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On: 02 July 2013, At: 12:53

Publisher: Routledge

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Justice Quarterly

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rjqy20>

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Published online: 17 May 2012.

To cite this article: Justice Quarterly (2012): Impacts of Juvenile Probation Training Models on Youth Recidivism, Justice Quarterly, DOI: 10.1080/07418825.2012.673633

To link to this article: <http://dx.doi.org/10.1080/07418825.2012.673633>

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Impacts of Juvenile Probation Training Models on Youth Recidivism

Douglas W. Young, Jill L. Farrell and Faye S. Taxman

Probation and parole case managers in 12 field offices of a state juvenile justice agency took part in a controlled experiment aimed at advancing knowledge on implementing evidence-based practices in juvenile assessment, treatment planning, and placement. Employing stratification and random assignment, case managers in four of the offices were assigned to a control/no training condition and case managers in the other eight offices took part in an initial training and two follow-up sessions on research-based supervision practices. In four of these offices, training was enhanced by the inclusion of peer coaches who provided internal support for practice implementation. Consistent with other ongoing research that shows improved organizational functioning in the enhanced training sites, logistic and Cox regression results on 1,518 youth in two follow-up cohorts tracked over 12 months indicate those supervised in the enhanced sites show a pattern of reduced recidivism compared to those in the standard and control sites.

Keywords juvenile justice; probation; corrections; supervision; training; recidivism

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More than 1.6 million youth are under juvenile court jurisdiction in the USA. Delinquency cases processed by juvenile courts have increased 44% since 1985. The increase in the number of cases that were adjudicated delinquent and resulted in an order of probation has been especially acute, up 69% between 1985 and 2007, compared with a 42% increase in the number of cases that resulted in out-of-home placement (Puzzanchera, Adams, & Sickmund, 2010). Accompanying this growth has been a substantial body of research suggesting that the juvenile justice (JJ) system has become a default repository for youth with multiple and often longstanding service needs, as data demonstrate that youth in correctional settings have rates of substance abuse and mental health disorders that far exceed those in the general adolescent population (Ford, Hartman, Hawke, & Chapman, 2008; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002). An extensive literature has also shown that youth involvement in the JJ system has deleterious effects on their development into productive adults.

Concurrent with this increase in the size and scope of the JJ population has been a significant growth in knowledge about effective programs in the JJ system, and more generally practices with at-risk youth. Numerous reviews, including expert panels' assessments of substance abuse treatment practices (Brannigan, Schackman, Falco, & Millman, 2004; Drug Strategies, 2005), the Blueprints violence prevention initiative at the University of Colorado, and meta-analyses of dozens of prior studies (Greenwood, 2008; Lipsey, 2010; Lipsey & Cullen, 2007) have served to build consensus around a core set of evidence-based practices (EBPs) that should be used with delinquent youth. National initiatives such as Reclaiming Futures (Solovitch, 2009) and regional, multisite JJ, and mental health partnerships (Glisson et al., 2010; Schoenwald, Chapman, Sheidow, & Carter, 2009) have further attempted to integrate and employ EBPs in comprehensive, multiagency intervention models aimed at at-risk and delinquent youth across multiple settings and systems. Taking knowledge development to another level, researchers have also begun to study how best to close the gap between this advanced understanding of what works and the actual use of EBPs (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; Taxman & Belenko, 2011). These studies borrow from research on technology transfer in mental health and substance abuse treatment to examine organizational factors involved in adopting and implementing EBPs with at-risk and delinquent youth (Hemmigarn, Glisson, & James, 2006; Henderson, Taxman, & Young, 2008; Henderson et al., 2007).

Within this picture of progress, there is a notable absence of EBP research that directly involves probation and aftercare/parole officers and case managers who are responsible for supervising youth in the JJ system. In one sense, this is not surprising, in that EBPs are typically wrapped up in a specific "model" or program that involve multimodal interventions (McCarter, Haber, & Kazemi, 2010) or intensive, family-focused interventions (e.g. Multisystemic Therapy (MST), Functional Family Therapy, or Multidimensional Family Therapy) that are delivered by therapists who take part in rigorous training

and monitoring protocols (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 2009; Liddle, Dakof, Turner, Henderson, & Greenbaum, 2008). Youth in the community under delinquency court orders who take part in these model programs are nearly always also on probation or parole supervision, but the EBP tends to relate to the treatment component (Taxman & Belenko, 2011). Recent studies have paid little attention to the role of the probation/parole case manager (PCM), and to practices and policies in community supervision.

The research reported here tests the impacts of an evidence-based juvenile supervision model that targets the role and responsibilities of probation/parole case managers. Reflecting Lipsey's (2010) view that EBPs not be regarded strictly as certain "brand name" programs or models, but may also effectively operate as a "home grown" program of proven and promising practices, EBPs in juvenile assessment, referral, treatment planning, and placement (JARPP) were manualized and transferred to PCMs under two distinct training strategies. In a controlled experiment, 12 field offices of a state JJ agency were stratified (on size, location, and other office-level measures) and then randomly assigned so that groups of PCMs were exposed to three different conditions. In four of the offices, case managers received standard training (ST) in JARPP, while those in a second group of four offices had the same training bolstered by on-site peer coaches and enhanced booster sessions. The impacts of standard and enhanced training (ET) in JARPP were compared with one another and with a no-training control condition, represented in the third group of four offices.

