | 8% |
| Lack of volunteer appropriate to youth's needs, interests, or personality as assessed by staff | 35 | 9% |
| Lack of volunteer meeting other parent and/or youth preferences (e.g., for race/ethnicity of the Big) | 2 | 1% |
| COVID-related challenges (e.g., unable to have match introduction meetings) | 0 | 0% |
| Agency capacity (e.g., staff availability) | 6 | 2% |
| Other reason | 7 | 2% |

volunteers matched to the youth's gender; and 14% of families withdrew from consideration for matching. Other reasons were less frequent.

When a match closes, BBBS staff record the primary reason from among a set of options. For matches that closed prior to the youth's 4-year follow-up, the most common reasons were: moves on the part of the volunteer (18.8%) or child/family (8.4%); time constraints on the part of the volunteer (15.9%) or child/family (2.5%); feelings of incompatibility on the part of the volunteer (6.0%) or child/family (3.9%); the volunteer losing contact with the family or agency (13.9%); the child/family losing contact with the volunteer or agency (8.6%); and the child losing interest (6.9%). Staff reported only small numbers of matches having ended due to reasons related to the COVID-19 pandemic (2.9%) or because youth aged out of the program (2.4%).

Among youth in the treatment group who had been matched by their 18-month follow-up and who completed that follow-up survey, 40.0% reported meeting in-person with their Big at least every other week; 32.1% once a month; and 27.9% less than once a month. At the 4-year follow-up, youth who indicated that they had met with their BBBS mentor at some point during the past 2 and a half years reported getting together with their Bigs somewhat more frequently: 53.6% at least every other week; 30.2% once a month; and 12.8% less than once a month. An additional 3.4% reported that they had never had an in-person meeting with their mentor. At the 4-year follow-up, youth also reported having contact with their mentor that was not in person, with 22.6% reporting this type of contact at least every other week, 17.1% every month, 19.2% less than once a month, and 41% reporting that they had never met their mentor this way.

At the 18-month follow-up, youth reported that the time they spent with their Bigs (whether in-person or otherwise) generally lasted either 1 to 2 hours (49.4% of youth) or 3 or more hours (46.8%). Similarly, at the 4-year follow-up, 44.8% of youth reported that their get togethers with their Bigs typically lasted 1 to 2 hours and 46.6% reported that they lasted 3 to 4 hours; small percentages reported that meetings with their Bigs typically lasted less than an hour (3.9%) or longer than 4 hours (4.7%).

At the 18-month follow-up, youth reported feeling close to their mentors, with an average rating of 7.4 (*SD* = 2.5) on a scale from 1 (not close at all) to 10 (extremely close) and over half (59.4%) providing a rating of 8 or higher. Similarly, at the 4-year follow-up, the average closeness rating was 7.52 (*SD* = 2.4), with 60.3% of youth providing a rating of 8 or higher. At the 4-year follow-up, youth provided similarly positive feedback about their relationship with their Bigs on the Developmental Relationships Survey (Search Institute, 2019), scores for which range from 1 ("Strongly Disagree") to 4 ("Strongly Agree"). These scales asked them about the extent to which their mentor: (1) Expresses care for them (e.g., "My Big really listens to me when I talk"; Mean = 3.6; *SD* = .67); (2) Challenges their growth (e.g., "My Big challenges me to try things that are a little hard for me"; Mean = 3.4; *SD* = .71); (3) Provides support (e.g., "I believe my Big has my back"; Mean = 3.5; *SD* = .70); (4) Shares power (e.g., "My Big and I solve problems together"; Mean = 3.5; *SD* = .70); and (5) Expands possibilities (e.g., "My Big helps me discover new things that interest me"; Mean = 3.4; *SD* = .73). Youth also reported fairly high levels of satisfaction with their relationship with their Big (Mean = 3.6; *SD* = .74) and low levels of conflict (Mean = 1.14; *SD* = .43) as assessed by the Satisfaction and Conflict NRI-Relationship Qualities

Version of the Network of Relationships Inventory (Buhrmester & Furman, 2008), the items for which were rated on the same 4-point scale as those of the Developmental Relationships Survey.

Youth at the 4-year follow-up also reported on the activities they engaged in with their Bigs and what they talked about together. The most frequently reported activity was "doing something fun (for example, playing sports, hanging out)," reported as occurring "often" or "very often" by 78.3% of youth who had a Big at some point between the 18-month and 4-year follow-up. Youth also reported "talking about things that are important to me" as occurring frequently (73.7%; i.e., often or very often). Other frequently engaged in activities, according to youth, included discussions about the youth's future: "talking about what I want to do in my future" (74.1%) and "talking about how I can have the future I want" (70.3%). "Doing something to help me reach one of my goals" was also reported as occurring frequently by more than half of youth (60.6%).

Also at the 4-year follow-up, we asked those youth who had met with a Big in the last 2.5 years and their parents whether the mentor was helping the youth to achieve specific goals, and if so, for parents, what those goals were and whether they agreed with them and, for youth, how often they had talked with their Big about the goals and how much progress they had made in achieving them. A little over three-quarters of youth (78.4%) and 59.4% of parents reported that the mentor was working with the youth on achieving specific goals (an additional 23.9% of parents reported they didn't know). Parents also reported on what the goal(s) were,[14] with the following percentages reporting each type of goal:

- Make social improvements (16.1%)
- Make academic improvements (15.9%)
- Increase self-esteem (15.6%)
- Develop new skills (12.7%)
- Connect youth with positive activities at school or in the community (9.4%)
- Make health improvements (7.7%)
- Go to college, a job training program or the military (5.9%)
- Get a job (4.0%)

Parents reported that they generally agreed with the focus of these goals, with 17.4% agreeing and 72.7% strongly agreeing with their focus. Youth reported talking about goals with their mentor fairly frequently, with slightly over a third (34.3%) discussing them just about every time they met, 45.3% talking about them more than once or twice, but not every time they met, 18.2% talking about them once or twice, and only 2.2% reporting that they had never talked about these goals. About half of youth further reported that they had "mostly" (43.7%) or "definitely" (6.0%) reached their goals; an additional 42.6% reported that they had reached them "a little"; and only 7.7% reported that they hadn't achieved them at all.

## Youth and Family Characteristics at Baseline (Baseline Equivalence)

Analyses were conducted to compare the treatment and control groups on demographic characteristics and baseline values of all study measures. The results of these analyses, as summarized in Table 3, are in line with the expected comparability between the groups.

[14] Parents could choose more than one goal.

More specifically, we find statistically significant ($p < .05$) differences for only 3 of the 51 measures/characteristics examined, a rate (.058) close to what would be expected by chance. Treatment-control group differences do not approach statistical significance for any of the three survey-based measures of our primary outcomes (i.e., property-related delinquent behavior, violence-related delinquent behavior, substance use) or for youth administrative records of arrest prior to study enrollment.

There are, however, a substantial number of measures for which the standardized mean difference (Cohen's *d*) exceeds .050. As described previously, these measures were controlled for in

**Table 3:** Baseline Equivalence of Study Measures for Youth Assigned to the Treatment and Control Groups

| Characteristic/Measure | Treatment Group (*n* =1,011) | Control Group (*n* = 342) | Two-tailed *p*-value | SMD |
|---|---|---|---|---|
| ***Demographics*** | | | | |
| Youth gender | Male (62.4%) | Male (63.7%) | .660 | .027 |
| Youth age in years | 12.31 (1.54) | 12.28 (1.52) | .786 | .017 |
| Youth race/ethnicity | Hispanic (29.4%)<br>Black (38.5%)<br>White (25.0%)<br>Other (7.1%) | Hispanic (32.7%)<br>Black (39.2%)<br>White (21.9%)<br>Other (6.1%) | .501 | N/A |
| Family structure | One adult (46.4%) | One adult (39.1%) | .020 | .148 |
| Family income | 4.35 (2.56)[a] | 4.36 (2.48)[a] | .933 | -.005 |
| ***Primary Outcomes and Related Variables*** | | | | |
| History of arrest (AR) | 3.9% | 1.5% | .145 | .094 |
| Ever arrested (YR) | 6.5% | 7.1% | .686 | -.025 |
| Ever arrested (PR) | 3.3% | 4.4% | .336 | -.060 |
| Ever stopped by police (YR) | 12.7% | 12.5% | .910 | .007 |
| Ever stopped by police (PR) | 6.1% | 5.9% | .897 | .008 |
| Property-related delinquent behavior past year (CR) | 26.2% | 29.5% | .232 | -.077 |
| Violence-related delinquent behavior past year (CR) | 38.1% | 37.1% | .755 | .020 |
| Any substance use (YR) | 14.0% | 15.0% | .654 | -.028 |

| Characteristic/Measure | Treatment Group (*n* =1,011) | Control Group (*n* = 342) | Two-tailed *p*-value | SMD |
|---|---|---|---|---|
| ***Risk Factors*** | | | | |
| Negative peer associations (YR) | 1.53 (.61) | 1.56 (.64) | .518 | -.041 |
| School misbehavior (PR) | 33.2% | 32.0% | .682 | .025 |
| Skipping school (CR) | 12.9% | 15.6% | .213 | -.079 |
| Aggressive behavior (CR) | -.01 (.75) | .03 (.86) | .361 | -.057 |
| Depressive symptoms (YR) | 9.06 (8.20) | 8.46 (8.06) | .247 | .073 |
| ***Protective Factors:** Personal Resources* | | | | |
| Self-control (CR) | .02 (.79) | -.04 (.77) | .232 | .075 |
| Conventional values (YR) | 4.18 (.78) | 4.18 (.76) | .968 | -.002 |
| Social skills (YR) | 3.67 (.76) | 3.71 (.75) | .450 | -.047 |
| Coping efficacy (YR) | 6.35 (2.63) | 6.56 (2.60) | .203 | -.080 |
| Spark development (YR) | 2.46 (.71) | 2.42 (.71) | .355 | .059 |
| Grit (YR) | 3.30 (.63) | 3.23 (.62) | .070 | .114 |
| Self-advocacy (YR) | 3.86 (.77) | 3.84 (.78) | .676 | .026 |
| Hopeful future expectations (YR) | 3.44 (.46) | 3.44 (.47) | .933 | -.005 |
| Goal setting and pursuit (PR) | 3.02 (.98) | 3.19 (1.01) | .005 | -.175 |
| ***Protective Factors:** Social-Contextual Resources* | | | | |
| Perceived social support: Family members (YR) | 4.05 (.99) | 4.10 (1.02) | .383 | -.055 |
| Perceived social support: Friends (YR) | 3.81 (1.16) | 3.83 (1.18) | .769 | -.019 |
| Perceived social support: Significant Other (YR) | 3.95 (1.08) | 3.99 (1.12) | .570 | -.036 |
| Family functioning (PR) | 3.13 (.54) | 3.15 (.51) | .488 | -.043 |
| Parenting behaviors: Involvement (PR) | 3.85 (.62) | 3.87 (.57) | .688 | -.025 |
| Parenting behaviors: Positive parenting (PR) | 4.29 (.59) | 4.35 (.57) | .108 | -.101 |
| Parenting behaviors: Poor monitoring/supervision (PR) | 1.58 (.52) | 1.61 (.51) | .439 | -.049 |

| Characteristic/Measure | Treatment Group (*n* =1,011) | Control Group (*n* = 342) | Two-tailed *p*-value | SMD |
|---|---|---|---|---|
| ***Protective Factors:** Social-Contextual Resources (continued)* | | | | |
| Parenting behaviors: Inconsistent discipline (PR) | 2.29 (.71) | 2.27 (.69) | .613 | .032 |
| Involvement in organized youth activities (PR) | 1.34 (1.12) | 1.53 (1.11) | .007 | -.171 |
| Volunteering (YR) | 36.8% | 40.3% | .251 | -.072 |
| ***Protective Factors:** Mental Health and Well-Being* | | | | |
| Self-esteem (YR) | 4.07 (.97) | 4.12 (.93) | .373 | -.056 |
| Positive affect (YR) | 11.80 (3.83) | 11.69 (3.57) | .623 | .031 |
| Life satisfaction (YR) | 7.28 (2.27) | 7.38 (2.31) | .479 | -.044 |
| ***Protective Factors:** Academic Engagement and Performance* | | | | |
| School engagement (YR) | 4.00 (.89) | 3.93 (.91) | .198 | .081 |
| Academic performance (CR) | -.02 (.91) | .03 (.95) | .404 | -.053 |
| College exploration (YR) | 31.1% | 31.0% | .957 | -.003 |
| Career exploration (YR) | 38.1% | 40.7% | .404 | -.053 |
| ***Other Measures*** | | | | |
| Receipt of formal mentoring (PR) | 10.7% | 14.1% | .103 | -.106 |
| Presence of a very important nonparental adult (YR) | 59.6% | 61.4% | .566 | -.036 |
| Youth risk exposure (PR) | 7.30 (3.61) | 6.99 (3.62) | .175 | .085 |
| Suicidal ideation (YR)[b] | 11.3% | 11.2% | .965 | .003 |
| Suicidal attempt (YR)[b] | 4.5% | 5.2% | .633 | -.034 |
| Perpetrating dating violence (YR)[b] | .048 (.42) | .087 (.53) | .320 | -.086 |
| Sexually transmitted infection (YR)[b] | 1.2% | 2.2% | .380 | -.088 |

Notes. AR = Administrative records; YR = Youth report; PR = Parent report; CR = Combination of youth and parent report. SMD = Standardized Mean Difference. For continuous measures, means and standard deviations (parentheses) are reported, and the *p*-value for the equivalence test is based on an independent groups t-test (two-tailed). For categorical measures, the *p*-value for the equivalence test is based on a chi-square test.

