Digging Deeper: Exploring the Value of Prison-Based Dog Handler Programs

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Abstract

As U.S. correctional systems continue to rollout evidence-based programs, the utility of "complimentary" programs that do not address recidivism reduction remains in question. Many U.S. prisons have a variety of prison-based animal programs, yet the outcomes are largely unexplored. This research addresses a literature gap by evaluating the intermediate outcomes associated with a statewide prison-based dog handler program. Using propensity score matching, we compared 1,001 inmates in a pretest, postentry design, aimed at measuring change across four outcomes. Results indicate that dog handler program inmates experienced significant improvement in three of four areas. Implications and further research needs are explored.

Keywords

prison, prison-based animal programs, intermediate outcomes, propensity score matching

Introduction

As part of the Washington State Department of Corrections (WADOC) *Sustainability in Prisons Project*, the majority of Washington prisons offer a

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dog training and/or adoption program. The programs aim to build offender accountability and skills, while providing a needed service to the community. The program, along with other sustainable programs such as horticulture and endangered species restoration programs, are considered "complimentary" programs to an array of evidence-based-offender-change programming efforts that have recently been adopted under legislative mandate. Program operations vary by facility, but include training and developing service dogs to assist those with disabilities (Cedar Creek, Monroe, Mission Creek, and Washington Corrections Center), as well as working with troubled dogs to make them adoption ready. The dog adoption program is available in six male facilities across the state.

Washington prisons are not alone in their use of prison-based animal programs (PAPs). Furst (2006) identified 71 different programs operating in 36 U.S. states, although the types of programs vary and include dog handler programs, equine programs, general livestock management and even domestic cat programs. Despite the prolific use of these programs, very little is known about the impact of programs on offender behavior while in the institution, or if positive effects do exist, whether they extend beyond the prison walls in the form of recidivism reduction. Research to date has been limited by small sample sizes, reliance on internal file data reviews and anecdotal stories, and the use of surveys to measure inmate and staff perceptions of the various programs (Bachi, 2013; Furst, 2006).

The purpose of this outcome evaluation is to determine whether WADOC inmates that participate in the various dog handling programs experience fewer infractions, less grievances, and improved behavior across the facilities. Using record data of 1,001 inmates in a matched treatment and control group design, this research aims to address the question of whether operation of the dog programs creates a safer and healthier prison environment among the participant inmates, as compared with those inmates who do not participate in the program.

Literature Review

The idea of creating and operating prison-based animal training and companion programs originates from the medical field where animal-assisted therapy (AAT) programs are widely utilized to address a myriad of health issues such as depression, abuse, and aging disorders (Furst, 2006). The use of the AAT is considered therapeutic, and, in some cases, is even used as part of a clinical technique. Animals are known to have a calming effect, and it is not uncommon to see dogs and cats in nursing homes, hospitals, and, increasingly, in places of work and even elementary schools (as visiting pets).

In the prison environment, the introduction and training of animals (primarily dogs) is generally not offered as a therapeutic milieu, but rather as a community service and a program to assist prisoners with social reintegration (Mulcahy & McLaughlin, 2013). Commonly referred to as PAPs, such efforts are generally concentrated around dog training/handling programs, taming of wild horses, farm animals, and even domestic cats.

Furst (2006) and Bachi (2013) maintained that through the eyes of correctional administrators, PAPs serve multiple purposes. It is believed that PAPs provide some level of rehabilitation function for inmates; some programs generate revenue for the prison (e.g., the taming and eventual sale of horses). Furthermore, the programs build ties to the community, inmates learn a valuable vocational skill, and such programs may lead to healthier prison environments (Deaton, 2005). Although not developed as a therapeutic intervention, early results of PAPs, most often collected through survey results or directly through researcher observation, revealed an increase in offender self-esteem, displays of greater patience and compassion, and increased levels of responsibility and even autonomy (Cushing &Williams, 1995; Harbolt & Ward, 1991).

