An Outcome Evaluation of Pennsylvania's Boot Camp: Does Rehabilitative Programming within a Disciplinary Setting Reduce Recidivism?

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Although previous research has found the disciplinary model of correctional boot camps to be ineffective in reducing recidivism, the impact of a rehabilitative model is still unclear. The current study addresses this issue through an outcome evaluation of Pennsylvania's Motivational Boot Camp Program, which uses a multidimensional approach to its rehabilitative programming. The authors predict that this program model should be more effective than traditional prison in reducing recidivism and that this effect will be particularly strong for certain high-risk offenders (i.e., those who are young and/or have a prior criminal record). The results from their logistic regression analyses indicate no significant differences in the recidivism of offenders graduating from the boot camp and those released from prison. However, tests for interactions indicate that this program performs better than prison for offenders with a prior record. This particular finding has important policy implications for targeting appropriate offenders for such programs.

Keywords: *boot camp; recidivism; Pennsylvania rehabilitation; corrections*

The 1990s saw a proliferation of correctional boot camp programs across the nation. They were enthusiastically embraced, both politically and socially, because they were viewed as being "tough on crime" while offering

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hope of deterring future criminal activity. Although most boot camps share the goals of reducing prison crowding, correctional costs, and offender recidivism, the means to achieving these goals vary. Of particular interest in this article is the crime reduction goal of boot camps and whether the model adopted in Pennsylvania has been successful in reaching this goal.

The concept of a correctional boot camp is borrowed from the military and thus incorporates a regimen of strenuous physical exercise and strict discipline to provide a more intensive experience than simply "doing time" in prison. In addition, some boot camps also provide rehabilitative programs in areas such as education, vocation, substance abuse, and conflict-resolution.

Although early research found that military-style boot camps did not reduce criminal behavior, more recent studies have suggested that programs that incorporate strong educational and rehabilitative components may hold promise for reducing recidivism (MacKenzie, Brame, McDowall, & Souryal, 1995). In an extensive review of correctional programs, Sherman and his colleagues concluded that, although the traditional, discipline-oriented boot camp model is ineffective in reducing recidivism, more research is needed to determine the success of boot camp programs that incorporate therapeutic activities (Sherman et al., 1997). Thus, what we still do not know is, "if an intensive treatment program can be effectively combined with correctional boot camps" (MacKenzie, 2000). Furthermore, due to the varying offender populations and structural characteristics of individual boot camps, researchers have suggested that future evaluations should be done on a "state by state basis" (MacKenzie & Souryal, 1994, p. 327).

The current study specifically addresses these issues through an outcome evaluation of Pennsylvania's only correctional boot camp for adult offenders, The Pennsylvania State Motivational Boot Camp Program, located in Quehanna, Pennsylvania. The structure of this program, which synthesizes a military-style physical regimen with a multidimensional rehabilitative curriculum, provides an opportunity to study whether intensive treatment can indeed be combined with the structural characteristics of a boot camp to reduce recidivism.

PREVIOUS RESEARCH: THE EFFECTIVENESS OF CORRECTIONAL BOOT CAMPS

Many of the early boot camp evaluations were conducted by the Departments of Corrections in the states that first established these alternative correctional programs: Georgia (Flowers, Carr, & Ruback, 1991), Florida

(Florida Department of Corrections, 1990), and New York (New York Department of Correctional Services, 1997). Evaluations in all three states used return to prison as the recidivism measure and offenders sentenced to prison as a comparison group. In addition, Georgia's evaluation included offenders sentenced to probation and intensive probation as comparison groups, and, in their analysis, they controlled for five factors related to recidivism: need level, risk level, age, race, urban/nonurban, and offense. The tracking period varied from 18 months in New York, to 3 years in Florida, and 5 years in Georgia. Georgia's evaluation found that the recidivism rates for the experimental group were lower than for the prison and intensive probation groups but higher than for the probation group. New York's evaluation found that its boot camp graduates were less likely than the control group to return to prison for new crimes, although the rates were similar for technical violations. The opposite was found in Florida, where the boot camp graduates were less likely than the prison group to be reincarcerated for technical violations but the rates were similar for new crime convictions.

The most extensive research on boot camps has been conducted by MacKenzie and her colleagues (MacKenzie, 1991; MacKenzie & Parent, 1991; MacKenzie & Shaw, 1993; MacKenzie, Shaw, & Gowdy, 1990; MacKenzie, Shaw, & Souryal, 1992). In an early study of Louisiana's boot camp, Mackenzie found no difference in the rearrest rates of offenders sentenced to prison, probation, or boot camp (MacKenzie, 1991). In an extension of this study, MacKenzie and Shaw (1993) examined differences in the type of arrests and found that boot camp graduates were significantly less likely than the two comparison groups to be arrested for a new crime, although they were significantly more likely to be arrested for a technical violation. The authors suggest that boot camp graduates may have higher technical revocation rates because they are under intensive supervision, which makes them more vulnerable to arrest.

