RCT of a Promising Vocational/Employment Program for High-Risk Juvenile Offenders

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Abstract

Juvenile offenders with substance use problems are at high risk for deleterious long-term outcomes. This study evaluated the capacity of a promising vocational and employment training program in the building sector (i.e., Community Restitution Apprenticeship-Focused Training, CRAFT) to mitigate such outcomes through enhanced employment and education. Participants were 97 high-risk juvenile offenders (mean age = 15.8 years) randomized to CRAFT versus education as usual (EAU) intervention conditions. Multi-method procedures measured employment, education, substance use, mental health, and criminal outcomes through a 30-month post-baseline follow-up. CRAFT was significantly more effective than EAU at increasing rates of youth employment and GED attendance. Intervention effects were not observed, however, for months employed, hours worked, or hourly wage. Measures of youth substance use, mental health symptoms, and criminal activity showed no favorable or iatrogenic effects. The potential of CRAFT was modestly supported, and suggestions were made for future research.

Keywords

Substance abuse; juvenile offenders; vocational training; employment

1. Introduction

Juvenile offenders with substance use problems represent a large and underserved population that is at high risk of presenting significant deleterious outcomes and long-term costs for themselves, their families and communities, and society (Chassin, 2008). Longitudinal research with clinical samples has shown that many substance abusing adolescents continue to abuse substances into emerging adulthood with detrimental results pertaining to educational attainments, mental health, social relationships, employment, and physical health (e.g., Brown, Myers, Mott, & Vik, 1994; Chan, Dennis, & Funk; 2008; Crowley, Mikulich, MacDonald, Young, & Zerbe, 1998; Henggeler, Clingempeel, Brondino, & Pickrel, 2002; Huang, Evans, Hara, Weiss, & Hser, 2011; Kaminer & Bukstein,

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2008; Myers, Stewart, & Brown, 1998; Ringel, Ellickson, & Collins, 2007). Similarly, relatively high percentages of juvenile offenders maintain criminal activity into adulthood (e.g., Liberman, 2008; White, Bates, & Buyske, 2001). Such outcomes among substance abusing individuals are estimated to cost society more than $180 billion each year, stemming from expenditures to address health care, drug-related crime, and reduced work productivity (Office of National Drug Control Policy, 2004).

Within this context, the primary purpose of the present study was to evaluate a vocational training program (i.e., Community Restitution Apprenticeship-Focused Training; CRAFT) that has shown promise (e.g., Office of Juvenile Justice and Delinquency Prevention, 2000) in altering the negative life trajectories of juvenile offenders with substance-related problems. Employability is viewed as a critical issue in the field of substance abuse treatment (e.g., Institute of Medicine, 1998), and criminal justice theorists (e.g., Currie, 1998) have suggested that access to high paying jobs holds the potential to impact long-term rates of antisocial behavior. It is not the availability of short-term low-wage jobs for teenagers that inhibits crime, but rather the prospects for upward movement into fulfilling adult roles as productive, valued, and respected members in the larger community. Yet, as Bushway and Reuter (1997) noted, many high-risk juveniles lack the skills needed to obtain and retain attractive jobs that pay above minimum wage and can raise the employee above the poverty level. Thus, increased employability among high-risk adolescents might alter their life course trajectories and reduce the risk of developing potentially lifelong substance use, antisocial, and vocational impairment (Oesterle, Hawkins, & Hill, 2011).

CRAFT was developed in 1994 by the Home Builders Institute (HBI) specifically to address the frequent skill deficits and job-placement limitations that confront high-risk youth such as juvenile offenders and youth with substance abuse disorders (HBI, 2012). HBI is the educational arm of the 200,000 member (e.g., home builders and remodelers, title lawyers, and suppliers such as Home Depot) National Association of Home Builders (NAHB). CRAFT is a pragmatic and ecologically valid strategy for both developing valued job skills and for placing high-risk youth on a path to attain well-paying jobs in the construction industry. Importantly, a multisite program evaluation (uncontrolled) has supported the potential effectiveness of CRAFT to boost employment and decrease antisocial behavior (Kiss, 1999). Consequently, CRAFT received a Promising and Effective Practices Network (PEPNet) award from the National Youth Employment Coalition (2002) recognizing the program as a best practice in youth development. Others identifying CRAFT as a promising model intervention include The United States Congress in 2005 (HBI, 2012), the Office of Juvenile Justice and Delinquency Prevention (2000), the Florida Department of Education and Florida Department of Juvenile Justice (2001), and The American Youth Policy Forum (James, 1999).

Notably, and as specified more extensively in the Method section, CRAFT includes several features that further reinforce its potential effectiveness for high-risk youth. First, as a model program of the NAHB that has membership associations across the nation, CRAFT has strong linkages to the world of skilled employment. For example, the Home Builder Association in Connecticut, the site of the study, had more than 1,200 member firms employing more than 45,000 people throughout the state when the study began. Second, CRAFT has standardized, flexible, and comprehensive training procedures that include pre-vocational and vocational services, employability skills development, job placement assistance (e.g., local contractors collaborate in teaching various skills), and job retention assistance with follow-up. Third, intervention principles used in CRAFT are similar to those used by evidence-based treatments of adolescent substance abuse. These include a strength-based approach to building competencies, emphasis on ecological validity (e.g., engagement with families, employers, service providers, and state service systems), provision of

comprehensive services, and monitoring of program fidelity. Together, these program features and favorable program evaluations support the potential effectiveness of CRAFT and set the stage for a rigorous evaluation of the program.

Before the methodology of the study is described, several pertinent conceptual and methodological issues should be addressed. First, the fidelity of implementation and internal validity of an employment-training program with substance-abusing and high-risk juvenile offenders can be undermined by a wide variety of psychosocial problems among the youth and their families (e.g., chaotic family environment, substance abuse, mental health problems). Hence, to enhance fidelity of implementation and internal validity, all youth were recruited from programs that had provided an evidence-based treatment to the youth. These included multisystemic therapy (MST; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 2009), multidimensional family therapy (MDFT; Liddle, 2010), and functional family therapy (FFT; Waldron & Brody, 2010) programs. Second, the timing of the study (i.e., 2007–2011) coincided with a major economic recession in the U.S., which was especially challenging to the construction industry (U.S. Bureau of Labor Statistics, 2012a). For example, during the research follow-ups conducted in 2010 the average rate of unemployment was 20.6% in the construction sector (U.S. Bureau of Labor Statistics, 2012b). Hence, the validity of the employment-related outcomes of the study is threatened by historical factors (Cook & Campbell, 1979).