[a] Household income was reported by parents on a 12-point scale from "$0–$5,000" to "More than $100,000", with 4.35 indicating a total household combined family income of slightly over "$20,001 to $30,000."

[b] This measure is based on retrospective report at the 4-year follow-up. The information presented thus is based on the responses of youth who completed a survey at the 4-year follow-up.

our impact analyses per our pre-specified analysis plan. Some of our pre-specified control measures also exhibited standardized mean differences of this magnitude. There is no obvious pattern to the generally small differences on the measures involved in direction or construct (for example, treatment youth reported greater self-control than control youth, but less school engagement.

## Intent-to-Treat Analyses

As shown in Table 4, impact analyses indicated statistically significant ($p < .05$) effects of assignment to the treatment group (i.e., immediate eligibility for the BBBS program) on three of the four primary hypothesized outcomes as assessed at the 4-year follow-up: property-related delinquent behavior over the past 2.5 years; violence-related delinquent behavior over the past 2.5 years; and recurring substance use in the preceding 6 months, each in a direction favoring the treatment group. The effect estimate for administrative records of arrest over the 4-year follow-up period did not reach or approach statistical significance, although it was in a direction favoring the treatment group. Variability in estimates of impact for arrest was markedly greater for this outcome than it was for the other outcomes, most likely due to the larger proportion of the sample for whom this outcome needed to be imputed. When applying the Benjamini-Hochberg procedure to control the

**Table 4: Effects of Random Assignment to BBBS CBM Program on Primary Hypothesized Outcomes at 4-Year Follow-Up**

| Outcome Measure | Effect Estimate[a] | Percent of Treatment Group with Outcome[b] | Percent of Control Group with Outcome[b] | Two-tailed *p*-value | Significance after B-H correction?[c] |
|---|---|---|---|---|---|
| Arrest past 4 years (AR) | -.213 | 9.4% | 13.4% | .579 | No |
| Property-related delinquent behavior past 2.5 years (CR) | -.229 | 26.4% | 34.1% | .029 | No |
| Violence-related delinquent behavior past 2.5 years (CR) | -.354 | 29.6% | 43.0% | .0005 | Yes |
| Overall delinquent behavior past 2.5 years (CR) | -.387 | 46.5% | 62.2% | <.0001 | N/A[d] |
| Recurring substance use past 6 months (YR) | -.438 | 18.2% | 31.4% | <.0001 | Yes |

Notes. BBBS CBM = Big Brothers Big Sisters Community-Based Mentoring; AR = Administrative records; CR = Combination of youth and parent report; YR = Youth report.

[a] Effect estimates are the Cox index (see text for details) and are presented for treatment group (i.e., those assigned to BBBS CBM program) relative to the control group (i.e., the negative direction of each effect estimate indicates that the rate of the outcome for the treatment group was lower than that for controls).

[b] Model-adjusted percentage of the relevant group (i.e., treatment or control) with the outcome as assessed at the 4-year follow-up.

[c] This column indicates whether the effect estimate is statistically significant using the Benjamini-Hochberg criterion where the False Discovery Rate is less than .05.

[d] This outcome was not included in the Benjamini-Hochberg adjustment (see text for details).

Type I error rate at 5% across the four tests of primary outcomes, the effect estimates for violence- related delinquent behavior and recurring substance use remained statistically significant, but the effect estimate for property-related delinquent behavior did not (see Table 4). As seen in Table 4, there was also a statistically significant effect of assignment to the treatment group on the measure of overall delinquent behavior that was in the original pre- specified analysis plan for the study.

To help with interpretation of findings for the primary hypothesized outcomes, the "number needed to treat" (NNT) was computed for each of the outcomes for which a significant effect is evident (Martinez-Gutierrez et al., 2019). The NNT represents the number of people that need to be treated (or more appropriately, in this context, the number of youth that needed to be assigned to the treatment group) for one person (i.e., one youth in the treatment group) to experience prevention of an adverse outcome. NNT is computed as the reciprocal of the absolute difference in risk reduction for an outcome. Illustratively, for property-related delinquent behavior, the absolute risk reduction is 7.7% (34.1%–26.4%, as shown in Table 4), with the NNT for this outcome then being 13 (i.e., 1 divided by .077, with the result rounded up). The NNTs for the remaining outcomes with significant effects are as follows: violence-related delinquent behavior, NNT = 8; overall delinquent behavior, NNT = 7; recurring substance use in the past 6 months, NNT = 8.

Analyses for primary hypothesized outcomes were supplemented with analyses examining effects of assignment to treatment group on the following related measures: a) whether administrative records indicated that the youth had had an arrest by their 18-month follow-up, given that sufficient numbers of records were not available at 18 months to include in the interim report (DuBois et al., 2022); b) measures of each type of delinquent behavior (i.e., property-related, violence-related, overall) that corresponded to the numbers of different delinquent behaviors of that type that were endorsed by the youth or parent as having been exhibited by the youth during the preceding 2.5 years, rather than the pre-specified measures of whether any of each type of delinquent behavior was endorsed; and c) a measure of whether youth reported any substance use over the past 2.5 years, as a parallel outcome to the measure of any substance use that was examined at the 18-month follow-up in the previous report. Similar to arrest at the 4-year follow-up, the effect of assignment to treatment on arrest (based on administrative records) at the 18-month follow-up was not statistically significant ($p$ = .192), although it was again in a direction favoring the treatment group (model-estimated percentages of treatment and control groups, respectively, with an arrest of 4.5% and 8.3%; effect size based on Cox index = .372). Also paralleling the primary analyses, the effect estimates on each of the measures of delinquent behavior and the measure of substance use were statistically significant ($p$ < .05) and in favor of the treatment group. For substance use, the model-estimated rates of use of any substance in the 2.5 years preceding the 4-year follow-up were 30.2% and 42.0% for the treatment and control groups, respectively.

As shown in Table 5, effect estimates of assignment to the treatment group for secondary hypothesized outcomes pertaining to risk factors for delinquent/criminal behavior were statistically significant ($p$ < .05) for negative peer associations, aggressive behavior, and depressive symptoms

**Table 5:** Effects of Random Assignment to BBBS CBM Program at 4-Year Follow-Up: Risk and Protective Factors for Delinquent/Criminal Behavior (Secondary Hypotheses H1 and H2)

| Outcome Measure | Effect Estimate[a] | Percent of Treatment Group with Outcome[b] | Percent of Control Group with Outcome[b] | Two-tailed *p*-value |
|---|---|---|---|---|
| ***Risk Factors*** | | | | |
| Negative peer associations (YR) | -.242 | -- | -- | .001 |
| School misbehavior (PR; *n* = 1,304) | -.132 | 18.3% | 21.8% | .281 |
| Skipping school (CR; *n* = 1,315) | -.170 | 33.5% | 40.0% | .083 |
| Aggressive behavior (CR) | -.324 | -- | -- | <.0001 |
| Depressive symptoms (YR) | -.242 | -- | -- | .0006 |
| ***Protective Factors:** Personal Resources* | | | | |
| Self-control (CR) | .148 | -- | -- | .019 |
| Conventional values (YR) | .186 | -- | -- | .006 |
| Social skills (YR) | .205 | -- | -- | .003 |
| Coping efficacy (YR) | .256 | -- | -- | .0003 |
| Spark development (YR) | .118 | -- | -- | .098 |
| Grit (YR) | .147 | -- | -- | .035 |
| Self-advocacy (YR) | .181 | -- | -- | .014 |
| Hopeful future expectations (YR) | .331 | -- | -- | <.0001 |
| Goal setting and pursuit (PR) | .142 | -- | -- | .028 |
| ***Protective Factors:** Social-Contextual Resources* | | | | |
| Perceived social support: Family members (YR) | .056 | -- | -- | .434 |
| Perceived social support: Friends (YR) | .109 | -- | -- | .170 |
| Perceived social support: Significant other (YR) | .157 | -- | -- | .030 |
| Family functioning (PR) | .103 | -- | -- | .143 |

| Outcome Measure | Effect Estimate[a] | Percent of Treatment Group with Outcome[b] | Percent of Control Group with Outcome[b] | Two-tailed *p*-value |
|---|---|---|---|---|
| ***Protective Factors:** Social-Contextual Resources (continued)* | | | | |
| Parenting behaviors: Involvement (PR) | .165 | -- | -- | .014 |
| Parenting behaviors: Positive parenting (PR) | .040 | -- | -- | .564 |
| Parenting behaviors: Poor monitoring/ supervision (PR) | -.083 | -- | -- | .203 |
| Parenting behaviors: Inconsistent discipline (PR) | -.139 | -- | -- | .046 |
| Involvement in organized youth activities (PR) | .045 | -- | -- | .536 |
| Volunteering (YR) | .087 | 46.0% | 42.4% | .350 |
| ***Protective Factors:** Mental Health and Well-Being* | | | | |
| Self-esteem (YR) | .180 | -- | -- | .010 |
| Positive affect (YR) | .277 | -- | -- | .0001 |
| Life satisfaction (YR) | .275 | -- | -- | .0003 |
| ***Protective Factors:** Academic Engagement and Performance* | | | | |
| School engagement (YR; *n* = 1,214) | .145 | -- | -- | .061 |
| Academic performance (CR) | .222 | -- | -- | .001 |
| College exploration (YR) | .161 | 42.3% | 36.0% | .101 |
| Career exploration (YR) | .095 | 76.6% | 73.7% | .369 |

Notes. Analyses are based on observed and imputed data for the full sample (*N* = 1,353) except where indicated due to the outcome measure not being relevant for a portion of the sample at the 4-year follow-up. BBBS CBM = Big Brothers Big Sisters Community-Based Mentoring; YR = Youth report; PR = Parent report; CR = Combination of youth and parent report.

[a] Effect estimates are standardized mean differences for continuous measures and the Cox index for dichotomous measures. Effect estimates are presented for treatments relative to controls (i.e., a positive effect estimate indicates that the treatment group average was numerically higher than that for controls; a negative effect estimate indicates that the treatment group average was lower than that for controls).

[b] Model-adjusted percentage of the relevant group (i.e., treatment or control) with the outcome as assessed at the 4-year follow-up.

and approached statistical significance ($p < .10$) for skipping school, with all differences in a direction favoring the treatment group. The effect estimate for school misbehavior did not approach statistical significance. For secondary hypothesized outcomes pertaining to protective factors, effect estimates were statistically significant for the following measures grouped by domain, with differences in all instances favoring the treatment group (see Table 5):

- **personal resources**
  - self-control, conventional values, social skills, coping efficacy, grit, self-advocacy, and hopeful future expectations
- **social-contextual resources**
  - perceived social support (significant other), parenting behaviors (involvement), and parenting behaviors (inconsistent discipline)
- **mental health and well-being**
  - self-esteem, positive affect, and life satisfaction
- **academic engagement and performance**
  - academic performance

For the remaining protective factor outcomes, effect estimates approached statistical significance ($p < .10$) for the outcomes of spark development, goal setting and pursuit, and school engagement, and did not approach significance for the outcomes of perceived social support (family), perceived social support (friends), family functioning, parenting behaviors (positive parenting), parenting behaviors (poor monitoring/supervision), involvement in organized youth activities, and volunteering. Differences on each of these outcomes were in a direction favoring the treatment group.

Findings for the secondary hypothesized outcomes that were assessed only at the 4-year follow-up are shown in Table 6. Effect estimates were statistically significant for suicidal ideation and substance abuse in the area of mental health and for discontinuing high school before graduation, occupational identity, and network support for education/career goals in the area of education and career. For the remaining outcomes, effect estimates approached significance ($p < .10$) for availability of extra-familial adult to discuss the future and progress toward education/career goals in the area of education and career.

**Table 6:** Effects of Random Assignment to BBBS CBM Program on Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-Up (Secondary Hypothesis H3)

| Outcome Measure | Effect Estimate[a] | Percent of Treatment Group with Outcome[b] | Percent of Control Group with Outcome[b] | Two-tailed *p*-value |
|---|---|---|---|---|
| ***Mental Health*** | | | | |
| Suicidal ideation (YR) | -.416 | 16.6% | 28.4% | .0002 |
| Suicide attempt (YR) | -.227 | 6.6% | 9.4% | .143 |
| Substance abuse (YR) | -.430 | -- | -- | <.0001 |

| Outcome Measure | Effect Estimate[a] | Percent of Treatment Group with Outcome[b] | Percent of Control Group with Outcome[b] | Two-tailed *p*-value |
|---|---|---|---|---|
| ***Education and Career*** | | | | |
| Discontinuing high school before graduating (CR) | -.512 | 3.1% | 6.9% | .022 |
| Engagement in post-secondary education, training, or employment (CR; *n* = 229) | -.088 | 65.4% | 68.5% | .850 |
| College attendance (CR; *n* = 193) | .171 | 31.3% | 26.7% | .723 |
| Occupational identity (YR) | .134 | -- | -- | .048 |
| Special interest related to future job/career (YR) | .117 | 48.2% | 43.4% | .212 |
| Specific job/career goal (YR) | .108 | 76.7% | 73.4% | .345 |
| Availability of extra-familial adult to discuss future (YR) | .131 | -- | -- | .088 |
| Network support for education/career goals (YR; *n* = 1,009) | .162 | -- | -- | .048 |
| Progress toward education/career goals (YR; *n* = 1,009) | .144 | -- | -- | .063 |
| ***Risky and Problem Behavior/Health*** | | | | |
| Perpetrating dating violence (YR; *n* = 622) | -.096 | -- | -- | .274 |
| Sexual intercourse without a condom (YR; *n* = 459) | -.087 | 51.5% | 55.1% | .633 |
| Pregnancy (YR; *n* = 459) | -.290 | 7.7% | 12.0% | .324 |
| Sexually transmitted infection (YR; *n* = 459) | -.436 | 8.2% | 15.4% | .114 |
| ***Transition to Adult Independence*** | | | | |
| Stable living situation (CR)[c] | -- | -- | -- | -- |

Notes. Analyses are based on observed and imputed data for the full sample (*N* =1,353) except where indicated due to the outcome measure not being relevant for a portion of the sample at the 4-year follow-up. BBBS CBM = Big Brothers Big Sisters Community-Based Mentoring; YR = Youth report; CR = Combination of youth and parent report.

