Evaluation of New Mexico's Men's and Women's Recovery Academies

Prepared by: Kristine Denman, Karin Thomas, and Amir Chapel

Edited by: Erin Ochoa and Linda Freeman

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Introduction

New Mexico has two Recovery Academies—one for women and one for men. Both provide services to criminal justice-involved individuals with substance abuse problems. The goal is to reduce recidivism through the provision of a variety of services. Both programs prioritize admission to individuals releasing from prison. Individuals under community supervision may also be accepted into the program. Those who are "experiencing a substance abuse relapse problem, who are subject to a technical violation and who have the recommendation of their assigned Probation-Parole Officer" have the second priority (Romero, 2013, "New Mexico Women's Recovery Academy"). Finally, individuals who are recommended to the program as an alternative to incarceration on a pre-sentence report are eligible for the program, but at the lowest priority. Besides those eligibility and priority criteria, individuals may be excluded for certain offenses. Those with a history of sex offenses, child abuse, or arson are not eligible for the program. Offenders with a violent criminal history are considered on a "case-by-case basis" (ibid). If the individual has mental health problems that may be harmful to others or themselves, or chronic medical issues, they will not be accepted into the program ("Residential Program Denial"). While most participants come from the Albuquerque area, it is open to eligible individuals from anywhere in New Mexico.

Both Recovery Academies are intended to be a six-month program (personal communication with NMCD staff member, Oct. 29, 2013). However, based on individual needs and circumstances, and with permission, participants may remain in the program longer (personal communication with NMCD staff member, Aug. 13, 2015). Both Recovery Academies offer individual and group counseling, educational services, parenting classes, substance abuse treatment, and anger management classes (http://www.cecintl.com/facilities_rr_nm_001.html; http://www.cecintl.com/facilities_rr_nm_002.html. There are some differences, however, between the two Academies. These are described below.

The **New Mexico Women's Recovery Academy (NMWRA)** is located in Albuquerque and is comprised of two tracks (Romero, 2013, "New Mexico Women's Recovery Academy"). Up to 48 women and 12 children may participate in the program. The first track targets women who have a primary diagnosis of substance abuse and have children (ibid). Children under the age of 11 are allowed to live with their mothers if it is determined that it is in the best interest of the child (ibid). Women with mild to moderate mental health issues are considered for participation on a case-by-case basis (ibid). School-aged children attend the local school while younger children are provided with on-site care by Recovery Academy staff when their mothers are engaged in treatment activities or working.

The second track targets women with co-occurring disorders, both substance abuse and significant mental health issues (Romero, 2013, "New Mexico Women's Recovery Academy"). Although children are not allowed to live with their mothers on-site, they may visit (ibid).

Also located in Albuquerque is the NMWRA Halfway House. Operated by the Probation and Parole Division, the transitional living facility has 12 beds for women who are motivated to obtain and maintain employment, and live in a sober community (Romero, 2013, "Halfway House"). The transitional living facility is not a treatment center. Rather, it gives women an opportunity to have a stable living situation before living independently (ibid). Women proceed to the transitional living facility after successfully completing one of the tracks described above and typically reside there for four to six months (ibid).

The **New Mexico Men's Recovery Academy (NMMRA)** is located in Los Lunas. This program has a current capacity of 183 (Romero, 2013, "Men's Residential Program"). Unlike the women, men who participate in the Recovery Academy do not have a dual diagnosis; indeed, they should have minimal mental health issues in order to participate (personal communication with NMCD staff member, Oct. 29, 2013). Further, men who self-admit and are validated gang members will be considered on a case-by-case basis (Romero, 2013, "Men's Residential Program").

Literature Review

Recovery Academies function as modified Therapeutic Communities. A Therapeutic Community (TC) provides treatment to substance users with the goal of altering their behavior and attitudes (Robbins, Martin, & Surratt, 2009, 395). Many TCs use a cognitive-behavioral curriculum in order to achieve the program goals (Sacks, Sacks, McKendrick, Banks, Stommel, 2004, 4). The traditional TC focuses on an individual's role within the Therapeutic Community; participants follow a strict daily schedule that emphasizes the creation of practical life skills for the individual to use after release from the program (Sacks, Chaple, Sacks, McKendrick, & Cleland, 2012, 248). TCs typically consist of three stages: orientation (lasting 3 months), main treatment (lasting 5-6 months) and preparation for reentry (Belenko, Houser, Welsh, 2012, 5). One of the defining features of a TC that distinguishes it from other treatments is the emphasis on interactions between individuals and staff (National Institute on Drug Abuse, 1). The patients and staff work together through structured and unstructured interactions designed to alter behaviors and attitudes (National Institute on Drug Abuse, 1).

The TC model has been modified in a variety of ways to serve particular populations. For example, one modified TC is designed to help those with cognitive disorders, emphasizing flexibility to address specific needs and modify instruction as needed, while continuing to uphold the traditional TC culture (Sacks et al., 2012, 248). Although designed for community-based treatment, TCs are also available to offenders in the prison setting and follow the same three-phase structure (Belenko et al., 2012, 5). Typically, non-residential treatment or treatment in correctional settings is less intensive and includes multiple group and individual counseling sessions each week (Belenko et al., 2012, 5). Whether the TC is traditional, modified, or in the prison or community setting, the TC encourages and helps members to work with

one another to promote desired behavioral changes as well as to serve as role models and guide each other (Introduction to the Therapeutic Community). Further, they maintain the idea that self-help advances learning and change within oneself and others in the community (Sacks et al., 2012, 248).