It is important to note that PAPs are not a new or trendy correctional programming effort. Strimple (2003) traced dog-based programs and interventions back to 1919 in an eastern state prison. In her national survey of state correctional administrators, Furst (2006) found that the first documented PAP program (livestock care) began in Wisconsin in 1885, with several other programs built throughout the early 1900s. The strong surge in PAPs took hold over the past few decades with 48 programs established since 1990 (Furst, 2006). The proliferation of the programs can be contributed to multiple factors, including the relative inexpensive nature of the programs and the highlighting of such programs on cable television (Animal Planet). It can even be argued that the PAP movement began in earnest in Washington state, when Kathy Quinn and Dr. Leo Bustad (of the Washington State University Veterinary School) began a dog training program at the Washington Corrections Center for Women (WCCW) in Gig Harbor, Washington, in the 1980s (Strimple, 2003). Although the stories were anecdotal, female inmates reported experiencing stronger self-esteem and learned marketable skills. Quinn and Bustad expanded the program across 17 different institutions based on the results at WCCW.

Although recent research has found that many state correctional facilities offer PAPs, outcomes of these programs have rarely been measured, and those programs that have been evaluated tend to rely more heavily on qualitative methods (Furst, 2006). A recent review of the relevant outcome literature on PAPs found only 19 studies that completed quantitative and/or mixed methods approaches to evaluate program outcomes. The research designs on all projects varied considerably, and suffered from small sample sizes, lack of

comparison groups, and questionable methodological designs (Bachi, 2013; Mulcahy & McLaughlin, 2013). Of the evaluations of PAPs that have been completed, outcome measures can generally be grouped into the following: measuring recidivism (five studies), measuring changes in disciplinary behaviors (five studies), emotional/psychological effects (14 studies), and sociobehavioral effects (11 studies) (Bachi, 2013; Mulcahy & McLaughlin, 2013).

Studies of the impact of participation in PAP's on prison-based disciplinary behaviors, such as infractions and grievances, have been minimal and hampered by small study sizes and limited controls. For example, Fournier, Geller, and Fortney (2007) found a statistically significant reduction in institutional fractions for the dog handlers (treatment) versus a control group, but with a limited sample of 48 males. The number of institutional infractions as a base rate was very low, and both groups improved from baseline to postprogram.

Other research efforts focused on measuring changes in disciplinary behaviors have been mixed, and have lacked official record data to draw solid conclusions. Analysis of two separate dog programs conducted by Furst (2007) of both males ($n = 14$) and females ($n = 15$) did not include official record data, and, instead, provided testimonials by prison administration officials who reported only anecdotal assessments of program success.

One of the earliest evaluations of a PAP was conducted by Moneymaker and Strimple (1991), and included measuring behavioral change in 98 male inmates in a pet-keeping/vocational training program. In this study, the researchers were concerned with levels of participation, rates of termination from the program, work release participation, and self-reported indicators such as abstinence from drugs and alcohol. Although the authors found high levels of participation and low levels of parole violations, the findings must be interpreted with caution, as no comparison group was utilized and data collection methods were not reported.

Bachi (2013) argued that given the methodologically weak research completed in this area, coupled with the fact that programs continue to expand, "studies should be replicated with larger sample sizes to further clarify the effects of PAPs on rates of disciplinary misconduct" (p. 60). This research seeks to address a gap in the literature by conducting an evaluation of the WADOC dog handler program participants against a matched comparison group ($n = 1,001$) across four core behavior domains. To the best of our knowledge, this is the largest study to date on the intermediate effects of PAPs.

WDOC Dog Handler Program

The WADOC is responsible for an average of 16,000 inmates across 12 prisons throughout Washington. Under legislative and administration directive, the WADOC embarked on an aggressive agenda to build evidence-based programs

and practices throughout the prison and community settings and to utilize outside evaluators to not only guide the reform process but to measure program outcomes as well. Throughout this effort, the WADOC has maintained that even in light of the evidence-based practices push, there is a role and purpose for what they consider "complimentary programs." One such example is the (WADOC) *Sustainability in Prisons Project* that allows inmates to participate in science and nature programs in the prison environment (http://sustainability-inprisons.org), through partnerships with volunteers and local universities. Through this program, inmates have the opportunity to participate in a range of programs, including green prisons, raising endangered species (frogs and butterflies), propagating rare native plants, and dog training/adoption programs.