Recognizing that differences among the various boot camp programs make it difficult to generalize findings from one program to another, MacKenzie and her colleagues conducted an evaluation of boot camp programs in eight states: Florida, Georgia, Illinois, Louisiana, New York, Oklahoma, South Carolina, and Texas (MacKenzie et al., 1995; MacKenzie & Souryal, 1994). The boot camps selected all shared the quasi-military aspects of discipline yet differed with respect to other programmatic features such as education, vocational training, and substance abuse treatment, which allowed the researchers to examine the influence of these rehabilitative programs on recidivism.

Three recidivism measures were used: arrest, return to prison for a new crime, and return to prison for a technical violation. The offenders were tracked for 12 months in Florida, Illinois, New York, and South Carolina and for 24 months in Georgia, Louisiana, Oklahoma, and Texas. In three states (Texas, Oklahoma, and Georgia), there were no significant differences between boot camp graduates and the comparison groups on any measure of recidivism. The authors suggest that this finding is partially attributed to the lack of substantive treatment, limited activities, and nonintensive supervision of program graduates. In two states (South Carolina and Florida), there were some significant differences between the boot camp graduates and comparison groups, though the researchers concluded that these differences were a result of preexisting differences in the offender groups.

In three states (Illinois, Louisiana, New York), there was evidence that boot camp graduates had lower recidivism rates for new crimes, though this finding was not significant in New York. In Louisiana and New York, boot camp graduates were also less likely than prison releases to be returned to prison for a technical parole violation; however, in Illinois the opposite was found.[1] The authors noted that the programs in New York, Louisiana, and Illinois shared the following similarities that might help to explain their success: They provided at least 3 hours of rehabilitative programming, were voluntary, were longer (120 to 180 days), had a high dismissal rate, selected offenders from those who were prison bound (rather than probation bound), and required intensive parole supervision. The authors conclude that due to the inconsistent findings among the various states, the success of boot camps has to be evaluated on a 'state by state basis' (MacKenzie et al., 1995, p. 327).

In sum, although studies examining the effectiveness of adult boot camps in reducing crime have resulted in inconsistent findings, many of the differences are attributable to variations in: measuring recidivism (e.g., parole violations, arrests, convictions, return to prison), comparison groups (boot camp dropouts, probationers, persons released from prison), length of tracking time (ranging from 12 months to 5 years), use of control variables, and program type (quasi-military vs. rehabilitative). Overall, there is some evidence from these studies that boot camp graduates are less likely to recidivate than offenders who go to prison. In addition, previous research indicates that boot camp graduates are less likely than their prison counterparts to be arrested for a new crime but more likely to be arrested for technical violations. Finally, those programs that incorporate a strong rehabilitative component (e.g., education, counseling, life skills training, and substance abuse treatment) show more success than those that focus primarily on the quasi-military aspects of boot camp.

REHABILITATIVE PROGRAMMING IN A CORRECTIONAL SETTING

Although the previous research on boot camps suggests that one of the primary determinants of their success may be the provision of rehabilitative programming, it is important to note that rehabilitation is a broad term encompassing a vast array of possible treatment services. Moreover, not all rehabilitation models are of equal quality or provide proven results. Although Martinson (1974), in his review of correctional programming, concluded that "nothing works," more recent meta-analyses have shown that in better controlled studies, many correctional treatment programs are found to have significant and substantial positive effects (Andrews, Zinger, et al., 1990; Cullen & Applegate, 1997; Lipsey, 1992). These studies also find that "what works" depends on more than just the program itself. Specifically, the effectiveness of a program may rely on an appropriate match between offender characteristics and program modalities. That is, some programs have some positive effects for some offenders (Andrews, Zinger et al., 1990; Cullen & Gendreau, 1989; Lipsey, 1989). Thus, the relevant question to be answered becomes: What program models work best for which offenders?

Andrews, Zinger et al. (1990) proposed that the key to answering this question lies in matching offenders with programs based on the principles of risk, need, and responsivity. Risk refers to existing characteristics or attributes of an offender that are associated with future criminal activity. Research suggests that the most efficient predictions of risk are based on prior behaviors, feelings, cognitions, personality measures, and associations (Andrews, Bonta, & Hoge, 1990). Accordingly, offenders who score high on risk should be directed toward the most intensive intervention and treatment programs.

The principle of need usually refers to the criminogenic needs of the offender—that is, those personal characteristics that directly relate to criminal activity (Andrews & Bonta, 1998; Andrews, Bonta, et al., 1990). Research suggests that some of the most prominent criminogenic factors that should be addressed in a program include antisocial attitudes; problems in work, school, and the home; drug and alcohol abuse; and associations with antisocial/criminal others (Andrews, Bonta et al., 1990; Andrews, Zinger, et al., 1990; Hunt & Azrin, 1973). Other research expands the concept of need to include additional social risk factors such as low self-esteem and emotional/psychological problems that may impair social functioning but have not been found by research to directly lead to criminal activity (Dowden & Andrews, 2000).