[a] Effect estimates are standardized mean differences for continuous measures and the Cox index for dichotomous measures. Effect estimates are presented for treatments relative to controls (i.e., a positive effect estimate indicates that the treatment group average was numerically higher than that for controls; a negative effect estimate indicates that the treatment group average was lower than that for controls).

[b] Model-adjusted percentage of the relevant group (i.e., treatment or control) with the outcome as assessed at the 4-year follow-up.

[c] An effect on this outcome was not analyzed due to insufficient variation on the outcome (see text for details).

Effect estimates did not approach significance for suicide attempt in the area of mental health, engagement in post-secondary education, training, or employment, college attendance, special interest related to future job/career, and specific job/ career goal in the area of education and career, and all four outcomes in the area of risky and problem behavior/health (i.e., perpetrating dating violence, sexual intercourse without a condom, pregnancy, and sexually transmitted infection). Less than one percent of youth or parents reported an unstable living situation for the youth at the 4-year follow-up. It was thus not feasible to conduct a meaningful analysis of the effect of assignment to treatment on this outcome.

Results of the sensitivity analyses in which the effect of treatment was modelled as random largely mirrored those of the planned analyses. Specifically, for the primary hypothesized outcomes, there were again statistically significant effects for the same outcomes and results with the Benjamini-Hochberg control for Type I error were unchanged as well. For secondary hypothesized outcomes, all effects that were statistically significant or approached significance ($p < .10$) continued to do so with only two exceptions: the effect for occupational identity now only approached significance ($p < .06$) and the effect for spark development no longer approached significance ($p = .110$).


Little Vanessa

Results of the supplementary complete-case outcome analyses based on only those youth with 4-year survey data (i.e., without use of multiple imputation to account for missing data) closely paralleled those of the main analyses. For primary outcomes, there was only one substantive change: the effect of assignment to the treatment condition only approached statistical significance for property-related delinquent behavior ($p < .08$). Findings for violence-related delinquent behavior and recurring substance use in the past 6 months remained significant, including with the Benjamini-Hochberg control for Type I error. The original pre-specified outcome of overall delinquent behavior also remained significant. The effect estimate for arrest as assessed using administrative records continued to not approach significance. For secondary outcomes, effects for assignment to treatment condition remained statistically significant for all outcomes for which there were significant effects in the main analyses, with three exceptions: the findings for perceived social support from a significant other, occupational identity, and network support for education/career goals only approached significance ($ps < .10$). With regard to the secondary outcomes with effects that only approached significance in the main analyses ($p < .10$), effect estimates for skipping school, spark development, and availability of an extra-familial adult to discuss the future weakened and no longer approached significance. Finally, there were changes for two outcomes with effects that did not approach significance in the main analyses. Specifically, the effect estimate for college exploration approached significance ($p < .08$) and the effect estimate for sexually transmitted infection now reached statistical significance ($p = .021$), with each of these findings in a direction favoring the treatment group.

# Discussion

Little Lincoln & Big Lee

# Discussion

The goal of this randomized controlled trial (RCT) of the Big Brothers Big Sisters of America (BBBSA) Community-Based Mentoring (CBM) program was to rigorously examine the effects of the program on crime and delinquency, associated risk and protective factors, and longer-term correlates, addressing limitations both in previous studies of the program and in the broader literature on youth mentoring program effectiveness. This final report follows an interim report discussing the program's 18-month effects (DuBois et al., 2022). It addresses evidence of the program's effectiveness using survey data obtained from youth and their parents 4 years after study enrollment and administrative records of arrest covering the 4-year follow-up period.

Despite facing significant recruitment challenges resulting from the COVID-19 pandemic, which began 1 year into the study's 2-year recruitment period, the 17 participating BBBSA agencies were able to recruit over 1,300 youth and their families to take part in the research. Results of intent-to-treat analyses (i.e., analyses that include all study participants regardless of whether those assigned to the treatment group were actually matched with a mentor) at the 4-year follow-up indicate effects favoring the treatment group in several hypothesized areas consistent with, and in many cases, strengthening, those impacts detected at the 18-month follow-up. As discussed below, these impacts share similarities with those reported in the four previous large-scale RCTs of BBBS mentoring, which include two studies of the BBBSA CBM program (Herrera et al., 2023; Tierney et al., 1995), a study of the BBBSA School-Based Mentoring (SBM) program (Herrera et al., 2007), and a study of the community-based BBBS program in Ireland (Brady, 2011). The present RCT also provides evidence of the effectiveness of BBBS mentoring in several areas not examined in these previous trials, including outcomes that are particularly relevant for older adolescents and thus not the focus of the previous trials (e.g., substance abuse, suicidal ideation).

## Effects on Crime and Delinquent Behavior

With respect to our primary hypotheses, we found support for effects of the BBBSA CBM program on three of the four outcomes tested (i.e., both violence- and property-related delinquent behavior and recurring substance use, with the caveat that the effect for property-related delinquent behavior did not meet criteria for significance when applying family-wise control for Type I error across tests of the four outcomes). However, youth in the treatment group did not differ significantly from those in the control group in their likelihood of arrest (measured through administrative records) at the 4-year follow-up or at the earlier 18-month timepoint.

The lack of impacts on arrest, despite evidence that the program affected involvement in delinquent behavior, may have resulted from a number of factors, including (but not limited to):

- Limitations in the accuracy of arrest records due to offenses being expunged prior to

being requested for the research (Rips, 2022);

- Reduced precision in effect estimation for this outcome for which we were able to obtain identifiable data for less than two thirds of the sample (64%); and
- The likelihood that arrest can be influenced by factors other than engaging in potentially illegal behavior, such as law enforcement practices, that are beyond the scope of program influence.

At the 18-month follow-up, we did not have access to administrative records of arrest, but we did find that the treatment group was less likely to have an arrest reported by the parent or youth. Current analyses using administrative records tracking arrests 18 months after program enrollment did not support those findings. Other studies have similarly reported imperfect correlations between youth self-reports of arrest and information from administrative records, with youth both under- and over-reporting arrests relative to records (Babinski et al., 2001; Holloway et al., 2024; Kirk, 2006; Krohn et al., 2013); limited correspondence also has been found between parent reports of youth arrest and official records (Holloway et al., 2024). Other factors may have also contributed to the discrepancy between findings based on survey and official records data. These include expungement practices resulting in an arrest being reported by a youth or parent but not appearing in official records and the subsample that provided consent for us to collect arrest records being slightly different from the families that completed our surveys. In addition, the time period referenced for survey respondents was often slightly different from that for arrest records; surveys, in many cases, were collected more than 4 years (or more than 18 months) after enrollment given extensive follow-up efforts for many families, whereas records were collected to cover exactly 4 years (and 18 months) after each child's enrollment.

None of the above-noted RCTs of BBBS mentoring included arrest as an outcome. A long-term (20-year) follow-up of the first of the two previous RCTs of BBBSA CBM suggested a potential beneficial impact on retrospective self-reports of having an arrest as a juvenile, but the researchers managed to obtain data from only about one-third of the original study sample (DuBois et al., 2024). Evaluations of other mentoring programs have shown mixed results in this area, ranging from evidence suggesting prevention of arrests (e.g., Bry, 1982; Leathers et al., 2023), no effects (e.g., Schirm & Rodriguez-Planas, 2004), different findings over time within the same sample (e.g., O'Donnell & Williams, 2013), or *increased* arrests for youth receiving mentoring (e.g., Rodriguez-Planas, 2012). The programs evaluated in these studies have tended to target youth with relatively high risk for delinquency (e.g., those already experiencing at least one arrest) or include components beyond mentoring. These important points of differentiation from the BBBSA CBM program make it difficult to draw meaningful comparisons with the current findings.

In line with our 18-month findings of a beneficial impact on substance use, analyses reveal a significant favorable impact on recurring substance use at the 4-year follow-up. Relevant for this older sample, there is also evidence of a beneficial effect of the program on substance *abuse* (i.e., the extent to which substance use was extensive enough to affect the quality of youth's daily life). A lower likelihood of use in the treatment group at the earlier timepoint may have helped reduce the risk for recurring use and abuse at the 4-year follow-up.

Impacts on strengthening resources for coping (discussed below) also may have made substance use less likely as a response to stress. For some, mentors may have served as a source of guidance for navigating through or away from risky situations increasing substance use (e.g., affiliations with substance-using peers—see discussion below on negative peers). The P/PV RCT of the CBM program (Tierney et al., 1995) similarly found that treatment group youth were less likely than those in the control group to report initiation of both alcohol and other substance use at the 18-month follow-up. Effects on substance use were not replicated in the other three major BBBS RCTs. However, systematic reviews and meta-analyses considering mentoring programs for youth more broadly have reported generally positive (albeit mixed) findings related to substance use (Dunn et al. 2012; Thomas et al., 2011, 2013; Tolan et al., 2014). A recent RCT of the YMCA's Reach & Rise® mentoring program, which shares a number of similarities with the BBBS CBM program (Jarjoura et al., 2025), also found a significant beneficial effect on substance use.

We also found significant effects on both violence-related and property-related delinquent behavior as reported by youth and their parents. Early program effects on social competence may have contributed to these findings, fostering a more positive peer group (see below), and ultimately lower levels of delinquent behavior. Findings from a longitudinal study following adolescent boys for over a decade into early adulthood support this hypothesis, reporting that social competence was linked to decreased youth involvement with deviant peers throughout adolescence, which, in turn, predicted lower levels of delinquency and higher levels of educational attainment later in life (Stepp et al., 2011).

Notably, though, impacts on delinquent behavior were not evident at the 18-month follow-up. The specific types of delinquent behavior assessed in our measures and their greater relevance for the older youth at the 4-year timepoint are important to consider. For example, our measure of violence-related delinquent behavior reflects fairly serious, violent and gang-related behavior (i.e., got into a serious physical fight; hurt someone badly enough to need bandages or care from a doctor or nurse; or took part in a fight where a group of your friends was against another group). These types of behaviors may have been more relevant for youth in our older sample. In line with this possibility, the peak age of onset of serious violence among youth in the U.S. has been reported to be 16 (Office of the Surgeon General, 2001), an age that the majority of the sample had reached only at the 4-year follow-up. Two of the prior RCTs of BBBS mentoring (Herrera et al., 2007, 2023) that assessed shorter-term effects of the program when youth were similar in age to those in our sample at the 18-month follow-up reported favorable effects on relatively "minor" types of misbehavior. One of these studies (Herrera et al., 2023) also tested effects on a youth-reported delinquency measure similar to that used in the current study and did not find evidence of a program effect. The P/PV RCT of the BBBSA CBM program (Tierney et al., 1995), again assessing shorter-term outcomes at a younger age, asked about two behaviors included in the current property-related delinquency variable (stealing and damaging property) and did not find significant effects for either. An additional potential factor contributing to the emergent effects on delinquent behavior could be accrual of greater protective benefits of mentoring received through the CBM program over time. This might occur not only due to strengthening of those relationships that continued past the 18-month follow-up, but also due to gains in protective factors and/or

reductions in risk factors for delinquent behavior that emerge as benefits from mentoring (even if no longer occurring) have the opportunity to be consolidated with increasing age and developmental maturity. This latter possibility is broadly consistent with the favorable effects that are evident at the 4-year follow-up on a range of risk and protective factors assessed as secondary hypothesized outcomes, several of which were not apparent at the 18-month follow-up.

## Effects on Risk and Protective Factors for Crime and Delinquency

The study's findings further suggest that participation in the BBBSA CBM program may contribute to lower levels of misbehavior that can serve as precursors for delinquency as well as to growth in personal resources for avoiding involvement in crime and delinquent behavior. As discussed below, hypothesized effects on a number of other risk and protective factors are not evident, most notably in the realm of social-contextual resources.

**Misbehavior.** In line with the indication of a program effect on violence-related delinquent behavior, and consistent with findings at the 18-month follow-up, there is a significant effect at the 4-year follow-up on aggression. Yet, findings do not indicate an effect on perpetrating dating violence (for those youth who had been involved in a dating relationship). Hitting was a significant impact in the P/PV RCT of the CBM program (Tierney et al., 1995), and Herrera et al.'s (2007) school-related misconduct measure (for which they found a significant effect) included aggressive behavior. Consistent with these findings, in the present study's 4-year follow-up, youth in the treatment group reported less association with negative peers than youth in the control group. This finding was not evident at 18 months. Perhaps the mentor's influence in this area is only evident during later adolescence when peers play a more significant role in youth's lives and when mentoring relationships have had additional time to develop. As noted above, early impacts on social competence may have also contributed to subsequent involvement in a less risky peer group (Stepp et al., 2011).

The lack of significant effects on school-related misbehavior at either follow-up differ from those of two of the large-scale RCTs of the BBBS program in which impacts included a significant reduction in skipping school as reported by youth (Tierney et al., 1995; Herrera et al., 2007). Similarly, no effect is apparent on our measure of school misbehavior that encompassed different types of disciplinary experiences (i.e., having been sent to the principal's office for misbehavior, receiving an in-school detention, or having been suspended). Perhaps the effects of idiosyncratic school policies outweigh the effects that community-based mentors may have on youth behavior in the school context.