A number of states have created and evaluated programs that use traditional TCs, modified TCs, or have features similar to a TC. Traditional TCs were evaluated in multiple states and the results for program completers are promising. In Ohio, Lamb (2013) compared the discharge status of inmates from 26 Recovery Services programs that focus on substance abuse. The researcher compared recidivism rates among those who were successfully discharged to those who were unsuccessfully discharged. Outpatient completion rates ranged from 65-70%; those who were unsuccessfully discharged had a reincarceration rate of 11.6% while those successfully discharged had a reincarceration rate of 7% (Lamb 2013, 2). In Illinois, Olson (2011) compared recidivism rates of those who were released from the Sheridan Correctional Center to those who were released from other prisons in Illinois. Sheridan functions as a TC, and focuses on the development of skills and the changing of behavior through individual and group treatment (Olson, 2011). Inmates released from Sheridan had a recidivism rate of 43% compared to the 50% recidivism rate of inmates released from other prisons; here, recidivism was conceptualized as reincarceration, subsequent offense, or subsequent conviction (Olson, 2011).

In Brooklyn, New York, the Drug Treatment Alternative to Prison (DTAP) program administers long-term residential treatment to high-risk felony drug offenders (Belenko, Foltz, Lang, Sung, 2004). Offenders reside at DTAP for 18-24 months and receive intensive residential TC treatment (Belenko et a., 2004). Researchers evaluated this program comparing a matched sample of 130 offenders sentenced to state prison to 150 offenders diverted to DTAP (Belenko et al., 2004). Belenko et al. (2004) found evidence that DTAP participation is associated with a reduction in the odds of a new rearrest (56%), of a new reconviction (60%), of a new jail sentence (59%), and of a new prison sentence (65%) (117).

Evidence for the effectiveness of community-based treatment centers is mixed. Hiller, Knight, and Simpson (2006) evaluated a modified TC for probationers in Texas by comparing program graduates to program dropouts and a randomly chosen sample of felony probationers that had similar characteristics. Researchers followed subjects two years post-release and found that those who dropped out of the program had a rearrest rate of 30%, which was higher than the rearrest rate for graduates (21%) and the comparison group (23%) (235). In Delaware, researchers evaluated a residential work-release TC that ran concurrently with a work-release program without treatment (Inciardi, Martin, Butzin, 2004, 88). Offenders were evaluated by correctional staff as to whether they qualified for the program (Inciardi et al., 2004, 94). There were more offenders eligible for treatment than the capacity allowed, so qualified offenders were assigned to either the TC treatment group or to the work-release group (Inciardi et al., 2004, 96). Individuals were followed for 42 months after release. The authors found that participants who received treatment had a 70% reduction in the odds of a new arrest compared to the control group (Inciardi et al., 2004, 98).

Some TCs specialize in substance abuse treatment for offenders with mental disorders. In Colorado, the reentry modified therapeutic community (RMTC) is for offenders with co-occurring substance use and mental disorders (Sacks et al., 2012, 247). Offenders remain at the RMTC for 6 months, attending activities 3 to 5 hours a day for 3 to 7 days a week (Sacks et al., 2012, 250). The program is divided into phases where offenders gradually gain greater responsibility within the community as they alter their behavior (Sacks et al., 2012, 250). Researchers evaluated this program by comparing four different groups of offenders based on which treatments they received (Sacks et al., 2012). Initially, researchers divided offenders into two groups: those who received modified therapeutic community (MTC) treatment in prison and those who did not. For the post-prison component of the study, all participants were randomly assigned in equal proportions to the RMTC and PSCM groups. Four comparison groups emerged from these stratifications: those who received MTC and RMTC, those who received only RMTC, those who received MTC and PSCM, and those who did not receive MTC and received post-prison treatment as usual. Researchers found that after 12 months, offenders in the RMTC program (regardless of whether they received MTC in prison) had a reincarceration rate of 19%, which was much lower than the 38% reincarceration rate of the PSCM group (Sacks et al., 2012, 247). Those who received both the RMTC and MTC treatments had the lowest reincarceration rate: 13% (Sacks et al., 2012, 256). Those who received prison MTC treatment only had a recidivism rate of 19% while those who received only the standard care in prison had a recidivism rate of 41% (Sacks et al., 2012, 254).

In Pennsylvania, a modified TC for offenders with substance-abuse problems and mental health disorders was structured as a traditional TC, but only offered outpatient treatment enhanced with a psychoeducational seminar, case management, and trauma-informed addictions treatment (Sacks, McKendrick, Sacks, Banks, Harle, 2008, 48). Offenders with a co-occurring mental disorder were given the opportunity to decide to participate in the control group (a basic TC) or in the modified TC treatment group with the three previously mentioned enhancements (Sacks et al., 2008, 50). Researchers found that the experimental and control groups both improved but had no notable differences in terms of substance abuse, crime, and employment (Sacks et al., 2008, 56). However, participants in the experimental group exhibited greater improvement in symptoms of psychological or emotional problems, and an increase in the number of days the offender lived in a place and paid rent (Sacks et al., 2008, 56-57).

Finally, one study focused specifically on women. The CREST Outreach Center in Delaware is a six-month long TC for both sexes beginning after the offender is released from prison, but researchers focused solely on evaluating the program for women (Robbins et al., 2009, 394-395). Participants choose between working in the community or going to school during the day but reside in a halfway house where the offender is integrated into a TC (Robbins et al., 2009, 395). CREST provides gender-specific group meetings in order to address issues specific to women (Robbins et al., 2009, 397). Researchers compared program graduates, participants, and a comparison group of female drug offenders who did not receive treatment (Robbins et al., 2009, 398). Researchers found evidence that women who completed the program were less likely to be rearrested and had reduced substance abuse one year after treatment, compared to program participants and non-participants (Robbins et al., 2009).