A third issue pertains to the extant literature on the association between employment and antisocial behavior in adolescents. Although the primary hypothesis of the study is that CRAFT will provide high-risk youth with a path toward productive careers for the reasons noted above, findings from extant research dampen optimism. (a) To the best of our knowledge, no controlled studies support the capacity of a vocational intervention to favorably impact the functioning of juvenile offenders or substance abusing youth. (b) Vocational training programs have had limited success with adult substance abusers (e.g., Magura, Blankertz, Madison, Friedman, & Gomez, 2007; Svikis et al., 2012). (c) An extensive literature demonstrates that employed youth generally evidence higher rates of antisocial behavior than do nonworking youth, and these findings hold for nonclinical youth (e.g., Apel, Bushway, Paternoster, Brame, & Sweeten, 2008; Samuolis, Griffin, Williams, Cesario, & Botvin, 2011; Wu, Schlenger, & Galvin, 2003) as well as for youth who receive substance abuse treatment (Godley, Passetti, & White, 2006). And (d), the potentially iatrogenic effects of intervention programs that group antisocial youth together have been well established (Dodge, Dishion, & Lansford, 2006). These two latter sets of findings establish the importance of examining rates of youth antisocial behavior throughout the research.

A final conceptual issue pertains to the characteristics of vocational programs that might be best suited to this population. In a context where little controlled research on vocational training for juvenile offenders with substance use problems has been conducted, we decided to evaluate a well-specified approach with juvenile offenders that has received national recognition, has promising outcomes in uncontrolled research, and is supported by a major stakeholder in the labor sector (i.e., the NAHB). It should be noted, however, that other approaches to enhancing the employability of a high risk youth population might be viable as well. For example, a strong and consistent literature has emerged demonstrating the effectiveness of supported employment for adults and transitional age youth (i.e., age 18–25) with serious mental illness, many of whom have co-occurring substance use disorders (Bond, Drake, & Becker, 2008; Burke-Miller, Razzano, Grey, & Cook, 2012). Rather than providing training in specific vocations per se, supported employment emphasizes client vocational choice across a range of fields, integrates mental health and vocational interventions, and provides long-term follow-along supports once work is obtained

(Swanson, Becker, Drake, & Merrens, 2008). Indeed, recent meta-analysis of studies with adults with serious mental illness found large effect sizes for job attainment, weeks worked, and job retention, with results consistent regardless of substance abuse status (Campbell, Bond, & Drake, 2011).

Despite these concerns, the enormity of the public health burden and the economic productivity costs associated with substance abuse by juvenile offenders requires continued efforts to evaluate viable solutions. Godley et al. (2010) estimated that two million adolescents in the U.S. have substance abuse or dependence disorders and that half of these are involved in the juvenile justice system. The long-term social and economic costs on families and communities are staggering. With its promising program evaluations, comprehensive and ecologically valid intervention protocols, and conceptual similarities with several evidence-based treatments of delinquency and substance abuse in adolescents, CRAFT seems well suited for rigorous evaluation.

2. Materials and Methods

2.1. Design

The study followed a 2 (intervention type: CRAFT versus Education as Usual [EAU]) x 6 (time: Baseline and 6, 12, 18, 24, and 30 months post-baseline) design, with random assignment of youth to intervention conditions. In addition to these semi-annual assessments, self-reported outcomes assessing the primary aims of CRAFT (e.g., the number of days worked in a given month, school attendance) and youth substance use were measured on a monthly basis to increase accuracy of recall.

2.2. Participants

Participants were 97 juvenile offenders who completed a family- and evidence-based treatment program for substance abuse, delinquent behavior, and associated problems. Inclusion criteria for the youth were: (a) age 15–18 years, (b) involvement in the juvenile justice system for the commission of a criminal offense, (c) referral by the justice system to one of three (i.e., MST, MDFT, or FFT) publicly-funded and evidence-based treatment programs designed to prevent out-of-home placement (e.g., incarceration or residential substance abuse treatment) for juvenile offenders, (d) an identified problem with substance abuse or very high risk for developing such a problem, and (e) an interest in pursuing vocational training in the building trades. Caregivers also participated, and in the case of multiple caregivers in the home, self-selection was used to determine who would be enrolled.

2.3. Research Procedures

All procedures were approved by the institutional review boards (IRB) of the participating universities and by two IRBs housed within the public agencies that have statutory authority to serve juvenile offenders in the state of Connecticut (i.e., the Judicial Branch Community Services and Support Division and the Department of Children and Families).

2.3.1. Recruitment—Participants were recruited from nine MST, four MDFT, and 1 FFT treatment teams that served juvenile offenders and their families within the greater Hartford, Connecticut area. Participant recruitment occurred from June 2007 through April 2009, and data collection continued through October 2011. For several months prior to the recruitment period and continuously during recruitment, research staff met regularly with treatment team therapists, supervisors, and program managers to facilitate referrals. Therapists were asked to invite all youth aged 15–18 years on their caseloads to learn about a research study examining vocational training. If the youth was interested, therapists obtained a caregiver's

written release of information and provided contact information to the research staff who then telephoned the caregiver.

2.3.2. Consent and randomization—If the caregiver and youth were interested in participating in the study, research staff visited their home and screened the youth for substance abuse using four subscales of the Global Appraisal of Individual Needs (GAIN; Dennis, Titus, White, Unsicker, & Hodgkins, 2003). Based on criteria established in validation studies of the GAIN with adolescent samples (Buchan, Dennis, Tims, & Diamond, 2002; Dennis, Funk, Godley, Godley, & Waldron, 2004; Godley, Kahn, Dennis, Godley, & Funk, 2005), a youth was deemed to have a problem with or be at high risk for substance abuse if he or she: (a) met DSM-IV criteria for lifetime substance dependence, using the 7-item Substance Dependence Scale; (b) met DSM-IV criteria for lifetime substance abuse, using the 4-item Substance Abuse Index; (c) scored in the clinical or acute range on the 16-item Substance Problem Scale-Lifetime; or (d) scored in the "high risk" range on both the 7-item Social Risk Index and the 13-item Recovery Environment Risk Index. Using these criteria, 95% of volunteering youth were screened eligible for participation. If the youth met inclusion criteria, the research assistant explained the study to the youth and his or her caregiver, attained informed assent and consent, and administered separate baseline assessment batteries to each. For cases in which the family's time was limited, the baseline assessment batteries were administered during a subsequent visit to the home.