**Personal resources.** Findings from the 4-year follow-up suggest that participation in the BBBS CBM program can strengthen personal resources that are important for both resilience (Alvord & Grados, 2005) and thriving (DuBois & Keller, 2017), with statistically significant impacts evident for a wide range of outcomes in this area: self-control, social skills, coping efficacy, self-advocacy, grit, hopeful future expectations, conventional values (e.g., believing in the importance of honesty and steering clear of aggression), and skills for setting and pursuing goals. In addition, an effect approached statistical significance for having a special interest or "spark." Most of these outcomes have not been examined in previous

studies of BBBS. Yet, they have plausible links to the types of interactions that are emphasized as central to positive relationships with caring, supportive adults. For example, self-control, a well-established protective factor against involvement in delinquent behavior (Meldrum et al., 2009) and substance use (Wills & Stoolmiller, 2002), could be cultivated through mentor role modeling of patience and frustration tolerance and encouragement to consider the consequences of behavior. Improvements in social competence—a key developmental building block that predicts both later educational attainment and involvement in less serious forms of delinquency in early adulthood (Stepp et al., 2011)—likewise may be cultivated by virtue of interpersonal processes and experiences (e.g., feelings of social affirmation) posited to be of central importance in mentoring relationships (Rhodes, 2005). BBBS mentors also are well-suited to support youth with goal achievement (i.e., goal setting and pursuit)—in fact, over three-quarters of youth in the present study who reported having received BBBS mentoring between the 18-month and 4-year follow-ups reported that their Big worked with them to achieve specific goals. This may include mentors supporting youth with demonstrating persistence when confronted with obstacles or setbacks (i.e., grit) and cultivation of the ability to troubleshoot and work through problems when things don't go well (i.e., coping efficacy), an important component of which may be seeking out access to helpful resources and other forms of support (i.e., self-advocacy). Developing these skills and mindsets may then help foster more hopeful future expectations—the outcome measure yielding the largest effect estimate among indices of personal resources at the 4-year follow-up. The extension of this impact into later adolescence may be particularly telling, as older youth are now closer to the "futures" asked about in the questions comprising the measure (e.g., having a job or career they enjoy) and thus their expectations may be more realistic than at the earlier timepoint (Sweeny & Krizan, 2013). At the same time, engaging in a range of fun activities—which over three-quarters of youth reported they do "often" or "very often" with their mentor—may help youth find a special interest or hobby that brings them joy (i.e., spark development), although the present findings are only suggestive of a benefit in this area. Finally, by serving as a positive and influential role model, mentors can serve as an additional adult to model and support the values that parents and other caregivers work to instill in their children (i.e., conventional values).

**Social-contextual resources.** Findings also suggest some benefits in youth's social-contextual resources, in both their family and broader social environments—although impacts in this domain are not as consistent across measures as impacts in other domains. Youth in the treatment group were more likely than those in the control group to report having a "special person" who provides them with support—which, for some youth, may have been the mentors themselves. In addition, parents of treatment group youth reported higher levels of involvement and using less inconsistent discipline with them than did those of control group youth. Mentor-youth outings may provide the parent with needed respite (Keller et al., 2018) and reduce caregiver stress. Improved youth behavior could also have contributed to these differences. Apparent improvements in these aspects of parenting echo youth-reported improvements in the parent-child relationship reported in the P/PV RCT of the BBBSA CBM program (Tierney et al., 1995). Importantly, shifts in parenting may be one potential mechanism through which impacts can be sustained, even after mentoring relationships have ended.

Yet, parents in the treatment and control groups reported similar levels of monitoring/supervision, "positive parenting," and general family functioning—an outcome which did show evidence of improvement by the 18-month follow-up. In addition, the present findings do not indicate benefits of program participation on youth reports of support from family members. Nor do results indicate relative improvements in youth ratings of support from friends. These latter findings parallel results of both Herrera et al. (2007) and Brady (2011) but run at least partially counter to those of Tierney et al. (1995) in which the treatment group reported greater emotional support from peers at follow-up.

Outcomes related to school and community involvement, including organized youth activities (e.g., clubs, music or sports, after-school programs) and volunteering, were not associated with program access. It may be that mentors need to take on an active role in directly facilitating these types of activities for impacts to be yielded—something which is not emphasized as a core component of expectations for mentors in the BBBSA CBM program.

**Mental health and well-being.** The present findings indicate benefits of program participation for several outcomes related to mental health and well-being, specifically, positive affect, life satisfaction, self-esteem, depressive symptoms, and suicidal ideation (although not for reports of a suicide attempt).

Depressive symptoms was assessed as an outcome in only one of the major RCTs of BBBS programs (Herrera et al., 2023); that study found reduced youth-reported depressive symptoms, as well as parent-reported emotional symptoms, for youth in the treatment group. Positive affect, life satisfaction, and suicidal ideation were not included in any of the RCTs. Studies of non-programmatic mentoring have suggested links between the presence of positive adults and lower rates of suicidal ideation or behavior (e.g., Ahrens et al., 2008; Hall et al., 2021). However, only a handful of rigorous evaluations of mentoring programs have included suicidal ideation as a key outcome, and they have reported mixed findings. For example, an RCT of the Fostering Healthy Futures for Preteens program did not find evidence of effects on a combined measure of suicidal ideation or behavior for the full treatment group but did find evidence of a favorable impact on this outcome among youth who reported having had suicide-related thoughts or behaviors at baseline (Taussig et al., 20024). An RCT of the LET'S CONNECT program for youth with peer difficulties (King et al., 2021) also did not find impacts on suicidal ideation or behavior. As noted, the present study did not find a significant difference between the treatment and control groups with respect to having attempted suicide. It could be that volunteer mentors are good at helping to mitigate youth distress that would lead to ideation, but not particularly effective at helping youth who are already considering suicide to then avoid a suicide attempt.

No estimated program effects on any of the outcomes in this broad area of mental health and well-being were significant at the 18-month follow-up (note that questions about suicidal ideation and attempts were asked only at the 4-year follow-up). The scheduled timing of the 18-month survey—which occurred after the start of the COVID-19 pandemic for just over half the youth in our sample (56.5%; see DuBois et al., 2022)—may help explain this pattern. Compromised mental health among adolescents during the COVID pandemic (Zolopa et al., 2022), including increased depression

and anxiety (Hawes et al., 2021), may have overshadowed what a mentoring relationship could accomplish in this area.

The inability of most matches to meet in person also may have contributed to the lack of findings in this important area. In addition, as youth become older adolescents, they have greater vulnerability to mental health concerns than in earlier years (Paus et al., 2008). Mentoring as a protective resource may show more impact during those later teen years. In addition, the age span of our sample at the later follow-up covers a developmental period when striving for autonomy from parents intensifies (Zimmer-Gembeck & Collins, 2003) potentially making non-familial adult support even more important during this period.

The evidence for a beneficial effect on self-esteem at the 4-year follow-up is counter to findings from other RCTs of the BBBSA CBM and SBM programs (Herrera et al., 2007, 2013; Tierney et al., 1995) as well as the 18-month interim findings from the current study. Prior research demonstrates that self-esteem of developing youth can be compromised by a wide range of personal and contextual factors (DuBois et al., 2009). Thus, it may be somewhat unrealistic to expect involvement in a mentoring program to make significant in-roads in this area over the short-term. Yet, over a longer period, the internalization of positive views of self from the mentor could contribute to higher self-esteem (Rhodes, 2005) as might also improvements in other areas such as reduced involvement in problem behavior and its potential negative repercussions. It is worth noting as well that improving self-esteem was one of the most frequently reported mentoring goals reported by parents at the 4-year follow-up in the current research.

**Academic and career.** Consistent with findings from two earlier evaluations of the BBBSA CBM and SBM programs (Herrera et al., 2017; Tierney et al., 1995), this study found evidence of a beneficial impact on academic performance (grades in school). Academic performance was one of the most frequent goals parents reported as being worked on in their child's mentoring relationship at the 4-year follow-up. The lack of earlier findings could, in part, reflect the fact that grading standards shifted significantly during the COVID lockdown, with many schools shifting standards for grading due to remote learning (Townsley, 2020).

Youth with program access were significantly less likely to discontinue high school before graduating, based on parent and youth report; however, effects on their reports of engagement in post-secondary education, training or employment and college attendance specifically are not evident. None of the BBBS RCTs to date have included high school graduation as an outcome (given the younger age of youth participants). Rigorous studies of other mentoring programs have yielded promising, albeit mixed, findings in this area. For example, an RCT of the Check & Connect program, in which mentoring interactions specifically focus on improving school engagement and performance, found evidence of a beneficial effect on school persistence for youth with disabilities (Sinclair et al., 2005), although a later RCT of the program's effects on general education students at-risk for drop-out did not (Heppen et al., 2018). An RCT of the Quantum Opportunity Program, a multi-component program which includes mentoring from paid program staff and is specifically designed to improve rates of high school graduation and college enrollment for low-performing students, found that youth in the treatment group obtained their high school diplomas earlier and were more likely than controls to attend postsecondary education (Rodriguez-Planas, 2012).

Similar outcomes were reported in an RCT of a revised version of the program (Curtis & Bandy, 2016). A long-term follow-up of participants from the P/PV RCT of the BBBS CBM program found evidence of a potentially greater rate of college attendance for youth in the treatment group relative to controls based on evidence gleaned from tax records of study participants, although this finding did not reach or approach statistical significance when including the full set of control measures (Bell & Petkova, 2024). With only a minority of participants in the current study having reached the typical age of high school graduation and transition to college or other post-secondary pursuits by the 4-year follow-up, the results of the present analyses for outcomes in this area should be viewed with a high level of caution. This also applies to findings for the other career and education-related outcomes that were added to the 4-year follow-up and are also most relevant for older adolescents (e.g., special interest related to a future job/career, having a specific job/career goal, network support for education/career goals and progress toward education/career goals).[15]

## Program Implementation

Treatment youth in the study who were matched with a mentor had received an average of a little over 2 years (24.8 months) of mentoring through the BBBSA CBM program by their 4-year follow-up and reported close relationships with their mentors at both the 18-month and 4-year follow-ups. Importantly, however, close to one-third (32%) of the treatment group had not been matched by the 4-year follow-up, and only about 1 in 5 reported they were still meeting with their mentor at that time. The major disruptions in operations experienced by agencies during the COVID-19 pandemic undoubtedly decreased the rate and extent of mentoring that agencies were able to facilitate for youth in the treatment group during that period. And once the pandemic had ended, many youth in the treatment group may have moved or were no longer interested in receiving a mentor. Yet, even before the onset of the pandemic, it was observed in informal preliminary analyses (not included in this report) that the rate of matching for treatment youth by their 18-month follow-up was trending lower than that seen in the P/PV RCT of the CBM program in which 78% of youth had been matched with a mentor over the same length of time.

Given that unmatched youth in the treatment group would not be expected to benefit from program involvement, it seems likely that results of the current intent-to-treat analyses underestimate the impact of program participation for those youth who were matched with a mentor. The potential also exists for the remaining youth in the treatment group (who expected to be matched but were not) to have experienced setbacks in the outcomes we assessed. Findings from a recent RCT in which the treatment group participated in a violence prevention program (Take Charge!) that included mentoring through the BBBSA CBM program are in line with this possibility (Lindstrom Johnson et al., 2022). Results from this trial suggest that a failure to match youth in the treatment group with a mentor may have contributed to more aggressive behavior, relative to similar youth in the control group. Similar analyses that consider differential effects associated with whether treatment group youth were matched or not may help to clarify

[15] With only a minority of youth in the sample reporting being sexually active (i.e., having had sexual intercourse) at the 4-year follow-up, similar caution is appropriate when considering findings for outcomes in this domain (e.g., STI, pregnancy).

differences between our results and those of prior trials of the program. Illustratively, analyses of data from the Tierney et al. (1995) RCT revealed that treatment group youth who experienced the shortest matches (less than 3 months) had decrements in their reports of self-worth and perceived scholastic competence relative to youth in the control group, even when controlling for potential selection bias (Grossman & Rhodes, 2002). The authors noted that these findings could be attributable, at least in part, to feelings of rejection and disappointment among youth whose matches closed shortly after being established. In line with this possibility, qualitative research has documented feelings of sadness and disappointment among participants in the program in the wake of unexpected match endings (Spencer et al., 2017). Such potential dynamics underscore the importance of further inquiry into differential outcomes within the treatment group associated with matching status and match duration. Contributions of the pandemic will merit careful consideration in these analyses.

## Limitations

A number of features of this study address limitations of previous studies of the BBBS mentoring program. These include the use of both parent and youth reports as well as administrative records, a larger more representative sample of agencies, a longer time frame for the assessment of outcomes, and the consideration of a broader set of outcomes. However, several limitations remain. These include (but, of course, are not limited to) the following considerations:

- Study outcome assessments relied on incomplete data due to survey non-response and our inability to collect arrest records from some jurisdictions. Despite addressing this issue through multiple imputation, missing data reduced the precision in our effect estimation and introduced the risk of bias due to differential attrition.
- The study did not collect outcome data from informants such as teachers or peers or from additional administrative sources (e.g., school or health care records). These types of data would be less susceptible to some sources of bias, most notably the potential motivation among youth and parents in the treatment group to present themselves (or their children) in a favorable light (DuBois et al., 2022, Roberts et al., 2004). However, the strong assurances of data privacy provided to participants as well as the emergence of effects on several outcomes only at the 4-year follow-up—a time when most youth's BBBS mentoring relationships had already ended (at least formally), make this possibility seem unlikely.
- Although following youth for 4 years allowed the assessment of outcomes at older ages than in other BBBS RCTs, several of the added outcomes were either not yet able to be meaningfully assessed due to age (e.g., college attendance) or other developmental considerations (e.g., lack of initiation of dating) for large portions of the study sample, thus substantially reducing statistical power for detecting effects on these outcomes. In addition, many youth had not reached the age of highest risk for onset of some of the assessed behaviors (e.g., sexual risk-taking behavior, dating violence, substance abuse). Additional follow-up when the full sample has transitioned into late adolescence and early adulthood would help to more accurately answer questions about the impact of the program on these important outcomes.