Overall, the research evaluating TCs shows positive results. The most common factor among successful TC outcomes is program completion. Modified TCs, residential treatment, community-based treatment, co-occurring disorder treatment, and outpatient treatment for women all show greater program success for participants who complete the required curricula (Belenko et al., 2004; Inciardi et al., 2004; Lamb, 2013; Olson, 2011; Robbins et al., 2009; Sacks et al., 2012). Modified TCs featuring cognitive-behavioral therapy through treatment phases has shown decreases of recidivism rates in Ohio and Illinois (Lamb, 2013; Olson, 2011). Long-term residential treatment in lieu of incarceration is associated with a reduction in the odds of a new arrest, a new reconviction, a new jail sentence, and a new prison sentence (Belenko et al., 2004). Sacks et al. (2012) and Sacks et al. (2008) both found TCs are an effective approach to addressing co-occurring disorders. Offenders with co-occurring disorders who participated in in-prison MTC treatment and post-prison RMTC treatment had the lowest reincarceration rates compared to those who had less treatment either in prison or on parole (Sacks et al., 2012). Those who participated in psychoeducational seminars, addiction treatment, and case management seminars exhibited greater improvement in psychological symptoms than control groups (Sacks et al., 2008).

Structure and Function of New Mexico's Recovery Academies

New Mexico's Recovery Academies function as substance abuse treatment facilities that use Rational-Emotive Behavioral Therapy (REBT) in Therapeutic Communities (TC) with the goal of reducing recidivism and substance use and abuse. REBT is a form of cognitive behavioral therapy—this treatment aims to change one's actions through the process of being aware of one's thoughts and how to change them. Ultimately, this is expected to lead to healthy behavior. Participants in this form of therapy focus on respect, participation, and confidentiality as some of their core values. A TC encourages and helps members to work with each other to promote the desired behavioral change as well as to serve as role models and guidance for each other (Introduction to the Therapeutic Community, 2008). Paired together, REBT and TC encourage participants to respect each other, actively participate in sessions, and keep sessions confidential and distraction-free so that each individual feels safe. The Recovery Academies are divided into three phases and also have supplemental programs available to participants. Within each phase, participants are required to complete all homework, have it reviewed by a counselor, and pass an exam. In addition, they must display a cooperative attitude at each level. The specific criteria and guidelines for each phase are discussed in greater detail below.

In order to complete Phase I, the resident must participate in at least 30 days of treatment. This part of the program orients the individual to treatment. Participants begin to focus on thought processes of recovery and associated behavior. Counselors encourage motivation and change, and teach participants the structure and function of the TC.

Participants may complete Phase II and move to Phase III after they have participated in the program for at least 4 months. This part of the treatment educates participants on the effects of drug use, and coping mechanisms to avoid future drug use. Counselors emphasize the ability of the residents to

address their issues and their peers' issues in the TC. Concurrently, treatment explores the understanding and reduction of angry feelings participants may have.

Participants can complete Phase III and graduate after at least 6 months of treatment. Participants focus on their willingness and ability to use skills learned from the TC in the outside community. Participants are encouraged to find counseling and support groups within the community, have a relapse prevention plan, and release and reintegration plans. Indeed, Recovery Academy clients who release to supervision are supported by the Probation and Parole Department to continue treatment through the Department's contracted counselors and treatment providers (personal communication with NMCD staff, Aug. 13, 2015). Once all three phases are completed, participants graduate from the program. The Recovery Academies have contracted counselors and treatment providers to support graduating participants, who typically leave the academy under community supervision (probation or parole).

Supplemental programs and courses are offered to residents during accountability hours and process group hours.[1] Addiction and recovery education, adaptive treatment, and transition skills courses help participants to make self-assessments concerning their addictions. These courses also help individuals manage their recovery and maintain good social networks and healthy communication. In addition to these programs, there are weekly mandatory substance abuse meetings. Participation is determined by the individual's phase: those in Phase I must attend 4 meetings each week, Phase II must attend 3 meetings, and Phase III must attend 2 meetings.

Methods

We began by identifying all men and women who participated in the Recovery Academies between July 2009 and June 2011. There were 503 individuals who participated in the Recovery Academies over this period of time. We chose this time frame to ensure both an adequate sample size and follow-up period. Using a quasi-experimental design, we constructed a comparison group with propensity score matching. We chose appropriate matches from the New Mexico Corrections Department's Risk Needs Assessment (RNA) data; these RNA instruments are administered to those who are or will be under community supervision. The population from which the comparison group was drawn included all individuals who had an RNA between July 2009 through June 2011 (the same period as the treatment group). Two different RNAs were administered during this period: the Austin RNA and the ISR RNA. Individuals were first matched by RNA type. We then matched by items that were comparable on both RNA forms: gender, age at first offense, prior parole/probation revocations, current drug problem, diagnosed mental illness, gang involvement, and the overall RNA score (i.e., severity score). Age at first offense is measured somewhat differently depending on the RNA type: the Austin RNA measures age at first arrest while the ISR RNA measures age at first conviction or juvenile adjudication. The remaining items are measured similarly.

[1] Generally, program hours reflect the time dedicated to scheduled program sessions. Accountability hours are a time during which participants are provided feedback about their behavior (recognition for positive behaviors and a range of tools to address negative behaviors). The men's facility offers accountability hours daily while the women's facility offers them twice per week.