Randomization was based on a computer-generated table of random numbers. Assignments were placed in sealed envelopes that were numbered and opened sequentially, with separate randomization envelopes created for each gender to help ensure equal distributions to CRAFT and EAU conditions. Upon completion of the baseline assessment batteries, the research assistant opened the next sealed envelope in the sequence and informed the family of the youth's assigned intervention condition.

2.3.3. Data collection—All self-report measures were administered individually and separately for the youth and caregiver in their home at 6 time points (i.e., baseline, 6, 12, 18, 24, and 30 months). Youth also provided a urine sample during each assessment. Youth-caregiver dyads were compensated $75 per assessment, which lasted on average 1.5 hours. In addition, research assistants telephoned all youth once per month to conduct a brief (approximately 15 minutes) interview pertaining to their employment, schooling, and substance use during the past 30 days. Youth received $10 for each completed phone interview. All compensations were in the form of checks made out to the caregiver and were provided in person during home-based assessments or by mail for phone interviews.

2.3.4. Research recruitment and retention—Of the 128 youths/families indicating interest in the study, 109 (85%) agreed to an initial home screening visit when telephoned. Of those screened, 104 (95%) were eligible for participation, and 97 (93%) were enrolled and randomized. One youth, randomly assigned to EAU, declined to complete any additional assessments post-baseline. Of the 96 youth remaining, research retention ranged from 78–94% across all semi-annual and monthly time points.

2.4. Interventions

All youth were participating in one of three evidence-based interventions for substance use and delinquent behavior at the time of referral to the study. Referrals came mostly from MST therapists (85%), with 14% and 1% from MDFT and FFT therapists, respectively. Although it was not possible to gather specific information (e.g., length of services) about participating youths' involvement in these treatments, therapists tended to refer only those

cases that were deemed successful treatment completers and were nearing case closure. In all but one case, youth were referred with fewer than 4 weeks remaining in the treatment intervention.

2.4.1. Community Restitution Apprentice-Focused Training—CRAFT is a 6-month employment program designed to train and place high-risk youth and juvenile offenders in employment in the building industry. As noted previously, the program is operated by the HBI, which is the educational arm of the NAHB. CRAFT curricula can emphasize different specialty areas within the home building industry (e.g., bricklaying, landscaping). In the present study, the CRAFT facilities maintenance curriculum, which provides broad exposure to most facets of the construction trade (e.g., plumbing, electrical services, drywall installation, woodworking) was selected to provide youth with a wide range of marketable skills.

CRAFT interventions were delivered by a single full-time instructor with more than 20 years experience in private sector contract work and by an assistant instructor. Upon randomization to the CRAFT condition, the research assistant referred the youth to the instructor, who immediately scheduled a home visit with the family. Because most students (74%) were enrolled in public high schools at the time of referral to CRAFT, the instructors worked with school personnel to create individualized program attendance schedules that accommodated students' school requirements. In addition, transportation to and from the program was provided each day. Youth began the CRAFT program as soon as possible, within 4 weeks after program referral in 66% of cases.

Successful completion of the CRAFT program was defined as attendance for a minimum of 100 hours of instruction and basic proficiency in all core skill areas within the facilities maintenance curriculum. Using this definition, 70% of students completed the program. Completers were awarded an HBI Pre-Apprenticeship Certificate verifying their skills and readiness for a real-world entry-level apprenticeship. On average, students received 125.7 hours of CRAFT instruction (range 0 – 152.2; 3 youth [6%] never attended the program following randomization) and attended for 5.68 months (range 0 – 11.06 months; $M = 7.49$ months and $M = 1.84$ months for completers and noncompleters, respectively).

2.4.1.1. Classroom-based construction skill learning: CRAFT uses an apprentice-based learning model in which students work alongside the instructor in a simulated work environment. The CRAFT classroom was fully equipped with tools and supplies set up in workstations based on a particular skill (e.g., plumbing, drywall). As students became more proficient in specific skills, they were practiced on projects outside of the classroom. For example, various projects (e.g., restoring a restroom to functionality) were implemented within a large unused warehouse building that needed repairs. The instructor adhered to CRAFT protocols requiring students to have "tools in hand" during 75% of program time. The remaining 25% of program time was spent on academic and employability skill development and job placement assistance.

2.4.1.2. Academic skill development: Students spent a portion of each program day engaged in activities linking academic subjects (e.g., math, writing) to real-world problems within the construction trade (e.g., written estimates of project expenses, determining angles for custom building). Academic skill development sessions were delivered by both the instructor and his assistant, using both classroom and one-on-one instruction.

2.4.1.3. Employability skill development: Students also received direct individual- and classroom-based instruction in skills related to obtaining and keeping a job, including job seeking techniques, completing application forms, interviewing effectively, meeting

employer expectations, and filing tax forms. Employability training was individualized to student needs.

2.4.1.4. Job placement assistance: The instructor, in conjunction with local NAHB member companies, worked to identify job opportunities for each participant. When successful, the instructor guided the youth through the hiring process and helped employers access any available incentives for hiring at-risk youth (e.g., the Federal Work Opportunities Tax Credit, Hartford's Capital Workforce Partners Program).

2.4.1.5. Job retention and follow-up: CRAFT instructors maintained contact with program graduates for 6 months post completion to help troubleshoot any job-related issues and were available to serve as a liaison between the youth and the employer if problems arose. Ongoing contact occurred primarily through semi-monthly telephone calls or home visits to the youth.

2.4.2. Education as Usual—Youth randomized to the EAU condition had access to vocational and educational services available through public schools and community organizations in Hartford. At the time of the study, however, vocational programs within the Hartford area were scarce and difficult for juvenile offenders to access. Thus, most youth in the EAU condition received only standard educational services delivered by the public school system. Youth success in school is a major treatment goal of all three of the treatment models (MST, MDFT, and FFT) that made referrals to the study. In ongoing meetings with therapists, research staff reminded therapists to provide any educational/vocational assistance and links to post-treatment programs for the youth they deemed necessary, in accordance with their respective model protocols.

2.5. Measures

The primary aim of CRAFT was to enhance employment and education outcomes. As such, these are considered the primary outcome measures and were assessed monthly. In addition, semi-annual assessments of youth substance use, criminal behavior, and mental health symptoms were conducted to evaluate either favorable or iatrogenic changes in youth functioning. These latter measures are considered secondary, as they are not the primary aim of the CRAFT intervention.