The final principle, that of responsivity, refers to an offender's potential to benefit from one mode of service delivery over another. In general, research has found that highly structured programs based on cognitive behavior and

social learning approaches produce greater reduction in criminal activity than other types of programs (Andrews & Bonta, 1998; Andrews, Bonta et al., 1990; Dowden & Andrews 2000). At a more specific level, however, it is suggested that even within a proven program model, the mode of service delivery must be matched to the learning styles, intellectual abilities, and maturity level of offenders (Andrews & Bonta, 1998; Dowden & Andrews, 2000). For example, research has found that highly verbal and interpersonal forms of service delivery are only effective with offenders who have high levels of interpersonal abilities and conceptual functioning and that a more directed and structured service delivery program is beneficial for offenders with less developed interpersonal and intellectual skills (Andrews, Bonta et al., 1990).

In sum, this literature suggests that high-intensity services should be reserved for high-risk offenders; the specific rehabilitative programming offered should be directed at the offender's criminogenic, and possibly noncriminogenic, needs; and, the program model should be based on proven cognitive-behavioral or social learning models with service delivery tailored to the offender's specific learning style. To direct these findings more specifically to the study at hand, the following section will provide a detailed description of the Quehanna Motivational Boot Camp as it relates to the risk level of participants, the specific offender needs addressed through programming, and the structure and mode of service delivery.

THE PENNSYLVANIA BOOT CAMP

In 1990, the Pennsylvania Legislature established the State Motivational Boot Camp Program with two primary objectives: (a) to reduce prison overcrowding, and (b) to reduce recidivism by providing a program that would promote discipline, structure, and characteristics of good citizenship. Opened in June 1992, the boot camp is structured as a 6-month alternative to prison that blends the traditional military style physical regimen with a rehabilitation program consisting of education, life skills training, and cognitive-behavioral therapy to address drug and alcohol abuse as well as antisocial attitudes and behaviors.

The statute requires that eligible offenders be (a) sentenced to a state prison with a minimum sentence not exceeding 2 years (or 3 years if offenders serve 1 year in prison),[2] (b) under age 35, and (c) not convicted of certain violent or major drug trafficking offenses. In addition to statutory eligibility, the sentencing judge must recommend the offender as a potential candidate for the program, and the Department of Corrections maintains final discre-

tion in determining admissions into the program. Although the program is voluntary and an offender can withdraw at any time, both the admission and graduation rates are quite high, averaging 66% and 80%, respectively. Offenders not selected for the program or who leave, either voluntarily or involuntarily, must serve the original sentence imposed by the judge.

These strict eligibility criteria provide assurance that Pennsylvania's boot camp does not simply widen the net of incarceration, as has been the criticism of some programs (Austin & Krisberg, 1982). Moreover, as there is no exclusion of offenders based on prior criminal record or previous incarceration, as is the case in some states, the Pennsylvania model has the potential for resulting in a more chronic and serious offender population than is the norm in traditional boot camps (Zhang, 1998).

Like most correctional boot camps, Pennsylvania's program is modeled after military boot camps in that it provides high levels of discipline and structure through regimented 16-hour days consisting of drills, work, and program activities with very little free time. Unlike many boot camps, however, a hallmark of this program is its emphasis on rehabilitative programming to address both the criminogenic and noncriminogenic needs of the offenders.

Because the program's primary rehabilitative emphasis is on drug and alcohol abuse, the boot camp employs drug and alcohol treatment specialists who provide treatment interventions based on a cognitive restructuring approach. These interventions are designed to address criminogenic behaviors and to equip the offender with the thinking skills necessary to avoid engaging in future criminal activity. Inmates are taught how to deal with issues related to substance abuse such as stress and anger management, the effect of drugs on the body, dysfunctional family systems, self-defeating behaviors, building self-esteem, developing healthy relationships, and relapse prevention. Group counseling sessions meet for 2.5 hours per day, 7 days a week, and nightly community meetings are offered to allow inmates the opportunity to discuss individual problems. In addition, Alcoholics Anonymous, Narcotics Anonymous, and Gamblers Anonymous are offered on a weekly basis. Offenders are evaluated daily on their progress in these therapeutic programs.

Although not directly considered a criminogenic need, research has shown stable employment to significantly reduce recidivism (Sampson & Laub, 1990; Warr, 1998). Thus, the Pennsylvania model also incorporates education and employment training. Inmates who do not have a high school diploma participate in a mandatory education program, with approximately 92% of these offenders receiving their GED while at the boot camp. Inmates who have achieved a high school diploma or equivalent spend their days par-

ticipating in community work projects and assisting with the daily maintenance and upkeep of the boot camp. In addition, the topics of employability, financial budgeting, and community reintegration are addressed through the group counseling sessions and nightly meetings.