## Concluding Thoughts

The statistically significant effects evident in this large-scale trial of the BBBSA CBM program generally would be categorized as "small" (.15), with a few instances of effects that are closer to "medium" (.45) in size, based on suggested benchmarks (Lipsey, 1990). This is in line with results reported in previous trials of BBBS mentoring and in mentoring evaluations more broadly (for meta-analyses, see DuBois et al., 2002, 2011; Raposa et al., 2019; Tolan et al., 2014). It does not follow, however, that these findings are unimportant, for several reasons. First, given the well-scaled status of the BBBSA CBM program, even modest-sized benefits take on greater significance when considered in the context of the relatively large numbers of youth who may be experiencing them through participation in the program (DuBois, 2017). Second, outcomes for which favorable effects of the program are evident, particularly delinquent behavior and substance use, may translate into monetized benefits that substantially exceed program costs, although such analyses remain to be conducted. Third, recent evidence suggests that considering program effects in isolation from one another may underestimate the magnitude of the benefits youth receive from mentoring (Herrera et al., 2023). A more holistic approach that considers outcomes collectively would be in line with the aim of the BBBS CBM program to support the overall positive development of participating youth.

Future studies should examine longer-term outcomes of the program, particularly in some of the understudied areas that this study was able to only begin to explore, such as postsecondary education and employment, and others such as health care utilization and incarceration during adulthood. The fact that so many outcomes were not significant at our first follow-up, but did suggest significant impacts at the later timepoint supports the value of following samples over longer time periods, particularly for programs like BBBS CBM that strive to serve youth for several years; many outcomes may need more time to develop than the timeframes used in most studies of mentoring to date. Addressing the limitations of this study noted earlier (e.g., the importance of measuring outcomes through other respondents and forms of administrative data) also should be a priority. Likewise, collecting qualitative data to explore in more depth *how* beneficial impacts are yielded undoubtedly would be valuable. Finally, all the analyses reported here are intent-to-treat, including all youth enrolled in the study regardless of their actual exposure to the program. Because it preserves the integrity of the experimental design, this is the most rigorous approach to testing program impacts. But, because only about two-thirds of youth in the treatment group received mentoring through the program during the 4-year study period, it will be important to examine in future analyses the outcomes of this group relative to comparable youth in the control group, which may reveal evidence of stronger impacts, albeit conditional on being matched with a mentor and with less certainty because the analyses will be non-experimental. Likewise, outcomes should be compared for the remaining youth in the treatment group who were not matched with those of comparable youth in the control group, which could potentially reveal negative effects due to unfulfilled expectations or hope of being matched or other influences.

These considerations notwithstanding, the current findings do provide notable support for the effectiveness of the BBBSA CBM program as a means of reducing youth involvement in problem behaviors that are of central concern for delinquency and crime prevention. At the same time, the lack of support for an associated reduction in the likelihood of arrest, although possibly attributable to methodological considerations, leaves this outcome as a yet-to-be-established benefit of program participation.

From a broader perspective, the present results also largely align with the capacity of the BBBSA CBM program to realize its aim of promoting overall positive youth development and resilience, particularly in the areas of personal resources and mental health and well-being. Tracking the ways in which such outcomes and mentoring received through the program may shape the longer-term, life-course trajectories of participants in the research is an exciting challenge on the horizon.

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the youth relationships study

# Appendix 1:

## Attrition Tables

**Table A:** Baseline Study Measures for Youth With and Without 4-Year Survey Data

| Characteristic/Measure | Youth With 4-Year Survey Data (*n* = 1,047) | Youth Without 4-Year Survey Data (*n* = 306) |
|---|---|---|
| ***Demographics*** | | |
| Youth gender | Male (62.0%) | Male (63.0%) |
| Youth age in years | 12.32 (1.55) | 12.21 (1.48) |
| Youth race/ethnicity* | Hispanic (28.6%)<br>Black (40.3%)<br>White (24.9%)<br>Other (6.2%) | Hispanic (35.9%)<br>Black (33.0%)<br>White (21.9%)<br>Other (9.2%) |
| Family structure | One adult (43.9%) | One adult (47.1%) |
| Family income | 4.40 (2.51) | 4.18 (2.57) |
| ***Primary Outcomes and Related Variables*** | | |
| History of arrest (AR)[a] | 1.3% | 2.1% |
| Ever arrested (YR) | 6.1% | 8.6% |
| Ever arrested (PR) | 3.3% | 4.3% |
| Ever stopped by police (YR) | 12.0% | 14.8% |
| Ever stopped by police (PR) | 6.2% | 5.3% |
| Property-related delinquent behavior past year (CR) | 26.3% | 29.7% |
| Violence-related delinquent behavior past year (CR)* | 36.3% | 41.1% |
| Any substance use (YR) | 13.9% | 15.4% |
| ***Risk Factors*** | | |
| Negative peer associations (YR) | 1.53 (.61) | 1.58 (.63) |
| School misbehavior (PR) | 32.2% | 35.4% |
| Skipping school (CR) | 12.8% | 16.2% |

| Characteristic/Measure | Youth With 4-Year Survey Data (*n* = 1,047) | Youth Without 4-Year Survey Data (*n* = 306) |
|---|---|---|
| ***Risk Factors** (continued)* | | |
| Aggressive behavior (CR) | -.003 (.77) | .01 (.83) |
| Depressive symptoms (YR) | 8.71 (7.97) | 9.56 (8.57) |
| ***Protective Factors:** Personal Resources* | | |
| Self-control (CR) | -.01 (.79) | .05 (.78) |
| Conventional values (YR) | 4.19 (.76) | 4.14 (.80) |
| Social skills (YR) | 3.68 (.76) | 3.68 (.75) |
| Coping efficacy (YR) | 6.41 (2.60) | 6.41 (2.63) |
| Spark development (YR) | 2.45 (.70) | 2.46 (.70) |
| Grit (YR) | 3.28 (.63) | 3.28 (.62) |
| Self-advocacy (YR) | 3.85 (.78) | 3.86 (.77) |
| Hopeful future expectations (YR) | 3.45 (.46) | 3.43 (.48) |
| Goal setting and pursuit (PR) | 3.05 (1.01) | 3.09 (.90) |
| ***Protective Factors:** Social-Contextual Resources* | | |
| Perceived social support: Family members (YR) | 4.07 (.99) | 4.02 (.99) |
| Perceived social support: Friends (YR) | 3.84 (1.16) | 3.72 (1.15) |
| Perceived social support: Significant other (YR) | 3.98 (1.08) | 3.89 (1.12) |
| Family functioning (PR) | 3.14 (.53) | 3.13 (.54) |
| Parenting behaviors: Involvement (PR) | 3.88 (.61) | 3.80 (.59) |
| Parenting behaviors: Positive parenting (PR) | 4.32 (.58) | 4.28 (.59) |
| Parenting behaviors: Poor monitoring/supervision (PR) | 1.58 (.52) | 1.63 (.49) |
| Parenting behaviors: Inconsistent discipline (PR) | 2.28 (.71) | 2.30 (.67) |
| Involvement in organized youth activities (PR) | 1.42 (1.11) | 1.30 (1.14) |
| Volunteering (YR) | 37.6% | 38.0% |

| Characteristic/Measure | Youth With 4-Year Survey Data (*n* = 1,047) | Youth Without 4-Year Survey Data (*n* = 306) |
|---|---|---|
| ***Protective Factors:** Mental Health and Well-Being* | | |
| Self-esteem (YR) | 4.09 (.94) | 4.05 (.98) |
| Positive affect (YR) | 11.78 (3.79) | 11.73 (3.63) |
| Life satisfaction (YR) | 7.34 (2.24) | 7.19 (2.39) |
| ***Protective Factors:** Academic Engagement and Performance* | | |
| School engagement (YR) | 3.99 (.90) | 3.93 (.89) |
| Academic performance (CR) | -.004 (.90) | .0008 (.92) |
| College exploration (YR) | 30.3% | 33.9% |
| Career exploration (YR) | 38.5% | 39.7% |
| ***Other Measures*** | | |
| Receipt of formal mentoring (PR) | 11.6% | 11.1% |
| Presence of a very important nonparental adult (YR) | 60.7% | 58.2% |
| Youth risk exposure (PR) | 7.16 (3.67) | 7.45 (3.71) |

Notes. AR = Administrative records; YR = Youth report; PR = Parent report; CR = Combination of youth and parent report. For continuous measures, means and standard deviations (parentheses) are reported and the test for a significant difference between groups is an independent groups t-test (two-tailed). For categorical measures, the test for a significant group difference is a chi-square test.

[a] Based on the 965 youth for whom identifiable data on history of arrest were able to be obtained.

* Group difference is statistically significant ($p < .05$).

**Table B:** Baseline Study Measures for Youth With and Without 4-Year Survey Data by Study Condition

| Characteristic/Measure | Treatment Group | | Control Group | |
|---|---|---|---|---|
| | Youth With 4-Year Survey Data (*n* = 758) | Youth Without 4-Year Survey Data (*n* = 253) | Youth With 4-Year Survey Data (*n* = 289) | Youth Without 4-Year Survey Data (*n* = 53) |
| ***Demographics*** | | | | |
| Youth gender (male) | 62.8% | 61.3% | 63.0% | 67.9% |
| Youth age in years | 12.34 (1.57) | 12.21 (1.46) | 12.30 (1.51) | 12.23 (1.61) |
| Youth race/ethnicity* | Hispanic (27.4%)<br>Black (40.2%)<br>White (26.2%)<br>Other (6.3%) | Hispanic (36.3%)<br>Black (31.5%)<br>White (22.7%)<br>Other (9.6%) | Hispanic (33.1%)<br>Black (38.7%)<br>White (22.5%)<br>Other (5.6%) | Hispanic (34.0%)<br>Black (39.6%)<br>White (18.9%)<br>Other (7.5%) |
| Family structure (one adult) | 46.3% | 46.7% | 37.3% | 49.0% |
| Family income | 4.37 (2.54) | 4.27 (2.62) | 4.48 (2.49) | 3.75 (2.35) |
| ***Primary Outcomes and Related Variables*** | | | | |
| History of arrest (AR) [a] | 2.0 | 2.1% | 1.5% | 2.7% |
| Ever arrested (YR) | 5.6% | 9.1% | 7.4% | 5.7% |
| Ever arrested (PR) | 3.1% | 4.0% | 4.2% | 5.7% |
| Ever stopped by police (YR) | 11.6% | 15.9% | 13.0% | 9.4% |
| Ever stopped by police (PR) | 6.4% | 5.2% | 5.9% | 5.7% |
| Property-related delinquent behavior past year (CR) | 25.1% | 29.6% | 29.4% | 30.2% |
| Violence-related delinquent behavior past year (CR)* | 37.3% | 40.3% | 33.6% | 56.6% |
| Any substance use (YR) | 13.8% | 14.6% | 14.3% | 18.9% |
| ***Risk Factors*** | | | | |
| Negative peer associations (YR) | 1.52 (.61) | 1.57 (.64) | 1.54 (.65) | 1.66 (.62) |
| School misbehavior (PR) | 32.4% | 35.9% | 31.8% | 33.3% |
| Skipping school (CR) | 11.9% | 16.0% | 15.3% | 17.7% |

| Characteristic/Measure | Treatment Group | | Control Group | |
|---|---|---|---|---|
| | Youth With 4-Year Survey Data (*n* = 758) | Youth Without 4-Year Survey Data (*n* = 253) | Youth With 4-Year Survey Data (*n* = 289) | Youth Without 4-Year Survey Data (*n* = 53) |
| ***Risk Factors** (continued)* | | | | |
| Aggressive behavior (CR) | -.01 (.73) | -.01 (.82) | .01 (.86) | .14 (.86) |
| Depressive symptoms (YR) | 8.91 (8.03) | 9.52 (8.66) | 8.22 (7.96) | 9.80 (8.54) |
| ***Protective Factors:** Personal Resources* | | | | |
| Self-control (CR) | .00 (.79) | .06 (.80) | -.05 (.79) | -.01 (.69) |
| Conventional values (YR) | 4.19 (.77) | 4.17 (.81) | 4.21 (.76) | 4.05 (.79) |
| Social skills (YR) | 3.67 (.77) | 3.67 (.75) | 3.70 (.75) | 3.74 (.75) |
| Coping efficacy (YR) | 6.32 (2.64) | 6.46 (2.61) | 6.64 (2.53) | 6.17 (2.95) |
| Spark development (YR) | 2.47 (.70) | 2.45 (.71) | 2.41 (.71) | 2.49 (.73) |
| Grit (YR) | 3.30 (.63) | 3.29 (.64) | 3.22 (.64) | 3.25 (.47) |
| Self-advocacy (YR) | 3.86 (.77) | 3.85 (.77) | 3.82 (.79) | 3.92 (.75) |
| Hopeful future expectations (YR) | 3.45 (.45) | 3.42 (.49) | 3.45 (.48) | 3.43 (.41) |
| Goal setting and pursuit (PR) | 3.00 (1.00) | 3.09 (.93) | 3.20 (1.04) | 3.12 (.83) |
| ***Protective Factors:** Social-Contextual Resources* | | | | |
| Perceived social support: Family members (YR) | 4.07 (.99) | 3.99 (1.00) | 4.09 (1.03) | 4.17 (.97) |
| Perceived social support: Friends (YR) | 3.83 (1.16) | 3.74 (1.15) | 3.86 (1.16) | 3.63 (1.21) |
| Perceived social support: Significant other (YR) | 3.96 (1.07) | 3.91 (1.12) | 4.02 (1.12) | 3.82 (1.14) |
| Family functioning (PR) | 3.13 (.54) | 3.14 (.55) | 3.17 (.51) | 3.08 (.52) |
| Parenting behaviors: Involvement (PR) | 3.87 (.63) | 3.81 (.59) | 3.89 (.56) | 3.75 (.60) |
| Parenting behaviors: Positive parenting (PR)† | 4.30 (.60) | 4.28 (.57) | 4.38 (.54) | 4.17 (.69) |