2.5.1. Employment/education—During each monthly phone interview, youth reported whether or not they were working a job for pay and if so: (a) the type of job (construction vs other), (b) hours worked, and (c) hourly wage earned. From these responses, a "steady worker" variable was also created to indicate those youth who had worked for at least 6 months of the reporting period. Youth also reported whether during the past month they had (a) attended high school, (b) graduated from high school, and (c) if not in school, attended classes for completing the General Equivalency Diploma (GED).

2.5.2. Substance use and related problems—Substance use was measured through two self-reports indices and urine drug screens. (a) Self-reported substance use was assessed semi-annually using a variation of the Form 90 (Miller, 1991) as well as during the monthly calls using the 15-item GAIN Substance Frequency Scale (Dennis et al., 2003). The Form 90 is an interview based on the time-line follow-back (TLFB) methodology of quantifying specific amounts of substances consumed by individuals during the previous 90 days. The numbers of days were tabulated for alcohol use, heavy alcohol use (i.e., more than 4 standard drinks), marijuana use, and polydrug use. Research with adolescents indicates that the TLFB method is reliable (Waldron, Slesnick, Brody, Turner, & Peterson, 2001) and yields data that correspond with biological markers (Waldron et al., 2001) and collateral

reports (Donohue et al., 2004) of youth substance use. For the GAIN Substance Frequency Scale, youth reported how many days alcohol, marijuana, cocaine, opiates, or other drugs were used during the past 30 days. (b) Urine drug screens (UDS) were collected semi-annually following the Department of Health and Human Services (DHHS) Mandatory Guidelines for Federal Workplace Drug Testing Programs http://workplace.samhsa.gov. The specimens were tested at a local drug testing laboratory for cannabis, cocaine, benzodiazepines, and opiates. (c) Substance-related problems (e.g., health concerns, legal issues) were assessed semi-annually using the 16-item GAIN Substance Problem Scale, which has predicted later substance use in longitudinal research (Godley et al., 2005).

2.5.3. Mental health symptoms—Externalizing and internalizing symptoms were assessed semi-annually by adolescent and caregiver ratings on the 113-item Youth Self Report/Child Behavior Checklist (YSR/CBCL; Achenbach, 1991), one of the best-validated measures of youth behavioral functioning. Raw scores ranging from 21–28 on the externalizing and 15–21 on the internalizing dimensions are considered to be in the borderline clinical range, and scores above 28 and 21, respectively, are in the clinical range.

2.5.4. Criminal activity and recidivism—Criminal behavior was assessed through semi-annual self-reports and archival arrest records. (a) The 47-item Self-Report Delinquency Scale (SRD; Elliott, Ageton, Huizinga, Knowles, & Canter, 1983) is one of the best validated of the self-report delinquency scales (Thornberry & Krohn, 2000) and taps the number of times the youth engaged in a broad range of criminal behavior during the past 90 days. Subscales pertain to general delinquency, general theft, and crimes against the person (e.g., assault). (b) Arrests were tracked through computerized records maintained within the Connecticut Judicial Branch. In Connecticut, all criminal records involving young people under the age of 21 years are maintained in this system; thus, a separate search of adult arrest databases was not necessary.

2.6. Analytic Strategies

With the exception of descriptive tests, all analyses were conducted using the Mplus Version 6.12 software package (Muthen & Muthen, 2010). Choice of analytic strategies was based on whether the outcome of interest involved continual change over time, such as mental health symptoms, or a cumulative effect across the entire follow-up period, such as high school graduation. Also, model estimation was dictated by the nature of the outcome variable. Analyses involving dichotomous outcomes were performed using weighted least squares adjusted for means and variance (WLSMV) estimation, whereas continuous and count outcome analyses used Maximum Likelihood Robust (MLR) estimation.

All outcomes were analyzed using an intent-to-treat approach that included data from youth who did not complete CRAFT or who had missing data points for other reasons. In addition, worker-only analyses were conducted on employment and educational outcomes. Youth age was included as a covariate in all models, since age was significantly related to many outcomes of interest. Potential moderators of outcomes (i.e., youth age, severity of substance-related problems, and number of prior arrests) also were explored.

2.6.1. Descriptive analyses and equivalence of groups at baseline—Chi-square and *t* tests, conducted using SPSS Version 20 (2011), were used to examine between-groups differences on baseline characteristics.

2.6.2. Cumulative outcomes: Employment, education, and criminal arrest— Binomial logistic regression analyses were conducted to determine between-groups differences on whether or not the youth had obtained employment, graduated from high

school, enrolled in a GED program, worked in construction, and been rearrested for a criminal offense by the end of the 30-month follow-up. Linear regression analyses were used to evaluate average hourly wage. Negative binomial regression analysis was used to examine number of months of employment, number of months attending GED classes, and number of arrests during the follow-up period.

2.6.3. Continual change over time: Substance use/problems, mental health symptoms, and criminal activity—Latent growth curve modeling (LGM) was used to assess intervention effects over 30 months post-baseline on youth UDS results and youth/ caregiver self-report measures. Analyses involving continuous variables (i.e., substance problems, externalizing/internalizing symptoms) used sums of raw scores of each measure. Outcomes expressed as counts (i.e., days of alcohol and drug use, self-reported delinquency) were analyzed using negative binomial LGMs. Outcomes expressed as binary indicators (i.e., presence/absence of each substance in urine drug testing) were estimated using LGM with the WLSMV estimator.

For each outcome, models with different assumptions regarding the nature of change over time (i.e., no linear change, linear increase/decrease across time points, leveling at later time points) and other parameter specifications (e.g., fixing vs. freely estimating residual variances, estimating intercept and slope factor covariance) were tested. Standard LGM fit indices (e.g., the Comparative Fit Index [CFI], the Root Square Error of Approximation [RMSEA]) were used to determine the best fitting model for all models involving continuous or binary outcomes, and the Baysian Information Criterion (BIC) was used for models involving counts. Once the best fitting model was determined, the estimate of the linear growth factor regressed on treatment condition (EAU = 0, CRAFT = 1) was used as the indicator of an intervention effect.