Although the military-style boot camp provides a highly structured mode of service delivery, the program also incorporates components of a therapeutic community model, which allows inmates to earn privileges and rewards. The program is divided into three 2-month phases that gradually reduce the structural controls on inmates, allow for greater personal freedoms, and require escalating levels of self-discipline. Inmates are evaluated at the end of each phase with increased expectations concerning their application of what they have learned, their success in achieving established goals, and their demonstration of appropriate behavior in the various aspects of the program. If satisfactorily meeting program expectations, the inmate is promoted to the next level. Also, within each level, inmates have the opportunity to gain, or lose, personal privileges such as phone calls and visitations.

From this description of Pennsylvania's boot camp, it is apparent that the offender population is a high-risk population—primarily young offenders with prior criminal histories. In accordance with the risk-need principle, these offenders are offered a highly intensive and highly structured program that addresses a variety of criminogenic and noncriminogenic needs aimed toward reducing recidivism on release. Although it is beyond the scope of the current study to evaluate program implementation, the programmatic design of the Pennsylvania Motivational Boot Camp Program, as described in official documentation, appears to incorporate many of the aspects of programs found to be successful in other treatment settings. The research question then becomes: Is this type of rehabilitative programming effective when delivered within the disciplinary setting of the boot camp?

CURRENT STUDY

The primary research question to be addressed in this study is: Do offenders who graduate from a rehabilitation-based boot camp have lower recidivism rates than offenders who are released from traditional prison? We predict that graduates of Pennsylvania's boot camp will have significantly lower recidivism rates than a comparison group of offenders released from prison. Specifically, we would expect graduates of Pennsylvania's boot camp to perform significantly better as this program meets most of the criteria that previous studies have found to be associated with successful boot camp programs (MacKenzie et al., 1995; MacKenzie & Souryal, 1994). That is, Pennsylva-

nia's boot camp is a longer program (6 months), is specifically designed for prison-bound offenders, is voluntary, and includes more than 3 hours of rehabilitative programming a day. Furthermore, the rehabilitative programming offered encompasses many of the characteristics of successful correctional programs such as high structure, high intensity, and the provision of services directed at both criminogenic and noncriminogenic needs (Andrews, Bonta et al., 1990).

Moreover, based on risk-effect models, we anticipate that this specific boot camp model may have additional benefits for certain types of offenders, who are traditionally at high risk for recidivism. Specifically, we predict that:

- Young offenders who attend the boot camp will have lower recidivism rates than young offenders who serve time in prison; and
- Offenders with a prior criminal record will have lower recidivism rates than similar offenders who serve their time in prison.

In general, recidivism research finds that age is a key predictor of recidivism (Hepburn & Albonetti, 1994; Land, McCall, & Williams, 1990; Rhodes, 1986). As such, we believe that this particular population should be more responsive to the highly intensive boot camp experience and should, therefore, perform better in terms of recidivism than similar offenders who serve their time in prison. As Pennsylvania's boot camp is fairly unique in its inclusion of an offender population with considerable prior criminal histories, we are especially interested in the impact of a boot camp on this population. Recidivism research has found a strong main effect between prior record and recidivism in that offenders with a criminal history are more likely to continue recidivating (Albonetti & Hepburn, 1997; Land et al., 1990; Rhodes, 1986; Ulmer, 2001). Subsequently, we expect to find an interaction effect between the sample group and prior record in that offenders with a prior record who attend boot camp will recidivate significantly less than similar offenders who served their time in prison.

Data and Sample Description

This study employs a quasi-experimental design, as the offenders were not randomly selected for boot camp or prison. The sample for the current study included offenders who graduated from Pennsylvania's Motivational Boot Camp Program during 1996 and 1997 ($n = 508$), along with a comparison group of offenders who were released from state prison during those 2 years ($n = 532$). Thus, the entire sample consists of 1,040 offenders. The comparison group consists of those offenders who met the statutory eligibility criteria for boot camp but did not attend because they were not recommended

by the judge, were not accepted by the Department of Corrections, or did not volunteer for the program.

In an effort to control for some of the resulting sample differences and for additional variables found to relate to recidivism in previous studies (Gendreau, Little, & Goggin, 1996; Horney, Osgood, & Marshal, 1995; Morgan, 1994; Sims & Jones, 1997; Ulmer, 2001), we obtained information from the Department of Corrections on the following: race, county, current conviction offense, and sentence length.[3] Also, to test our interaction hypotheses, information was collected from the Department of Corrections on age at release, and criminal history information, collected by the state police, was provided via the Pennsylvania Commission on Crime and Delinquency. Because conviction information was missing in more than one third of the cases, we used prior arrests as a measure of prior criminal record.