| Characteristic/Measure | Treatment Group | | Control Group | |
|---|---|---|---|---|
| | Youth With 4-Year Survey Data (*n* = 758) | Youth Without 4-Year Survey Data (*n* = 253) | Youth With 4-Year Survey Data (*n* = 289) | Youth Without 4-Year Survey Data (*n* = 53) |
| ***Protective Factors:** Social-Contextual Resources (continued)* | | | | |
| Parenting behaviors: Poor monitoring/supervision (PR) | 1.56 (.52) | 1.63 (.50) | 1.61 (.51) | 1.61 (.49) |
| Parenting behaviors: Inconsistent discipline (PR) | 2.29 (.73) | 2.30 (.65) | 2.26 (.68) | 2.30 (.78) |
| Involvement in organized youth activities (PR)† | 1.39 (1.12) | 1.22 (1.11) | 1.51 (1.09) | 1.68 (1.22) |
| Volunteering (YR) | 36.4% | 38.0% | 40.8% | 37.8% |
| ***Protective Factors:** Mental Health and Well-Being* | | | | |
| Self-esteem (YR) | 4.08 (.96) | 4.06 (.99) | 4.14 (.93) | 4.00 (.94) |
| Positive affect (YR) | 11.82 (3.87) | 11.74 (3.72) | 11.69 (3.63) | 11.69 (3.26) |
| Life satisfaction (YR) | 7.29 (2.25) | 7.23 (2.35) | 7.45 (2.22) | 7.00 (2.76) |
| ***Protective Factors:** Academic Engagement and Performance* | | | | |
| School engagement (YR) | 4.01 (.90) | 3.97 (.89) | 3.93 (.90) | 3.95 (.95) |
| Academic performance (CR) | -.01 (.89) | -.02 (.97) | .02 (.98) | .10 (.76) |
| College exploration (YR) | 30.2% | 33.9% | 30.4% | 34.0% |
| Career exploration (YR) | 38.0% | 38.7% | 40.1% | 44.2% |
| ***Other Measures*** | | | | |
| Receipt of formal mentoring (PR) | 10.9% | 9.9% | 13.5% | 17.0% |
| Presence of a very important nonparental adult (YR) | 60.0% | 58.5% | 62.3% | 56.6% |
| Youth risk exposure (PR) | 7.30 (3.60) | 7.30 (3.63) | 6.78 (3.48) | 8.15 (4.13) |

Notes. AR = Administrative records; YR = Youth report; PR = Parent report; CR = Combination of youth and parent report. For continuous measures, means and standard deviations (parentheses) are reported.

[a] Based on the 965 youth for whom identifiable data on history of arrest were able to be obtained.

* Interaction of study condition and availability of 4-year survey data is significant at $p < .05$.

† Interaction of study condition and availability of 4-year survey data approaches significance: $p < .10$.

# Appendix 2:

## Overview of Selected BBBSA Standards for the Community-Based Mentoring (CBM) Program

### Staff Training

After being hired, CBM program staff must participate in the following trainings:

1. BBBSA online cultural competency training;
2. Annual BBBS Child Safety and Youth Protection online training; and
3. (for program managers) BBBS Program Manager Certification online courses.

### Youth Enrollment

When enrolling youth in CBM programs, the following are required:

1. The child meets the agency's written eligibility requirements;
2. Signed application from parent/guardian;
3. In-person child interview;
4. Parent interview;
5. Assessment of the home environment;
6. Written assessment and matching recommendations based on information gathered during inquiry and enrollment;
7. Request collateral Information as needed (therapy report, school report, etc.); and
8. RTBM children are reassessed every 12 months if they have not yet been matched—all information about the child, family and home environment is updated.

### Matching

When matching youth with a potential Big:

1. the pre-match presentation must be interactive (in person or by phone) and ensure that each party understands the agency's matching rationale;
2. documentation of match selection rationale, reaction of parties and all approval dates;
3. the Big must approve the match before the match introduction meeting;
4. the parent/guardian must approve the match before the match introduction meeting;
5. the match introduction meeting must be in person and involve the parent/guardian; and
6. written documentation of completed match introductions including a signed match agreement form and a post-match meeting assessment by staff.

## Orientation and Training

Pre-match training must be conducted prior to the actual match and provide participants (Big, child, and parent/guardian) the information needed to begin a match and develop and sustain effective and enduring match relationships.

1. CBM pre-match training must be interactive, evaluated, and documented and can be provided in- person, online with interaction, and/or individually, in group sessions, or a combination thereof. Training should be conducted by an agency staff member who demonstrates a strong competency for training others.
2. CBM pre-match training must cover, at a minimum:

**VOLUNTEER**

- ✔ Ground rules / program rules
- ✔ Volunteer Big obligations and appropriate roles
- ✔ Expectations for the match relationship
- ✔ Relationship development cycles
- ✔ What match support is and why it is important
- ✔ Child safety / youth protection
- ✔ Ages and stages of child development
- ✔ The match closure process

**PARENT/GUARDIAN**

- ✔ Ground rules / program rules
- ✔ Expectations for the match relationship
- ✔ Relationship development cycles
- ✔ What a volunteer Big is and isn't
- ✔ Expectations for parent partnership (why the parent is important in mentoring)
- ✔ What match support is and why it is important
- ✔ Child safety / youth protection
- ✔ The match closure process

**CHILD(REN)**

- ✔ What a Big Brother / Big Sister is
- ✔ Ground rules / program rules
- ✔ Expectations for the match relationship
- ✔ What match support is and why it is important
- ✔ Personal safety
- ✔ The match closure process

## Youth Outcomes Development Plan

Agencies must develop a Youth Outcomes Development Plan (YODP) for the youth at the beginning of the match. It should be used in match support to coach the match toward desired outcomes. Staff must review the plan annually with match participants to assess progress made and make any needed adjustments.

## Support/Supervision

Staff must contact the parent/guardian, child and Big within the first 2 weeks of the match. **During the first year of the match,** they are required to contact the parent/guardian monthly (which may alternate with the child), the child monthly (which may alternate with the parent/guardian), and the Big monthly. **Once a CBM match has passed a year being matched,** staff are required to contact the parent/guardian, child and Big every 3 months. Match contact may be in person, over the phone or via email/text/social media as long as it involves substantive, two-way communication and an opportunity for staff and clients to engage in follow-up questions or discussions.

## Match Closure/Rematching

BBBS Standards of Practice outline that:

1. staff must make reasonable efforts to contact the parent/guardian, child and Big individually to explore reasons for closure, safety levels, satisfaction and youth outcomes associated with the match;
2. when no child safety issues are present and parties agree, every effort must be made to have a documented, facilitated final communication or visit with the Big and with the child, providing an explanation for the reason(s) for match closure and an assessment of the accomplishments of the match;
3. staff must provide a written assessment and any recommendations for re-matching the child or re-engaging of the Big; and
4. staff must provide written notification of match closure to all parties including the risks assumed if continuing a relationship outside of the agency.