2.6.4. Moderator analyses—Three variables (i.e., youth age, severity of substance-related problems at baseline, and number of prior arrests) were explored as potential moderators of intervention outcomes. To examine moderation, each outcome analysis was rerun to simultaneously include intervention group (dummy-coded), the potential moderating variable, and the cross-product term of group and the moderating variable. Moderator variables were centered around their means in each cross-product term. A significant coefficient for the cross-product term reflected a moderation effect. Moderator analyses were conducted for all outcomes, since moderation can occur in the absence of a main (i.e., intervention) effect (Aiken & West, 1991).

3. Results

3.1. Participants

As shown in Table 1, the groups were equivalent on all but one demographic variable (i.e., percent in single-parent households). Bivariate analyses indicated that household status (i.e., single- vs. dual-parent) was significantly correlated with only one outcome variable (i.e., YRS internalizing); thus, it was included as a covariate in analyses examining this outcome.

Across conditions, the mean age of the youth at baseline was 15.8 years (SD = 0.92 years) and 83% were male. Regarding race/ethnicity, 52% were White/Hispanic, 28% were Black, 17% White/Non-Hispanic, and 3% identified as mixed race. The youth averaged 5.33 (SD = 3.88) prior arrests, and 26% were not attending regular or alternative public school. Participating caregivers averaged 43 years of age, 91% were female, 37% had not completed high school, and 48% were unemployed. A large proportion (i.e., 53%) of households received at least some public assistance (i.e., food stamps, housing assistance, or supplemental security income), and the majority (i.e., 57%) reported household incomes of

less than $20,000 a year. The family socioeconomic characteristics and youth arrest histories support the high-risk nature of the sample.

3.2. Primary Outcomes: Employment and Education

Descriptive statistics and analyses are presented in Table 2 for the intent-to-treat sample and Table 3 for the worker-only sample.

3.2.1. Employment—For the intent-to-treat analyses, youth in the CRAFT condition were significantly more likely to have been employed over the 30-month follow-up period (i.e., 76% vs. 50%) and employed in the construction trade (i.e., 46% vs. 19%) than were counterparts in the EAU condition. Intervention effects were not observed for other employment-related measures. Among the 61 youth who were employed (i.e., worker-only sample), the groups did not differ across follow-up on any employment-related outcome.

3.2.2. Education—For the intent-to-treat analyses, youth in the CRAFT condition were significantly more likely to have attended a GED program (i.e., 50% vs. 26%). In addition, if enrolled ($n = 37$), youth in the CRAFT condition attended the GED program for significantly more months than did their EAU counterparts. The groups, however, did not differ on high school graduation rates. Significant education-related outcomes were not observed in the worker-only analyses.

3.3. Secondary Outcomes: Substance Use/Problems, Mental Health Symptoms, and Criminal Activity/Recidivism

Means and standard deviations for all semi-annual measures by time point and intervention condition are presented in Table 4. Table 5 provides growth factor and intervention effect estimates for these same measures as well as for the monthly reports of youth alcohol and marijuana use from the GAIN. For all but one measure (i.e., the GAIN monthly marijuana frequency scale), a linear model, indicating change over time, was superior in fit to an intercept-only (i.e., no change) model, allowing for the testing of intervention effects.

3.3.1. Substance use and problems—Due to extremely low or zero frequencies at multiple time points, self-report or biological measures of use of substances other than marijuana and alcohol could not be analyzed. Intervention effects were not observed for any of the alcohol, marijuana, or substance problem outcomes. Although youth evidenced increased alcohol and marijuana use across intervention conditions throughout the follow-up (e.g., percent positive urine drug screens increased from 45% to 73%), in all but one case (i.e., GAIN alcohol frequency), these increases were not statistically significant. On the other hand, youth reported decreased substance-related problems, although not at a statistically significant level.

3.3.2. Mental health symptoms—Intervention effects were not observed. Both youth and caregiver reports of externalizing symptoms indicated baseline levels in the borderline clinical range. Youth reported small, nonsignificant linear decreases over 30 months, whereas caregivers reported significant decreases over time. Youth and caregiver reports of internalizing symptoms at baseline were in the subclinical range and remained unchanged during follow-up.

3.3.3. Criminal activity and recidivism—Across intervention conditions, youth reported significant decreases over time in general delinquency and crimes against persons with no intervention effect. Neither intervention nor time effects were observed for self-reported general theft. Post-baseline rearrest rates did not differ by intervention condition at follow-up, CRAFT = 32%, EAU = 34%, Wald [1] = 0.08, *ns*. The average frequency of

post-baseline arrests also did not differ between groups, CRAFT $M = 0.70$ ($SD = 1.33$), EAU $M = 0.68$ ($SD = 1.27$), Wald (1) = 0.02, *ns.*

3.4. ModeratorAnalyses

Analyses were conducted to determine whether youth outcomes were moderated by age, substance-problem severity, or prior arrests. Moderator effects were not observed for any of the aforementioned employment/education outcomes that had demonstrated significant treatment effects. Moreover, as only four moderators were significant at the $p<.05$ level across all variables, and four were expected by chance given the 75 separate analyses (i.e., [10 employment/education outcomes + 15 psychosocial outcomes] × 3 moderator variables), it seems reasonable to conclude that meaningful moderation effects were not observed.

4. Discussion

The central aim of the study was to evaluate whether a promising vocational training program for high-risk youth, CRAFT, was effective in achieving its primary goal – enhancing employment and educational attainments. Analyses showed that youth in the CRAFT condition were 1.52 times more likely than counterparts in the EAU condition to have been employed during the 30-month follow-up and 2.4 times more likely to have been employed in the construction industry. For youth who were employed, however, no intervention effects were observed for their average number of months employed (i.e., 3.82 vs. 3.65), average hours worked during these months (i.e., 67 vs. 68), average hourly wage (i.e., $7.78 vs. $8.10), or capacity to achieve employment for at least 6 months during follow-up (11% vs. 26%). In addition, youth in the CRAFT condition were 1.92 times more likely to have attended a GED program during this time and, for those youth enrolled, attended the GED program almost twice as long as their EAU counterparts. Such findings are encouraging in light of the historic context of the study and nature of the sample. The study was conducted during an economic recession that was particularly onerous for workers in the construction industry. Moreover, participants were at very high risk. The youth averaged more than 5 prior arrests, had identified substance use problems or were at high risk for such, and experience considerable economic disadvantage.