We also received recidivism information, along with the offender's employment status, from the Pennsylvania Board of Probation and Parole (PBPP). The information from PBPP allowed us to distinguish whether the offender had been arrested for a technical violation or convicted of a new crime, though not necessarily reincarcerated, as two different measures of recidivism. We received recidivism information on the offenders in our sample through May 2000, which allowed for a minimum of a 2-year tracking period for offenders released in 1997 and of 3 years for offenders released in 1996. From this information, we defined those offenders who had either completed their maximum sentence on parole or were still on parole but had no violations as being successful.

Table 1 provides a description of the sample for the variables included in the recidivism analysis. Although we attempted to select a comparable prison group based on statutory eligibility, there are statistically significant differences between the sample groups for all of the variables except for race and gender. Using standard *t* tests, we found that offenders who went to boot camp were significantly more likely than offenders who went to prison to be young (average age of 25 years vs. 28 years) and to have a longer sentence (20 months vs. 17 months for minimum sentence; 48 vs. 45 months for maximum sentence). Using a chi-square statistic for the categorical variables, we also found that boot camp inmates were more likely than the prison group to be from a rural county (25% vs. 19%), employed (56% vs. 45%), convicted of a drug offense (62% vs. 51%), and to have no prior arrests (24% vs. 12%).

These differences with respect to age and offense are not particularly surprising as Pennsylvania's boot camp is oriented toward young offenders with substance abuse problems. Nor is it surprising that offenders in the boot camp sample have longer sentences, as the reduction in time offered by this alternative program might provide more of an incentive to those inmates who have

TABLE 1: Sample Description (*N* = 1,004)

Variable	*Prison*	*Boot Camp*
Gender		
Male	97%	98%
Female	3%	2%
Race		
White	31%	34%
Non-White	69%	66%
Mean age***	28 years	25 years
County**		
Rural	19%	25%
Urban	40%	43%
Major metropolitan	41%	32%
Employment***		
Employed	45%	56%
Unemployed	55%	44%
Offense***		
Drug	51%	62%
Property	29%	20%
Other	20%	18%
Prior arrest***		
No	12%	24%
Yes	88%	76%
Mean minimum sentence length	17 months	20 months
Mean maximum sentence length*	45 months	48 months

NOTE: Due to missing data, the sample size is reduced to 914 for employment and 906 for minimum and maximum sentence length. Significance levels determined using χ^2 for categorical data and *t* tests for continuous variables.
*Significant at .05 level. **Significant at .01 level. ***Significant at .001 level.

longer sentences. That the boot camp sample is more likely than the prison group to have offenders from rural counties is consistent with previous research findings that judges in rural counties have a higher boot camp referral rate than judges in urban areas (Kempinen & Kurlychek, 2001). Finally, the higher rate of postincarceration employment for boot camp graduates may be due to these offenders being more motivated to obtain employment, having acquired the necessary skills for job acquisition and/or receiving better aftercare during the reintegration process.

Statistical Methods

The recidivism analysis is conducted in two steps. First, we perform a bivariate analysis using a series of cross tabulations to determine whether there are any significant differences in parole outcomes based on our sample

groups and the control variables. For this portion of the analysis, we define success as either the completion of parole or being on parole without any violations and separate out failure (i.e., recidivism) into two categories: technical violations and new crime convictions. We exclude from the analysis the 36 cases that involved the offender's death or an undetermined case closure, such as moving out of state. This results in a sample of 1,004 for the bivariate analysis. One-way ANOVA procedures are used to distinguish significant differences in age and minimum sentence length and the chi-square statistic is used for the remaining categorical variables.

Second, we conduct a multivariate analysis to determine which of these variables are most significantly correlated with recidivism when considered collectively. For this analysis, the dependent variable, recidivism, is modeled in two ways: (a) convictions for new crimes and technical parole violations combined and (b) convictions for new crimes only. Based on this dichotomous classification of the response variable, a binary logistic regression model is employed. The primary independent variable of interest is boot camp graduate versus prison release. We anticipate that for both measures of recidivism, boot camp graduates will be less likely to recidivate.

For both measures of the dependent variable, we first run a model including the primary variable of interest: boot camp (1) or prison (0) and the following control variables: age (continuous), race (White/non-White), county (rural, urban, or major metropolitan, which includes the state's the two largest cities, Philadelphia and Pittsburgh), offense (drug, property, or other), employment status (employed/unemployed), prior criminal record (prior record/no prior record), and the mean minimum and maximum sentence lengths. We remove those cases from the analysis that are missing information on employment, sentence length, and/or prior arrest, resulting in a final sample of 812 for the logistic regression. Next, we introduce product interaction terms for boot camp and age and boot camp and prior record to test our expectations that the boot camp may provide additional benefits for high-risk offenders (i.e., young offenders and offenders with prior criminal records).