Most comparison group individuals matched perfectly with the treatment group on the items detailed above. Among the handful that did not match perfectly, the dissimilarity was a difference of two or three points on the severity score. However, the RNA level (low, medium, high, or extreme) was the same. We could not find a good match for 14 individuals; these were excluded from the final analyses. Thus, the final sample consists of 489 Recovery Academy clients and 489 matched offenders.

The follow-up period began from either the date individuals began the Recovery Academy, or the date of the RNA for the comparison group. Our primary interest was to determine whether there were any differences in recidivism rates. We examine multiple measures of recidivism: arrests, adjudications, convictions, incarcerations, and probation violations. *Arrests* include both arrests for technical violations of terms of community supervision as well as new offenses. Subsequent *adjudications* include all felony court filings processed through district court. Subsequent *convictions* include convictions on any charge for all felony court filings processed through district court. Subsequent *incarceration* includes incarcerations for any reason including new crimes and violations of supervision conditions. *Probation violations* include any violation of the conditions of community supervision. We also include a measure that encompasses all of these recidivism measures which we call "*any subsequent offenses*." Data are dichotomous and coded as "1" if there was a subsequent offense and "0" if there was not. We also explored whether the total number of subsequent violations differed between the two groups as well as whether there were differences in the time to re-offense by each recidivism measure.

Recidivism data were extracted from the automated administrative records of several sources including: the New Mexico Corrections Department (NMCD), the New Mexico Department of Public Safety (DPS), and the Administrative Office of the Courts (AOC). We joined NMCD data with other NMCD data using offender number, which is a unique number assigned to each individual. We joined the remaining datasets using common identifiers (last, first, and middle name; date of birth; and/or last four digits of the Social Security number). This was completed in iterations with decreasing criteria. For example, the first match included all identifiers, the second match omitted middle name, etc. We manually checked the results of those cases that did not match perfectly to determine whether the match was a good one. Any cases that we were unsure about and could not be verified were not considered a good match and were discarded. Thus, if there are matching errors, it is likely that we will have missed one or more recidivism events rather than included ones that were not true matches.

Description of data sources

Automated data from the NMCD include all admissions to prison between 2004 and 2014, community risk and needs assessments, and probation/parole violations. We included demographics (age, sex, and race) and admission date from the admissions dataset. The risk and needs assessment (RNA) data include all assessments administered to offenders under community supervision. The RNA is comprised of both static and dynamic risk factors measuring community risk. Probation and parole violations include the date of the incident and type of violation.

Data from DPS include all documented arrests in New Mexico between 2001 and 2014. These represent all hard-copy and electronically submitted arrest fingerprint cards. Data elements consist of personal identifiers, demographics, offense type, arresting agency, and date of arrest. Data from the AOC include

all *district* court cases disposed of between 2000 and 2014. Typically, district court cases involve new crimes rather than probation or parole violations, and include felony-level offenses. Each line of data includes offender personal identifiers, filing date, most serious offense (MSO) charge, court case number, and disposition of MSO. In the cases where the individual was not convicted on the MSO, we looked up the court record in the New Mexico Courts website (https://caselookup.nmcourts.gov) to determine whether there was a conviction on any of the other charges; if so, the disposition of the case was changed to reflect a conviction.

Sample description

We began by checking the characteristics of the treatment sample to the matched comparison group to ensure the two groups were similar. We found no statistically significant differences by gender or race/ethnicity. We did, however, find some statistically significant differences. Specifically, individuals in the comparison group were significantly more likely to begin their probation/parole terms in earlier fiscal years. This means that overall, the follow-up period is longer for most individuals in the comparison group compared to the Recovery Academy group. Thus, the exposure time is somewhat longer for the comparison group, allowing more opportunities to capture recidivism for that group. Though not displayed in the table below, this is was true for both males and females.

Overall, individuals in the comparison group were significantly older on average than those in the Recovery Academy group. When we analyzed this by gender, we found that the difference in age for women was statistically significant. Only marginally significant differences (p<.10) were found in age for men. Typically, recidivism is somewhat lower for older individuals.

Table 1. Characteristics by Recovery Academy client status

	Recovery Academy (N=489)	Comparison group (N=489)
Gender		
Male	58.5%	58.5%
Female	41.5%	41.5%
Year began* **		
2008	.4%	0%
2009	23.7%	51.7%
2010	54.2%	42.5%
2011	21.7%	5.7%
Age* **	**32.13 (9.49)**	**34.26 (9.846)**
Min–Max	19–63	18–66
Age, Males	32.28 (10.23)	33.88 (9.89)
Age, Females**	31.93 (8.37)	34.81 (9.78)
Race/ethnicity		
White, non-Hispanic	26%	25.2%
Hispanic	54.4%	56.2%
Native American	7.6%	6.3%
African American	4.9%	6.1%
Other	.4%	0%
Unknown	6.7%	6.1%

**p<.01, ***p<.001

We also examined whether there were any differences in prior offending by group type, since prior contact with the criminal justice system is often a predictor of recidivism. We found no statistically significant differences by prior offending of any type or by prior arrests. However, we did find some statistically significant differences by prior adjudication, prior conviction, prior incarceration, and prior probation/parole violations. Specifically, Recovery Academy clients were more likely to have prior adjudications, prior convictions, prior incarcerations, and prior probation or parole violations. While both males and females who participated in the Recovery Academy were significantly more likely to have prior adjudications, convictions, and probation or parole violations, only females were significantly more likely to have prior incarcerations.