Prior and ongoing analyses based on the research focus on the effects of the different training conditions on PCMs' perceptions of organizational functioning in their agency and offices (Henderson & Taxman, 2010) and associations between organizational measures and self-reported supervision practices among PCMs in the agency statewide (Farrell, Young, & Taxman, 2011). The findings reported here concern the impacts of the JARPP program and the different training strategies on the recidivism of youth who were supervised in the 12 study offices.

EBPs in Juvenile Supervision

There is an abundant literature on EBPs for delinquent youth. In a recent review of the current state of knowledge in the area, Greenwood (2008) cites a number of systematic efforts undertaken over the past 15 years that have helped to establish the evidence base for various interventions for this population. Most prominent here are the Blueprints for Violence Prevention and related efforts by the USA Surgeon General's office, meta-analyses conducted by Lipsey and colleagues, and cost-effectiveness analyses done by the Washington State Institute for Public Policy. These initiatives have been important in establishing support for various prevention programs and intensive community-based programs such as MST, Functional Family Therapy, Multidimensional Treatment Foster Care, and Aggression Replacement Training. They have also

helped confirm that certain fairly common practices employed with individual youth on probation or parole-intensive supervision and other surveillance-focused approaches, in particular-are not effective. To some extent, these systematic assessments have provided an evidence base for more generic practices and strategies that are not tied to particular programs or models. Cognitive behavioral therapy, interpersonal skills training, motivational interviewing (MI), and enhancement techniques are included here, as are methods that tailor services to assessed needs and dynamic, changeable risk factors (substance abuse, mental health, and family functioning), and generally target high-risk youth. Further, these efforts have pointed to basic principles that are essential to the effectiveness of EBPs, such as ensuring the quality of the intervention, adequate dosage, and implementation fidelity; these principles underlie the stress placed, for example, on using assessment tools that are validated, or programs that have manuals and structured training protocols (Drake, Aos, & Miller, 2009; Greenwood, 2008; Lipsey & Cullen, 2007; Taxman & Belenko, 2011).

Much of the contemporary literature on efforts to implement a comprehensive array of EBPs with high-risk youth has centered around extensive multisite studies involving system-level interventions with families and multiple service and child supervision agencies. Included here are tests of MST and the ARC (for availability, responsiveness, and continuity) organizational intervention by Glisson, Schoenwald, and colleagues (Glisson et al., 2010; Schoenwald et al., 2009) and of Multidimensional Family Therapy (Liddle et al., 2008). Of the various comprehensive, multisite EBP-focused interventions, Reclaiming Futures has perhaps garnered the most attention (Butts & Roman, 2009; Solovitch, 2009). In ten sites nationally, local multidisciplinary teams planned, organized, and implemented extensive community-wide, multiagency initiatives directed at substance-abusing youth in various stages of involvement with the JJ system. Reclaiming Futures sought to extend the knowledge base on EBPs in stressing collaboration and coordination among family, community, and institutional systems while incorporating principles and practices of cultural competency and positive youth development (Buck Willison et al., 2010). At its core, however, the Reclaiming Future model featured the conventional EBPs of validated assessment, comprehensive needs-driven service planning and referral, service engagement, and continued, coordinated support by service providers, family members, and supervision agents (McCarter et al., 2010; Nissen, Butts, Merrigan, & Kraft, 2006).

By comparison, there is scant attention in the recent literature to efforts focusing on juvenile supervision officers and case managers as the EBP delivery agent, and that which has appeared is largely descriptive reviews of evidence supporting certain supervision and service practices, often with a spotlight on reentry and aftercare (Altschuler & Brash, 2004; Barton, 2006; Borum, 2003; Jones & Wyant, 2007). The research studies that have appeared in the past few years in this area have been limited with regard to the gamut

of EBPs that can be used in supervision, and pointed generally to the value of intensive service provision (Chung, Schubert, & Mulvey, 2007; Lane, Turner, Fain, & Sehgal, 2005; Zhang, Roberts, & Callanan, 2006) or, again, confirmed the failure of intensive supervision programs for youth on probation and parole/aftercare (Hennigan, Kolnick, Siva Tian, Maxson, & Poplawski, 2010). By focusing case managers' attention on identifying and addressing youths' underlying needs and engaging them in assuming responsibility for behavioral change, the JARPP model tested in the present research strongly reflected a service-oriented approach to community supervision (Farrell, Young, & Taxman, 2011).

Technology Transfer and Organizational Factors in EBP Adoption and Implementation

In addition to assessing the impacts of the JARPP supervision model on youth recidivism, this study was designed to test the relative effects of different technology transfer strategies in achieving those impacts. Organizational development research has shown that an array of factors can influence the success of transfer methods, including opportunities for professional growth and ready access to information, a work climate and organizational culture supportive of change, and clarity and consensus on the agency's mission and its commitment to the new practice or innovation (Burke & Hutchins, 2007).

The primary transfer strategy employed in the current study was further based on the stages of organizational change, and the need to facilitate movement from practice exploration to adopting, piloting, and routinely implementing and sustaining the innovation (Fixsen et al., 2005; Roman & Johnson, 2002). Staff must be in a state of readiness, equipped to understand the relevance of the innovation to daily operations and provided with opportunities to rehearse and employ the practice. Studies of EBP use in substance abuse treatment programs show that practice adoption and implementation are affected by trainees' perceptions of the need for improving current practices, peer pressure for change, consensus on the agency's priorities and commitment to the innovation (Courtney, Joe, Rowan-Szal, & Simpson, 2007; Fuller et al., 2007).