Though employment and educational outcomes were modest in scope, the conceptual bases of the relative success of CRAFT in achieving these key goals are pertinent. The success of CRAFT pertains most likely to its comprehensive, pragmatic, individualized, and ecologically valid emphases. Construction skill development was "hands on" and practiced in real world building sites. Academic instruction was individualized and focused on pragmatic concerns within the construction trade. Mentors developed students' interpersonal employment skills (e.g., job interviewing, communication with co-workers and supervisors) and worked with local colleagues in the construction trades to identify job opportunities. Finally, after the youth graduated from CRAFT, instructors were available to trouble-shoot any job-related issues. In general, such emphases are conceptually consistent with the intervention approaches used by those treatments of serious antisocial behavior in adolescents that have proven effective (Henggeler & Sheidow, 2012) – pragmatic, problem focused, systemic, and ecologically valid.

As noted previously, several employment and education outcomes did not evidence significant intervention effects. CRAFT did not impact wages and hours worked for those youth who were employed nor high school graduation rates for the larger sample. In retrospect, such findings are not surprising. The vast majority of the employed youth had entry-level, minimum wage jobs consistent with their ages. For even the most talented CRAFT graduate, the path to a well-paid, skilled position (e.g., plumber, electrician) likely extends beyond a 2-year post training follow-up. Similarly, in light of the real-world,

pragmatic emphases of CRAFT as well as the self selection of the study participants (i.e., interested in a career in the building trades), a GED seems to be a reasonable choice for continued education in comparison with high school classroom attendance. At any rate, a considerably longer follow-up will most likely be needed to evaluate CRAFT effects on outcomes such as wage income.

A secondary aim of the study was to evaluate CRAFT effects on the behavioral (i.e., substance use, criminal activity) and mental health (i.e., externalizing and internalizing symptoms) outcomes of this high-risk sample. Consistent with outcomes observed in the supported employment literature with adults (Campbell et al., 2011), findings showed that CRAFT neither attenuated nor exacerbated youth behavioral or mental health functioning. In contrast with hopes, engagement in prosocial, career-based training was not associated with decreased substance use or criminal behavior. For example, youth in both conditions had moderately high and stable substance use across the follow-up period. On the other hand, and in contrast with realistic concerns (Dodge et al., 2006), extensive contact among the antisocial youth in the CRAFT program (i.e., peer contagion) did not lead to increased rates of deviant behavior. The lack of iatrogenic effects in this intervention that grouped antisocial youth together might be explained by the fact that CRAFT includes key program characteristics that can attenuate negative peer contagion effects (Dodge et al., 2006). These characteristics include a focus on older adolescents, high structure and organization, the presence of an expert instructor, and having well-specified and mutually agreed-upon goals.

4.1. Limitations and Future Directions

The study includes several pertinent limitations. The first pertains to its historical context and timing. Intervention implementation and research follow-up occurred during a severe economic downturn that had a particularly devastating effect on the construction industry. This recession likely dampened the employment-related outcomes for youth in both intervention conditions, but especially for those youth who were specifically being prepared for careers in the building trades. The second limitation pertains to external validity. Findings should not be generalized to samples beyond justice-involved substance abusing or high-risk youth in late adolescence who are interested in careers in the building trades. Similarly, all youth were in the final stages of completing an evidence-based treatment of serious antisocial behavior, and results should not be generalized to youth who have not received such treatment. Third, statistical power was low for many analyses due to the relatively small sample size. For example, power to detect small-medium effects was .51-.88 for intent-to-treat analyses (Table 2) and only .33-.67 for worker-only analyses (Table 3). Yet, it should be noted that few intervention effects, other than those noted previously, even approached marginal levels (i.e., $p < .10$) of statistical significance, which decreases the likelihood that null results were due to type 2 error. Finally, in light of the considerable discrepancy in the intensity of services between CRAFT and EAU, the favorable outcomes observed from CRAFT might not have been due to the vocational emphases of this program per se, but might have been the product of a broader opportunity for employment planning and support.

As indicated previously, the effects of CRAFT are encouraging. Nevertheless, considerable room for improved outcomes exists for this very challenging clinical population. Although CRAFT shares several key features with high-quality supported employment programs that have well-documented effectiveness (i.e., zero exclusion, a focus on competitive "real" employment, and follow-along support post-employment; Swanson et al., 2008), supported employment has several additional emphases. These include (a) opportunities to develop skills applicable to a broader range of vocations, (b) coordination with mental health and substance abuse treatment throughout vocational interventions, (c) job searching activities that commence immediately upon program entry, and (d) long-term follow-along support for

vocational success. Thus, future efforts to enhance vocational outcomes for juvenile offenders might incorporate lessons learned from the supported employment literature.

Acknowledgments

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Table 1

Comparability Between Groups at Baseline on Demographic Characteristics and Arrests

Characteristic	Frequencies or Means (SDs)		Significance	
	CRAFT ($n = 50$)	EAU ($n = 47$)	^{2} or t	p
Youth age (in years)	15.8 (0.89)	15.9 (0.96)	0.12	.71
Youth gender (% male)	83.0	82.0	0.02	.56
Youth race/ethnicity (% each)			0.54	.91
White, Hispanic	52.0	52.2		
Black, not Hispanic	26.0	30.4		
White, not Hispanic	18.0	15.2		
Mixed race	4.0	2.2		
Youth in school (% yes)	73.5	74.4	0.01	.55
Youth number of prior arrests	4.86 (3.81)	5.83 (3.92)	1.52	.22
Caregiver age (in years)	43.5 (10.47)	43.2 (10.55)	0.02	.90
Caregiver gender (% female)	89.8	93.0	0.30	.43
Caregiver role (% each category)			2.57	.46
Biological mother	69.4	74.4		
Biological father	8.2	7.0		
Grandmother	12.2	16.3		
Other (e.g., older sibling)	10.2	2.3		
Marital status (% single-parent household)	66.0	85.1	4.75	.03
Number of children in the home	2.23 (1.22)	2.58 (1.45)	1.42	.24
Caregiver graduated from high school (% yes)	68.0	57.4	1.16	.19
Caregiver employed (% yes)	54.0	48.9	0.25	.38
Family receiving public assistance (% yes)	44.9	60.9	2.43	.09
Family annual income, all sources (% each)			4.88	.30
Less than 10,000	33.3	34.8		
10,001 – 20,000	16.7	30.4		
20,001 – 30,000	16.7	13.0		
30,000 – 40,000	18.8	6.5		
More than 40,000	14.6	15.2		

Table 2

Intent-to-Treat Analyses: Intervention Effects on Primary Outcomes (N =97)