Table 2. Prior offending by Recovery Academy client status

	Recovery Academy		Comparison group	
	N	**%**	**N**	**%**
Has prior of any type	**485**	**99%**	**479**	**98%**
Males	285	99%	278	97%
Females	200	99%	201	99%
Prior arrests	**475**	**97%**	**474**	**97%**
Males	277	97%	275	96%
Females	198	98%	199	98%
Prior adjudication*	**469**	**96%**	**444**	**91%**
Males*	273	96%	260	91%
Females*	196	97%	184	91%
Prior conviction*	**467**	**96%**	**438**	**90%**
Males*	271	95%	254	89%
Females*	196	97%	184	91%
Prior incarceration*	**219**	**45%**	**176**	**36%**
Males	118	41%	108	38%
Females*	101	50%	68	34%
Prior probation/parole violation***	**242**	**50%**	**139**	**28%**
Males***	156	54%	92	32%
Females***	89	44%	47	23%

*p ≤.05, ***p<.001

Although we did find some differences between the Recovery Academy clients and those in the comparison groups, they are similar in many ways. Moreover, in the multivariate analyses that follow, we control for the differences found. This includes exposure time (how long we followed subjects), age, and prior offending.

Analytic approach

We began with bivariate descriptive statistics, followed by multivariate analyses. First, we examined whether there were any differences in any of the measures of recidivism by Recovery Academy by gender. We then completed a series of logistic regression analyses to assess whether participation in the Recovery Academy was associated with reductions (or increases) in recidivism while controlling for other factors. Logistic regression is an appropriate technique to use when the outcome of interest is a dichotomous variable (e.g., recidivated or not). The results produce an odds-ratio coefficient for each

independent variable. The odds ratio can be interpreted as the multiplicative change in the odds of an event occurring, in this case, recidivism. For example, an independent variable measuring marital status could be coded as married as the outcome of interest and non-married as the reference category. If the odds ratio were 1.3, this would indicate that an increase of one unit in this independent variable is expected to increase the odds of recidivism by 30%. In other words, married individuals would be 30% more likely or have 1.3 times the odds of non-married individuals to recidivate. Similarly, an odds ratio of 0.7 would indicate that an increase of one unit in that independent variable would decrease the odds of recidivism by 30%; that is, married individuals would be 30% less likely to recidivate.

We analyzed each outcome variable of interest with a series of nested models or blocks. By assessing the data in this way, we not only are able to determine whether one or more variables are statistically significant by examining the coefficients produced, but we can also determine whether there is a significant change from one block to another as measured by the change in the -2 Log Likelihoods. This difference produces a chi-square statistic; the degrees of freedom are equal to the number of variables added in each block. The purpose for analyzing the data in this way is to ensure that any significant differences are detected, as the analysis of the coefficients alone is sometimes incomplete.

Regardless of the outcome measure, the same blocks of variables were included in each step of the logistic regression analysis; the final model included all variables. The first block included demographic data: age, gender, and race. Age is measured in years and represents the individual's age at the time they began the Recovery Academy or the date of their RNA if in the comparison group. Gender is dichotomous and coded as "1" if male and "0" if female. Race is also dichotomous and coded as "1" if White and "0" if any other race/ethnicity (thus, Hispanic is included in the non-White category). Next, we included a measure of criminal history: total prior criminal justice contacts. This variable reflects exposure to the criminal justice system: each recorded arrest, adjudication, or incarceration is reflected in this measure. The third block adds exposure time. For the logistic regression analyses, the exposure time represents the time in days that the individual was followed for this study. The beginning date was the day they began the Recovery Academy or the date of their RNA if in the comparison group, and the end date was 12/31/14. Finally, in the last block, we include whether the individual is a Recovery Academy client. Clients are coded as "1" and those in the comparison group are coded as "0."

Besides assessing differences in subsequent offending by participation in the Recovery Academy, we also examined time to recidivism. We began by calculating the average (mean) time to each measure of recidivism. Next, we calculated a series of Cox Proportional Hazards regression equations. This is a type of survival analysis that allows one to consider whether an event has occurred (recidivated or not) along with survival time, while incorporating predictor variables. The survival time is measured as the time until the event occurs, or if the individual did not experience the event, the total exposure time. This results in a regression coefficient for each independent variable, similar to the logistic regression coefficient. However, this coefficient takes into account not only whether the event occurs, but also the time to the event (how long before they fail). Further, rather than the odds of an event occurring, the regression coefficient reflects the hazard ratio. A ratio less than one can be interpreted as indicating a decreased hazard of the event occurring; a ratio greater than one indicates increased hazard of the event occurring.

Like the logistic regression models, we analyzed the data with a series of nested models or blocks. The blocks were identical to those used in the logistic regression except that we did not include exposure time as an independent variable. Thus, there were three blocks: demographics, criminal history, and client status. Like the logistic regression analyses, the blocks can be compared by calculating the differences in the -2 Log Likelihood.

Results

Subsequent offending

We examined subsequent offending by group; the results are displayed in Table 3 below. We found that females were significantly less likely to have a subsequent adjudication if they participated in the Recovery Academy. Note that this recidivism measure reflects new crimes. While the results were similar when we examined convictions, the results were significant only for females. There were no statistically significant differences by gender for reincarceration or subsequent probation/parole violations.

While not shown below, we also assessed whether there were any differences by number of subsequent offenses. We found no significant differences by gender for any of the recidivism measures except number of subsequent court cases. Recovery Academy females had a significantly (p=.05) lower average number of subsequent court cases (mean=.05, sd=.28) than women who did not participate in Recovery Academy (mean=.11, sd=.33). Likewise, the average number of convictions was significantly lower (p=.01) for Recovery Academy females (.03, sd=.17) than those in the comparison group (.19, sd=.28).