The transfer process should take advantage of the social networks of colleagues and perceived workplace leadership, as well as management support for change. Training must identify clear goals and proximal, achievable objectives, and where needed, advance readiness by addressing resistance and cynicism. Opportunities for rehearsal, feedback, remediation, and ongoing reinforcement are also important transfer elements. The value of developing on-site peer coaches and "champions" and the use of booster sessions tailored to the organizational context (Fixsen et al., 2005; Ford et al., 2007; Rogers, 2003) also helped inform the JARPP training strategy.

The JARPP Curriculum and Training Models

The JARPP curriculum

A professional trainer with extensive experience working with juvenile and adult corrections staff was hired in the study's planning phase to develop the JARPP training curriculum. An extensive manual of practice guidelines was developed for use by the PCMs who attended a core three-day training delivered to the standard and ET sites. Supplementary materials included daily lesson plans, case studies, and materials for role playing and other exercises (see Taxman, 2008; Taxman, James-Andrews, & Yeres, 2009).

The three-day training integrated content and principles behind each of the JARPP elements (assessment, ongoing case planning, service referral) with activities aimed at building PCMs' capacity to conduct these activities effectively. JARPP's focus on service-oriented supervision, and on engaging youth and families in planning and behavior change, was reflected in both the training content and extensive attention to skill-building exercises. The first day of training was titled "Understanding and interacting with youth: what works" and covered several core areas, including the strengths-based perspective; elements of the case plan and behavioral contracting; roles and responsibilities of the PCM and supervisor in case management (CM); engaging youth and families in ongoing case planning and management; and a review of adolescent development and perspectives on current youth culture. Day two focused more on skill building and the theme "Communications and using your tools" that covered MI and the use of "OARS" (open-ended questions, affirmations, reflective listening, summarizations); risk and needs factors and assessment tools; individualizing case plans with attention to gender and developmental and family dynamics; and using incentives and sanctions. The third JARPP training day, entitled "Keeping it simple," included lessons on incorporating MI skills in assessment and planning; tying service plans and interventions to youths' stages of behavioral change; skills for dealing with youth resistance; case planning, monitoring, and documentation; and strategies for enhancing collaboration with community providers. Role playing and other skill building exercises were introduced in day one and used with increasing frequency over the course of the training, altogether accounting for about half of the approximately 18 h of core training.

JARPP training conditions

As part of standard protocol in the agency, all PCMs receive training on risk and needs assessment and the use of the agency's intake screens and treatment service planning protocols as new practices are introduced. This approach to training reflects a traditional change strategy focused on building management support for the innovation, and a top-down approach to EBP implementation.

In this study, PCMs and supervisors in all the agency's field offices took part in a one-day training on the core concepts of MI (Miller & Rollnick, 2002) and in engaging the youth and their families in conversation. In addition to providing staff throughout the state with some minimal level of skill development and a basic familiarity with MI, this session served to bring staff in the study sites up to a similar level of knowledge and exposure to this training content.

As detailed further in the "Methods" section, following the one-day training, 12 of the JJ agency's field offices were randomly assigned to one of three study conditions aimed at testing the effects of different technology transfer strategies. PCMs in eight of the offices were assigned to the experimental training conditions, where all PCMs and supervisors in these offices took part in the three-day training described above. Probation staff in all eight sites were also exposed to a similar dosage of follow-up post-training, which was provided by JARPP trainers during three two-hour sessions at approximately 3, 6, and 12 months following the three-day training. Unique strategies were reflected in the content and type of training provided in these sessions, and in the use of peer mentoring and coaching. PCMs and supervisors in the four sites who were assigned to the education-oriented post-training condition were provided with training that reviewed the curriculum covered in the three-day session; this standard training (ST) condition thus focused on declarative knowledge and expertise.

At the four social networks and enhanced training (ET) offices, the JARPP trainer recruited from the PCM pool staff who could serve as on-site peer specialists or experts. These individuals were given additional JARPP training and were encouraged to provide ongoing assistance to their office colleagues in applying JARPP skills and principles. The peer specialists also kept the JARPP trainer abreast of staff readiness and amenability for change, identifying concerns and issues that appeared to impede implementation of the JARPP training (e.g. cynicism, resistance to change, perceived inconsistencies between JARPP and agency policies, etc.). These issues were addressed proactively by the JARPP trainer in the three follow-up booster sessions, along with review and exercises focusing on the JARPP curriculum. The peer specialists also took an active role in conducting the boosters. The ET condition exemplified a transfer strategy focused on procedural knowledge and a social network approach to organizational readiness and change.

PCMs in the four offices assigned to the no training (NT), business-as-usual group only took part in the initial one-day training and review of MI skills and received no post-training. It should be noted that much of the content addressed in JARPP is ostensibly covered in agency directives and policies, and largely didactic training sessions provided by the agency's professional development unit. Thus, most PCMs in the NT group (and the ET and ST groups as well) were exposed to sessions on MI and case planning either as new staff in entry-level training or in-service training done by the agency.

A companion study of responses from surveys of PCMs conducted prior to the three-day training and at two follow-up points showed that case managers

in the ET condition showed significant gains in perceptions of organizational readiness and functioning compared to PCMs in the ST and NT sites, particularly in the long-term (12-month) follow-up (Henderson & Taxman, 2010). Specified more fully below, we hypothesized in the present research that youth supervised during the follow-up period in the standard and ET sites would show more favorable recidivism outcomes than those in the NT group. Further, we predicted that ET youth would have reduced recidivism rates compared to youth in ST sites.

