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Impact of Brief Intervention Services on Drug-Using Truant Youths' Self-Reported Delinquency and Arrest Charges: A Longitudinal Study

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Abstract

The issue of delinquency among truant youth is insufficiently documented in the literature. There is a need to elucidate this issue, and assess the efficacy of interventions to reduce this problem behavior. The present, NIDA-funded study addressed this gap by examining the impact of a Brief Intervention (BI), originally designed to address youth substance use, on their delinquent behavior over an 18-month follow-up period (for self-reported delinquency) and a 24-month follow-up period (for official record delinquency). A number of significant BI intervention effects with sizable effect sizes were found, as well as a number of marginally significant BI effects. In particular, significant reductions in arrest charges at 24-month follow-up for youth receiving BI services compared to controls were among the key findings of this study. Service delivery implications and directions for future analyses are discussed.

Introduction

While trends in juvenile arrest rates appear to be declining in recent years (U.S. Department of Justice, 2011), school truancy remains a serious national problem. School truancy generally refers to unauthorized, unexcused absence from school, with the definition varying slightly across jurisdictions. Unlike juvenile arrest rates, regularly collected national statistics on truancy rates do not exist (Education Commission of the States, 2007). Estimates from self-report data and school districts, however, suggest the prevalence of truancy is approximately 10 percent in the U.S, with higher rates in urban areas. For example, recent statistics on truancy in Los Angeles County and Colorado indicate high rates of unexcused absences,

with the highest rates found in urban high schools (Dropout Nation, 2010). During the 2008–2009 school year in Los Angeles County, two-hundred-thousand students, representing 16 percent of all students attending schools in the county, were truant. Fifty-seven of the county's 88 school districts experienced truancy rates greater than 10 percent. Similarly, Colorado truancy data for the 2010–2011 school year (Colorado Department of Education, 2011) indicated truancy rates above 10 percent for many schools, including several Denver area schools. Comparable statistics pointing to the high level of truancy problems can be found in other jurisdictions (Garry, 2001).

Truancy is a particularly deserving topic study because it appears to be an early sign for a trajectory toward more negative behaviors (National Center for School Engagement, 2006). As Garry (2001) observed, truancy may be the beginning of a lifetime of problems among students who routinely skip school. Truancy has been shown to be related to poor standardized test performance (Caldas, 1993; Lamdin, 1996), high school dropout (Bridgeland, Dilulio, & Morison, 2006), a stressed family life (Baker, Sigmon, & Nugent, 2001; Kearney & Silverman, 1995), emotional and psychological functioning difficulties (Diebolt & Herlache, 1991; Egger, Costello, & Angold, 2003; Kearney & Silverman, 1995), substance use (Dembo et al., 2014; Soldz, Huyser & Dorsey, 2003), and juvenile delinquency, including contact with the justice system (Henry & Huizinga, 2007; Loeber & Farrington, 2000; Puzzanchera, Stahl, Finnegan, Tierney, & Snyder, 2003; also see Henry, Thornberry, & Huizinga, 2009) and progression to adult criminality (Schroeder, Chaisson, & Pogue, 2004). Related research has also documented a link between truancy and subsequent problems with employment, adult crime, and incarceration (Catalano, Hawkins, Wells, & Miller, 1991; Dryfoos, 1990; Robins & Ratcliff, 1978; Snyder & Sickmund, 1995).

Unfortunately, the association between truancy and other problem behaviors such as delinquency is often ignored by services addressing truancy. That is, truant youth are often treated as management and disciplinary problems (DeKalb, 1999; Diebolt & Herlache, 1991; Dougherty, 1999) that are isolated from other problem behaviors. Truancy programs typically focus on identifying, locating, and transitioning truant youth back into their respective schools without much or any attention on identifying and referring services for the underlying psycho-social problems causing truant behavior (Dembo & Gullledge, 2009). Responding to truant youth with counseling or therapy provides an excellent opportunity for early intervention to reduce the likelihood these truant youth will continue in a pattern of problem behavior that may eventually move them into contact with the juvenile justice system.

Although the need for effective intervention programs for truant youth is clear, most communities lack sufficient screening, in-depth assessment, and treatment resources to respond effectively to the needs of truant youth. As a result, too many truant youth fall through the cracks of the service delivery system. None of the expected benefits of intervention services can occur unless youths become involved, and participate in them. Service delivery challenges are particularly great among economically stressed families who lack the resources to pay for care or to travel to service agencies, have not been effectively served by traditional service delivery systems, are distrustful of formal support systems, or are dependent on overburdened and under-resourced public services. For too many of these

overwhelmed families, contact with the juvenile justice system may present the only realistic opportunity for troubled youths to receive needed care.

Truant youth represent a critical group deserving more research and involvement in intervention services. There is a critical, continuing need to evaluate the effect of intervention services on improving psycho-social outcomes among truant youth and reducing the likelihood of justice system contact. Reducing justice system contact and costs is a continuing, major, current policy concern (Dembo & Walters, 2003). The present study examines the impact of such an intervention service for truant youth.

The purpose of the present study is to examine the effectiveness of a National Institute on Drug Abuse (NIDA)-funded Brief Intervention (BI) project involving truant youth to reduce contact with the criminal justice system. Specifically, the BI project was a prospective, longitudinal, intervention study of baseline and follow-up data collected on 300 truant youth and their parents/guardians in an urban area in a southeast part of the U.S. The project, described in greater detail below, involved random assignment of youth to three service conditions to assess the impact of two BI strategies (youth and youth-parent) in comparison to standard services (control condition) on youths' psycho-social functioning, including involvement in future self-reported delinquency and official records of delinquency/crime. The present report describes, among other things, the impact of BI services on the youths' self-reported delinquency over an 18-month follow-up period and official arrest charges over a 24-month follow-up period. Two hypotheses were tested in this study. First, relating to the efficacy of the two BI strategies post-program drug use and related behaviors for truant youth, it was hypothesized truant youths in the two BI conditions will exhibit lower post-treatment delinquency/crime than participants in the control group. Second, relating to the relative effects of parental involvement in the BI on post-treatment drug use and related behaviors, it was hypothesized truant youths in the BI youth-parent condition will exhibit lower post-treatment delinquency than participants in the BI youth only condition. Following a discussion of the results, implications for intervention services are considered.

Method

Participants and Procedures

The main place of recruitment into the BI project occurred at a south Florida Juvenile Assessment Center, or Truancy Intake Center (TIC). The truancy center is a school-based center with a classroom-like setting where youths who have been picked up by law enforcement for truancy are held during school hours until their parents retrieve them at the end of the school day. Additionally, social workers or guidance counselors from area schools made referrals to the Brief Intervention project. A second place of recruitment into the BI project was at a community diversion program, where case managers referred youth with a current truancy record who met project criteria for BI services to project staff for enrollment. Eligible youth met the following criteria: (1) aged 11 to 17, (2) had an official record of delinquency of two or fewer misdemeanor arrests, (3) had some indication of alcohol or other drug use, as determined by a screening instrument (the Personal Experience Screening Questionnaire [PESQ], Winters, 1992) or as reported by a county school district social worker located at the TIC, and (4) lived within a 25-mile radius of the TIC.

Procedures for this study were approved and monitored for ethics by the university's Institutional Review Board (IRB). At both enrollment locations, project enrollment proceeded as follows. First, a project staff member met with referred youth and his/her parent/guardian and provided an overview of the project and its services. Second, potential participants were informed project services were provided free of charge and in-home, and that participation was voluntary. Third, for interested parents and youth, an in-home meeting was scheduled to discuss the project further, answer any questions, complete consent and assent processes, and conduct separate baseline interviews with the youth and his/her parent/guardian. Finally, following completion of the baseline interviews, the youth and parent/guardian were randomly assigned to one of three project service conditions: (1) the Standard Truancy Services (STS) plus a referral service overlay involving three in-home visits by a project staff member, (2) two BI sessions with the youth (BI-Y), or (3) two BI sessions with the youth and one BI session with the parent (BI-YP). The BI sessions were based on the work of Winters and Leitten (2007), and focused on promoting abstinence and preventing relapse among drug using adolescents through the development of adaptive beliefs and problem-solving skills.

Of the 753 TIC and diversion eligible truancy youth who were eligible for enrollment, 59.9% of families agreed to an initial in-home meeting. Of families who agreed to an initial in-home meeting, 66.5% completed the baseline assessment resulting in a sample of 300 youth. Comparisons of participating and non-participating youth with regard to gender, race, and ethnicity found no statistically significant differences between the two groups. However, older- age youth were more likely to participate than younger-aged youth (participants: mean age = 14.78, SD = 1.29; non-participants: mean age = 14.48, SD = 1.25, $t(751) = 3.24$, $p < .001$).

Baseline interviews were completed with 300 youth and their parents/guardians between March 6, 2007 and June 21, 2012. Each youth and parent/guardian was paid \$15 for completing the interview. The baseline interviews for parents/guardians averaged 30 minutes; the youth interviews averaged one hour. The interviews were conducted by trained research staff, following local IRB approved procedures.

Completion of follow-up interviews depended on when youths entered the project: 3-month ($n = 282$), 6-month ($n = 281$), 12-month ($n = 245$), and 18-month ($n = 215$) follow-up interviews. The 3-month follow-up interviews followed 90 days from the date of the youth's last participation in project services (i.e., the last intervention or Standard Truancy Services session), and the subsequent 6-, 12-, and 18-month follow-up interviews followed 90, 180, and 180 days after the 3-month follow-up interview, respectively. Youths who began participation early in the project completed all four follow-up interviews, whereas youths who enrolled most recently were only eligible for 3-month and 6-month follow-up interviews. Overall completion rates of 94.0%, 93.6%, 92.1%, and 88.5% were achieved for the 3-month, 6-month, 12-month, and 18-month follow-up interviews, respectively. Of the completed follow-up interviews, 95.4% of the 3-month, 95.0% of the 6-month, 96.3% of the 12-month, and 99.1% of the 18-month interviews were completed within 60 days of the scheduled interview date. Just as in the baseline interviews, each youth and parent/guardian was paid \$15.00 for each follow-up interview. The majority of youths were interviewed in

their home at each follow-up time point, while a very small number of youth were interviewed in secure program settings, such as residential commitment programs, county jails, or a juvenile detention center (less than 5%).