RESULTS

Bivariate Analysis

Our bivariate analysis in Table 2 reveals that the boot camp group is more likely than the prison group to recidivate (44% vs. 39%), although the type of recidivism is different for the two groups. That is, consistent with previous research (MacKenzie & Shaw, 1993), we find that the boot camp group is

TABLE 2: Bivariate Analysis of Outcome Measures of Recidivism by Sample Characteristics (*N* = 1,004)

	Success	*Failure*	*Type of Recidivism*	
Variable	*(No Recidivism)*	*(Any Recidivism)*	*(Technical)*	*(New Crime)*
Sample group				
Boot camp	56%	44%	32%	12%
Prison	62%	39%	24%	15%
Race				
White	60%	40%	27%	13%
Non-White	59%	42%	28%	14%
Age (mean)***	27 years	26 years	26 years	25 years
County				
Rural	53%	47%	31%	16%
Urban	57%	43%	29%	14%
Major metropolitan	65%	36%	24%	12%
Employment***				
Employed	70%	29%	20%	9%
Unemployed	44%	57%	37%	20%
Offense***				
Drug	64%	36%	25%	11%
Property	46%	54%	32%	22%
Other	60%	40%	28%	12%
Prior arrest*				
No	68%	31%	19%	12%
Yes	57%	43%	29%	14%
Mean minimum sentence length	18 months	18 months	19 months	18 months
Mean maximum sentence length*	45 months	48 months	49 months	47 months

NOTE: Total of success and failure rate may not exactly equal 100% due to rounding error. Due to missing data, the sample size is reduced to 914 for employment and 906 for minimum and maximum sentence length. Significance levels determined using χ^2 for categorical data and one-way ANOVA for continuous variables. Outcome variable defined as success, technical violation, or new crime.
*Significant at .05 level. **Significant at .01 level. ***Significant at .001 level.

more likely than the prison group to fail on parole as a result of a technical violation (32% vs. 24%) rather than for a new crime conviction (12% vs. 15%). Consistent with recidivism research, we also find that offenders who are young and have a prior arrest are more likely to recidivate. In addition, our control variables of offense type, employment status, and length of minimum sentence reach significance. Specifically, property offenders (54%) are more likely than drug (36%) and other types of offenders (40%) to recidivate, whereas unemployed offenders are more likely than employed offenders to

recidivate (57% vs. 29%, respectively). Furthermore, an offender's risk of recidivism increases with the length of the maximum sentence. Our bivariate analysis reveals no significant differences in recidivism rates with respect to the other control variables of race, county, and minimum sentence.

Multivariate Analysis

Table 3 presents the logistic regression models for recidivism when defined as convictions for new crimes and/or technical parole violations. The findings indicate that, on controlling for the influence of other variables, there is no longer a significant relationship between recidivism and sample group. However, as anticipated, recidivism is significantly related to age and prior record, with the additional variables of offense, county, employment, and maximum sentence length also achieving significance.

The coefficient for age (odds = .962) indicates that older offenders are less likely to recidivate than younger offenders, with the chance of recidivism decreasing approximately 4% for each year increase in age. For example, offenders who are 21 years of age are 56% more likely to recidivate than offenders who are 35 years of age. Prior arrest also has a significant effect in the anticipated direction, with offenders having a prior arrest being 92% more likely to recidivate than offenders without a prior arrest (odds = 1.92).

In addition, the analysis revealed that offense type, employment, county, and maximum sentence length were also significant predictors of recidivism. Employment proved to be one of the most significant predictors, with unemployed offenders being almost 3 times as likely to recidivate than employed offenders. Offense type also emerged as a significant predictor, with property offenders being almost twice as likely as drug offenders to recidivate. Offenders from the two major metropolitan areas of Philadelphia and Pittsburgh are the most likely to succeed, with offenders from less urban counties being 50% more likely to recidivate and those from rural counties 70% more likely to recidivate. Finally, maximum sentence is also significant with an odds ratio of 1.02, meaning that there is a 2% increase in the chance of recidivism for each month increase in maximum sentence length. This indicates that an offender with a maximum sentence of 36 months is 24% more likely to recidivate than an offender with a maximum sentence of 24 months.

Next, we explore the possibility of interactions between the boot camp program and the variables of age and prior arrest. As previously noted, we anticipate that the highly structured and intensive service delivery model of the boot camp should provide additional benefits for high-risk offenders defined in this study as those who are (a) young or (b) have a prior record. Although Model 2 (Table 3) shows no additional benefits based on age, the

TABLE 3: Logistic Regression Analysis: Dependent Variable = New/Technical (*N* = 812)