Methods

Stratification and Random Assignment

In the first phase of the research, prior to conducting the controlled study of JARPP training, a statewide survey of probation staff and supervisors in the JJ agency's field offices was conducted to assess self-reported CM practices, and staff perceptions of organizational functioning and interagency collaboration among the offices with other elements of the JJ system (courts, service agencies, etc.). Results of the survey were used as stratification factors in the random assignment and site selection process. Of the 544 staff eligible to complete the survey, 445 (82%) completed surveys. Details of the survey measures and an analysis exploring relationships between CM practices, interagency collaboration, and organizational functioning are reported in Farrell, Young, and Taxman (2011).

The JJ agency has 33 field offices across the state, with at least one office located in each county; large jurisdictions have as many as three offices. For purposes of sample selection, several small adjacent county offices in one rural area of the state were aggregated to count as two offices, basing the final selection on 26 offices. The offices were then stratified and selected in a two-stage urn randomization procedure to ensure that the final 12 sites in the three study conditions were equivalently represented in terms of location (urban, suburban, large town, small town/rural based on the local area's population size, population density, and proximity to metropolitan areas), size (averaging < 50 probation/aftercare youth admitted to supervision over a four-month period, 50-190 youth, >190 youth), and average site score on the overall CM practices, interagency collaboration, and organizational functioning scales. Table 1 shows the offices that comprised each of the study groups and their stratification characteristics.

Office PCMs and Youth Sample

The three-day trainings were conducted at a centrally located public conference center during February and March 2008. A total of five separate three-day trainings were held. PCMs were scheduled to attend by region and each

Table 1 Office characteristics by study group: location, caseload size, and survey scores

Office	Location	Youth N (4 mos. intake)	Practice score	Organizational score	System integration score	Total score	State score ranking
<i>ET sites</i>							
ET-1	R/ST	68	0.35	1.65	0.92	0.85	2
ET-2	U/S	44	-1.72	0.45	-1.20	-0.96	26
ET-3	LT	83	-0.14	-0.49	-0.07	-0.23	19
ET-4	U/S	240	1.04	-1.11	0.07	0.20	13
<i>ST sites</i>							
ST-1	U/S	76	0.39	0.79	1.67	0.77	3
ST-2	LT	44	1.28	1.46	0.32	1.14	1
ST-3	U/S	191	1.00	-1.43	-0.86	-0.10	17
ST-4	R/ST	73	-1.01	-0.35	-0.87	-0.79	25
<i>Control Sites</i>							
C-1	U/S	201	-0.58	-0.08	-0.28	-0.37	21
C-2	R/ST	48	0.21	1.78	-0.46	0.55	6
C-3	LT	119	0.82	0.57	0.90	0.76	4
C-4	U/S	116	0.28	-0.68	0.06	-0.05	15

Notes. R/ST=rural, small town; LT=large town; and U/S=urban, suburban.

three-day session included a mix of staff from the ST and ET groups. Of the 144 PCMs from the eight sites (85-ET and 59-ST) who were eligible and invited to the training, 122 or 84.7% attended the three-day sessions.¹ Attendance rates for the two training groups were very similar at 86.4% for the ST offices and 83.5% for PCMs in the ET sites. At 80.5%, attendance rates at the booster sessions stayed at a relatively high rate for the ET offices, while it dropped to 58.2% for the ST sites. At the time of the three-day training, a total of 77 PCMs were working in the four control NT offices.

Data on youth supervised in the ET offices were obtained from the state JJ agency’s electronic management information system (MIS). These data, as well as the survey data collected from the PCMs who took part in the study, were gathered and maintained under federal human subjects guidelines and specific protocols approved by the Institutional Review Boards serving at the authors’ affiliated universities. Data were collected for a baseline cohort of youth and two follow-up cohorts. The youth in all three cohorts were tracked for a one-year period following the date their probation or aftercare case was opened (i.e. they were assigned to supervision) in the agency MIS.

1. The discrepancy in the total eligible PCMs staffing the two sets of offices (85-ET and 59-ST) was due simply to the vicissitudes of the random selection process and the constraints imposed by the limited office pool (N=26) and use of stratification factors.

The baseline cohort included youth from the 12 study sites whose cases were opened during a four-month period (approximately 10-13 months) before the three-day training. In most offices, every youth whose probation/after-care case was opened during this period was included in the baseline cohort for that site. This "intake" period was the average time it took to reach the target sample size of 50 youth for each office (youth were slightly oversampled in larger offices). For smaller offices, the intake period had to be extended to 5-6 months. In the rare event a youth's supervision was transferred to another office (regardless of if the new office was represented in the study) within a month of their starting supervision, the youth was dropped from the sample; other transfers were kept in the original office sample.

The choice to employ a baseline and two follow-up cohorts reflected our recognition that the application of the JAARP methods would likely occur over a prolonged period. The standard intake period for the first follow-up cohort extended from the month of the three-day training to four months after the training; in a few small offices with low case flow, this was extended by up to one month before and/or after this period. For most of the 12 study sites, the second youth follow-up cohort included all probation/aftercare cases opened in the 6th-10th month after the three-day training (or the 5th-12th month in some small sites). With both follow-up cohorts tracked for 12 months each, youth in the second cohort were tracked through as late as 23 months after PCMs attended the three-day training. Overall, 773 youth comprised the baseline cohort, and 789 and 719 youth were included in the two follow-up cohorts, respectively. Including a separate cohort of "new" youth who would have regular contact with PCMs during the booster training period would better enable detection of the longitudinal effects of learning and the application of new skills.