Overview of the Brief Intervention

Following is a description of the BI, to give the reader an understanding of the conceptual foundation and content of the intervention. The primary goals of the BI therapist sessions were to promote abstinence and prevent relapse among drug-using adolescents by promoting or strengthening coping skills that have been shown to help individuals resist temptations for drug use and to use and strengthen social behaviors that are likely to interfere with drug seeking and using behaviors. Specific coping skill program elements are based on Rational-Emotive Therapy (RET), which strives to alter beliefs that encourage and promote the use of effective coping-skills, and Problem-Solving Therapy (PST), which focuses on developing certain coping skills. These BI components dovetail with the view that drug involvement is learned behavior that develops within a context of personal, environmental, and social factors (Catalano et al., 1991; Clark & Winters, 2002). Developed over the course of an adolescent's learning history and prior experience with drugs, coping skill deficits are viewed as primary determinants of drug use. Thus, the goal of the BI sessions are to promote positive coping skills (Winters & Leitten, 2007).

The BI sessions were conducted by trained BI counselors. First, BI counselors received training on the treatment manual and personal training from a skilled trainer on all intervention components. Next, the BI counselors provided BI services to several practice cases. Finally, a review and approval of these training sessions was conducted by the BI skilled trainer, with a focus on developing therapist adherence (aided by a rating checklist) and competence (e.g., perceived warmth and interest in the client, presentation clarity, ability to elicit client feedback), before the BI counselor was allowed to receive project families and administer BI sessions. Each BI session was approximately 75 minutes in duration, and the sessions occurred about a week apart. With youth and parent/guardian permission, the BI sessions were tape recorded for fidelity/adherence assessment.

Two BI sessions were conducted for the youths only. The first session focused on discussing information about the youth's substance use and related consequences, the level of willingness to change, examining the causes and benefits of change, and discussing what goals for change the youth would like to select and pursue. Youth were allowed to pursue goals of drug abstinence or reduction in drug use. In the second youth-only session, the youth's progress with the previously agreed upon goals in session one were reviewed, risk situations associated with difficulty in achieving these goals, if any, were identified, strategies to overcome barriers toward goal achievement were discussed, it was reviewed where the youth was in the state of change process, and either continuation or advancement of goals were negotiated.

If the participating family was randomly assigned to the BI-YP group, a third session was conducted with the parent(s)/guardian(s) only. This parent session was informed by an integrated behavioral and family therapy approach. The parent session addressed the following: the youth's substance use issues, parent attitudes and behaviors regarding this

use, parent monitoring and supervision to promote progress towards their child's intervention goals, and parent communication skills to enhance youth-parent connectedness.

Standard truancy services—As mentioned above, one-third of the participating youths and their families were assigned to STS as a control group for the intervention study. The standard truancy services were provided by the school district in the TIC, as their normal services offered to youths detained for truancy. In addition to the normal truancy services provided by the school district, truant youths and their parents/guardians had access to a countywide agency and service resource file to assist them in connecting with needed services/programs. Developed over a period of several years, this resource guide contains hundreds of agency listings. Informed by the concept of equipoise (Freedman, 1987), this project sought to provide meaningful services to individuals in each condition. Hence, this referral assistance provided truant youth and their families with an additional resource that is not routinely available to them.

To control for service exposure, STS youths/families received three one-hour-long visits by a project staff member. On each contact occasion, the staff member carried with her/him a copy of the service resource guide. In addition to a general inquiry on events since the last session, she or he asked the youth and his or her parents/guardians: (1) if they used any services and (2) if they had any additional service needs, for which an appropriate referral was made.

Measures

Socio-demographic variables—Several socio-demographic characteristics were measured for the youth: age in years; gender (0 = male, 1 = female); race (1 = African American, 0 = other); ethnicity (1 = Hispanic, 0 = other); and family structure (1 = youth lives with mother alone, 0 = youth lives in other arrangement). In addition, family annual income level was an interval level measure, where 1 = < \$5,000, 2 = \$5,001 to \$10,000, 3 = \$10,001 to \$25,000, 4 = \$25,001 to \$40,000, 5 = \$40,001 to \$75,000, 6 = > \$75,000.

Family trauma and stressful events—The youths' parents/guardians were asked to indicate if the youth or their family ever experienced any of eleven different stressful/traumatic events. Specifically, parents were questioned on the following: accidental injury requiring hospitalization, serious illness, death, divorce, eviction, unemployment of a parent, legal problems resulting in jail or detention, victimization of violence, and any other (unspecified) traumatic event. An additive summary measure of these eleven traumatic events experienced by family and youth was created, where 1 = ever and 0 = never, such that higher scores indicated more family trauma.

Sexual risk behavior—Youths' involvement in sexual risk behavior was measured using the POSIT HIV/STD Risk Behavior instrument. The 11-item measure was developed by the NOVA Research Company (Young & Rahdert, 2000). The instrument has been pilot tested and found to have very good psychometric properties (e.g., internal consistency = 0.80, one-week test-retest reliability = 0.90; concurrent validity with the Sexual Risk Questionnaire

scores: $r = 0.80$). In the current study, the internal consistency (Cronbach's α) of the 11 items was 0.73.

Lack of condom use and number of sexual partners are also widely used sexual risk behavior measures in related research (Brook, Balka, Abernathy, & Hamburg, 1994; Bryan, Ray, & Cooper, 2007; Cooper, 2002; Elkington, Bauermeister, Brackis-Cott, Dolezal, & Mellins, 2009; Goldstein, Barnett, Pedlow, & Murphy, 2007; Komro, Tobler, Maldonado-Molina, & Perry, 2010; Morris, Baker, Valentine, & Pennisi, 1998; Morris, Harrison, Knox, Tromanhauser, & Marquis, 1995; Murphy, Brecht, Herbeck, & Huang, 2009; Wetherill & Fromme, 2007; also see: Warren et al., 1998; de Guzman & Bosch, 2007). Hence, the present study developed a summary measure involving the following four indicators reflecting the youths' involvement in sexual risk behaviors at each time point: (1) had sexual intercourse, (2) had sexual intercourse without using a condom, (3) had sex with two or more people, and (4) had a sexually transmitted disease (STD). A summary measure for the number of sexual risk behaviors was created based on adding affirmative responses to the aforementioned four items. Since there was low endorsement for the STD item, the measure was truncated so that scores of three and four were coded as a score of three in the variable.

Marijuana use—Marijuana use was measured through self-report questions on the Adolescent Diagnostic Interview (ADI, Winters & Henly, 1993) and results of urine tests, both of which were administered at baseline interview. The ADI was designed to be delivered within a highly structured and standardized format (e.g., most questions are yes/no). Many items in the instrument reflected *DSM-IV* criteria to measure substance use disorders and related areas of functioning, and *DSM* guidelines provided the basis for scoring rules. Reliability and validity studies, involving over 1,000 drug clinic adolescents for the ADI, provide a wide range of psychometric evidence pertaining to inter-rater agreement, test-retest reliability, convergent validity (with clinical diagnoses), self-report measures, and treatment referral recommendations (Winters & Henly, 1993). The ADI questions probed the use of marijuana as: never, less than five times, or five or more times.

Urine specimens were also collected to assess recent drug use. The use of four substances was probed using the Onsite CupKit® urine screen procedure (positive threshold levels are noted in parentheses): (1) methamphetamines (1000 nanograms per milliliter [ng/ml] of urine), (2) opiates (300 ng/ml of urine), (3) cocaine (300 ng/ml of urine), and (4) marijuana (THC) (50 ng/ml of urine). No urine testing was done for alcohol use. Following are the surveillance windows for the four drugs: methamphetamines and opiates = 48 hours; cocaine = 72 hours; marijuana: infrequent users = 5 days, heavy users = 10 days, and chronic users or users with high body fat = 30 days.

Urine analysis (UA) results and self-report results indicated high incidence rates of marijuana use for the youth. Few to none of the youths' self-reported use of substances other than marijuana and alcohol, and urine tests confirmed little to no use of substances other than marijuana (see Appendix for prevalence of use by substance), but could not test for alcohol use. Consequently, a combined measure of self-reported marijuana use and UA test results for marijuana use at baseline was used in the present study. The marijuana use measure was coded as four ordinal categories: (1) marijuana use denied and UA test for

marijuana negative or missing; (2) UA test missing or negative for marijuana, but youth self-reported marijuana use one to four times; (3) UA test missing or negative, but youth self-reported marijuana use five or more times; and (4) UA test positive for marijuana.

Self-reported delinquent behavior—Based on the work of Elliott, Ageton, Huizinga, Knowles, and Canter (1983), youths were asked to self-report their involvement in a variety of personal, property and drug-related criminal acts. Specifically, youths were asked to report how many times they engaged in each of 23 delinquent behaviors during the year prior to the baseline interview and the time between subsequent follow-up interviews. As a validity check, youths who reported committing an act 10 or more times were also asked to indicate how often they participated in this behavior (once a month, once every two or three weeks, once a week, two to three times a week, once a day, or two to three times a day).

Similar to Elliott et al. (1983), five summary indices of delinquent involvement were initially created: general theft (e.g., petit theft, vehicle theft/joyriding, burglary); crimes against persons (e.g., aggravated assault, fighting, robbery); index crimes (similar to Uniform Crime Report Index Part I); drug sales; and total delinquency (i.e., the sum of the 23 delinquent activities). As indicated in the Appendix, the youth reported relatively high rates for each of the indicators of delinquency. For example, high prevalence rates were reported for the year prior to baseline interview for index offenses (50%), crimes against persons (75%), general theft (75%), drug sales (29%), and total delinquency (94%). Further, from 1% to 15% of the youths reported engaging in the offenses (represented by the various indices) 100 times or more; some reported many hundreds of offenses. Since the follow-up periods has shorter time frames of observation than the baseline interview, youths tended to report lower prevalence rates for the follow-up periods (see Appendix).