Binary Outcomes: % each	CRAFT (1)	EAU (0)	OR (95% CI)	RR	Wald or F
Employed	76.0	50.0	3.41 (1.39–8.34)	1.52	7.20[**]
Job in construction	46.0	19.1	4.11 (1.57–10.76)	2.40	8.29[**]
Steady worker (6+ mos employed)	8.0	13.0	0.59 (0.15–2.31)	---	0.57[**]
Steady job in construction (6+ mos)	6.0	4.3	1.51 (0.34–9.56)	---	0.19[**]
Graduated from high school	14.0	23.4	0.53 (0.16–1.74)	---	1.11[**]
Attended GED	50.0	26.1	2.85 (1.20–6.75)	1.92	5.67[**]
Count and Continuous Outcomes: M (SD)					
Months worked	2.90 (3.87)	1.83 (3.03)	---	---	2.25[**]
Hours worked/month	45.57 (55.64)	30.49(47.61)	---	---	1.57[**]
Months enrolled in GED	1.90 (3.09)	1.30 (2.80)	---	---	0.92[**]
Months in GED, if enrolled[a]	7.27 (6.22)	3.79 (2.90)	---	---	6.04[**]

Note. CRAFT = Community Restitution Apprentice-Focused Training; EAU = Education as Usual; OR = Odds Ratio; CI = confidence interval; RR = Relative Risk; GED = general equivalency diploma. Analysis type was as follows: binary logistic regressions for binary outcomes; negative binomial regressions for count outcomes; and linear regressions for hourly wage. All models controlled for youth age. A full parameter table is available from the first author upon request.

[a] Analysis was completed only on those youth who were enrolled in a GED program, *N* = 37.

[*] *p* < .05;

[**] *p* < .01.

Table 3

Worker-Only Analyses: Intervention Effects on Primary Outcomes (N = 61)

Binary Outcomes: % each	CRAFT (1)	EAU (0)	OR (95% CI)	RR	Wald or F
Job in construction	60.5	37.5	2.43 (0.82–7.16)	---	2.58 **
Steady worker (6+ mos employed)	10.5	26.1	0.32 (0.08–1.32)	---	1.90 **
Steady job in construction (6+ mos)	7.9	8.7	0.90 (0.14–5.85)	---	0.01 **
Graduated from high school	15.8	21.7	0.65 (0.15–2.78)	---	0.35 **
Attended GED	52.6	30.4	2.56 (0.86–7.64)	---	2.82 **
Count and Continuous Outcomes: *M* (SD)					
Months worked	3.82 (4.03)	3.65 (3.43)	---	---	0.03 **
Hours worked/month	67.0 (55.8)	68.2 (50.1)	---	---	0.02 **
Average hourly wage in dollars	7.78 (3.97)	8.10 (1.02)	---	---	0.02 **
Months enrolled in GED	2.13 (3.39)	1.22 (2.52)	---	---	1.08 **
Months in GED, if enrolled [a]	4.05 (3.76)	1.57 (1.81)	---	---	2.79 **

Note. CRAFT = Community Restitution Apprentice-Focused Training; EAU = Education as Usual; OR = Odds Ratio; CI = confidence interval; RR = Relative Risk; GED = general equivalency diploma. Analysis type was as follows: binary logistic regressions for binary outcomes; negative binomial regressions for count outcomes; and linear regressions for hourly wage. All models controlled for youth age. A full parameter table is available from the first author upon request.

[a] Analysis was completed only on those youth who were enrolled in a GED program, *N* = 27.

*
  p < .05;

**
  p < .01.

Table 4

Means and Standard Deviations or Frequencies for Outcome Measures by Time and Condition

Outcomes[a]	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
F90 Alcohol						
CRAFT	1.54 (3.27)	1.59 (2.45)	2.16 (4.78)	2.47 (4.10)	5.00 (7.97)	3.69 (8.94)
EAU	2.02 (3.96)	1.59 (3.75)	3.73 (5.53)	3.00 (4.66)	4.97 (8.44)	4.78 (8.91)
F90 Heavy Alcohol						
CRAFT	1.16 (3.15)	0.90 (1.68)	1.24 (3.36)	2.47 (4.10)	3.59 (6.95)	3.19 (6.74)
EAU	1.49 (3.54)	1.28 (3.60)	2.97 (5.31)	3.00 (4.66)	4.91 (9.14)	4.22 (6.46)
F90 Marijuana						
CRAFT	11.30 (22.01)	8.82 (21.27)	7.49 (16.38)	12.68 (24.16)	22.91 (34.64)	20.42 (33.41)
EAU	17.11 (28.64)	14.00 (27.94)	21.17 (35.13)	26.42 (32.07)	29.29 (36.23)	21.88 (33.08)
F90 Polydrug Use						
CRAFT	0.92 (2.26)	0.76 (1.30)	0.51 (1.12)	1.21 (1.96)	3.65 (7.60)	1.94 (5.46)
EAU	0.96 (3.58)	0.97 (1.59)	1.23 (2.12)	1.35 (1.89)	3.03 (6.46)	1.84 (3.86)
UDS Marijuana (% positive)						
CRAFT	44.7%	61.5%	48.6%	62.2%	64.5%	75.9%
EAU	46.5%	67.9%	69.0%	67.9%	59.3%	69.2%
GAIN Substance Problems						
CRAFT	1.52 (2.27)	0.76 (1.30)	0.51 (1.12)	0.88 (1.65)	0.72 (1.22)	0.56 (0.78)
EAU	1.91 (2.54)	0.97 (1.59)	1.23 (2.12)	1.23 (1.52)	1.05 (1.94)	1.19 (2.20)
YSR Externalizing						
CRAFT	21.76 (7.79)	21.14 (8.23)	17.60 (6.32)	18.67 (8.41)	16.31 (7.90)	15.11 (8.71)
EAU	22.52 (9.43)	18.63 (6.37)	18.63 (6.37)	16.20 (5.97)	14.27 (7.84)	15.63 (6.97)
YSR Internalizing						
CRAFT	9.18 (6.21)	9.36 (5.77)	7.29 (5.60)	8.13 (7.00)	7.28 (5.32)	5.67 (4.30)
EAU	9.57 (7.36)	8.53 (6.72)	8.60 (7.77)	5.93 (4.24)	5.91 (4.58)	9.06 (7.98)
CBCL Externalizing						
CRAFT	18.92 (11.83)	20.79 (10.60)	18.24 (12.98)	15.30 (9.95)	14.19 (11.96)	16.74 (13.48)
EAU	22.70 (11.12)	19.65 (8.20)	19.41 (11.43)	18.74 (7.90)	17.57 (10.90)	10.53 (7.50)
CBCL Internalizing						