Analysis Plan and Outcome Measures

The decision to conduct random assignment at the office level in this research reflects the most rigorous design alternative to other approaches-random assignment of youth to PCMs, PCMs to youth, or of training conditions within offices-that were (or would be) ruled out as unacceptable by the JJ agency or the juvenile court. Given this real-world framework, it is important to control for other office-level effects that, beyond the effect of the training conditions, may influence post-training recidivism outcomes. Since different youth were drawn for each of the three cohorts, it was not possible to employ the baseline cohort's "pre-training" recidivism rate as a covariate in modeling the other groups' post-treatment recidivism, as would be done if a single cohort was tracked in a repeated measures longitudinal design. Instead, the analyses reported here compare the results of models constructed on each of the three youth cohorts.

Ideally, the analyses would employ multilevel models to account for the dependent and nested nature of the data. In the current context, such models would account for the fact that cases handled within the same office may be treated similarly, and permit examination of the relative variation in the recidivism outcomes that is attributable to offices and to the individual cases within those offices. Due to the low number of level 2 units (i.e. 12 offices) in the design, however, HLM or other multilevel approaches are inadvisable. Instead, to account for the clustered structure of the data and reduce the risk of Type I errors, multivariate regression models described below were run using robust standard errors adjusted for clustering by office.

Four outcome measures of delinquency were assessed, including *any re-referral* to the JJ agency,² *detained*, *adjudicated delinquent*, and committed to a *surveillance-oriented placement* during the follow-up period. This last measure included commitments to secure detention and residential facilities, youth centers, and court-ordered electronic monitoring, while excluding service-oriented placements such as those made to non-residential counseling, outpatient substance abuse, reporting centers, and non-secure residences (group homes, structured shelters, and foster care) and treatment facilities (residential substance abuse or psychiatric treatment facilities, hospitals).

Logistic regression was used to test the effects of JARPP training and other factors on the re-referral outcome coded dichotomously at six and 12 months into the follow-up period (i.e. yes/no the youth was re-referred within the first six months; yes/no she or he was re-referred within the year). Survival analyses using Cox hazard models were also conducted on this outcome at both follow-up points to assess training condition effects on time to recidivate. Analyses of the other outcomes, which occurred with lower frequency and involved the juvenile court (which may have delayed the outcome), were assessed only at the 12-month point.

In addition to testing for the effects of the training condition variable, it was possible to control for youth characteristics in the models as covariates. These included demographics (i.e. race/ethnicity, gender, and age), the youth's number of prior referrals to the state agency, severity of the current offense (misdemeanor or felony), and whether the youth was ordered to probation or aftercare supervision. To further control for office-level effects, the models also included a location variable (urban/suburban, large town, or small town/rural).

Hypotheses

Study hypotheses centered around the effect of the ST and ET training conditions, coded and entered as "dummy" variables with the NT condition

2. The vast majority of these are rearrests by police that are referred to the state agency; about three percent of all referrals to the agency are citizen referrals and another three percent are for violations of probation or aftercare conditions.

Table 2 Descriptive information on the three youth cohort samples

Descriptor variable	Baseline cohort	First follow-up cohort	Second follow-up cohort
All youth	749	777	711
<i>Study condition</i>			
Enhanced	275 (36.7%)	313 (40.3%)	259 (36.4%)
Standard	237 (31.6%)	243 (31.3%)	248 (34.9%)
Control	237 (31.6%)	221 (28.4%)	204 (28.7%)
<i>Demographics</i>			
<i>Gender</i>			
Male	624 (83.8%)	661 (85.1%)	595 (83.7%)
Female	125 (16.7%)	116(14.9%)	116 (16.3%)
<i>Race</i>			
African American	488 (65.2%)	446 (57.4%)	450 (63.3%)
Caucasian	238 (31.8%)	281 (36.2%)	228 (32.1%)
Hispanic	19 (2.5%)	39 (5.0%)	23 (3.2%)
Other, unknown	4 (0.5%)	11 (1.4%)	10 (1.4%)
Age (mean)	16.2 (sd = 1.4)	16.3 (sd = 1.5)	16.4 (sd = 1.5)
<i>Delinquency History</i>			
Prior referrals (mean)	4.08 (sd = 3.3)	4.06 (sd = 3.2)	4.74 (sd = 3.9)
Age at first referral (mean)	14.2 (sd = 2.2)	14.2 (sd = 2.1)	14.1 (sd = 2.2)
<i>Current offense & supervision type</i>			
Felony	173 (23.1%)	185 (23.8%)	160 (22.5%)
Misdemeanor	458 (61.1%)	470 (60.5%)	444 (62.4%)
Other offense type	118 (15.8%)	122 (15.7%)	107 (15.0%)
Probation	562 (75.0%)	596 (76.7%)	558 (78.5%)
Aftercare	187 (25.0%)	181 (23.3%)	153 (21.5%)

serving as the reference variable. Analyses of the baseline cohort served to test the effectiveness of the random assignment procedure; here, we hypothesized there would be no differences between youth in the three study conditions in any of the seven models (logistic and survival models of re-referral at the two follow-up points and logistic models of the three other outcomes) run on the baseline cohort. The other models tested the hypothesis that the ET and ST groups would both show reduced recidivism compared to the NT group in the first follow-up cohort (seven models) as well as the second follow-up cohort (seven models). Further, we predicted that these differences would be most likely found between the ET and NT groups, and less so when comparing ST and NT. We expected that, compared to youth in the ST sites, youth in the ET offices would be more likely to show more favorable outcomes in analyses of the second follow-up cohort, and of the 12-month outcomes in both follow-up cohorts, reflecting the accumulated impact of the on-site mentoring and organizationally-focused booster sessions.