The frequency of delinquency for each of the scales across the five time points were very large, ranging from no activity to hundreds (and in few cases thousands). The distribution of the raw total delinquency index had high skewness and kurtosis. Therefore, the index was log transformed to improve normality in the distribution of the data, base 10 with 1 assigned to zero values before the log transformation. Skewness and kurtosis of the delinquency indicator were improved by the log transformation (see Appendix). The five log transformed, delinquency indices were highly correlated (baseline mean correlation = .603; 3-month follow-up mean correlation = .618; 6-month follow-up mean correlation = .629; 12-month follow-up mean correlation = .620; 18-month follow-up = .620). Hence, the total delinquency index was utilized in subsequent analyses.

Official recidivism—Considerable discussion has been devoted to reviewing the strengths and weaknesses of measuring recidivism (see, for example: Spohn & Holleran, 2002). A major issue in this discussion centers around the lack of complete information on “every crime and who committed it” (Maltz, 1984, p. 22). Although informed judgments differ on an appropriate operational definition of recidivism, Maltz (1984) and Blumstein and Cohen (1979) argue persuasively that data on arrests are a better measure of recidivism than convictions. As Blumstein and Cohen (1979, p. 565) assert, “errors of commission associated with truly false arrests are ...far less serious than errors of omission that would occur if the more stringent standard of conviction were” [used]. Hence, our operational

definition of recidivism was based on the youths' follow-up period arrest data, where five follow-up periods over a two-year period were defined following the youths' date of last project service (i.e., BI session or STS meeting): (1) 1–3 months, (2) 4–6 months, (3) 7–12 months, (4) 13–18 months, and (5) 19–24 months.

Since youths can be arrested on multiple charges, official state arrest information was obtained on the number of arrests and the number of arrest charges during the 24-month follow-up period. In addition, adult arrest information was obtained from the local jail system for all youths, and from records from the Florida Department of Law Enforcement for youths who turned 18 years old or older during the follow-up period. Summary scores for total arrests and total arrest charges were created for each of the five recidivism follow-up periods.

One-sample Kolmogorov-Smirnov tests indicated the distributions of the number of arrest charges at each follow-up time point were not consistent with a normal, uniform, Poisson or Exponential distribution. Further, each distribution had very high skewness and kurtosis values. Hence, each distribution was log transformed to the base 10, with -1 assigned to no charges. The log transformations reduced skewness and kurtosis values below levels indicating severe non-normality (e.g., skew > 2 ; kurtosis > 7 , Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Validity of the self-reported delinquency data—Comparison of the youths' self-reported data with official arrest and charges data provide some indication of validity for the delinquency measures. In order to evaluate the validity of the self-reported delinquency data, the self-reported delinquency of youths with an arrested record were compared youths without an arrest record in each follow-up period. Among youths who were not arrested, the percentages of those who reported any delinquency were 55%, 54%, 50%, and 48% in the four follow-up periods, respectively. Among youths who were arrested, the percentages that reported any delinquency were 83%, 76%, 72%, and 52%, respectively. The higher rates of reporting delinquency among arrested youths suggest that most youths reported their delinquency fairly accurately for the 3-month, 6-month, and 12-month follow-up periods, but less accurately for the 18-month follow-up period.

Time in a secure facility—Since time in a secure setting reduces the likelihood of engaging in risk behavior, it is important to control for time in a secure facility in analyses examining delinquency/crime. Hence, utilizing official criminal records for each youth, measures of the number of days he/she spent in a secure facility (e.g., detention center, jail) were created for each follow-up period. Examination of the distributions of each of these variables revealed found them to also be highly skewed, with large skewness and kurtosis values. Accordingly, each distribution was log transformed to the base 10, with a -1 assigned to no days in a secure facility. The log transformations reduced greatly each distribution's skewness and kurtosis values.

Times in a secure setting in follow-up periods were associated with arrest charges, so they were used as covariates in arrest charges analyses. In contrast, the correlation between the number of the days spent in a secure facility (log transformed) during each follow-up period

and the youths' self-reported delinquency (log transformed) during that period was low and non-significant (3-month follow-up, $r = .065$; 6-month follow-up, $r = .145$; 12-month follow-up, $r = .138$; 18-month follow-up, $r = .106$). Therefore, time in a secure facility was not included as a covariate in the self-reported delinquency model.

Results

Descriptive Information on Measures

Most youths in the study were male (63%), and averaged 14.80 years in age ($SD = 1.30$). Thirty-seven percent of the youths were Anglo, 26% were African American, 29% were Hispanic, 1% were Asian, and 7% were from other, mainly multi-ethnic, backgrounds. Relatively few youths (17%) lived with both their biological parents. In contrast, a majority of the youths were living either with their biological mother alone (33%) or with their mother and another adult (35%). Many of the youths tended to live in modest socioeconomic circumstances. For example, only 10% of the caretakers reported an annual income of more than \$75,000, while 39% reported annual incomes of \$25,000 or less. Median family income was \$25,000 to \$40,000.

Results indicated large percentages of the youths/families experienced stressful/traumatic events, with unemployment of parent (50%), divorce of parents (39%), death of a loved one (58%), serious illness (31%), and legal problem resulting in jail or detention (26%) being noteworthy. In addition, 49% of the caretakers reported other traumatic experiences (e.g., youth being placed in foster care, not having a relationship with their father, mom's drug addiction, youth witnessing mom being verbally and physically abused by dad, separation from their mother). Overall, an average of 2.99 ($SD = 1.76$) traumatic events was reported.

The youths reported high rates of lifetime sexual risk behavior at baseline (see Appendix): sexual intercourse (67%), sexual intercourse without using a condom (33%), two or more sexual partners (30%). In addition, 3% of the youths reported ever contracting an STD. Comparison of these results with findings reported in the Centers of Disease Control, 2009 Youth Risk Behavior Surveillance ([YRBS], CDC, 2009) indicates a much higher rate of sexual intercourse among youths in this study, than that reported by youths in the YRBS nationally (47%) or in Florida (48%; 9th grade: 31%; 10th grade: 45%; 11th grade: 57%).

Ninety one percent of the youth reported ever using marijuana, and 75% of 274 youth reporting marijuana use indicated they used the substance five or more times in their lifetime. Urine analysis (UA) results indicated 47% of 300 tested youths were positive for marijuana. Only 3 of 138 (2.2%) of marijuana positive youth denied use.

The STS, BI-Y, and BI-YP groups were compared in regard to each of their baseline background characteristics, separately. No significant differences were found for any of these variables. (Results are available from the corresponding author upon request.)

As reported in Table 1, there were high prevalence rates for self-reported total delinquency, but lower prevalence rates for official arrests and arrest charges. The majority of youths self-reported one of more delinquent behaviors from baseline interview to the 18-month follow-

up interview. Many youths reported engaging in hundreds of the 23 delinquent acts. The majority of youths did not have an official criminal record of any arrest or arrest charges. Generally, slightly more than 10% of the sample were arrested during the duration of the project. Some youths, however, had criminal histories of multiple arrests and arrest charges during the 24-month recidivism period. As can be seen, the prevalence rate for arrests and arrest charges increases during the 3-month, 6-month, and 12-month follow-up periods, then decreases. Within each follow-up period, the correlation between number of arrests and number of arrest charges was .84 or higher. For this reason, and since arrest charges reflect more serious offending, subsequent analyses focused on the recidivism outcome of number of arrest charges.

Strategy of Analysis for Official Arrest Charges Outcome

Auto-regressive lag model regression analyses were completed to examine the relative predictive ability of the variables discussed in the methods section on the number of arrest charges at different follow-up time points, with particular interest in the 24-month follow-up. The regression analyses were run using Mplus version 7.11 (Muthén & Muthén, 1998–2012), a versatile, multivariate statistical modeling program that estimates a variety of models for continuous and categorical observed and latent variables. The analyses involved maximum likelihood regression (MLR) estimation, with standard errors and a chi-square test statistic that are robust to non-normality. Because the time of entry into the study determined the number of follow-up periods, the outcome data that are missing are a consequence of the study design; analyses for the respective follow-up periods have different sample sizes. The Mplus feature providing maximum likelihood estimation of missing values was used to estimate the missing data for the covariates (Muthén & Muthén, 1998–2012).

Given the time ordering of the logarithmically transformed arrest charge variables, an auto-regressive lag model was estimated. As a preliminary analysis step, the basic model depicted in Figure 1 was estimated. As Figure 1 shows, the baseline covariates of age, gender, family income level, who youth lives with, race (African American), ethnicity (Hispanic), family stress/trauma experiences, marijuana use, sexual risk behavior, and total self-reported delinquency were specified to influence the baseline number of arrest charges. Time in a secure facility was specified to influence number of arrest charges in each follow-up period. The arrest charges at each time point were regressed on arrest charges at the preceding time point. Finally, an overall STS vs BI [combined BI-Y and BI-YP] intervention effect was specified on the arrest charges at 3-month, 6-month, 12-month, 18-month, and 24-month follow-up.

Estimation of this model resulted in a poor fit to the data ($\chi^2 = 188.61$, $df = 86$, $p < 0.001$). Inspection of the modification indices indicated model fit could be improved by including covariates at a number of time points. Hence, the basic autoregressive model was refined to incorporate these covariate effects, in each case with good model fit. These covariate additions are reflected in the regression results of the various model comparisons reported in the results section.