Table 3. Recidivism by Recovery Academy client status

	Recovery Academy		Comparison group	
	N=489	%	N=489	%
Has subsequent of any type (including PV)				
Males	241	84%	223	78%
Females	139	69%	136	67%
Subsequent arrests				
Males	213	75%	208	73%
Females	117	58%	122	60%
Subsequent adjudication				
Males	55	19%	65	23%
Females*	8	4%	21	10%
Subsequent conviction				
Males	49	17%	54	19%
Females*	6	3%	18	9%
Subsequent incarceration				
Males	119	42%	100	35%
Females	54	27%	40	20%
Subsequent probation/parole violation				
Males	173	61%	154	54%
Females	97	48%	85	42%

*p≤.05

Next, we examined whether female Recovery Academy clients recidivated at greater rates once we control for other variables with logistic regression analyses. We found that the odds of recidivism were lower for older women. This was significant, however, only for subsequent arrests and incarcerations. Women with a greater number of prior offenses had significantly greater odds of recidivism, regardless of the measure examined. The exposure time variable was not significantly related to recidivism. Note, though, that for subsequent adjudications and convictions, there was a small but significant change in the differences in the -2LL. This indicates that the addition of exposure time does improve overall model fit, and that this variable may change the odds of these types of recidivism.

Participation in the Recovery Academy was significantly related to subsequent adjudication and convictions. The odds of recidivism were lower for women who participated in the Recovery Academy than for women who did not. The odds ratios for the remaining measures of recidivism were not statistically significant.

Table 4. Logistic regression subsequent offense results for females only

Females only						
Block	**Variable**	**Subsequent arrest**	**Subsequent adjudication**	**Subsequent conviction**	**Subsequent incarceration**	**Subsequent PV**
Demographics	Age at intake	.976*	.957	.956	.957**	.981
	White	.667	1.094	1.446	.881	.724
Criminal history	Total priors (total unique exposures to criminal justice system)	1.076***	1.117***	1.113***	1.123***	1.041*
Days to follow-up	Exposure time	1.000	1.001	1.002	1.000	1.000
Client status	Recovery Academy client	.757	.356*	.329*	1.251	1.089
	Constant	1.995	.012	.008	.341	1.733
	Block 1 -2LL	543.137	207.724	181.080	433.010	553.169
	Block 2 -2LL	531.025***	197.995***	173.594***	404.487***	548.155*
	Block 3 -2LL	530.691	191.981*	167.825*	404.449	547.625
	Block 4 -2LL	529.174	186.628*	162.736*	403.751	547.475
	Correctly classified	63%	93%	94%	76%	57%
	H-L GOF	4.645, 8df	3.778, 8df	3.312, 8df	8.195, 8df	3.417, 8df

*p≤.05, **p<.01, ***p<.001

In table 5 we summarize the results of the logistic regression analyses for males. Older men had significantly lower odds of subsequent arrests, incarcerations, and probation violations. Those with a greater number of priors had greater odds of recidivism of any type. Exposure time was statistically significant when arrests, adjudications, and conviction were the outcome measures. Men who were in

the study longer had significantly greater odds of having a subsequent arrest, adjudication, or conviction. The variable of interest here, whether men participated in the Recovery Academy, was not statistically significant regardless of which recidivism measure was used. This indicates that, once we control for other measures, participation in the Recovery Academy is not associated with different levels of recidivism.

Table 5. Logistic regression subsequent offense results for males only

Males only						
Block	**Variable**	**Subsequent arrest**	**Subsequent adjudication**	**Subsequent conviction**	**Subsequent incarceration**	**Subsequent PV**
Demographics	Age at intake	.962***	.981	.979	.973**	.964***
	White	.969	1.267	1.426	.962	.934
Criminal history	Total prior criminal justice contacts	1.130***	1.057**	1.070***	1.129***	1.102***
Days to follow up	Exposure time	1.002**	1.002***	1.003***	1.001	1.000
Client status	Recovery Academy client	1.230	.987	1.112	1.382	1.185
	Constant	.180	.006	.002	.125	2.315
	Block 1 -2LL	648.708	585.890	537.468	756.672	769.413
	Block 2 -2LL	613.171***	579.284*	528.502***	699.454***	731.299***
	Block 3 -2LL	604.076***	562.280***	509.677***	698.635	730.837
	Block 4 -2LL	603.167	562.277	509.475	695.863	730.033
	Correctly classified	75%	79%	82%	64%	64%
	H-L GOF	6.233 8df	10.277 8df	5.997 8df	13.349	9.340

**p<.01, ***p<.001

Time to subsequent offense

Next, we examined time to re-offending by recidivism type and calculated a series of Cox Proportional Hazards regression equations measuring subsequent arrests, adjudications, convictions, incarcerations, and probation violations. The results for females are below (Table 6). Age at intake is significantly related to subsequent arrests, adjudications, convictions, and incarcerations. However, we found no significant relationship with subsequent probation/parole violations. Additionally, regardless of the measure assessed, the greater the number of prior offenses, the greater the hazard of recidivism. Finally, whether someone is a Recovery Academy client is significantly related to the hazard of adjudication as well as conviction. Specifically, women have a lower hazard rate if they are Recovery Academy clients, consistent with the results from the logistic regression analyses above. We found no significant relationship between client status and the remaining recidivism measures.