Results

Descriptive data on the youth in the three study conditions for the baseline and two follow-up cohorts are shown in Table 2. Note that cases with missing data on any of the variables included in the analyses were excluded from the samples (less than 3% of cases were dropped from each cohort). The average age was just over 16 years old, and more than four-fifths of each of the cohorts were male. Overall, about three-fifths of the youth samples were African-American; whites accounted for one-third of the youth; Latinos, Asians, and other mixed race youth made up only about 5% of the three cohorts. They averaged between four and five prior referrals to the juvenile agency, and the mean age of first referral was just over 14 years. Sixty-one percent of the youth had been charged with a misdemeanor on their current referral, and just under one-fourth were charged with a felony. Just over three-fourths of the youth in each cohort was on probation while the remainder were being supervised under aftercare court orders.

Training Models and Recidivism Outcomes

Using the conventional criterion for statistical significance ($p < .05$ or lower), none of the regression models that tested for differences on outcomes between the control, standard, and ET sites in the baseline cohort showed a significant effect for the study condition. This was an expected finding and provides support for the random assignment procedure. Contrary to the study hypotheses, there were also no differences evident between the control sites and either the ST or ET sites on the logistic models involving the detention or adjudication outcomes in both follow-up cohorts.

Favorable evidence of JARPP training effects did show on the re-referral outcomes and the use of surveillance-oriented placements. Table 3 summarizes the results of the comparisons between the standard, enhanced, and control sites on these outcomes, controlling for other variables in the model. Examples of results from the full models constructed for the logistic regression and Cox survival analyses of any re-referral over the 12-month follow-up are shown in Tables 4 and 5, respectively, for the baseline and two follow-up cohorts.

The results in Table 3 indicate that the site differences on re-referral were concentrated in the 12-month outcomes and second follow-up cohort, showing significantly lower rates of referral and time to re-referral among youth in the enhanced sites when compared with those in the control sites. A marginal effect ($p = .086$) was also observed for the ET group on 12-month re-referral rates in the first follow-up cohort. There were no site differences evident on re-referrals at six months for either follow-up cohort. Two models again showed positive results of training in the ET sites in the long-term, 12-month placement outcomes. Youth in the ET offices in both follow-up cohorts were

Table 3 Cox and logistic regression, effects of training conditions on re-referral and surveillance-oriented placement at 6 and 12 months

Cohort and training condition	Re-referral 6 months		Re-referral 12 months		Placement 12 months
	Logistic odds ratio	Cox hazard ratio	Logistic odds ratio	Cox hazard ratio	Logistic odds ratio
<i>Baseline cohort</i>					
Standard	.78	.91	.94	1.00	.94
Enhanced	.63	.73	.80	.82	.99
<i>First follow-up cohort</i>					
Standard	.90	.93	.75	.85	1.24
Enhanced	.83	.85	.71	.78	.69**
<i>Second follow-up cohort</i>					
Standard	1.23	1.21	.82	.96	1.03
Enhanced	.72	.74	.59*	.70**	.53**

Notes. * $p < .05$; ** $p < .01$; all p -values based on robust standard errors adjusted for clustering by office.

significantly less likely to have received surveillance-oriented placements at the one-year point.

Inspection of the various outcome frequencies for each of the study groups showed that the significant findings observed in the multivariate analyses reflected relatively small differences in the percentages recidivating between youth in the control and training sites. For example, compared to youth in the control sites, 8.2% fewer youth in the ET sites in the first follow-up cohort and 10.7% fewer youth in the second follow-up cohort had recidivated as measured on the one-year re-referral outcome. The significant effect for the ET group on surveillance-oriented placements in the first follow-up cohort reflected a difference of 5.4% between ET youth and control youth; this difference in placement rates at 12 months for ET and control youth was 11.0% in the second follow-up cohort.

Other Predictors of Youth Recidivism

Results from the full logistic and Cox regression models constructed on one of the outcomes-re-referrals at the 12-month point-are displayed in Tables 4 and 5. The tables illustrate the type of models conducted for all the outcomes represented in Table 3, as well as the detention and adjudication outcomes. Results shown in the 12-month re-referral models for the various predictor variables are also indicative of the findings evident in the other models. As expected, number of prior referrals to the juvenile system was a strong and

Table 4 Logistic regression, effects of training conditions on re-referral to JJ agency within 1 year