# Appendix 3:

## Study Measures

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Primary Hypothesized Outcomes[d]*** | | | | | |
| **Arrest (administrative records)** | Administrative records of arrests obtained from juvenile justice entities | NA | NA | 0 = No arrest in past 4 years<br><br>1 = One or more arrests in past 4 years | NA |
| **Property-related delinquent behavior** | Adapted from Add Health Study (Wave I; Bearman et al., 1997)<br><br>7 items asking about youth's engagement in different behaviors during the past 12 months at baseline and past 2½ months at 4-year follow-up<br><br>Response options:<br>• I have NEVER done this in my entire life<br>• I have done this but NOT in the last 2½ years<br>• I have done this 1-2 times in the last 2½ years<br>• I have done this 3 or more times in the last 2½ years | Y / P | • Go into a house or building to steal something<br>• Use or threaten to use a weapon to get something from someone<br>• Steal something worth more than $50 | 0 = No behaviors in past 2½ years reported by youth or parent<br><br>1 = One or more behaviors in past 2½ years reported by youth or parent | NA |
| **Violence-related delinquent behavior** | Adapted from Add Health Study (Wave I; Bearman et al., 1997)<br><br>3 items asking about youth's engagement in different behaviors during the past 12 months at baseline and past 2½ months at 4-year follow-up<br><br>Response options:<br>• I have NEVER done this in my entire life<br>• I have done this but NOT in the last 2½ years<br>• I have done this 1-2 times in the last 2½ years<br>• I have done this 3 or more times in the last 2½ years | Y / P | • Get into a serious physical fight<br>• Hurt someone badly enough to need bandages or care from a doctor or nurse<br>• Take part in a fight where a group of your friends was against another group | 0 = No behaviors in past 2½ years reported by youth or parent<br><br>1 = One or more behaviors in past 2½ years reported by youth or parent | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Primary Hypothesized Outcomes[d]*** *(continued)* | | | | | |
| **Overall delinquent behavior** | Adapted from Add Health Study (Wave I; Bearman et al., 1997)<br><br>13 items asking about youth's engagement in different behaviors during the past 12 months at baseline and past 2½ years at 4-year follow-up<br><br>Response options:<br>• I have NEVER done this in my entire life<br>• I have done this but NOT in the last 2½ years<br>• I have done this 1-2 times in the last 2½ years<br>• I have done this 3 or more times in the last 2½ years | Y / P | • Get into a serious physical fight<br>• Deliberately damage property that didn't belong to you<br>• Take part in a fight where a group of your friends was against another group | 0 = No behaviors in past 2½ years reported by youth or parent<br><br>1 = One or more behaviors in past 2½ years reported by youth or parent | NA |
| **Recurring substance use** | Adapted from Herrera et al. (2013)<br><br>6 items asking about youth's use of different substances during the past 6 months; asked only of youth reporting using a given substance in the past 2½ years at 4-year follow-up<br><br>Response options:<br>• Never<br>• Less than once a month<br>• About once a month<br>• Once every week or two<br>• Once or twice a week<br>• Most days | Y | • Drink alcohol to the point of getting drunk<br>• Use or try out other drugs (such as inhalants, cocaine, LSD, heroin, steroids), not including medicine<br>• Use an electronic vapor product (e-cigarettes, e-pipes, vaping pens, e-hookahs, etc.; do not include vaping of marijuana) | 0 = No recurring substance use as defined below (includes not reporting any substance use in past 2½ years)<br><br>1 = Drunkenness at least every week or two; illicit drug use at least once a month; OR using tobacco/ vaping at least once or twice a week in the past 6 months | NA |
| ***Secondary Hypothesized Outcomes:*** *Risk Factors for Delinquent/Criminal Behavior[d]* | | | | | |
| **Negative peer associations** | Elliott et al. (1996)<br><br>4 items asking youth how many of their friends engage in different behaviors<br><br>Response options:<br>• None (1)<br>• Some (2)<br>• Most (3)<br>• All (4) | Y | • Bully other kids<br>• Get into fights at school<br>• Do bad things | Average across items | .82/.75 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes:*** *Risk Factors for Delinquent/Criminal Behavior[d] (continued)* | | | | | |
| **School misbehavior** | Herrera et al. (2013)<br><br>3 items asking about different disciplinary experiences at school during the last 3 months youth attended school; asked only about youth attending middle school or high school at 4-year follow-up<br><br>Response options:<br>• This has NEVER happened in this child's entire life<br>• This has happened but not in the last 3 months of school<br>• This happened 1-2 times in the last 3 months of school<br>• This happened 3 or more times in the last 3 months of school | P | • Sent to the principal's office or spoke with a school administrator for misbehavior<br>• Received an in-school detention<br>• Received an out-of-school suspension | 0 = No disciplinary experiences in past 3 months<br><br>1 = One or more disciplinary experiences in past 3 months | NA |
| **Skipping school** | Adapted from Herrera et al. (2013)<br><br>3 items asking about skipping school during the last 3 months youth attended school; asked only of/about youth attending middle school or high school at 4-year follow-up<br><br>Response options:<br>• I have NEVER done this in my entire life<br>• I have done this but NOT in the last 3 months of school<br>• I have done this 1-2 times in the last 3 months of school<br>• I have done this 3 or more times in the last 3 months of school | Y / P | • Skipped one or more classes at school without your parent or guardian knowing<br>• Skipped a full day of school without your parent or guardian knowing<br>• Lied to your parent or guardian so that you could skip all or part of a day of school (for example, told them you were sick when you really weren't) | 0 = No items endorsed by youth or parent as having occurred in the last 3 months of school<br><br>1 = One or more items endorsed by youth or parent as having occurred in the last 3 months of school | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes:*** *Risk Factors for Delinquent/Criminal Behavior[d] (continued)* | | | | | |
| **Aggressive behavior** | The Aggression Scale (Orpinas & Frankowski, 2001) and Parent Checklist – Fast Track Project (adapted from Dodge & Coie, 1987)<br><br>9 items asking youth how often they engaged in each behavior during the past 7 days and 6 items asking parent how true each statement is of the youth<br><br>Youth response options:<br>• 0 times (1)<br>• 1 time (2)<br>• 2-3 times (3)<br>• 4 or more times (4)<br><br>Parent response options:<br>• Never true (1)<br>• Rarely true (2)<br>• Sometimes true (3)<br>• Usually true (4)<br>• Almost always true (5) | Y / P | Youth-report<br>• I threatened to hurt or to hit someone.<br>• I pushed or shoved other kids.<br>• I called other students bad names.<br>Parent-report<br>• This child uses physical force (or threatens to use force) in order to dominate other kids.<br>• When this child is teased or threatened, he or she gets angry easily and strikes back.<br>• This child gets other kids to gang up on somebody that he or she does not like. | Average of standardized (*M* = 0, *SD* = 1) scores on youth- and parent-report measures<br><br>(each scored as average across items) | Y: .86/.84<br>P: .84/.88 |
| **Depressive symptoms** | Short-form Pediatric Depressive Symptoms Scale: Patient-Reported Outcomes Measurement Information System (PROMIS; Irwin et al., 2010)<br><br>8 items asking how often each statement has been true over the past 7 days<br><br>Response options:<br>• Never (0)<br>• Almost never (1)<br>• Sometimes (2)<br>• Often (3)<br>• Almost always (4) | Y | • I felt sad.<br>• I felt like I couldn't do anything right.<br>• I felt lonely.<br>• It was hard for me to have fun. | Sum across items | .92/.94 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Personal Resources*[d] | | | | | |
| **Self-control** | Grasmick et al. (1993)<br><br>8 items asking youth how true each statement is for them or parent about agreement that the statement describes the youth<br><br>Youth response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Always true (5)<br><br>Parent response options:<br>• Strongly disagree (1)<br>• Disagree (2)<br>• Agree (3)<br>• Strongly agree (4) | Y / P | • I often act on the spur of the moment without stopping to think. (R)<br>• Sometimes I will take a risk just for the fun of it. (R)<br>• I often do whatever brings me pleasure here and now, even at the cost of some distant goal. (R) | Average of standardized (*M* = 0, *SD* = 1) scores on youth- and parent-report measures<br><br>(each scored as average across items) | Y: .65/.81<br>P: .77/.90 |
| **Conventional values** | Belief in the Moral Order Scale from the Communities that Care Survey (Arthur et al., 2002)<br><br>4 items asking youth how true each statement is for them<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I think sometimes it is okay to cheat at school.<br>• I think it is important to be honest with your parents, even if they become upset or you get punished. (R)<br>• I think it is okay to take something without asking if you can get away with it. | Average across items | .58/.61 |
| **Social skills** | Social Competencies scale of the Youth Outcome Measures Online Toolbox (adapted from Muris, 2001)<br><br>7 items asking youth how true each statement is for them<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I can make friends with other kids.<br>• I can stay friends with other kids.<br>• I can tell other kids what I think, even if they disagree with me. | Average across items | .70/.85 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Personal Resources[d] (continued)* | | | | | |
| **Coping efficacy** | Adapted from Coping Efficacy Scale (Sandler et al., 2000)<br><br>Single item<br><br>Response options from 0 to 10 presented on a ladder:<br>• 0 (What you did, did not make things better at all) to 10 (What you did made things completely better) | Y | • Sometimes the things people do to handle their problems work really well to make the situation or how they feel better. Other times what they try doesn't work at all. Think about the difficult situations or problems you have faced in the last month. How well did what you tried for handling these situations work? | Response on the single item | NA |
| **Spark development** | Adapted from Benson & Scales (2009)<br><br>Single item<br><br>Response options:<br>• No, not at this time (1)<br>• Sort of (2)<br>• Yes, definitely! (3) | Y | • Some people have a special interest or hobby that they really care about. This is something that takes time and effort to learn about and do well. So it would not be just watching TV or spending time on the internet or social media (e.g., YouTube). Do you have a special interest or hobby like this? | Response on the single item | NA |
| **Grit** | Short Grit Scale for Children (Duckworth & Quinn, 2009)<br><br>8 items asking youth how much each statement is like them<br><br>Response options:<br>• Not like me at all (1)<br>• Not much like me (2)<br>• Somewhat like me (3)<br>• Mostly like me (4)<br>• Very much like me (5) | Y | • I am a hard worker.<br>• Setbacks (delays and obstacles) don't discourage me. I bounce back from disappointments faster than most people.<br>• New ideas and projects sometimes distract me from previous ones. (R) | Average across items | .61/.75 |
| **Self-advocacy** | Self-Advocacy Scale (Jarjoura et al., 2018)<br><br>5 items asking youth how true each statement is for them<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I am good at figuring out how to get the kind of help I need to solve a problem.<br>• I can figure out how to get involved in activities that I enjoy or want to learn more about.<br>• When I want to do something new, I think of ideas for how to make it happen. | Average across items | .75/.83 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Personal Resources[d] (continued)* | | | | | |
| **Hopeful future expectations** | Abbreviated version of the Hopeful Future Expectations Scale (Bowers et al., 2012)<br><br>7 items asking youth how they see each description being true for them when they are older and an adult<br><br>Response options:<br>• I'm very sure it won't be true (1)<br>• I think it probably won't be true (2)<br>• I think it probably will be true (3)<br>• I'm sure it will be true (4) | Y | • Having a job or career that you really enjoy<br>• Having enough money to buy the things you need<br>• Being healthy | Average across items | .76/.82 |
| **Goal setting and pursuit** | Goal Orientation Scale (Child Trends, 2022)<br><br>7 items asking how much each statement describes the youth<br><br>Response options:<br>• Not at all like this child (1)<br>• A little like this child (2)<br>• Somewhat like this child (3)<br>• A lot like this child (4)<br>• Exactly like this child (5) | P | • This child has goals in his/her life.<br>• This child develops step-by-step plans to reach his/her goals.<br>• If this child sets goals, he/she takes action to reach them. | Average across items | .89/.91 |
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Social-Contextual Resources[d]* | | | | | |
| **Perceived social support from family members** | Family subscale of the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)<br><br>4 items asking youth how true each statement is for them<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I can talk about my problems with my family.<br>• My family really tries to help me.<br>• My family is willing to help me make decisions. | Average across items | .85/.91 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Social-Contextual Resources[d] (continued)* | | | | | |
| **Perceived social support from friends** | Friends subscale of the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)<br><br>4 items asking youth how true each statement is for them<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • My friends really try to help me.<br>• I can count on my friends when things go wrong.<br>• I can talk about my problems with my friends. | Average across items | .89/.94 |
| **Perceived social support from significant other** | Significant Other subscale of the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)<br><br>4 items asking youth how true each statement is for them<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • There is a special person who is around when I am in need.<br>• There is a special person in my life who cares about my feelings.<br>• I have a special person who is a real source of comfort to me. | Average across items | .86/.95 |
| **Family functioning** | General Family Functioning scale of the Family Assessment Device (Epstein et al., 1983)<br><br>12 items asking parent how much they agree or disagree with each statement<br><br>Response options:<br>• Strongly disagree (1)<br>• Disagree (2)<br>• Agree (3)<br>• Strongly agree (4) | P | • Making decisions is a problem for our family. (R)<br>• Individuals are accepted for what they are.<br>• We avoid discussing our fears and concerns. (R) | Average across items | .89/.90 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Social-Contextual Resources[d] (continued)* | | | | | |
| **Parenting behaviors: Involvement** | Involvement subscale of the Alabama Parenting Questionnaire (Essau et al., 2006)<br><br>10 items asking how often each behavior or situation typically occurs in the youth's home<br><br>Response options:<br>• Never (1)<br>• Almost never (2)<br>• Sometimes (3)<br>• Often (4)<br>• Always (5) | P | • You have a friendly talk with this child.<br>• You volunteer to help with special activities that this child is involved in (such as sports, Boy/Girl Scouts, church youth groups).<br>• You help this child with his/her homework. | Average across items | .78/.84 |
| **Parenting behaviors: Positive parenting** | Positive Parenting subscale of the Alabama Parenting Questionnaire (Essau et al., 2006)<br><br>6 items asking how often each behavior or situation typically occurs in the youth's home<br><br>Response options:<br>• Never (1)<br>• Almost never (2)<br>• Sometimes (3)<br>• Often (4)<br>• Always (5) | P | • You praise this child if he/she behaves well.<br>• You compliment this child when he/she does something well.<br>• You tell this child that you like it when he/she helps out around the house. | Average across items | .83/81 |
| **Parenting behaviors: Poor monitoring/ supervision** | Poor Monitoring and Supervision scale of the Alabama Parenting Questionnaire (Essau et al., 2006)<br><br>10 items asking how often each behavior or situation typically occurs in the youth's home<br><br>Response options:<br>• Never (1)<br>• Almost never (2)<br>• Sometimes (3)<br>• Often (4)<br>• Always (5) | P | • This child is out with friends you don't know.<br>• This child goes out without a set time to be home.<br>• You get so busy that you forget where this child is and what he/she is doing. | Average across items | .68/.79 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Social-Contextual Resources[d] (continued)* | | | | | |
| **Parenting behaviors: Inconsistent discipline** | Inconsistent Discipline scale of the Alabama Parenting Questionnaire (Essau et al., 2006)<br><br>6 items asking how often each behavior or situation typically occurs in the youth's home<br><br>Response options:<br>• Never (1)<br>• Almost never (2)<br>• Sometimes (3)<br>• Often (4)<br>• Always (5) | P | • You threaten to punish this child and then do not actually punish him/her.<br>• This child talks you out of being punished after he/she has done something wrong.<br>• You feel that getting this child to obey you is more trouble than it's worth. | Average across items | .70/.80 |
| **Involvement in organized youth activities** | Herrera et al. (2007)<br><br>4 items asking whether youth has been involved in different types of activities during the past 12 months at baseline and past 2½ years at follow-up<br><br>Response options:<br>• No<br>• Yes | P | • After-school programs or activities at their school (like arts, science club, music or sports)?<br>• Clubs during the school day at his/her school (like band, newspaper, drama, chorus, public speaking)?<br>• An after-school program or activity but not at his/her school (like a sports team, music lessons, Boys & Girls Club, 4H, Boy/Girl Scouts, YMCA, recreation center or a church youth group)? | Number of activities with yes responses | NA |
| **Volunteering** | Herrera et al. (2013)<br><br>Single item asking youth if they engaged in the activity described during the past 12 months at baseline and past 2½ years at follow-up<br><br>Response options:<br>• No (0)<br>• Yes (1) | Y | • Volunteered in your community | Response on the single item | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Mental Health and Well-being*[d] | | | | | |
| **Self-esteem** | Global Self-Esteem subscale of the Brief version of the Self-Esteem Questionnaire (DuBois et al., 1996)<br><br>4 items asking youth how true each statement is for them<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I like being just the way I am.<br>• I am happy with myself as a person.<br>• I am the kind of person I want to be. | Average across items | .83/.88 |
| **Positive affect** | Short-form Pediatric Positive Affect Scale: Patient-Reported Outcomes Measurement Information System (PROMIS; Forrest et al., 2018)<br><br>4 items asking how often statement has been true over the past 7 days<br><br>Response options:<br>• Never (0)<br>• Almost never (1)<br>• Sometimes (2)<br>• Often (3)<br>• Almost always (4) | Y | • I felt great.<br>• I felt cheerful.<br>• I felt joyful.<br>• I felt happy. | Sum across items | .87/.90 |
| **Life satisfaction** | Cantril (1965); WHO (2006)<br><br>Single item asking youth how they feel about the way their life is<br><br>Response options from 0 to 10 presented on a ladder:<br>• 0 (The worst possible life) to 10 (The best possible life) | Y | • In general, where on the ladder do you feel you stand at the moment? | Response on the single item | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Academic Engagement & Performance*[d] | | | | | |
| **School engagement** | Behavioral Engagement subscale of Engagement versus Disaffection with Learning Scale (Skinner et al., 2009)<br><br>5 items asking youth how true each statement is for them; asked only of youth attending school (inclusive of college) at 4-year follow-up<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I try hard to do well in school.<br>• When I'm in class, I participate in class discussions.<br>• When I'm in class, I listen very carefully. | Average across items | .88/.88 |
| **Academic performance** | Adapted from Herrera et al. (2013)<br><br>Single item asking about grades youth received on their last report card<br><br>Response options:<br>• F's (1)<br>• D's and F's (2)<br>• D's (3)<br>• C's and D's (4)<br>• C's (5)<br>• B's and C's (6)<br>• B's (7)<br>• A's and B's (8)<br>• A's (9)<br>• I don't get marks or letter grades on my report cards (parallel wording for parent report) | Y / P | • Think about the grades you got on your last report card. Which of the choices below best describes these grades? If you get a different kind of marks, like from 0 to 100 or other kinds of letter grades, please choose the answer that comes closest to those marks or grades. If you don't get marks or letter grades, just choose the last box in the list to show this. | Average of standardized responses ($M$ = 0, $SD$ = 1) on the youth- and parent-report measures | NA |
| **College exploration** | Herrera et al. (2011)<br><br>Single item asking youth if they engaged in the activity described during the past 12 months at baseline and past 2½ years at follow-up<br><br>Response options:<br>• No (0)<br>• Yes (1) | Y | • Visited a college or university with an adult (other than a family member) where you were able to learn about college life or what subjects you might be interested in studying | Response on the single item | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes: Protective Factors for Delinquent/Criminal Behavior:*** *Academic Engagement & Performance[d] (continued)* | | | | | |
| **Career exploration** | Herrera et al. (2011)<br><br>2 items asking youth if they engaged in the activity described during the past 12 months at baseline and past 2½ years at follow-up<br><br>Response options:<br>• No<br>• Yes | Y | • Worked at a job for pay<br>• Visited a workplace to get to know more about what it would be like to work there or in a certain kind of job (do not include a family member's workplace) | 0 = Response of no on both items<br><br>1 = Response of yes on either item | NA |
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Mental Health* | | | | | |
| **Suicidal ideation** | *Youth Risk Behavior Survey (Youth Risk Behavior Surveillance System [YRBSS], 2021),* with adapted response options<br><br>Response options (both of the first two options could be selected if applicable):<br>• Sometime during the past 4 years (1)<br>• Sometime longer than 4 years ago (0)<br>• I've NEVER seriously considered attempting suicide (0) | Y | • Sometimes people feel so depressed about the future that they may consider attempting suicide, that is, taking some action to end their own life. When, if ever, have you seriously considered attempting suicide? | Response on the single item | NA |
| **Suicide attempt** | *Youth Risk Behavior Survey (YRBSS, 2021),* with adapted response options<br><br>Single item asking about suicide attempts in the past 4 years and prior<br><br>Response options (both of the first two options could be selected if applicable):<br>• Sometime during the past 4 years (1)<br>• Sometime longer than 4 years ago (0)<br>• I've NEVER actually attempted suicide (0) | Y | • When, if ever, have you actually attempted suicide? | Response on the single item | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Mental Health (continued)* | | | | | |
| **Substance abuse** | Adapted from the *Difficulties* subscale of the *Substances and Choices Scale* (Christie et al., 2007)<br><br>10 items asking youth about substance-related behaviors and experiences in the past 6 months; asked only of youth who reported using any substance other than tobacco/vaping in the previous 6 months<br><br>Response options:<br>• Not true (1)<br>• Somewhat true (2)<br>• Certainly true (3) | Y | • I took alcohol or drugs when I was alone.<br>• My alcohol or drug use has kept me from getting important things done.<br>• I've wanted to cut down on the amount of alcohol or drugs that I am using. | Average of items; score of 1 for those reporting no substance use in past 6 months | --/.83 |
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Education and Career* | | | | | |
| **Discontinuing high school before graduation** | Developed for this study<br><br>Single item<br><br>Response options:<br>• No, I am still attending middle or high school<br>• No, but I am working on my GED<br>• No, but I received my GED<br>• Yes, I graduated from high school<br>• I am no longer attending high school, and I am not currently working on my GED | Y / P | • Have you graduated from high school? | 0 = Still attending middle or high school or graduated from high school OR graduated from high school<br><br>1 = Any other response[e] | NA |
| **Engagement in post-secondary education, training, or employment** | Developed for this study<br><br>Single item; asked only of/about youth who were not in middle school or high school<br><br>11 response options (multiple options could be selected if applicable) including:<br>• Attended a 4-year college or university<br>• Attended a 2-year community college<br>• Participated in a job training or career program (including attending a program or school to get certified or licensed to do a particular type of job)<br>• Had a full-time job<br>• Had an internship<br>• Enlisted in the military | Y / P | • Which of the following have you done at any point since leaving high school? | 0 = neither parent nor youth selected any of these listed options<br><br>1 = parent or youth selected any of these listed options[e] | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Education and Career (continued)* | | | | | |
| **College attendance** | Developed for this study<br><br>Single item; asked only of/about youth who were not in middle school or high school<br><br>11 response options (multiple options could be selected if applicable) including:<br>• Attended a 4-year college or university<br>• Attended a 2-year community college | Y / P | • Which of the following have you done at any point since leaving high school? | 0 = did not select either of the two listed options<br><br>1 = selected one of the two listed options[e] | NA |
| **Occupational identity** | *Social Capital Assessment + Learning for Equity (SCALE) Measures* (Search Institute, 2021), with modified response options<br><br>5 items asking about the degree to which the youth has a clear sense of their occupational identity<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I have a clear sense about what careers (or future jobs) I am interested in pursuing.<br>• I know what steps to take to reach my career (or future job) goals.<br>• I see how what I'm doing in school could be useful for careers (or future jobs) I'm interested in. | Average across items | --/.82 |
| **Special interest related to future job/ career** | Developed for this study<br><br>Single item; asked only of youth who responded that they had a special interest or hobby<br><br>Response options:<br>• No<br>• Yes, sort of<br>• Yes, very much<br>• I'm not sure what kind of job or career I want to have when I'm older | Y | • Is your special interest or hobby related to the kind of job or career you want to have when you are older? | 0 = No; Not sure; OR indicated did not have a special interest or hobby<br><br>1 = Yes, sort of or Yes, very much | NA |
| **Specific job/ career goal** | Adapted from Resnjanskij et al. (2021)<br><br>Single item<br><br>Response options:<br>• No (0)<br>• Yes (1) | Y | • Do you have any education or career goals that you would like to achieve (for example, to have a certain job, join the military, or go to college or some other kind of school after high school)? | Response on the single item | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Education and Career (continued)* | | | | | |
| **Availability of extra-familial person to discuss future** | Adapted from Resnjanskij et al. (2021)<br><br>Single item<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I have someone outside of my family who I can talk to about my future. | Response on the single item | NA |
| **Network support for education/ career goals** | *Social Capital Assessment + Learning for Equity (SCALE) Measures* (Search Institute, 2021), with modified response options<br><br>5 items about the extent to which youth have people in their life who help with their career or education goals; asked only of youth who report having an education or career goal<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I have people in my network that I can trust to help me with my education or career goals.<br>• I have people in my network who I am close to that help me with my education or career goals.<br>• I have people in my network that introduce me to others who can help me with my education or career goals. | Average across items | --/.87 |
| **Progress toward education/ career goals** | *Social Capital Assessment + Learning for Equity (SCALE) Measures* (Search Institute, 2021), with modified response options<br><br>4 items; asked only of youth who reported having an education or career goal<br><br>Response options:<br>• Not at all true (1)<br>• A little true (2)<br>• Somewhat true (3)<br>• Mostly true (4)<br>• Completely true (5) | Y | • I am making progress toward my education or career goals.<br>• I have taken important steps to reach my education or career goals.<br>• I have made a plan to reach my education or career goals. | Average across items | --/.88 |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Risky and Problem Behavior/Health* | | | | | |
| **Perpetrating dating violence** | Adapted from Miller et al., 2020 and The National Longitudinal Study of Adolescent to Adult Health *(Add Health)*<br><br>7 items asking about behavior exhibited during or after a dating relationship; asked only of youth who reported ever having been in a dating relationship<br><br>Response options (both of the last two options could be selected if applicable):<br>• I've NEVER done this<br>• I've done this more than 4 years ago<br>• I've done this in the past 4 years | Y | • Yelled at a person I was dating/had dated or called them names, like 'ugly' or 'stupid'<br>• Slapped, hit, shoved, or kicked someone I was dating/had dated<br>• Showed friends or posted pictures of someone I was dating/had dated that were private or personal | Number of behaviors reported engaging in during the past 4 years (scored only for those youth who reported having been in a dating relationship during the past 4 years) | NA |
| **Sexual intercourse without a condom** | *Youth Risk Behavior Survey* (YRBSS, 2021)<br><br>Single item; asked only of youth who reported ever having had sexual intercourse<br><br>Response options:<br>• No (0)<br>• Yes (1)<br>• I've never had sexual intercourse (0) | Y | • The last time you had sexual intercourse, did you or your partner use a condom? | Response on the single item (scored only for those youth who reported having had sexual intercourse during the past 4 years) | NA |
| **Pregnancy** | *Youth Risk Behavior Survey* (YRBSS, 2021), with adapted response options<br><br>Single item; asked only of youth who reported ever having had sexual intercourse with an opposite-sex partner<br><br>Response options:<br>• Sometime during the past 4 years (1)<br>• Sometime longer than 4 years ago (0)<br>• I've never been pregnant or gotten someone pregnant (0) | Y | • When, if ever, have you been pregnant or gotten someone pregnant? | Response on the single item (scored only for those youth who reported having had sexual intercourse during the past 4 years) | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Risky and Problem Behavior/Health (continued)* | | | | | |
| **Sexually transmitted infection** | Adapted from the *Youth Risk Behavior Survey* (YRBSS, 2021)<br><br>Single item; asked only of youth who reported ever having had sexual intercourse<br><br>Response options:<br>• Sometime during the past 4 years (1)<br>• Sometime longer than 4 years ago (0)<br>• I've never been told that I had an STI (0) | Y | • When have you EVER been told by a doctor or nurse that you had a Sexually Transmitted Infection (STI), such as chlamydia, trichomonas (trich), syphilis, gonorrhea (clap), genital herpes, genital warts (HPV), or pubic lice (crabs)? | Response on the single item (scored only for those youth who reported having had sexual intercourse during the past 4 years) | NA |
| ***Secondary Hypothesized Outcomes Assessed Only at 4-Year Follow-up:*** *Transition to Adult Independence* | | | | | |
| **Stable living situation** | Developed for this study<br><br>Single item asking about the consistency of youth's current housing<br><br>Response options:<br>• With one or both of my parents<br>• In military or college housing<br>• Different places from week-to-week or month-to-month (e.g., hotel, motel, "couch surfing" at friends' or family's homes)<br>• One place, on my own or with other family or friends (not one or both of my parents) | Y / P | • Where are you living now? | 0 = "Different places…"<br><br>1 = Response other than "Different places…"[e] | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Measures Used Only as Covariates*** | | | | | |
| **Stopped by police** | Adapted from the National Longitudinal Study of Adolescent to Adult Health Wave III (Add Health; Bearman et al.,1997)<br><br>Single item, administered at baseline<br><br>Response options:<br>• This has never happened to me. (0)<br>• This has happened to me 1 or 2 times. (1)<br>• This happened to me 3 or more times. (1) | Y / P | • Have you ever been stopped by the police for questioning about your activities (do not include any times when you were also taken in or arrested by the police)? If you drive, don't count minor traffic violations. | Responses on the single item for each reporter considered separately | NA |
| **Receipt of formal mentoring** | Herrera et al. (2013)<br><br>Single item asking about youth's involvement in a formal mentoring program in the past 12 months at baseline<br><br>Response options (both of the first two options could be selected if applicable):<br>• A program in which he/she had an assigned mentor who met with just him/her, one-on-one<br>• A program in which he/she had an assigned mentor who met with him/her and other kids in a group<br>• This child has not been part of either of these types of programs in the past 12 months. | P | • In the past 12 months, has this child been part of the following types of mentoring programs? | 0 = Youth not part of a one-on-one or group mentoring program in past year<br><br>1 = Youth was in a one-on-one or group mentoring program in past year | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Measures Used Only as Covariates*** *(continued)* | | | | | |
| **Very important nonparental adult** | Herrera et al. (2013)<br><br>Single item, administered at baseline<br><br>Response options for those reporting a Very Important Adult (multiple responses could be selected if applicable):<br>• My parent or other person who raises me<br>• Another adult relative (grandparent, aunt or uncle, etc.)<br>• Teacher, guidance counselor, or other adult at school<br>• Coach or activity leader outside of school<br>• Adult friend, neighbor, friend of your family, or friend's parent<br>• A mentor through this program<br>• A mentor through a different program than this one<br>• If you have a Very Important Adult that is not listed here, please check this box and write in the blank who that person is to you—not the person's name | Y | • A Very Important Adult is a person who is ALL of these things:<br>  • someone who spends a lot of time with you;<br>  • someone you can really count on;<br>  • someone who gets you to do your best; AND<br>  • someone who cares a lot about what happens to you.<br>• Please answer No or Yes to show whether you happen to have a Very Important Adult in your life right now. Then, if you do have one, please check the box next to who that person is. If you have more than one Very Important Adult, you may check more than one box. | 0 = Youth did not report a Very Important Adult or reported only parent/ caregiver as a Very Important Adult<br><br>1 = Youth reported one or more Very Important Adults other than parent/ caregiver | NA |
| **Substance use** | Adapted from Herrera et al. (2013)<br><br>6 items asking about youth's use of different substances during the past 12 months at baseline<br><br>Response options:<br>• I have NEVER done this in my entire life<br>• I have done this but NOT in the last year<br>• I have done this 1-2 times in the last year<br>• I have done this 3 or more times in the last year | Y | • Drink alcohol to the point of getting drunk<br>• Use or try out marijuana (pot)<br>• Use or try out other drugs (such as inhalants, cocaine, LSD, heroin, steroids), not including medicine | 0 = No substance use<br><br>1 = Use of one or more substances at any point in time | NA |