Table 6. Cox Proportional Hazards results for subsequent offending females only

Females only						
Block	**Variable**	**Subsequent arrest**	**Subsequent adjudication**	**Subsequent conviction**	**Subsequent incarceration**	**Subsequent PV**
Demographics	Age at intake White	.984* .810	.951* 1.067	.949* 1.387	.964** .936	.989 .787
Criminal history	Total prior criminal justice contacts	1.055***	1.105***	1.104***	1.110***	1.031*
Client status	Recovery Academy client	.839	.300**	.269**	1.174	1.120
	Block 1 -2LL **Block 2 -2LL** **Block 3 -2LL**	2676.397 2658.486*** 2656.693	345.100 334.938*** 325.664**	285.642 277.706** 268.858**	1094.038 1061.582*** 1061.015	2074.345 2064.599* 2064.031

*p≤.05, **p<.01, ***p<.001

The results for males are in Table 7 below. The hazard rate of men who participated in the Recovery Academy was not significantly different from those who did not participate, regardless of the recidivism measure used. In other words, although we found that participation in the Recovery Academy decreased the hazard of adjudication and conviction occurring for females, this was not the case for males.

Table 7. Cox Proportional Hazards results for subsequent offending males only

Males only						
Block	**Variable**	**Subsequent arrest**	**Subsequent adjudication**	**Subsequent conviction**	**Subsequent incarceration**	**Subsequent PV**
Demographics	Age at intake White	.976*** .956	.983 1.151	.981 1.262	.982** .937	.978*** .993
Criminal history	Total prior criminal justice contacts	1.069***	1.042**	1.051	1.091***	1.053***
Client status	Recovery Academy client	.381	.782	.836	1.164	1.141
	Block 1 -2LL **Block 2 -2LL** **Block 3 -2LL**	4885.224*** 4825.398*** 4824.633	1495.097 1488.060** 1486.275	1286.631 1277.251** 1276.441	2675.100 2612.623*** 2611.394	3873.351** 3839.293*** 3837.911

*p≤.05, **p<.01, ***p<.001

Probation violations

Since probation violations cover a wide range of behaviors, we analyzed some types of violations separately to determine whether there were any differences between program participants and the comparison group. The violations we examined were: new offense, drug or alcohol violation, drug violation only, and alcohol violation only. Like the analyses above, we began by analyzing the bivariate relationship between client status and violation type as well as time to violation, and then calculated multivariate logistic and Cox Proportional Hazards regression models.

Violation for a new offense

First, we examined whether there were any differences by client status for a violation for a new offense, which indicates a new crime was committed. We found that female Recovery Academy clients were significantly less likely to have a subsequent violation for a new offense. Further, among those who did have a new offense, the time to the first violation was significantly longer for male Recovery Academy clients. Note that while not statistically significant, the time to the first violation for a new offense among female Recovery Academy clients was longer than for women in the comparison group.

Table 8. Subsequent probation/parole violation for a new offense

	Recovery Academy		Comparison group	
	N=489	%	N=489	%
Subsequent violation for new offense				
Males	64	37%	68	44%
Females*	18	19%	29	34%
Time to first violation for new offense				
Males*	545.67 (396.09), N=64		395.99 (415.54), N=68	
Females	543.33 (333.83), N=18		379.86 (426.66), N=29	

*p≤.05

Next, we completed logistic regression analyses to assess differences in violations for a new offense (see Table 9 below). Males have higher odds of a violation for a new offense than females, and those with a greater number of prior offenses have higher odds of a violation. Both of these variables are statistically significant. Further, when we limit the analyses by gender, total priors continue to be statistically significant while age is significant only for males. Total exposure time was not significantly related to the likelihood of a violation for a new offense. Further, we did not find a statistically significant relationship between client status and a violation for a new offense.

We then assessed the hazard for a violation for a new crime using Cox Proportional Hazards regression. Once other variables were accounted for, we found that the hazard for a violation for a new offense was significantly lower for female Recovery Academy clients. This suggests that the time to the new offense is significantly longer for female Recovery Academy clients. However, we did not find a statistically significant relationship for Recovery client status when we limited the data to males.

Table 9. Regression results for new offense violation

		Logistic regression results		Cox Proportional Hazards results	
Block	**Variable**	**Subsequent PV females for new offense**	**Subsequent PV males for new offense**	**Subsequent PV females for new offense**	**Subsequent PV males for new offense**
Demographics	Age at intake White	1.000 .812	.933*** .972	.997 .816	.942*** .981
Criminal history	Total prior criminal justice contacts	1.063*	1.073***	1.056*	1.056***
Days to follow-up	Exposure time	1.001	1.000	n/a	n/a
Client status	Recovery Academy client	.622	.836	.552*	.827
	Constant	.020	1.003	n/a	n/a
	Block 1 -2LL **Block 2 -2LL** **Block 3 -2LL** **Block 4 -2LL**	290.280 286.040* 282.635 280.709	590.434 574.973*** 574.506 573.832	555.892 551.420* 547.499* n/a	1612.353*** 1597.635*** 1596.470 n/a

*p≤.05, ***p<.001

Violation for alcohol or drugs

Next, we examined violations for either drugs or alcohol. The time to the first drug or alcohol violation was significantly longer for female Recovery Academy clients. Although the time to first drug or alcohol violation was longer for male Recovery Academy clients relative to males in the comparison group, this difference was not statistically significant.

Table 10. Violation for alcohol or drugs

	Recovery Academy		Comparison group	
	N=489	**%**	**N=489**	**%**
Subsequent drug/alcohol violation				
Males	121	70%	119	77%
Females	75	77%	67	79%
Time to first drug /etoh violation*				
Males	392.12 (373.76), N=121		342.49 (434.80), N=119	
Females*	451.72 (331.74), N=75		284.09 (371.51), N=67	

*p≤.05

We then assessed drug or alcohol violations while controlling for other variables in logistic regression models. While none of the other independent variables were statistically significant when limited to females, we did find two variables that were related to subsequent drug or alcohol violations for males. These were age (older men have reduced odds of a violation) and total priors (a greater number of priors is associated with higher odds of a violation).