Four autoregressive lag models were estimated: Model 1 with an overall intervention effect (BI-Y or BI-YP = 1 vs. STS = 0); Model 2 with comparison of the BI-Y vs. STS conditions;

Model 3 with comparison of the BI-YP vs. STS conditions; and Model 4 with comparison of the BI-YP vs. BI-Y conditions. For these analyses, the directional intervention hypotheses were considered significant at the .05 level by a one-tailed test. (In preliminary analyses of the official record data, linear and quadratic growth models were estimated. Results indicated latent growth models were not consistent with the official record data.)

Official Record Analysis Results

Number of arrests and arrest charges over time—Figure 2 presents the cumulative mean values for untransformed number of arrests and number of arrest charges, for the 3-months, 6-months, 12-months, 18-months, and 24-months post-intervention periods for the STS and combined BI groups. In regard to the number of arrests, there are very small (at 3-month follow-up) or no difference (at 6-month follow-up) between the STS and combined BI groups. At 12-month follow-up, however, STS group youth have a larger, but non-significant mean, cumulative number of arrests (0.56), than the BI groups (0.45). A similar trend occurs for mean, cumulative number of arrest charges at 3-month, 6-month, and 12-month follow-up (STS youths: .17, .29, and .71; BI groups: .12, .35, and .59, respectively). The graphs for both number of arrests and number of arrest charges clearly highlight a trend over time, in which STS youth have more arrests and arrest charges, than BI youth.

Assessment of Model 1 (BI-Y/YP vs. STS)—Table 2 displays the results of the autoregressive log estimation for Model 1. The model fit to the data was good (chi-square = 87.86, $df = 72$, $p = 0.10$; root mean square error of approximation [RMSEA] = 0.033; comparative fit index [CFI] = 0.948; Tucker-Lewis index [TLI] = 0.921; standardized root mean square residual [SRMR] = 0.043). Findings indicated a significant positive effect of age and baseline marijuana use on number of arrest charges at project enrollment. Time in a secure facility during the 3-month follow-up period, being non-Hispanic, and marijuana use at baseline were significantly related to number of arrest charges at 3-month follow-up. Time in a secure facility during the 6-month follow-up period was significantly related to number of arrest charges during this follow-up period. The number of charges during the 3-month follow-up period, time in a secure facility during the 6- and 12-month follow-up periods, age (being younger), gender (being male), and involvement in sexual risk behavior at baseline were significantly related to number of arrest charges during the 12-month follow-up period. Time in a secure facility during the 12- and 18-month follow-up periods were significantly related to number of arrest charges during the 18-month follow-up period. Time in a secure facility during the 18- and 24-month follow-up periods, age (being younger), gender (being male), and being non-Hispanic were significantly related to number of arrest charges during the 24-month follow-up period. Together, the predictor variables explained 37% of the variance in 24-month follow-up arrest charges.

Importantly, a significant intervention effect was found, indicating youth who received BI services had significantly fewer arrest charges at 24-month follow-up, than youth receiving STS (estimate = -0.162 , critical ratio = -2.808 , $p = .003$). The estimated intervention effect size on 24-month follow-up arrest charges was -0.45 (moderate) (following Muthn & Asparouhov, 2002). The effect of the intervention on 3-month arrest charges approached, but did not achieve, statistical significance (estimate = -0.084 , critical ratio = -1.521 , $p = .064$),

indicating that youth who received BI services had somewhat fewer arrest charges at the 3-month follow-up than STS youth. There were no significant intervention effects at other follow-up times.

Assessment of Model 2 (BI-Y vs. STS)—Table 2 also displays the results of the estimation of Model 2. The model fit to the data was good (chi-square = 87.56, $df = 70$, $p = 0.08$; RMSEA = 0.042; CFI = 0.927; TLI = 0.885; SRMR = 0.045). Results indicated a significant positive effect of baseline marijuana use and a significant negative effect of engaging in sexual risk behavior at baseline on number of arrest charges at project enrollment. Time in a secure facility during the 3-month follow-up period, being non-Hispanic, and marijuana use at baseline were significantly related to number of arrest charges at 3-month follow-up. Time in a secure facility during the 6-month follow-up period and involvement in sexual risk behavior at baseline were significantly related to number of arrest charges during the 6-month follow-up period. The number of charges during the 3-month follow-up period, time in a secure facility during the 6- and 12-month follow-up periods, and gender (being male) were significantly related to number of arrest charges during the 12-month follow-up period. Time in a secure facility during the 12- and 18-month follow-up periods and number of arrest charges during the 6-month follow-up period were significantly related to number of arrest charges during the 18-month follow-up period. Time in a secure facility during the 18- and 24-month follow-up periods, age (being younger), and gender (being male) were significantly related to number of arrest charges during the 24-month follow-up period. Together, the predictor variables explained 33% of the variance in 24-month follow-up arrest charges.

Importantly, again, a significant intervention effect was found, indicating youth who received BI-Y services had significantly fewer arrest charges at 24-month follow-up, than youth receiving STS (estimate = -0.234 , critical ratio = -3.711 , $p < .001$). The estimated intervention effect size on arrest charges at 24-month follow-up was -0.63 (large) (Muthén & Asparouhov, 2002). The effect of the intervention on 3-month arrest charges approached, but did not achieve, statistical significance (estimate = -0.076 , critical ratio = -1.355 , $p = .088$), indicating that BI-Y youth had somewhat fewer arrest charges at the 3-month follow-up than STS youth. There were no significant intervention effects at other follow-up times.

Assessment of Model 3 (BI-YP vs. STS)—The results of the estimation of Model 3, comparing BI-YP and STS youth, are also shown in Table 2. The model fit to the data was good (chi-square = 90.79, $df = 72$, $p = 0.07$; RMSEA = 0.044; CFI = 0.931; TLI = 0.894; SRMR = 0.051). Findings indicated a significant positive effect of age and baseline marijuana use on number of arrest charges at project enrollment. Time in a secure facility during the 3-month follow-up period and marijuana use at baseline were significantly related to number of arrest charges at 3-month follow-up. Time in a secure facility during the 6-month follow-up period and number of arrest charges during the 3-month follow-up period were significantly related to number of arrest charges during the 6-month follow-up period. Time in a secure facility during the 6-month ($p = .050$) and 12-month follow-up periods, gender (being male), being African American and involvement in sexual risk behavior at baseline were significantly related to number of arrest charges during the 12-month follow-

up period. Time in a secure facility during the 18-month follow-up period was significantly related to number of arrest charges during the 18-month follow-up period. Time in a secure facility during the 18- and 24-month follow-up periods, age (being younger), gender (being male), and being non-Hispanic were significantly related to number of arrest charges during the 24-month follow-up period. Together, the predictor variables explained 55% of the variance in 24-month follow-up arrest charges.

The effect of the intervention on 24-month arrest charges approached, but did not achieve, statistical significance (estimate = -0.083 , critical ratio = -1.486 , $p = .069$), indicating that BI-YP youth had somewhat fewer arrest charges at the 24-month follow-up than STS youth. There were no significant intervention effects at other follow-up times.

Assessment of Model 4 (BI-YP vs. BI-Y)—The results of the estimation of Model 4, comparing BI-YP and BI-Y youth, are also shown in Table 2. The model fit to the data was very good (chi-square = 76.36 , $df = 72$, $p = 0.34$; RMSEA = 0.021 ; CFI = 0.974 ; TLI = 0.960 ; SRMR = 0.039). Findings indicated a significant positive effect of age on number of arrest charges at project enrollment. Time in a secure facility during the 3-month follow-up period was significantly related to number of arrest charges at 3-month follow-up. Time in a secure facility during the 6-month follow-up period was significantly related to arrest charges during the 6-month follow-up period. Time in a secure facility during the 6- and 12-month follow-up periods, age (being younger), gender (being male), and involvement in sexual risk behavior at baseline were significantly related to number of arrest charges during the 12-month follow-up period. Time in a secure facility during the 18-month follow-up period was significantly related to number of arrest charges during the 18-month follow-up period. Age (being younger) and being non-Hispanic were significantly related to number of arrest charges during the 24-month follow-up period. Together, the predictor variables explained 26% of the variance in 24-month follow-up arrest charges.

The effect of the intervention on 24-month arrest charges was contrary to the hypothesized direction (estimate = $.113$, critical ratio = 2.083 , $p = .981$), indicating that youth who received BI-YP services had more arrest charges at 24-month follow-up, than youth receiving BI-Y services. The extremely non-significant p -value reflects the conclusion that the one-sided hypothesis was emphatically not rejected when the result was in the opposite direction. This comparison would have been significant ($p = .037$) if a two-sided test had been performed. There were no significant interaction effects at any other follow-up time points.

Comparing the results from the BI-Y vs. STS and BI-YP vs. STS analyses in Table 2, it is clear that BI-Y was the intervention condition that was influencing youth reductions in arrest charges at 24-month follow-up.

Strategy of Analysis: Self-Reported Delinquency

Regression analyses were conducted to examine the relative predictive ability of the variables of interest on total self-reported delinquency at different follow-up time points. Again, the regression analyses were run using Mplus version 7.11 (Muthén & Muthén, 1998–2012), involving MLR estimation. (In preliminary analyses of the self-reported

delinquency data, linear and quadratic growth models were estimated. Results indicated latent growth models were not consistent with the official record data.) Similar to the official arrest charges analyses, maximum likelihood estimation of missing values was used to estimate the missing data for the covariates (Muthén & Muthén, 1998–2012). Given the time ordering of the self-reported delinquency variables, an auto-regressive lag model was estimated. As a preliminary analysis step, the basic model depicted in Figure 3 was initially estimated.

As Figure 3 shows, the baseline covariates of age, gender, family income level, lives with mother, race (African American), ethnicity (Hispanic), family stress/trauma experiences, marijuana use, and sexual risk behavior were specified to influence baseline self-reported total delinquency. Each of the following total self-report delinquency measures was regressed on its preceding time point of total delinquency. Finally, an overall STS vs. BI (combined) intervention effect was specified on self-reported delinquency at 3-month, 6-month, 12-month, and 18-month follow-up.