| Construct | Measure(s)[a] | Reporter(s)[b] | Sample Item(s)[c] | Scoring | Reliability (T1/T3) |
|---|---|---|---|---|---|
| ***Measures Used Only as Covariates*** *(continued)* | | | | | |
| **Youth risk exposure** | Herrera et al. (2013)<br><br>29 items; administered at baseline; asking if youth has had the experience indicated (domains include economic disadvantage, family risk/stress, peer difficulties, behavioral, academic, and mental health)<br><br>Response options:<br>• No<br>• Yes | P | • In the last 12 months, there have been times when it was hard for the family this child lives with to pay the bills.<br>• There have been many fights or arguments in this child's home in the last 12 months.<br>• This child has been picked on or bullied often in the last 12 months.<br>• This child has a physical, emotional or mental condition that makes it difficult for him/her to do schoolwork at grade level (for example, ADHD, ADD or a learning disability).<br>• This child spends time with gang members.<br>• A professional has said that this child has a mental health issue or he/she is currently under the care of a mental health care provider (a therapist or counselor). | Number of items with yes responses | NA |

Notes. (R) designates an item that was reverse-scored.

[a] In cases where both youth and parent were reporters, only response options for youth items are provided unless response options differed significantly between the two.

[b] Y=Youth; P=Parent.

[c] In cases where both youth and parent were reporters, only youth items are provided as examples unless the content of the items differed significantly between the two.

[d] Unless otherwise indicated, parallel forms of measures included in this section of the table were administered at both baseline and 4-year follow-up.

[e] Conflicting youth and parent responses were treated as missing.

# the youth relationships study

Little Levi & Big Yasin