At this time, the majority of Washington prisons offer a dog training and/or adoption program. The dog programs aim to build offender accountability and skills, while providing a needed service to the community. The purpose of the program is not therapeutic in nature. In other words, the assignment of a dog to an inmate is not intended to have therapeutic benefit, but rather provide inmate-targeted training, grooming, and general care of animal. Program operations vary by facility, but include training and developing service dogs to assist those with disabilities (Cedar Creek, Monroe, Mission Creek, and Washington Corrections Center), as well as working with troubled dogs to make them adoption ready. For purposes of this study, we included both the service dog and adoption programs in our analyses.

Inmates must complete an application to be part of either program. To be eligible, an inmate must have been major infraction-free (violent, serious) for the prior 6 months to application and have had no Class A infraction in the prior 2 years. Class A infractions include crimes that would be considered serious criminal acts, or felonies. Inmate applicants are subject to medical, mental health, and sex offender screening processes to ensure goodness of fit for the program.

Once selected for the program, inmates work with volunteer dog trainers from the community who come into the various facilities to teach basic introductory skills such as leash handling, sit/down/stay commands, bail out moves, proper feeding/grooming, and dog interaction and observation behaviors. All dog handlers are assigned reading materials (e.g., "Don't Shoot the Dog") and attend classroom-based trainings, completing 20 separate modules. Topics vary from understanding breeds, to dog attention seeking, aggression toward other dogs, and how a dog learns. The inmates maintain journals and inventory sheets as well, and receive US$45 a month once they have passed all their skills and knowledge testing. More seasoned dog handlers can obtain "mentor" status at a rate of US$50 per month. Mentors must also be major infraction-free, have successfully trained and supervised at least three dogs, and pass a knowledge/skills test.

In 2013, Administrators from the WADOC initiated contact with the Washington State University Researchers at the Institute for Criminal Justice to explore the possibility of evaluation of the dog programs. This, in part, was driven by need to understand whether the programs were having effects on inmate behavior in terms of reducing general, serious, and violent infractions among inmates, as well as grievances filed by inmates. WADOC was interested in exploring beyond the dozens of anecdotal stories that were brought before headquarters regarding the positive and lasting impacts the program was having on inmate behavior and self-esteem.

Method

Sampling Frame

Data were acquired from the WADOC administrative database to evaluate the effect of inmate participation in the dog handling program. According to WADOC records, there were a total 597 participants across all facilities that participated in the program since 2002. To measure the impact of program participation, a comparison group was selected from inmates who were not in the program, but were matched on similar preintervention characteristics.

When the "gold standard" of randomized assignment to a correctional program is not available, any and all possible efforts should be made to eliminate selection bias. To address this, Propensity Score Modeling (PSM) was utilized to balance the two study groups on all available measures that possess the potential to systematically bias study findings. PSM is a statistical method that allows one to simulate randomization by balancing the two study groups on preintervention characteristics. The first step in identifying the comparison group was determining the mean (average) time from admission to prison and treatment start date for dog training participants. This was an average of 1,583 days. All eligible inmates, incarcerated for at least this duration for the comparison, were selected. Key individual indicators were gathered from the Offender Needs Assessment (ONA) interview conducted at prison admission and reassessed periodically. Inmates who did not possess an ONA were also not eligible for study inclusion. The selection yielded a potential of 7,002 comparison group members in total.

To control for differences between the treatment and comparison groups, inmates were matched based on their similarities with the treatment group prior to their study entrance date. Specifically, comparison group members who were similar to the treatment participants were selected and included in the study, while unmatched or dissimilar cases were excluded. The match was based on 40 variables gathered from needs assessment and demographic data, as well as incarceration length, custody level, and preintervention, baseline measures of the outcome variables.

Prior to matching, dog program participants differed from the comparison group pool on 30 of the 40 dimensions (75%), justifying the need for matching as there were substantial differences between the two groups. To examine the sensitivity and specificity of the model, a receiver operating characteristics (ROC) curve was computed for the multivariate propensity score predicting treatment group assignment. The area under the curve (AUC) estimate was .819, indicating that the model and its covariates were collectively strong predictors of group assignment.

Using a matching caliper of .25 as a common support boundary for selecting an adequate match for each program participant, 113 of the 597 initial participants could not be matched with a similar comparison group member, resulting in 18.9% loss which was necessary to sufficiently match the two groups. Following the match, there were 484 treatment group members and 517 comparison group members. Postmatch, the two groups significantly differed on only two of the 40 dimensions (5%), which is the proportion anticipated to be significant based on accepted levels of chance. AUC estimates of the matched model were .503 (confidence interval [CI] = [.467, .539]), suggesting the included measures no longer predicted group assignment. The results of the match are presented in Table 1.