We then calculated Cox Proportional Hazards regression for drug and/or alcohol violations. Unlike the other models, none of the demographic variables nor prior exposures to the criminal justice system were significantly related to the hazard of a subsequent probation violation involving drugs or alcohol. Instead, the only variable significantly related to subsequent drug or alcohol violations was client status. Participation in the Recovery Academy significantly decreased the hazard of a subsequent drug/alcohol violation for male clients. However, we did not find any statistically significant differences among female clients. Note that this differs from the bivariate analyses, where we found significant differences for female clients.[2] Thus, once both time to violation and whether a violation occurred are taken into account, we found that male Recovery Academy clients fare better than males who did not participate in the Recovery Academy.

Table 11. Multivariate analyses results for violation for alcohol or drugs

		Logistic regression results		Cox Proportional Hazards results	
Block	**Variable**	**Subsequent drug/alcohol PV females**	**Subsequent drug/alcohol PV males**	**Subsequent drug/alcohol PV females**	**Subsequent drug/alcohol PV males**
Demographics	Age at intake White	.992 .819	.980* 1.057	1.013 1.302	1.002 1.137
Criminal history	Total prior criminal justice contacts	1.028	1.059***	1.009	.992
Days to follow-up	Exposure time	1.000	1.000	n/a	n/a
Client status	Recovery Academy client	1.090	.989	.750	.712**
	Constant	.714	.647	n/a	n/a
	Block 1 -2LL **Block 2 -2LL** **Block 3 -2LL** **Block 4 -2LL**	524.126 521.782 521.533 521.388	775.126 760.574*** 760.472 760.468	1307.929 1307.598 1304.853 n/a	2493.004 2492.593 2486.002** n/a

*p≤.05, **p<.01, ***p<.001

Violation for drug offense

We then examined drug violations and alcohol violations separately. There was little difference in the proportions of Recovery Academy clients with a violation for drugs relative to the comparison groups. However, Recovery Academy females had a significantly longer time to violation for drugs than women who did not participate.

[2] We used a cutoff of p≤.05; females were significant at p=.10

Table 12. Violation for drug offense

	Recovery Academy		Comparison group	
	N=489	%	N=489	%
Subsequent drug violation				
Males	83	29%	90	32%
Females	58	29%	57	28%
Time to first drug violation				
Males	427.54 (377.74), N=83		414.31 (490.37), N=90	
Females*	469.57 (351.99), N=58		331.88 (400.28), N=57	

*p≤.05

Once we controlled for other variables in multivariate regressions, though, that relationship was no longer statistically significant. While not shown here, we found no statistically significant relationship between Recovery Academy client status and violation for a drug offense in either the odds ratios (logistic regression) or the hazard ratios (Cox Proportional Hazards regression). These results are available upon request.

Violation for alcohol offense

We found no statistically significant differences in time to alcohol violation by gender. Further, once we controlled for other variables, we found no statistically significant differences in either the odds ratios (logistic regression) or the hazard ratios (Cox Proportional Hazards regression) for Recovery Academy clients when we limited the analysis by gender. These results are available upon request.

Table 13. Violation for alcohol offense

	Recovery Academy		Comparison group	
	N=489	%	N=489	%
Subsequent alcohol violation				
Males	63	22%	51	18%
Females	29	14%	26	13%
Time to first alcohol violation				
Males	443.00 (418.62), N=63		319.10 (375.57), N=51	
Females	388.72 (232.58), N=29		304.42 (387.48), N=26	

Summary

Taken together, the results from the bivariate and multivariate analyses of recidivism suggest that female Recovery Academy clients may be less likely to commit a new offense or be adjudicated and convicted for a new offense. Further, time to adjudication appears to be significantly longer for female Recovery Academy clients. This conclusion is reiterated with the results from the analyses of the probation violation data. Those results indicated that women who participated in the Recovery Academy were less likely to have a probation violation for committing a new offense and that the time to violation was significantly longer than for women in the comparison group once other variables were taken into account.

On the other hand, men who participate in the Recovery Academy may be less likely to have a violation for either a drug or alcohol violation. Although not statistically significant in the bivariate analyses, once other variables were controlled for in the multivariate analyses, we found that males who participated in the Recovery Academy had a lower hazard rate than males who did not. Thus, once both time to failure and failure are considered simultaneously, men who participate in the Recovery Academy were found to fare better than men who did not participate. However, when we examined violations for drugs and alcohol separately, we did not find statistically significant differences.

It is important to note that while not always statistically significant, we found that at least in the bivariate analyses, the time to recidivism and failure on probation were longer for Recovery Academy clients by gender. This suggests that at least while men and women are participating in the Recovery Academy, there is a deterrent effect. Further, this may result in lower levels of new, serious crimes by Recovery Academy females and lower levels of substance use and abuse by males.

Importantly, there are some limitations to this study. First, we do not have dosage information for the individuals who participated in the Recovery Academy programs. Thus, we cannot determine whether there is a difference between those who complete the program compared to those who did not. This is especially important given that the evaluations described in the literature review often found that individuals who completed TC or modified TC programs often fared better than those who did not complete, and that in some cases, those who participated but did not complete actually fared worse than those who did not participate at all.

In addition, there may be some differences between the Recovery Academy clients and comparison group individuals that we did not identify. For example, it is plausible that the Recovery Academy clients were faring worse on probation when accepted into the Recovery Academy than their counterparts were at the time of the RNA assessment. Further, the bivariate analysis suggests that the Recovery Academy group had more serious prior contacts with the criminal justice system. While we controlled for much of this, there could still be some aspects of this we could not control for that contributes to the recidivism rates.

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