Estimation of the full model resulted in a poor fit to the data ($\chi^2 = 103.90$, $df = 43$, $p < 0.001$). Inspection of the modification indices indicated model fit could be improved by including covariates at a number of time points. Hence, the basic auto-regressive model was refined to incorporate these covariate effects, in each case with good model fit. These covariate additions are reflected in the regression results of the various model comparisons reported in the following results of the self-reported delinquency analyses.

As for arrest charges, four auto-regressive lag models were estimated: Model 1, with an overall intervention effect ($BI-Y + BI-YP = 1$ vs. $STS = 0$); Model 2, with comparison of the $BI-Y$ vs. STS condition; Model 3, with comparison of the $BI-YP$ vs. STS condition; and Model 4, with comparison of the $BI-YP$ vs. $BI-Y$ condition. For these analyses, the intervention, directional hypotheses were considered significant at the .05 level by a one-tailed test.

Results of Self-Reported Delinquency Analyses

Assessment of Model 1 (BI-Y/YP vs. STS)—Table 3 displays the results of the estimation for Model 1. The model fit to the data was good ($\chi^2 = 49.91$, $df = 37$, $p = 0.08$; RMSEA = 0.034; CFI = 0.963; TLI = 0.941; SRMR = 0.040). Findings indicated significant effects of age (being younger), family income level (higher income), and involvement in sexual risk behavior at baseline on self-reported delinquency at baseline. Age (being younger), marijuana use at baseline, and involvement in sexual risk behavior at baseline were related to self-reported delinquency at 3-month follow-up. Self-reported delinquency at baseline and at 3-month follow-up were each significantly related to self-reported delinquency at 6-month follow-up. Age (being younger), involvement in sexual risk behavior at baseline, and self-reported delinquency at 6-month follow-up were significantly related to self-reported delinquency at 12-month follow-up. Finally, self-reported delinquency at 12-month follow-up was significantly related to self-reported delinquency at 18-month follow-up. Together, the predictor variables explained 22% of the variance in 18-month follow-up, self-reported delinquency.

Importantly, a significant intervention effect was found. Youth receiving BI services (BI-Y or BI-YP) were significantly less likely to report involvement in delinquency at 3-month follow-up, than STS youth (estimate = -0.208 , critical ratio = 1.900 , $p = .029$). The estimated effect size was -0.24 (small) (Muthén & Asparouhov, 2002). There were no significant intervention effects at other follow-up time points.

Assessment of Model 2 (BI-Y vs. STS)—Table 3 also displays the results of the estimation of Model 2. The model fit to the data was good (chi-square = 37.19 , $df = 37$, $p = 0.46$; RMSEA = 0.005 ; CFI = 0.999 ; TLI = 0.998 ; SRMR = 0.040). Findings indicated significant effects of age (being younger), family income level (higher income), and involvement in sexual risk behavior at baseline on self-reported delinquency at baseline. Marijuana use at baseline, involvement in sexual risk behavior at baseline, and self-reported delinquency at baseline were each significantly related to self-reported delinquency at 3-month follow-up. Self-reported delinquency at baseline and at 3-month follow-up were significantly related to self-reported delinquency at 6-month follow-up. Age (being younger), involvement in sexual risk behavior at baseline, and self-reported delinquency at 6-month follow-up were significantly related to self-reported delinquency at 12-month follow-up. Finally, self-reported delinquency at 12-month follow-up was significantly related to self-reported delinquency at 18-month follow-up. There was no intervention effect at any follow-up time. Together, the predictor variables explained 23% of the variance in 18-month follow-up of self-reported delinquency.

Assessment of Model 3 (BI-YP vs. STS)—The results of the estimation of Model 3, comparing BI-YP and STS youth are also shown in Table 3. The model fit to the data was good (chi-square = 39.38 , $df = 32$, $p = 0.17$; RMSEA = 0.034 ; CFI = 0.973 ; TLI = 0.949 ; SRMR = 0.037). Findings indicated significant relationships between age (being younger), family income (higher income), and involvement in sexual risk behavior and baseline self-reported delinquency. Self-reported delinquency at baseline, age (being younger), involvement in sexual risk behavior at baseline, and being non-Hispanic were significantly related to self-reported delinquency at 3-month follow-up. Self-reported delinquency at baseline and 3-month follow-up, gender (being male), and family income (lower) were each significantly related to self-reported delinquency at 6-month follow-up. Self-reported delinquency at baseline and 6-month follow-up, age (being younger), involvement in sexual risk behavior at baseline, and being non-Hispanic were each significantly related to self-reported delinquency at 12-month follow-up. Finally, self-reported delinquency at 12-month follow-up was significantly related to self-reported delinquency at 18-month follow-up. Together, the predictor variables explained 22% of the variance in 18-month follow-up of self-reported delinquency.

Importantly, a significant intervention effect was obtained. Youth receiving BI-YP services reported significantly less involvement in delinquent behavior at 3-month follow-up, than STS youth (estimate = -0.265 , critical ratio = -2.113 , $p < .05$), and the estimated effect size was 0.32 (moderate). A marginally significant BI-YP effect was also found for self-reported delinquency at 12-month follow-up (estimate = -0.161 , critical ratio = -1.35 , $p = .088$). Youth receiving BI-YP services reported less delinquency, than STS youth.

However, contrary to the hypothesis, at 6-month follow-up, it was found that youth receiving BI-YP services reported more involvement in self-reported delinquency, than youth receiving STS (estimate = -0.265 , critical ratio = 2.140 , $p = .984$). The extremely non-significant p -value reflected the conclusion that the one-sided hypothesis was emphatically not rejected when the result was in the opposite direction. This result would have been significant ($p = .033$) if a two-sided test had been performed. There were no significant intervention effects for other follow-up time points in Model 3.

Assessment of Model 4 (BI-YP vs. BI-Y)—The results of the estimation of Model 4, comparing BI-YP and BI-Y youth are shown in Table 3. The model fit to the data was good (chi-square = 42.45 , $df = 37$, $p = 0.25$; RMSEA = 0.027 ; CFI = 0.979 ; TLI = 0.965 ; SRMR = 0.041). Findings indicated significant effects of age (being younger), family income level (higher income), and involvement in sexual risk behavior at baseline on self-reported delinquency at baseline. Age (being younger), involvement in sexual risk behavior at baseline, and self-reported delinquency at baseline were each significantly related to self-reported delinquency at 3-month follow-up. Self-reported delinquency at baseline and at 3-month follow-up were significantly related to self-reported delinquency reported at 6-month follow-up. Age (being younger) and self-reported delinquency at 6-month follow-up were significantly related to self-reported delinquency at 12-month follow-up. Finally, self-reported delinquency at 12-month follow-up was significantly related to self-reported delinquency at 18-month follow-up. Together, the predictor variables explained 19% of the variance in 18-month follow-up of self-reported delinquency. There were no significant intervention effects at any follow-up time.

There was a possible assessment validity problem for 13 follow-up interview cases completed by a former staff member. These assessments occurred during the first two years of the project and involved several assessments at each follow-up. The analyses reported in the present paper were re-computed with the thirteen cases suspected of having validity issues excluded. The results were unaffected by excluding these cases.

Discussion

The main purpose of the present study was to examine the longitudinal effect of Brief Intervention services on truancy project youths' self-reported delinquency and official records of delinquency. Specifically, two hypotheses guided this work. The first hypothesis stated truant youths in the two active intervention conditions will exhibit lower post-treatment delinquency, than participants in the control group. The second hypothesis stated truant youths in the BI- Youth Parent (BI-YP) condition will exhibit lower post-treatment delinquency, than participants in the BI-Youth (BI-Y) only condition. These two hypotheses were addressed by separate analyses of the youths' official records of arrest charges and their self-reported delinquent behavior over time.

Support for the first hypothesis was found. Based on official record data, the analyses revealed youth receiving BI services had a significantly, lower rate of arrest charges during the 24-month follow-up period, compared to youth in the STS, after controlling for covariates of socio-demographics, marijuana use, sexual risk behavior, family trauma, and

time in a secure facility. Additional analyses highlighted that BI-Y services were the major impetus of reduced arrest charges at 24-month follow-up, not BI-YP services. However, based on youths' self-reported delinquency at 18-month follow-up (the latest time point for which self-reported delinquency data were available), no significant long-term effects of BI services were found. But several shorter term, BI outcomes were observed based on these self-report data. First, youth receiving BI services reported less involvement in delinquency at 3-month follow-up, than STS youth. Second, youth receiving BI-YP services reported less involvement in delinquency at 3-month follow-up, than STS youth.

The findings with respect to the official arrest charge effects are a pleasant surprise given that the Brief Intervention was not designed to specifically address youth delinquency issues, but rather drug-use issues. Also, the 24-month official record BI effect may point to a delayed impact of the intervention, although further study is needed on this issue. This finding is consistent with other studies (e.g., Prado et al., 2007; Wolchik et al., 2002) that have found delayed effects of preventive interventions delivered in early adolescence. The results here are consistent with these cited studies in suggesting that the "effects of preventive interventions may only become apparent after several years post intervention. Such sleeper effects may be a function of developmental increases in base rates of the target behaviors." (Prado et al., 2007, p. 923).

There was no support for the second hypothesis that BI-YP would show superior results to BI-Y. We are uncertain as to why this effect was found. Related studies applying Brief Interventions to moderate-to-mild drug abusing youth recruited from schools, find differently (Winters, Fahnhorst, Botzet, Lee, & Lalone, 2012; Winters, Lee, Botzet, Fahnhorst, & Nicholson, 2014). In those studies, the BI-YP group was associated with superior outcome to the BI-Y, although at 12-months the group differences were only in the trend direction for BI-YP (Winters et al., 2014). A significant mediating factor linked to the superior BI-YP effect at 6-months was greater utilization of community services following the intervention (Winters et al., 2012), a variable that may have exerted little or no effect at the 12-month outcome point (Winters et al., 2014). For the present study, we may have experienced the same problem, that is, the BI-YP condition may not have contributed more to families receiving additional services.