Sensitivity Tests

Due to the loss of treatment group participants because of an adequate match with the comparison pool, sensitivity tests were completed for the 113 dog program participants who were not selected, in contrast with the 484 retained participants. The results of the comparisons can be found in Table 2. The retained participants differed from the dropped participants on 45% of the 40 bivariate measures, suggesting substantial differences between the two groups.

Upon examining the measures, those dropped from the model appear to be lower risk inmates than the inmates who were successfully matched. Retained subjects are at higher custody during admission (a lower custody score/number under WADOC supervision indicates a higher security rating) and commit more serious and violent infractions. However, the dropped inmates appear to score higher on drug-related needs items.

The finding indicates a selection bias for inclusion in the dog training programs which results in participants who are systematically different from the WADOC inmate population at large. It may be that inmates who self-select into the program are simply lower risk offenders to begin with. Therefore, their removal from subsequent models to get a better match is desirable, and makes those retained more representative of Washington inmates in general.

Table 1. Match Results ($n = 1,001$).

Measure	Before matching				After matching			
	Comparison %/M	Dog program %/M	χ²/t test p value	Standard Differences	Comparison %/M	Dog program %/M	χ²/t test p value	Standard Differences
Measure	92.14	7.86			51.65	48.35		
Custody at admission								
≤37	55.46	37.86	<.001	45.05	42.55	41.74	.966	1.41
>37	34.74	39.36			38.88	39.46		
>47	9.78	22.78			18.57	18.8		
Custody post intervention								
≤37	9.09	16.75	<.001	23.29	10.44	10.12	.41	3.95
>37	6.38	5.53			6.19	4.34		
>47	84.81	77.72			83.37	85.54		
White	69.98	81.74	<.001	25.89	77.56	79.34	.545	4.32
Never expelled/quit school	26.89	27.3	.866	0.93	28.43	27.27	.735	2.59
Never employed	12.51	6.2	<.001	19.42	9.48	6.61	.122	10.5
No problems while employed	39.23	44.22	.019	10.2	41.01	43.18	.527	4.41
Barriers to employment	36.46	33.5	.161	6.16	32.88	34.71	.586	3.87
Financial issues								
Saves money	5.09	3.35	.007	13	3.29	3.93	.822	1.44
No issues	11.95	8.71			9.09	8.47		
Problems managing money	82.94	87.94			87.62	87.6		
No employee health insurance	71.12	79.4	<.001	18.38	76.79	77.27	.915	1.15
Friends								
Friends willing to help	15.41	14.41	.002	9.84	11.22	14.67	.456	8.69
Pro social friends	8.84	7.71			9.09	8.26		
No friends	20.72	17.42			17.99	17.36		
Unstable relationships	11.61	8.21			9.67	9.5		
Antisocial friends	41.66	50.08			50.68	47.73		

(continued)

Table 1. (continued)

	Before matching				After matching			
	Comparison %/M	Dog program %/M	χ²/t test p value	Standard Differences	Comparison %/M	Dog program %/M	χ²/t test p value	Standard Differences
Occupants of residence								
Minor children	19.02	15.91	.067	10.57	17.6	14.88	.485	1.54
Lives alone	29.45	26.97			25.34	27.89		
Other	20.44	21.61			19.54	22.11		
Mother	14.78	18.09			17.8	17.98		
No current residence	16.31	17.42			19.73	17.15		
Current partner is a positive influence	14.97	26.97	<.001	32.81	23.79	23.35	.928	1.54
Family is a positive influence	29.48	48.58	<.001	41.3	45.65	42.77	.394	5.79
No minor children	66.22	55.28	<.001	23	59.19	57.44	.619	3.55
No current contact with minor child	9.97	12.56	.052	8.58	10.64	11.98	.567	4.25
Alcohol problems ever	64.71	68.01	.115	6.91	67.7	69.01	.706	2.81
Drug problems ever	65.85	79.9	<.001	29.86	78.14	76.65	.626	3.56
Alcohol problems in the last 6 months	26.59	23.45	.104	7.13	20.89	24.59	.187	8.82
Drug problems in the last 6 months	28.62	38.36	<.001	21.38	34.24	34.71	.927	0.99
Means for supporting drug habits								
None	24.58	15.08	<.001	26.98	15.86	17.56	.742	2.87
Legal income	24.65	21.44			24.56	23.35		
Illegal income	50.77	63.48			59.57	59.09		
Prior treatment for drug use	34.98	53.94	<.001	39.39	51.06	49.59	.686	2.95
Never clean during recent 6 months	37.39	33.67	.078	7.7	34.24	34.09	1	0.31
Documented mental health problems	39.73	36.18	.097	7.26	34.82	36.36	.656	3.23
Mental health outpatient previously	12.07	14.41	.108	7.13	13.54	14.05	.887	1.48
Aggressive or violent behaviors in the community	82.79	77.89	.003	12.87	81.04	78.72	.402	5.8
Aggressive or violent behaviors while confined	35.13	22.95	<.001	25.69	27.85	25.62	.468	5.04