Predictor variable	Baseline cohort		First follow-up cohort		Second follow-up cohort	
	Odds ratio	<i>p</i> -Value	Odds ratio	<i>p</i> -Value	Odds ratio	<i>p</i> -Value
<i>Demographics</i>						
Male	2.53	.001	1.96	.004	1.29	.258
Age	.69	.000	.74	.000	.67	.000
Nonwhite	1.03	.891	1.77	.015	1.29	.215
<i>Delinquency history</i>						
Age at first referral	.97	.583	.94	.267	.95	.369
Number of prior referrals	1.18	.000	1.17	.001	1.10	.007
<i>Offense and supervision status</i>						
Adjudicated for misdemeanor offense*	.85	.129	1.19	.380	1.27	.108
Adjudicated for other offense*	.62	.049	.75	.288	.98	.920
Probation (vs. aftercare)	1.43	.173	1.31	.293	2.17	.000
<i>Location</i>						
Small town/rural**	1.86	.086	1.19	.565	1.04	.866
Urban/suburban**	.93	.686	1.25	.334	1.05	.849
<i>Training condition</i>						
ET site***	.80	.354	.71	.086	.59	.002
ST site***	.94	.832	.75	.279	.82	.359
Constant	90.78	.000	37.52	.003	241.56	.000

Notes. *Adjudicated for felony offense suppressed; **large town suppressed; ***control training condition suppressed; all *p*-values based on robust standard errors adjusted for clustering by office.

consistent predictor of recidivism, showing as significant in 20 of the 21 models (employing the *p* < .05 criterion). Age (i.e. being younger) was also a significant predictor in all the models run on the various recidivism outcomes for the three cohorts. This finding is at least in part attributable to the fact that any rearrests that occurred after a youth had reached the age of 18 during the follow-up period were not observed in these results, as the data did not include adult criminal justice system records.

Gender and supervision status were also significant predictors on the majority of the 15 analyses of re-referral and adjudication outcomes (on each of the three cohorts), with males and youth on probation (compared to those on aftercare supervision following release from an out-of-home placement) showing more recidivism on these measures. On analyses modeling detention and surveillance-oriented placements, this pattern diverged. The supervision status variable was significant in five of the six models, with probation youth more likely to be detained and to receive both types of placements, while gender was not significant in any of the detention or placement analyses. Race was the only other predictor included in the models that contributed significantly

Table 5 Cox regression, effects of training conditions on re-referral to JJ agency within 1 year

Predictor variable	Baseline cohort		First follow-up cohort		Second follow-up cohort	
	Hazard ratio	<i>p</i> -value	Hazard ratio	<i>p</i> -value	Hazard Ratio	<i>p</i> -value
<i>Demographics</i>						
Male	1.87	.003	1.66	.008	1.20	.262
Age	.80	.000	.83	.000	.78	.000
Nonwhite	1.05	.797	1.49	.010	1.22	.196
<i>Delinquency history</i>						
Age at first referral	.99	.852	.97	.325	.96	.359
Number of prior referrals	1.12	.000	1.11	.000	1.07	.002
<i>Offense and supervision status</i>						
Adjudicated for misd. offense*	.88	.144	1.15	.291	1.10	.322
Adjudicated for other offense*	.72	.029	.82	.310	.99	.964
Probation (vs. aftercare)	1.38	.083	1.25	.211	1.84	.000
<i>Location</i>						
Small town/rural**	1.41	.188	1.05	.832	1.01	.961
Urban/suburban**	.94	.651	1.22	.227	1.05	.789
<i>Training condition</i>						
ET site***	.82	.268	.78	.112	.70	.007
ST site***	1.00	.987	.85	.378	.96	.827

Notes. *Adjudicated for felony offense suppressed; **large town suppressed; ***control training condition suppressed. *p*-Values are based on robust standard errors adjusted for clustering by office.

in several models. Compared to whites in the three cohorts, youth of color (more than 90% of whom were African American in these sample cohorts) were more likely to recidivate on 10 of the 21 outcome analyses.

Discussion

Although substantial progress has been made in the past 15 years in identifying and advancing the use of evidence-based interventions for JJ-involved youth, for the most part, juvenile community corrections has not been included in these advancements. This may be partly due to the challenges of achieving organizational change in these settings. Characterized by frequent administrative transitions, high turnover, and poorly trained and resourced line staff, JJ agencies are often beset by organizational change efforts that are uniformly top-down, with little administrative follow-up or accountability in implementing the change (Hemmeggarn, Glisson, & James, 2006; Young, 2004; Young, Moline, Farrell, & Bierie, 2006). The JARPP training protocol incorporated supervision practices in juvenile assessment, service planning, referral, and

placement that have been supported by research and expert consensus; the protocol is designed to advance the use of EBPs in difficult justice settings.

In this clinical trial, local field offices of probation case managers were randomly assigned to different training conditions; it was thus possible to assess the relative effectiveness of the different technology transfer strategies in improving staff adoption of EBPs that are likely to improve youth outcomes. Previous and ongoing analyses in this research explore the effects of the training strategies on CMs' perceptions of organizational functioning, and preliminary results indicate that the enhanced group that built on social networks has the greatest impact on organizational climate and functioning (Henderson & Taxman, 2010). The present analysis examined impacts of the training conditions on the recidivism of youth supervised in the study offices. Since the differences between the two training approaches centered around post-training enhancements provided during the year-long period that followed the core JARPP training, recidivism impacts were assessed by comparing the outcomes of youth supervised in the enhanced, standard, and control offices before the core training, youth in these offices who began supervision immediately following the core training, and a group that began supervision six months into the post-training phase.