It is important to note, that there are potential self-report validity problems with the 18-month follow-up delinquency data. Hence, the self-reported delinquency results should be treated with some caution. This situation points to the importance of including official record data in studies, particularly longitudinal studies, examining at-risk youth delinquent behavior.

The BI effects on arrest charges at 24-month follow-up are consistent with the notion of "spillover effects" in intervention studies. Ellickson et al. (2009) assert that drug prevention interventions can have "spillover effects" in reducing other at-risk behavior among youths. In general, among related risk behaviors, it could be expected that reduction in one risk behavior would result in the reduction of another—particularly if these behaviors are believed to reflect a syndrome of problem behavior (LeBlanc & Bouthillier, 2003; Jessor & Jessor, 1977). Non-specific factors, such as client expectations, readiness for change, and

rapport developed between the interventionist and client, may account for at least some of the intervention effects identified here (Stout & Hayes, 2005). Further research is needed on this important issue.

There were several limitations to this study. First, there were limitations due to the nature of the sample, which consisted of truant youth picked up by law enforcement or placed in a diversion program. Hence, the results of the study may not be generalizable to truant youth who do not have such agency contact/involvement. Second, the sample size was relatively small, particularly at later follow-up time points, limiting examination of the fit of the models across various socio-demographic groups. Third, as discussed earlier, the self-report data were collected at 18-months, not at the 24-month time point. Also, the self-report delinquency data appeared to reflect some systematic bias, limiting trust in the conclusions drawn from analyses of these data. While every effort was made to ensure data validity (e.g., conducting interviews in private in the youth's home, informed them of our Certificate of Confidentiality), there still appear to have been validity issues with these data. Future research should include both types of measures of delinquency/crime in studies involving at-risk youth, so the relative merits of these data can be evaluated.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix

Percentage of Youths Reporting Sexual Risk Behaviors across Time Points					
	Baseline	3-Months	6-Months	12-Months	18-Months
<i>Sexual risk behaviors:</i>					
Had sexual intercourse	67.0%	62.4%	61.9%	62.8%	63.4%
Had sexual intercourse without using a condom	33.3%	28.4%	31.7%	33.5%	36.2%
Had sex with two or more people	29.7%	32.3%	33.6%	33.8%	33.7%
Had sexually transmitted disease (STD)	2.7%	1.4%	2.1%	2.6%	3.7%
<i>n</i>	299	282	281	245	215
<i>Summary index of sexual risk behaviors:</i>					
0	32.4%	36.9%	36.7%	30.2%	25.8%
1	23.7%	19.1%	18.9%	21.6%	18.8%
2	23.7%	27.3%	25.3%	26.5%	29.6%
3 (or 4)	20.0%	16.7%	19.2%	21.6%	25.8%

Percentage of Youths Reporting Sexual Risk Behaviors across Time Points							
	Baseline	3-Months	6-Months	12-Months	18-Months		
Percentage of Self-Reported Use of Other Substances and Associated Urine Analysis (UA) Data across Time Points							
	Baseline	3-Months	6-Months	12-Months	18-Months		
<i>Self-reported use:</i>							
Amphetamines (ever)	2.0%	0.0%	1.4%	1.6%	0.0%		
Barbiturates (ever)	14.0%	2.8%	3.6%	2.9%	4.2%		
Cocaine (ever)	4.3%	0.7%	1.1%	2.4%	3.7%		
Opiates (ever)	8.0%	1.4%	4.6%	2.9%	2.8%		
Hallucinogens (ever)	8.3%	1.4%	1.4%	4.1%	2.8%		
PCP (ever)	0.0%	0.0%	0.0%	0.0%	0.5%		
Club drugs (ever)	6.0%	1.4%	1.1%	3.7%	6.0%		
Inhalants (ever)	0.7%	0.4%	0.0%	0.0%	0.0%		
Combo (ever)	1.7%	0.0%	0.0%	0.0%	0.0%		
Used any of these other drugs 5 or more times	9.3%	1.8%	4.3%	4.9%	5.1%		
Marijuana (ever)	46.3%	19.6%	18.2%	20.4%	15.8%		
Used marijuana 5 or more times	29.7%	7.2%	8.7%	11.7%	6.1%		
<i>n</i>	300	282	281	245	215		
<i>UA positive:</i>							
Amphetamines	3.4%	2.0%	0.8%	0.5%	0.5%		
Cocaine	0.3%	0.0%	1.2%	1.4%	0.5%		
Opiates	0.3%	0.0%	1.6%	0.9%	1.6%		
Marijuana	48.1%	41.1%	50.0%	48.2%	54.9%		
<i>n</i>	287	248	246	217/218	192/193		
Marijuana Use Measure (Self-Report and Urine Analysis) at Baseline							
							Baseline
<i>Marijuana use (n = 300):</i>							
Denied use and urine test negative/missing							7.6%
Reported use 1–4 times and urine test negative/missing							17.0%
Reported use 5 or more times and urine test negative/missing							29.3%
Urine test positive							46.0%
Percentage of Five Self-Reported Delinquency Indices Data across Time Points							
				Frequency			
<i>Baseline (n = 300):</i>	0	1–4	5–29	30–54	55–99	100–199	200+ Total
Index offenses	50%	32%	13%	2%	<1%	1%	- 99%
Crimes against persons	25%	33%	30%	5%	3%	2%	1% 99%
General theft	25%	33%	30%	6%	2%	2%	1% 99%
Drug sales	71%	14%	9%	2%	<1%	1%	2% 100%
Total delinquency	6%	22%	38%	12%	7%	7%	8% 100%

Percentage of Youths Reporting Sexual Risk Behaviors across Time Points								
		Baseline	3-Months	6-Months	12-Months	18-Months		
<i>3-Months (n = 282):</i>	0	1–4	5–29	30–54	55–99	100–199	200+	Total
Index offenses	81%	14%	5%	-	-	<1%	-	101%
Crimes against persons	60%	26%	11%	1%	<1%	<1%	-	100%
General theft	75%	15%	9%	-	1%	<1%	<1%	101%
Drug sales	88%	5%	5%	<1%	<1%	<1%	-	100%
Total delinquency	43%	28%	21%	3%	4%	1%	<1%	101%
<i>6-Months (n = 281):</i>	0	1–4	5–29	30–54	55–99	100–199	200+	Total
Index offenses	78%	14%	6%	1%	-	-	<1%	99%
Crimes against persons	64%	25%	10%	<1%	<1%	-	<1%	100%
General theft	77%	13%	9%	<1%	<1%	<1%	<1%	98%
Drug sales	87%	6%	6%	<1%	-	<1%	<1%	100%
Total delinquency	43%	29%	19%	4%	1%	3%	1%	100%
<i>12-Months (n = 245):</i>	0	1–4	5–29	30–54	55–99	100–199	200+	Total
Index offenses	82%	11%	7%	-	-	-	-	100%
Crimes against persons	71%	18%	9%	1%	<1%	1%	-	101%
General theft	76%	16%	6%	<1%	<1%	-	-	100%
Drug sales	85%	9%	5%	-	<1%	<1%	-	100%
Total delinquency	46%	30%	17%	2%	3%	2%	<1%	101%
<i>18-Months (n = 215):</i>	0	1–4	5–29	30–54	55–99	100–199	200+	Total
Index offenses	84%	11%	5%	-	-	-	-	100%
Crimes against persons	75%	19%	7%	-	-	-	-	101%
General theft	81%	13%	6%	<1%	-	-	-	101%
Drug sales	87%	7%	4%	2%	-	<1%	-	101%
Total delinquency	52%	30%	14%	3%	<1%	<1%	-	100%
Skewness and Kurtosis of Summed and Log-Transformed Self-Reported Delinquency Measures across Time Points								
		Baseline	3-Months	6-Months	12-Months	18-Months		
<i>Summed delinquency:</i>								
Skewness		6.23	6.84	9.95	5.53	5.33		
Standard error of skewness		0.14	0.15	0.15	0.16	0.17		
Kurtosis		46.71	60.50	108.31	37.39	35.70		
Standard error off kurtosis		0.28	0.29	0.29	0.31	0.33		
<i>Log-transformed delinquency:</i>								
Skewness		-0.32	0.36	0.60	0.59	0.68		
Standard error of skewness		0.14	0.15	0.15	0.16	0.17		
Kurtosis		0.38	-1.14	-0.49	-0.80	-0.80		
Standard error off kurtosis		0.28	0.29	0.29	0.31	0.33

Figure 1.

The Basic Auto-Regressive Lag Model: Official Records of Arrest Charges

Note. Time secured refers to the time in secured facility at each follow-up period, not at baseline. BI = Brief Intervention treatment. T1 = baseline interview; T2 = 3-month follow-up; T3 = 6-month follow-up; T4 = 12-month follow-up; T5 = 18-month follow-up; T6 = 24-month follow-up.

Figure 2.

Mean ($\bar{X}$) Cumulative Number of Recidivism Arrests and Arrest Charges during 3-Month, 6-Month, 12-Month, 18-Month and 24-Month Post-Intervention Follow-up Periods (Unadjusted for Time at Risk)—Untransformed Data

Note. STS = Standard Truancy Services ($n = 100$); BI-Y & BI-YP = Combined Cases in the Brief Intervention-Youth Cases and the Brief Intervention-Youth and Parent Groups ($n = 200$).

Figure 3.

The Basic Auto-Regressive Lag Model: Self-Reported Delinquency

Note. BI = Brief Intervention treatment. T1 = baseline interview; T2 = 3-month follow-up; T3 = 6-month follow-up; T4 = 12-month follow-up; T5 = 18-month follow-up.