	Model 1				*Model 2*			
	B	SE	*Wald*	*Odds Ratio*	B	SE	*Wald*	*Odds Ratio*
Intercept	–0.823	.616			–1.428	.800		
BC (prison)	0.044	.174	0.065	1.045	0.742	.953	0.606	2.100
Race (White)	0.310	.197	2.483	1.363	0.317	.197	2.578	1.373
Age	–0.039	.018	4.827	0.962*	–0.047	.024	3.996	0.954*
County (major metropolitan)								
Rural	0.584	.230	6.429	1.793*	0.614	.231	7.029	1.847**
Urban	0.412	.179	5.307	1.510*	0.399	.180	4.936	1.490*
Offense (drug)								
Property	0.637	.199	10.236	1.891***	0.612	.200	9.312	1.843**
Other	0.203	.228	0.794	1.225	0.220	.230	0.914	1.246
Prior arrest (no)	0.651	.225	8.368	1.918**	1.501	.436	11.860	4.485***
Employment (yes)	1.045	.158	44.010	2.843***	1.034	.158	42.851	2.812***
Min.	–0.012	.018	0.428	0.988	–.011	.018	0.343	0.989
Max.	0.020	.008	6.753	1.020**	0.020	.008	7.018	1.020**
BC Age*					0.014	.036	0.161	1.015
BC Prior Arrest*					–1.249	.015	5.909	0.287*
Model χ^2	95.476***				101.904			
df	11				13			
Cox & Snell R^2	.111				.118			

NOTE: Sample size is reduced to 812 based on listwise deletion for missing data. BC = Boot camp.
*Significant at .05 level. **Significant at .01 level. ***Significant at .001 level.

interaction term for prior record and sample group is significant. Overall, offenders with a prior record are more likely to recidivate than offenders without a prior record, regardless of sample group. However, among offenders with prior records, those who go to boot camp are 71% less likely to recidivate than those who go to prison (odds = .287).

Table 4 provides the logistic regression results when recidivism is defined as new conviction only. Using this definition, the direction of the relationship is in the anticipated direction—with boot camp graduates less likely to be convicted of a new crime (odds = .740). However, again, the relationship does not reach statistical significance.

Age is of increased significance, with a 1-year increase in age reducing the chance of conviction for a new crime by 7%. However, the relationship with prior record does not reach significance. Employment is still a significant predictor of success with unemployed offenders being more than twice as likely to recidivate (odds = 2.303). In addition, offense type and county again reach statistical significance. Property offenders are almost twice as likely as drug offenders to be convicted of a new crime (odds = 1.959), and offenders from rural counties are also almost twice as likely as offenders from major metropolitan areas to commit a new crime (odds = 1.891). Unlike our earlier analysis, Model 2 indicates that neither of our interaction terms reach significance.

DISCUSSION

This study examined whether offenders who graduate from Pennsylvania's Motivational Boot Camp Program are less likely to recidivate than offenders who are released from prison. Based on previous research on boot camps, as well as the correctional literature on offender risk and need characteristics, we expected that Pennsylvania's rehabilitative model would result in less recidivism among its graduates. However our findings did not support that expectation. Although we found evidence that boot camp graduates are more likely than offenders released from prison to commit technical violations and less likely to commit new crimes, this finding was not significant after controlling for other variables.

Consistent with other research, we also found age (Hepburn & Albonetti, 1994; Land et al., 1990; Ulmer, 2001) and prior record (Hepburn & Albonetti, 1994; Land et al., 1990; Rhodes, 1986; Visher, Lattimore, & Linster, 1991) to be significant indicators of recidivism. However, our finding that offenders with prior arrests were more likely to recidivate was significant only when considering technical violations and new crime convictions combined.

TABLE 4: Logistic Regression Analysis: Dependent Variable = New Crime (*N* = 812)

	Model 1				*Model 2*			
	B	SE	*Wald*	*Odds Ratio*	B	SE	*Wald*	*Odds Ratio*
Intercept	–.349	.855			–1.258	1.029		
BC (prison)	–.301	.240	1.562	0.740	1.933	1.391	1.932	6.914
Race (White)	.347	.271	1.634	1.415	0.352	0.272	1.681	1.423
Age	–.070	.025	7.874	0.932**	–0.047	0.030	2.439	0.954
County (major metropolitan)								
Rural	.637	.312	4.170	1.891*	0.648	0.313	4.280	1.912*
Urban	.461	.251	3.366	1.585	0.452	0.252	3.228	1.572
Offense (drug)								
Property	.672	.261	6.626	1.959**	0.637	0.262	5.913	1.891*
Other Arrest	.091	.327	0.077	1.095	0.076	0.327	0.054	1.079
Prior record (no)	.244	.302	0.653	1.276	0.515	0.520	0.978	1.673
Employment (yes)	.834	.221	14.237	2.303***	0.824	0.222	13.840	2.280*
Min. sentence	–.029	.024	1.427	0.972	–0.029	0.024	1.459	0.971
Max. sentence	.008	.010	0.699	1.008	0.009	0.010	0.893	1.010
BC Age*					–0.080	0.057	1.954	0.923
BC Prior Arrest*					–0.349	0.644	0.294	0.706
Model χ^2	45.435***				48.278***			
df	11				13			
Cox & Snell R^2	.054				.058			

NOTE: Sample size reduced to 812 based on listwise deletion for missing data. BC = Boot camp.
*Significant at .05 level. **Significant at .01 level, ***Significant at .001 level.