Outcomes[a]	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
CRAFT	9.43 (6.30)	11.12 (8.47)	9.32 (5.87)	10.23 (8.72)	9.04 (9.04)	10.79 (11.95)
EAU	12.02 (8.34)	11.68 (8.16)	11.00 (8.64)	11.00 (9.24)	11.17 (8.41)	7.93 (6.58)
SRD General Delinquency						
CRAFT	25.78 (35.95)	19.14 (32.36)	11.11 (19.13)	10.85 (22.18)	4.69 (7.91)	1.61 (3.76)
EAU	28.32 (35.51)	19.47 (36.11)	12.49 (19.97)	13.37 (24.46)	14.14 (25.27)	4.87 (7.87)
SRD General Theft						
CRAFT	2.24 (4.65)	2.35 (4.13)	0.71 (2.63)	0.80 (2.10)	0.48 (1.88)	0.11 (0.32)
EAU	5.00 (11.20)	2.03 (5.35)	1.60 (4.32)	0.77 (2.39)	1.10 (3.49)	0.80 (1.90)
SRD Person Crimes						
CRAFT	1.90 (2.94)	1.53 (2.46)	1.29 (2.93)	0.75 (1.41)	0.31 (0.89)	0.33 (0.97)
EAU	3.17 (4.79)	0.83 (1.86)	1.26 (2.73)	0.53 (1.22)	0.43 (0.98)	0.47 (1.25)

Note. CRAFT = Community Reinforcement Apprentice-Focused Training; EAU = Education as Usual; F90 = Form 90; GAIN = Global Assessment of Individual Needs; YSR = Youth Self Report; CBCL = Child Behavior Checklist; SRD = Self Report of Delinquency. Measurements occurred every six months following Time 1 (baseline).

[a] A table of GAIN Alcohol and Marijuana Frequency Scales is available from the first author upon request, since these outcomes were measured monthly over 30 months.

Table 5

Latent Growth Model (LGM) Parameters: Substance Use/Problems, Mental Health Symptoms, and Criminal Activity

	Intercept		Slope (S)		S on Intervention	Model Fit Indices [a]		
	Est (SE)	V (SE)	Est (SE)	V (SE)	Est (SE)	BIC	RMSEA	CFI
Substance Use and Problems								
F90 Alcohol	−0.10 (0.24)**	1.51 (0.44)**	0.59 (0.81)	0 (−)[b]	−0.08 (0.09)	1808.11	---	---
F90 Heavy Alcohol	−0.64 (0.31)*	2.12 (0.65)**	1.01 (0.93)	0 (−)[b]	−0.11 (0.11)	1556.49	---	---
F90 Marijuana	2.10 (0.33)**	2.73 (0.65)**	1.26 (1.33)	0.23 (0.08)**	0.06 (0.15)	2762.49	---	---
F90 Polydrug Use [c]	−1.14 (0.31)**	1.77 (0.59)**	0.29 (1.21)	0.11 (0.07)**	−0.11 (0.13)	1293.89	---	---
GAIN Alcohol Freq.	−0.45 (0.44)*	3.63 (0.84)**	0.32 (0.15)*	0 (−)[b]	0.00 (0.02)	3831.38	---	---
GAIN Marij. Freq. [d]	0.31 (0.39)**	5.76 (1.12)**	---	---	---	5049.67	---	---
UDS Marijuana	0.00 (0.00)	0.46 (0.20)**	0.59 (0.57)	0 (−)[b]	−0.03 (0.06)	---	.056	.957
GAIN Sub. Probs. [c]	1.41 (0.21)**	0.36 (0.21)**	−0.11 (0.63)*	0.05 (0.04)**	−0.15 (0.09)	1578.32	.026	.951
Mental Health Symptoms								
YSR Externalizing [c]	22.03 (0.82)**	24.15 (4.47)**	−1.87 (3.00)**	0 (−)[b]	0.19 (0.33)	2656.56	.028	.980
YSR Internalizing [c,e]	9.35 (0.68)**	31.61 (6.40)**	−3.48 (2.34)**	1.38 (0.52)**	0.10 (0.27)	2483.31	.068	.927
CBCL Externalizing	20.98 (1.00)**	53.31 (12.58)**	−1.58 (0.46)**	2.86 (1.02)**	0.10 (0.60)	2676.27	.046	.963
CBCL Internalizing	10.80 (0.72)**	34.88 (6.79)**	0.64 (4.29)**	1.89 (0.56)**	0.08 (0.43)	2393.74	.048	.970
Criminal Activity								
SRD General Delinq.	2.96 (0.21)**	1.23 (0.56)*	−0.45 (0.11)**	0.13 (0.07)	−0.08 (0.13)	2578.02	---	---
SRD General Theft	1.68 (1.37)	3.69 (1.19)**	−1.68 (1.37)	0 (−)[b]	−0.05 (0.14)	1012.68	---	---
SRD Person Crimes	0.43 (0.26)	1.69 (0.55)**	−4.55 (1.47)**	0 (−)[b]	0.09 (0.14)	1022.09	---	---

Note. Log means are presented for outcomes involving counts.

SE = standard error; V = parameter variance; BIC = Bayesian information criterion; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; F90 = Form 90; GAIN = Global Assessment of Individual Needs; UDS = Urine Drug Screens; YSR = Youth Self Report; CBCL = Child Behavior Checklist; SRD = Self Report of Delinquency. Dichotomous coding was used for intervention condition, Education as Usual (EAU) = 0, Community Reinforcement Apprentice-Focused Training (CRAFT) = 1. All models controlled for youth age on growth factors. A full parameter table is available from the first author upon request; *N* = 96.

[a] RMSEA and CFI not available in negative binomial LGMs (i.e., outcomes involving count variables); BIC not available in LGMs involving binary categorical outcomes.

[b]Residual variances, which were small and not statistically significant, were fixed at zero to optimize model fit.

[c]For these outcomes, a quadratic growth factor was included to optimize model fit.

[d]Intercept-only model retained; model estimating linear growth factor did not result in significantly better fit.

[e]Model controlled for household status (dual- vs. single-parent family)on growth factors.

[*]
$p < .05$.

[**]
$p < .01$.