Table 1

Self-Reported Delinquency and Official Arrests and Arrest Charges by Data Wave

Variable	Frequency									
	0	1-4	5-29	30-54	55-99	100-199	200+	Total		
<i>Self-reported total delinquency:</i>										
Baseline (<i>n</i> = 300)	6%	22%	38%	12%	7%	7%	8%	100%		
3-months (<i>n</i> = 282)	43%	28%	21%	3%	4%	1%	<1%	100%		
6-months (<i>n</i> = 281)	43%	29%	19%	4%	1%	3%	1%	100%		
12-months (<i>n</i> = 245)	46%	30%	17%	2%	3%	2%	<1%	100%		
18-months (<i>n</i> = 215)	52%	30%	14%	3%	<1%	<1%	-	100%		
<i>Official arrests:</i>										
3-months (<i>n</i> = 300)	90%	9%	1%	-	-	-	-	100%		
6-months (<i>n</i> = 300)	88%	9%	2%	<1%	-	-	-	100%		
12-months (<i>n</i> = 270)	77%	14%	6%	2%	-	<1%	-	100%		
18-months (<i>n</i> = 247)	83%	12%	3%	2%	-	-	-	100%		
24-months (<i>n</i> = 212)	86%	11%	2%	<1%	-	<1%	-	100%		
<i>Official arrest charges:</i>										
3-months (<i>n</i> = 300)	89%	6%	3%	<1%	<1%	1%	-	100%		
6-months (<i>n</i> = 300)	88%	5%	3%	<1%	2%	2%	-	100%		
12-months (<i>n</i> = 270)	77%	8%	5%	3%	4%	2%	2%	101%		
18-months (<i>n</i> = 247)	82%	5%	3%	4%	2%	4%	-	100%		
24-months (<i>n</i> = 212)	85%	8%	4%	<1%	<1%	3%	-	100%		

Table 2

Auto-Regressive Lag Model Estimation Results for Official Arrest Charges

Variables	Model 1: BI-Y/YP vs. STS			Model 2: BI-Y vs. STS		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
24-Month arrest charges ON:						
18-Month arrest charges	0.027	0.066	0.401	0.105	0.082	1.279
24-Month time in secure (log)	0.356	0.071	5.041***	0.310	0.078	3.953***
18-Month time in secure (log)	-0.190	0.071	-2.676**	-0.244	0.085	-2.867**
Age	-0.090	0.019	-4.660***	-0.096	0.021	-4.523***
Gender (1 = Female)	-0.122	0.046	-2.655**	-0.132	0.060	-2.207*
Ethnicity (1 = Hispanic)	-0.120	0.047	-2.530*	-0.093	0.059	-1.578
Intervention (1 = BI condition)	-0.162	0.058	-2.808**	-0.234	0.063	-3.711***
18-Month arrest charges ON:						
12-Month arrest charges	0.130	0.088	1.479	0.047	0.100	0.467
18-Month time in secure (log)	0.378	0.079	4.799***	0.380	0.093	4.086***
12-Month time in secure (log)	-0.185	0.091	-2.037*	-0.232	0.102	-2.266*
6-Month arrest charges				0.337	0.157	2.146*
Intervention (1 = BI condition)	0.106	0.069	1.538	0.099	0.077	1.279
12-Month arrest charges ON:						
6-Month arrest charges	0.044	0.107	0.409	0.074	0.145	0.508
3-Month arrest charges	0.253	0.106	2.400*	0.299	0.109	2.750**
12-Month time in secure (log)	0.452	0.050	9.132***	0.467	0.050	9.280***
6-Month time in secure (log)	-0.380	0.101	-3.775***	-0.501	0.088	-5.707***
Age	-0.065	0.025	-2.581*	-0.058	0.033	-1.751
Gender	-0.227	0.058	-3.912***	-0.242	0.070	-3.460**
Race (1 = African American)	0.140	0.085	1.642	0.026	0.090	0.284
Sex risk	0.078	0.029	2.694**	0.053	0.034	1.556
Intervention (1 = BI condition)	-0.039	0.067	-0.575	-0.061	0.074	-0.823
6-Month arrest charges ON:						

<i>Variables</i>	Model 1: BI-Y/YP vs. STS			Model 2: BI-Y vs. STS		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
3-Month arrest charges	0.181	0.100	1.799	0.169	0.117	1.438
6-Month time in secure (log)	0.426	0.123	3.453**	0.375	0.150	2.502*
Baseline arrest charges	0.057	0.031	1.846	0.067	0.042	1.602
Sex risk				0.066	0.031	2.103*
Intervention (1 = BI condition)	0.032	0.053	0.600	0.001	0.056	0.015
3-Month arrest charges ON:						
Baseline arrest charges	0.002	0.026	0.060	0.017	0.031	0.534
3-Month time in secure (log)	0.434	0.096	4.542***	0.497	0.106	4.708***
Ethnicity	-0.112	0.048	-2.337*	-0.177	0.050	-3.550***
Marijuana use	0.062	0.022	2.846**	0.076	0.030	2.563**
Intervention (1 = BI condition)	-0.084	0.055	-1.521	-0.076	0.056	-1.355
Baseline arrest charges ON:						
Age	0.155	0.047	3.310**	0.077	0.054	1.426
Gender (1 = Female)	-0.055	0.135	-0.408	-0.083	0.153	-0.540
Income	0.010	0.063	0.163	-0.055	0.063	-0.873
Lives with (1 = mother only)	0.246	0.155	1.585	0.151	0.188	0.804
Race (1 = African American)	0.401	0.211	1.902	0.374	0.230	1.622
Ethnicity (1 = Hispanic)	0.121	0.134	0.899	-0.021	0.156	-0.135
Family trauma	0.009	0.045	0.213	-0.025	0.046	-0.547
Baseline arrest charges ON:						
Sex risk	-0.098	0.066	-1.492	-0.149	0.071	-2.105*
Self-reported delinquency (log)	-0.004	0.079	-0.048	0.079	0.085	0.928
Marijuana use	0.187	0.069	2.692**	0.216	0.084	2.557*
Intercepts:						
Baseline arrest charges	-1.893	0.772	-2.452*	-0.401	0.753	-0.532
3-Month arrest charges	-0.503	0.111	-4.513***	-0.470	0.122	-3.840***
6-Month arrest charges	-0.376	0.151	-2.489*	-0.527	0.173	-3.049**
12-Month arrest charges	0.498	0.386	1.291	0.431	0.489	0.882

<i>Variables</i>	Model 1: BI-Y/YP vs. STS			Model 2: BI-Y vs. STS		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
18-Month arrest charges	-0.586	0.093	-6.313 ***	-0.378	0.148	-2.564 *
24-Month arrest charges	0.830	0.297	2.798 **	0.908	0.335	2.707 **
Residual variances:						
Baseline arrest charges	0.930	0.155	5.988 ***	0.846	0.170	4.983 ***
3-Month arrest charges	0.118	0.022	5.287 ***	0.111	0.023	4.737 ***
6-Month arrest charges	0.150	0.030	4.958 ***	0.132	0.032	4.092 ***
12-Month arrest charges	0.197	0.024	8.030 ***	0.188	0.029	6.424 ***
18-Month arrest charges	0.243	0.034	7.158 ***	0.223	0.039	5.791 ***
24-Month arrest charges	0.131	0.019	6.965 ***	0.140	0.024	5.941 ***
R^2 :						
Baseline	0.121	0.040	3.050 **	0.120	0.051	2.375 *
3-Month arrest charges	0.243	0.090	2.699 **	0.325	0.107	3.039 **
6-Month arrest charges	0.270	0.126	2.144 *	0.302	0.159	1.901
12-Month arrest charges	0.419	0.059	7.120 ***	0.441	0.072	6.166 ***
18-Month arrest charges	0.204	0.072	2.826 **	0.279	0.089	3.141 **
24-Month arrest charges	0.369	0.078	4.728 ***	0.327	0.081	4.039 ***
<i>N</i>	208			140		

<i>Variables</i>	Model 3: BI-Y/YP vs. STS			Model 4: BI-Y vs. BI-YP		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
24-Month arrest charges ON:						
18-Month arrest charges	-0.007	0.071	-0.097	-0.009	0.074	-0.120
24-Month time in secure (log)	0.490	0.059	8.355 ***	0.201	0.135	1.488
18-Month time in secure (log)	-0.193	0.070	-2.743 **	-0.036	0.139	-0.257
Age	-0.096	0.026	-3.661 ***	-0.065	0.024	-2.686 **
Gender (1 = Female)	-0.177	0.059	-3.020 ***	-0.074	0.047	-1.570
Ethnicity (1 = Hispanic)	-0.106	0.062	-1.711	-0.102	0.047	-2.159 *

<i>Variables</i>	Model 3: BI-YP vs. STS			Model 4: BI-Y vs. BI-YP		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
Intervention (1 = BI condition)	-0.083	0.056	-1.486	0.113	0.054	2.083 *
18-Month arrest charges ON:						
12-Month arrest charges	0.196	0.129	1.524	0.199	0.100	2.000 *
18-Month time in secure (log)	0.326	0.098	3.333 **	0.355	0.102	3.496 ***
12-Month time in secure (log)	-0.224	0.120	-1.870	-0.161	0.114	-1.415
Intervention (1 = BI condition)	0.086	0.079	1.098	-0.028	0.083	-0.340
12-Month arrest charges ON:						
6-Month arrest charges	0.170	0.131	1.298	-0.117	0.091	-1.294
3-Month arrest charges	0.202	0.128	1.572	0.220	0.138	1.590
12-Month time in secure (log)	0.476	0.057	8.391 ***	0.420	0.072	5.792 ***
6-Month time in secure (log)	-0.233	0.108	-2.144 *	-0.290	0.122	-2.376 *
Age	-0.043	0.028	-1.531	-0.086	0.029	-2.944 **
Gender	-0.245	0.070	-3.527 ***	-0.203	0.070	-2.922 **
Race (1 = African American)	0.207	0.101	2.053 *	0.187	0.115	1.627
Sex Risk	0.110	0.034	3.217 **	0.075	0.037	2.015 *
Intervention (1 = BI condition)	-0.017	0.079	-0.217	0.069	0.075	0.926
6-Month arrest charges ON:						
3-Month arrest charges	0.293	0.115	2.547 *	0.071	0.138	0.513
6-Month time in secure (log)	0.520	0.134	3.876 ***	0.462	0.132	3.490 ***
Baseline arrest charges	0.047	0.030	1.572	0.053	0.046	1.160
Intervention (1 = BI condition)	0.073	0.065	1.133	0.073	0.067	1.086
3-Month arrest charges ON:						
Baseline arrest charges	0.016	0.035	0.456	-0.030	0.029	-1.045
3-Month time in secure (log)	0.327	0.145	2.263 *	0.453	0.096	4.701 ***
Ethnicity (1 = Hispanic)	-0.084	0.077	-1.090	-0.050	0.060	-0.835
Marijuana use	0.085	0.028	3.014 **	0.031	0.023	1.368
Intervention (1 = BI condition)	-0.083	0.067	-1.240	0.014	0.055	0.253
Baseline arrest charges ON:						
Age	0.197	0.059	3.342 **	0.195	0.062	3.143 **