Results of initial analyses established that there were no significant differences in rates of recidivism by study condition in the pre-training baseline cohort, providing support for the controlled study design. The analyses of differences in the two follow-up cohorts showed favorable impacts of the JARPP training on two of the four recidivism measures assessed in the study, with lower rates of re-referral to the JJ system and fewer surveillance-oriented placements. It is notable that the two outcomes measures on which there were no observed effects of the training, detention and adjudication, tend to more closely reflect the decisions by prosecutors and judges, while placement types are made more at the discretion of the case manager. One of the explicit goals of JARPP training was to decrease PCMs use of punitive responses. Support for the hypothesis that other core elements of JARPP training—on the use of assessments and case planning, and of MI techniques (such as reflective listening and affirmations) that aim to engage youth and their families in behavior change—would, in turn, impact youth behavior was evidenced by the re-referral results (most all of which originate in police arrests and are thought to reflect delinquency).

Regression results showed the effects were specific to the ET approach, suggesting that even in these demanding settings—or perhaps especially in these settings—improved outcomes through staff adoption of new practices can best be obtained by taking advantage of peer associations, social networks, and organizational conditions supporting readiness for change. The preponderance of significant findings in the ET offices, and at the later 12-month follow-up point was consistent with the study hypotheses. Further evidence of the external validity of the present findings comes from the analyses of PCMs' views of organizational functioning, which similarly indicated that the strategies

employed in the ET condition were associated with better outcomes, while there were few improvements from the ST compared to the NT control condition (Henderson & Taxman, 2010).

The absence of any impacts of the ST condition was somewhat surprising and appears to be potentially instructive in developing future technology transfer efforts in JJ settings. That is, conventional efforts to build knowledge do not appear to affect either organizational functioning (Henderson & Taxman, 2010) or youth outcomes (this study). The JARPP ST represented an improvement over typical staff development activities in these agencies, with three days of professional training followed by three booster sessions led by the same JARPP expert, focusing on reviewing and practicing the lessons imparted in the core training. It appears, however, that follow-up alone is not sufficient in achieving impacts from change. The results suggest that in-house peer specialists and the JARPP trainer's responsiveness to staff's organizational concerns are the kinds of enhancements needed to distinguish successful change efforts from the usual top-down approaches. Strategies employed in the ET sites reflect a social network approach that creates a supportive environment more open to innovation and suited to the local office's circumstances and readiness for change (Courtney et al., 2007; Schoenwald, Carter, Chapman, & Sheidow, 2008). Use of the peer specialists and the trainer's message of commitment to the staff serve to help prospective adopters of new technology understand how the change can fit with the agency's values and culture, as well as practical matters of integrating JARPP practices into their office's ongoing business processes—elements central to achieving organizational change (Fixsen et al., 2005; Glisson et al., 2010; Rogers, 2003). Efforts to link JARPP to current processes were often evidenced in ET sites by the on-site specialists working in tandem with the trainer to address staff concerns about stress and time management, and balancing "time for my kids" with the need for completing assessments, and documenting comprehensive service plans, behavioral contracts, and youth progress.

Limitations

The study's research design, including the nesting of PCMs and youth in the study offices, limits the conclusions drawn from the recidivism analyses. The internal validity of the research was compromised by the realities of the study settings, where there is turnover of some PCMs in study offices, and some limited movement of a youth under supervision from one office to another. A related concern, and for using caution in attributing the favorable impacts of the ET condition solely to the unique content and use of the peer specialist in booster sessions at these sites, is the higher rate of attendance at these sessions in the ET group (80.5%) compared to ST offices (58.8%). Lower rates of participation in the ST sites may in part explain the lack of any outcome differences in these offices. Finally, while the stratification and random

assignment procedures appeared successful and controlled for obvious potential confounding variables, given the limited number of offices and PCMs that were available for inclusion in the study, unidentified factors that were not controlled may have influenced the study outcomes.

Future Research and Conclusions

Viewed in light of the promising findings from the recidivism analyses reported here, these study limitations serve as evidence of the need for expanded research on the JARPP best practices protocol employing these ET strategies. Testing of the model in a larger agency, or at least in more offices, would be called for given results showing reduced re-referrals and lower rates of surveillance-oriented placements among youth supervised in the ET offices. Replication of the reduced recidivism results would be of particular value in confirming the training's impact on case managers' use of supervision practices that affect youth behavior, beyond its impact on PCMs' use of placements.

Study variations that would permit assessment of the relative benefit of each of the main components of the ET protocol—the on-site specialist and the expert, outside trainer able to and address organizational concerns and spur readiness for change—would also be of practical utility in implementing future technology transfer efforts in this setting. Future research could help ascertain and weigh the contributions of the on-site peer specialist, whether they be to identify and address issues of staff readiness and resistance, clarify the fit and benefit of the innovation in light of current practices, spur peer pressure, coalesce managerial support, or provide feedback and expertise in rehearsing and implementing the change. Similarly, studies could improve understanding of the role of outside trainers and experts, and the extent to which their impact is reliant on an on-site specialist as distinguished from other sources of knowledge about local organizational issues, readiness, and social and managerial support for change. More generally, one hopes the positive findings from the JARPP training stimulate further efforts to adapt advances in EBPs with high-risk youth to the kind of modestly funded, inexpertly staffed real world of community corrections that serve the vast majority of JJ involved youth.

Acknowledgments

This study was funded by the National Institute on Drug Abuse, #R01 DA18759 to Faye S. Taxman. All opinions are those of the authors and do not represent the opinions of the National Institute on Drug Abuse or any governmental agency.

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