(continued)

Table 1. (continued)

	Before matching				After matching			
	Comparison %/M	Dog program %/M	χ²/t test p value	Standard Differences	Comparison %/M	Dog program %/M	χ²/t test p value	Standard Differences
Acceptance of responsibility for behavior								
Accepts responsibility	44.19	39.87	.029	9.99	45.07	42.36	.116	3.52
Superficially accepts responsibility	4.28	3.18			1.55	3.51		
Does not accept responsibility	51.53	56.95			53.38	54.13		
Needs individual living services	48.07	48.74	.785	1.34	49.13	49.38	.987	0.5
Total days incarcerated	4,095.06	2,104.08	<.001	82.37	2,994.64	2,430.39	<.001	26.92
Infraction rate pretest	0.142	0.126	.098	7.05	0.102	0.121	.085	−10.91
Serious infraction rate pretest	0.1192	0.046	<.001	33.9	0.066	0.056	.232	7.56
Grievance rate pretest	0.167	0.136	.01	7.94	0.112	0.148	.018	−15.09
Sanction rate pretest	0.159	0.112	<.001	18.84	0.110	0.117	.543	−3.85
Violent infraction rate pretest	0.013	0.006	<.001	28.68	0.008	0.007	.37	5.67
Age at admission	32.108	33.293	.008	10.63	33.021	33.272	.714	−2.32
Aggressive characteristics scale	2.182	1.686	<.001	28.68	1.839	1.764	.466	4.61
Aggressive motives scale	1.586	1.467	.004	12.22	1.489	1.473	.798	1.62
Antisocial attitudes motive scale	2.091	2.063	.434	3.33	2.023	2.039	.762	−1.91
Antisocial attitudes characteristics scale	1.870	1.564	<.001	15.03	1.688	1.626	.613	3.2
Recent impact scale	1.043	1.460	<.001	27.02	1.305	1.307	.983	.14

Table 2. Sensitivity Tests (*n* = 597).

	Dropped participants %/M	Selected participants %/M	χ^2/t test p value	Standard Differences
Measure	18.93	81.07		
Custody at admission				
≤37	21.24	41.74	<.001	54.3
>37	38.94	39.46		
>47	39.82	18.8		
Custody post intervention				
≤37	45.13	10.12	<.001	100.71
>37	10.62	4.34		
>47	44.25	85.54		
White	92.04	79.34	.003	32.84
Never expelled/quit school	27.43	27.27	1	0.36
Never employed	4.42	6.61	.515	9.06
No problems while employed	48.67	43.18	.341	11.05
Barriers to employment	28.32	34.71	.236	13.53
Financial issues				
Saves money	0.88	3.93	.255	10.84
No issues	9.73	8.47		
Problems managing money	89.38	87.6		
No employee health insurance	88.5	77.27	.012	27.73
Friends				
Friends willing to help	13.27	14.67	.067	15.92
Pro social friends	5.31	8.26		
No friends	0.88	2.48		
Unstable relationships	17.7	17.36		
Antisocial friends	2.65	9.5		
Occupants of residence				
Minor children	60.18	47.73	.565	1.94
Lives alone	20.35	14.88		
Other	23.01	27.89		
Mother	18.58	17.98		
No current residence	18.58	17.15		
Current partner is a positive influence	42.48	23.35	<.001	43.07
Family is a positive influence	73.45	42.77	<.001	61.34
No minor children	46.02	57.44	.036	22.95
No current contact with minor child	15.04	11.98	.468	9.23
Alcohol problems ever	63.72	69.01	.33	11.33
Drug problems ever	93.81	76.65	<.001	42.76
Alcohol problems in the last 6 months	18.58	24.59	.218	14.16
Drug problems in the last 6 months	53.98	34.71	<.001	39.6
Means for supporting drug habits				
None	4.42	17.56	<.001	48.91
Legal income	13.27	23.35		
Illegal income	82.3	59.09		
Prior treatment for drug use	72.57	49.59	<.001	46.06
Never clean during recent 6 months	31.86	34.09	.733	4.72