Of our two anticipated interaction terms, we found evidence of an interaction only for prior arrests and only when considering both technical and new criminal convictions as our measure of recidivism. Although we found that, overall, offenders with prior arrests were significantly more likely to recidivate, our interaction analysis indicates that offenders with prior records are 71% less likely to recidivate if they graduate from the boot camp than if they are released from prison. This provided some support for our expectation that the boot camp would perform better with certain types of high-risk offenders.

In accordance with previous research, our logistic regression analysis did find many of our control variables to be significantly related to recidivism. Overall, employment status emerged as the strongest predictor, with unemployed offenders being more than twice as likely to be convicted of a new crime and almost 3 times as likely to recidivate when new crime and technical violations were both considered. In addition, offenders convicted of property crimes were almost twice as likely to recidivate as offenders convicted of drug offenses. With respect to county, we found that offenders who lived in the counties containing the two major metropolitan areas, Philadelphia and Pittsburgh, had lower odds of recidivating than those in less urban or rural counties. Similar to prior record, maximum sentence length only achieved significance when considering recidivism as a combination of technical violations and new convictions. This is not surprising, as longer sentences increase the parole supervision period and thus the exposure time for potential misconduct.

Based on our findings, what do we conclude about the success of Pennsylvania's boot camp program in achieving its goal of crime reduction? Although statistically there is no difference in the recidivism rates of the boot camp and prison groups, we argue that it is premature to conclude that the program is not successful. First, because boot camp graduates do spend less time incarcerated and are under longer periods of postrelease supervision, the finding that they do not recidivate more is encouraging. Second, as we find the program does offer some advantages over the prison setting for offenders with a prior record, we suggest that this boot camp may indeed work for certain types of offenders. This is an important policy finding in that some boot camps currently do not accept offenders with a prior record and because it indicates that specific programming and environment settings may work differently among offenders. This suggests the need for further research to explore such interactions and to develop profiles of offenders who stand to benefit most from specific program characteristics, thereby permitting the most effective targeting of scarce resources.

Furthermore, although this study focused on the success of the boot camp in reducing recidivism, it is worth noting that the boot camp does help alleviate prison overcrowding and thus is a cost-savings program. In Pennsylvania, the boot camp reduces an offender's sentence, on average, by 1 year. As the recidivism rates of boot camp offenders are comparable to those of offenders going to prison, it can be argued that it is a fiscally successful program that does not result in increased risk to society.

We should note that there are several limitations to our study. First, although we included two measures of recidivism in this study, technical violations and new crime convictions, information on the seriousness of new crime convictions was unavailable. Second, we would have preferred using prior convictions, rather than prior arrests, as our measure of prior record as convictions are often viewed as a more valid indicator of criminal activity. However, because more than 33% of the sample was missing conviction information, we were unable to use this variable. Third, we found statistically significant differences between our boot camp and prison groups on most of the variables included in our study. Although our multivariate analyses controlled for these differences, the fact remains that these disparities may be indicative of greater dissimilarities between the two groups that are not identified, and therefore are not controlled for, in this analysis.

Fourth, data on parole aftercare were unavailable. By statute, Pennsylvania's boot camp graduates are to be paroled to intensive supervision to complement the highly structured and rigorous programming of the boot camp. However, whether this translates into actual assistance with the reintegration process is unknown. Previous studies have found that the level of aftercare provided on release from confinement is an important ingredient to successful reintegration into the community and future avoidance of crime (Petersilia, 1995; Petersilia & Turner, 1993). Thus, future analyses should examine the extent to which aftercare versus mode of incarceration contributes to recidivism differences.

In conclusion, we still do not know whether the potential impact of the boot camp is being fully realized. That is, the program may be successful in promoting behavioral adjustments in offenders, but without follow-up and continued support in the community, the positive benefits could erode. Thus, the next phase of our research will address these issues by (a) conducting a three-stage panel survey of boot camp inmates to measure the success of rehabilitative programming in bringing about the anticipated changes in offender attitudes and self-control, and (b) conducting a longitudinal study to investigate the role of aftercare in the reduction of recidivism among boot camp graduates.

NOTES

1. In Louisiana, the study found that boot camp graduates were more likely to have parole revoked because of a technical violation when they did not control for supervision status. On controlling for supervision, the opposite was found. The authors caution that this finding is tentative as the large number of missing cases made the analysis difficult.

2. Pennsylvania statute requires that both a minimum and maximum sentence be imposed and that the minimum cannot exceed one half of the maximum. Maximum sentences less than 2 years are served in county jails, whereas maximum sentences 5 years or greater are served in state prisons. Although an offender receiving a maximum sentence between 2 to 5 years can serve the sentence in a county jail, the vast majority of such offenders are sentenced to state prison.

3. We also received information on gender, but because 98% of the boot camp graduates are male, we did not include gender in the analysis.

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