<i>Variables</i>	Model 3: BI-YP vs. STS			Model 4: BI-Y vs. BI-YP		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
Gender (1 = Female)	-0.081	0.181	-0.448	-0.002	0.161	-0.014
Income	0.051	0.087	0.579	0.031	0.080	0.386
Lives with (1 = mother only)	0.324	0.197	1.649	0.252	0.186	1.352
Race (1 = African American)	0.429	0.270	1.588	0.429	0.264	1.627
Ethnicity (1 = Hispanic)	0.307	0.168	1.832	0.144	0.171	0.841
Family trauma	0.028	0.065	0.433	0.039	0.053	0.737
Sex risk	-0.090	0.088	-1.027	-0.063	0.080	-0.781
Self-reported delinquency (log)	-0.042	0.106	-0.401	-0.053	0.098	-0.542
Baseline arrest charges ON:						
Marijuana use	0.198	0.088	2.243 *	0.146	0.085	1.721
Intercepts:						
Baseline arrest charges	-2.728	1.029	-2.651 **	-2.607	1.065	-2.448 **
3-Month arrest charges	-0.672	0.162	-4.143 ***	-0.496	0.113	-4.387 ***
6-Month arrest charges	-0.189	0.144	-1.311	-0.442	0.197	-2.244 *
12-Month arrest charges	0.326	0.423	0.771	0.613	0.446	1.375
18-Month arrest charges	-0.607	0.100	-6.073 ***	-0.416	0.102	-4.078 ***
24-Month arrest charges	0.993	0.385	2.577 **	0.197	0.356	0.553
Residual variances:						
Baseline arrest charges	1.038	0.217	4.778 ***	0.848	0.158	5.373 ***
3-Month arrest charges	0.142	0.029	4.873 ***	0.095	0.027	3.581 ***
6-Month arrest charges	0.136	0.032	4.256 ***	0.168	0.040	4.178 ***
12-Month arrest charges	0.181	0.028	6.558 ***	0.194	0.030	6.533 ***
18-Month arrest charges	0.231	0.042	5.447 ***	0.251	0.040	6.227 ***
24-Month arrest charges	0.122	0.025	4.886 ***	0.103	0.021	5.010 ***
<i>R</i> ² :						
Baseline	0.159	0.054	2.959 **	0.126	0.055	2.271 *
3-Month arrest charges	0.164	0.076	2.150 *	0.281	0.135	2.089 *
6-Month arrest charges	0.289	0.103	2.800 **	0.287	0.152	1.887

Variables	Model 3: BI-YP vs. STS			Model 4: BI-Y vs. BI-YP		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
12-Month arrest charges	0.509	0.066	7.671***	0.370	0.077	4.827***
18-Month arrest charges	0.201	0.083	2.436**	0.183	0.078	2.357*
24-Month arrest charges	0.553	0.091	6.077***	0.264	0.104	2.548*
N	137			139		

Note. Two-tailed *p*-values:

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

One-tailed significance levels (intervention effect):

+ *p* < .05
++ *p* < .01
+++ *p* < .001.

Table 3

Auto-Regressive Lag Model Estimation Results for Self-Reported Delinquency

<i>Variables</i>	Model 1: BI-Y/YP vs. STS		Model 2: BI-Y vs. STS	
	Estimate	S.E.	Estimate	S.E.
18-Month delinquency ON:				
12-Month delinquency	0.413	0.057	7.272 ***	0.420
Intervention (1 = BI condition)	0.085	0.110	0.772	0.125
12-Month delinquency ON:				
6-Month delinquency	0.480	0.060	7.962 ***	0.448
Age	-0.160	0.041	-3.927 ***	-0.154
Sex risk	0.135	0.050	2.713 **	0.154
Intervention (1 = BI condition)	-0.099	0.112	-0.880	-0.093
6-Month delinquency ON:				
3-Month delinquency	0.411	0.057	7.216 ***	0.358
Baseline delinquency	0.288	0.074	3.905 ***	0.255
Intervention (1 = BI condition)	0.127	0.113	1.120	0.133
3-Month delinquency ON:				
Baseline delinquency	0.413	0.068	6.108 ***	0.364
Age	-0.109	0.040	-2.729 **	-0.069
Marijuana use	0.123	0.056	2.190 *	0.198
Sex Risk	0.146	0.050	2.926 **	0.141
Intervention (1 = BI condition)	-0.208	0.110	-1.900 +	-0.196
Baseline delinquency ON:				
Age	-0.188	0.039	-4.810 ***	-0.180
Gender (1 = Female)	-0.081	0.089	-0.906	-0.028
Income	0.120	0.040	2.976 **	0.098
Lives with (1 = mother only)	0.062	0.104	0.596	0.022
Race (1 = African American)	-0.103	0.124	-0.831	-0.016
Ethnicity (1 = Hispanic)	0.036	0.110	0.326	0.092

<i>Variables</i>	Model 1: BI-Y/YP vs. STS			Model 2: BI-Y vs. STS		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
Family trauma	0.036	0.027	1.335	0.045	0.033	1.361
Marijuana use	0.064	0.051	1.245	0.048	0.062	0.772
Sex Risk	0.210	0.044	4.739***	0.210	0.051	4.128***
Intercepts:						
Baseline delinquency	2.926	0.566	5.169***	2.832	0.710	3.991***
3-Month delinquency	0.887	0.614	1.445	0.184	0.698	0.264
6-Month delinquency	-0.393	0.135	-2.904**	-0.350	0.148	-2.367*
12-Month delinquency	2.199	0.616	3.567***	2.077	0.777	2.673**
18-Month delinquency	-0.259	0.088	-2.942**	-0.259	0.089	-2.911**
Residual variances:						
Baseline delinquency	0.632	0.056	11.205***	0.654	0.071	9.168***
3-Month delinquency	0.765	0.048	15.991***	0.721	0.055	13.028***
6-Month delinquency	0.742	0.088	8.421***	0.813	0.119	6.851***
12-Month delinquency	0.625	0.053	11.790***	0.648	0.064	10.189***
18-Month delinquency	0.608	0.051	11.903***	0.561	0.054	10.342***
R^2 :						
Baseline delinquency	0.162	0.040	4.031***	0.157	0.049	3.194**
3-Month delinquency	0.243	0.047	5.169***	0.241	0.054	4.434***
6-Month delinquency	0.303	0.064	4.752***	0.224	0.074	3.015**
12-Month delinquency	0.355	0.055	6.505***	0.325	0.064	5.090***
18-Month delinquency	0.215	0.053	4.049***	0.231	0.064	3.596***
Model 3: BI-Y vs. STS						
Model 4: BI-Y vs. BI-Y						
<i>Variables</i>	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
18-Month delinquency ON:						
12-Month delinquency	0.416	0.071	5.871***	0.403	0.071	5.697***
Intervention (1 = BI condition)	0.090	0.134	0.674	0.012	0.136	0.089

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Variables	Model 3: BI-YP vs. STS			Model 4: BI-Y vs. BI-YP		
	Estimate	S.E.	Est./S.E.	Estimate	S.E.	Est./S.E.
Marijuana use	0.085	0.065	1.310	0.061	0.060	1.025
Sex risk	0.197	0.057	3.434**	0.216	0.054	4.022***
Intercepts:						
Baseline delinquency	3.269	0.699	4.678***	2.734	0.650	4.204***
3-Month delinquency	1.413	0.740	1.911	1.062	0.785	1.354
6-Month delinquency	0.044	0.204	0.218	-0.376	0.123	-3.068**
12-Month delinquency	1.846	0.760	2.427*	2.019	0.614	3.285**
18-Month delinquency	-0.259	0.089	-2.915**	-0.181	0.092	-1.971*
Residual variances:						
Baseline delinquency	0.629	0.065	9.683***	0.589	0.068	8.637***
3-Month delinquency	0.744	0.060	12.476***	0.774	0.058	13.241***
6-Month delinquency	0.692	0.115	5.996***	0.666	0.080	8.336***
12-Month delinquency	0.570	0.058	9.777***	0.573	0.062	9.301***
18-Month delinquency	0.621	0.066	9.347***	0.641	0.066	9.761***
R^2 :						
Baseline delinquency	0.207	0.054	3.807***	0.147	0.043	3.409**
3-Month delinquency	0.298	0.057	5.258***	0.244	0.060	4.041***
6-Month delinquency	0.365	0.084	4.347***	0.369	0.068	5.461***
12-Month delinquency	0.437	0.063	6.977***	0.396	0.065	6.087***
18-Month delinquency	0.221	0.067	3.284**	0.194	0.063	3.061**

Note. Two-tailed p -values:

* $p < .05$

** $p < .01$

*** $p < .001$.

One-tailed significance levels (intervention effect):

+ $p < .05$

.100' > *p*
+++
10' > *p*
++

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