Table 2. (continued)

	Dropped participants %/M	Selected participants %/M	χ^2/t test p value	Standard Differences
Documented mental health problems	35.4	36.36	.933	2.01
Mental health outpatient previously	15.93	14.05	.716	5.35
Aggressive or violent behaviors in the community	74.34	78.72	.376	10.55
Aggressive or violent behaviors while confined	11.5	25.62	.002	33.54
Acceptance of responsibility for behavior				
Accepts responsibility	29.2	42.36	.015	28.92
Superficially accepts responsibility	1.77	3.51		
Does not accept responsibility	69.03	54.13		
Needs individual living services	46.02	49.38	.59	6.72
Total days incarcerated	706.41	2,430.4	<.001	54.3
Infraction rate pretest	0.149	0.121	.259	100.71
Serious infraction rate pretest	0.003	0.056	<.001	32.84
Grievance rate pretest	0.082	0.149	.015	0.36
Sanction rate pretest	0.09	0.118	.101	9.06
Violent infraction rate pretest	0	0.007	<.001	11.05
Age at admission	33.381	33.273	.908	13.53
Aggressive characteristics scale	1.354	1.764	.012	10.84
Aggressive motives scale	1.442	1.473	.771	27.73
Antisocial attitudes motive scale	2.168	2.039	.129	15.92
Antisocial attitudes characteristics scale	1.301	1.626	.098	1.94
Recent impact scale	2.115	1.308	<.001	43.07

Measures

Four outcome measures were captured and analyzed to assess the impact of the intervention. These measures, reported as rates, included the following: (a) serious infractions, (b) violent infractions, (c) grievances filed, and (d) number of sanctions imposed. Serious infractions are coded internally by the WADOC, and tend to be infractions that are more aggressive (destroying property, inciting riot, possession of a weapon).

Data on the above measures were collected to assess preprogram behavior, as well as postentry behavior across the four outcomes. For the comparison group, an enrollment date was replaced with a fixed 1,583-day follow-up. All four outcomes were analyzed as a rate based on exposure time before and after the intervention date. That is, outcomes are measured as the number of events over the number of months incarcerated after the intervention date.

Analytic Plan

Because the Washington inmates studied can reside within the same institutions, possible dependency may exist within each facility. That is, because inmates may

Table 3. Serious Infraction Models (*n* = 1,001).

Measure	Model I				Model II			
	B	SE	t	p	B	SE	t	p
Intercept	0.072	0.044	1.64	.101	0.047	0.071	0.663	.507
Dog program participant	−0.149	0.063	−2.361	.018	−0.210	0.066	−3.182	.002
Current facility								
Variance of random effects							0.037	
Analysis of deviance test							28.74	<.001

share the same prison environment, their propensity to engage in misconduct might be correlated due to this shared setting. If there is such clustering within facilities without being accounted for, any treatment effect may be due to differences between the facilities, and not due to the treatment itself. To account for this possible bias, random effects regression models were selected to test each of the four outcome measures. For each model, the outcome is regressed on treatment group member status, once with and once without a random effect parameter included representing the categorical facility of each inmate's residence.

In addition, because the outcome measures are operationalized as rates, they are not sufficiently normal enough for a traditional parametric approach. Rate measures tend to be highly skewed toward higher values, with lower frequencies of events being more common. Outcomes are therefore rank transformed before inclusion in each linear regression. Such transformations are termed the rank transformation (RT) approach, and make the data amenable to a traditional linear regression model (Conover & Iman, 1981; Iman & Conover, 1979). The final model used would be a rank regression, a type of generalized linear model that serves as a nonparametric test.

Results

Serious Infractions

Table 3 contains the results of the two regression models assessing the impact the dog handler program has on serious infractions following the intervention date. Model I is a standard linear regression, whereas Model II contains an added random effect that captures any unexplained heterogeneity due to a shared environment in each facility. The two models were compared with an analysis of deviance goodness-of-fit test. Model II demonstrated a significant improvement over Model I by including the random effect for the institution ($\chi^2 = 28.74$, $p < .001$). Model II is therefore the preferred model.

Referring to Model II, dog program participation was found to significantly and negatively predict serious infraction rates ($B = -0.21$, $p = .002$),

Table 4. Violent Infraction Models (n = 1,001).

Measure	Model I				Model II			
	B	SE	t	p	B	SE	t	p
Intercept	0.106	0.044	2.421	.016	0.094	0.055	1.704	.089
Dog program participant	−0.219	0.063	−3.482	<.001	−0.238	0.065	−3.655	<.001
Current facility								
Variance of random effects							0.012	
Analysis of deviance test							4.276	.039

suggesting that membership in the program is associated with fewer serious infractions. It should also be noted that the effect size is larger in the random effects model, suggesting that dog handler participants may be situated in facilities with higher serious infraction rates.

Violent Infractions

Table 4 presents the violent infraction models, testing the impact treatment had on violent infractions with and without a random effect for facility. Analysis of deviance goodness-of-fit tests indicated that Model II was an improvement over Model I, with inclusion of a random effect (χ^2 = 4.276, p = .039). Referring to Model II, the effect of treatment participation was significant and in the same direction as that found for serious infractions (B = −0.238, p < .001). Program participation is associated with fewer violent infractions during follow-up.

Grievances Filed

Table 5 contains the results of the number of grievances filed by inmates. Analysis of deviance tests indicated that Model II was a significant improvement over Model I (χ^2 = 15.189, p < .001). Referring to Model II, treatment is a significant predictor of grievances (B = −0.179, p = .007). Those in the dog handler's program appear to file fewer grievances posttest.

Sanctions Imposed

Table 6 presents the sanctions imposed on inmates models. Model II, the random effects model, was found to be a significant improvement over Model I (χ^2 = 5.889, p = .015). However, treatment participation did not significantly predict the number of sanctions received by inmates (B = −0.099, p = .137). Although the effect size is in the same direction as that of previous models, the effect is small.

Table 5. Grievances Filed Models (*n* = 1,001).

Measure	Model I				Model II			
	B	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*
Intercept	0.067	0.044	1.536	.125	0.064	0.066	0.964	.336
Dog program participant	−0.139	0.063	−2.208	.027	−0.179	0.066	−2.697	.007
Current facility								
Variance of random effects							0.028	
Analysis of deviance test							15.189	<.001

Table 6. Sanctions Imposed Models (*n* = 1,001).

Measure	Model I				Model II			
	B	*SE*	*t*	*p*	*B*	*SE*	*t*	*p*
Intercept	0.032	0.044	0.735	.463	0.025	0.061	0.406	.685
Dog program participant	−0.067	0.063	−1.057	.291	−0.099	0.066	−1.489	.137
Current facility								
Variance of random effects							0.02	
Analysis of deviance test							5.889	.015

Discussion

Our findings provide strong support for the utility of the PAPs in the prevention of prison-based intermediate outcomes. Specifically, significant reductions in three of the four outcomes examined (serious infractions, violent infractions, and grievances filed) were observed. Reductions were also identified in the fourth outcome, sanctions imposed, but the test failed to reach significance. Given the rigorous methods used to collect and analyze the data (i.e., PSM and random effects modeling), it would be difficult to argue that the provision of this program is anything but a promising practice; however, additional confirmation with further study testing sites will be needed to bear that out.

One argument that some might maintain diminishes the impact of our findings was the lack of outcomes with regard to offender recidivism. Given the program's intent and location, we focused on what the field refers to as "intermediate outcomes" or those not directly related to recidivism. Although recidivism reduction and rehabilitation are common goals of prison-based programs, these are not typically the *only* intent. Evidence of reducing negative/unwanted behavior is a goal of all correctional programs, and evidence of effectiveness must not hinge on a simple assessment of recidivism alone.

Infractions, and to a lesser extent grievances, are important outcomes for inmates and correctional staff. The term *intermediate outcome* suggests that

the outcome may impact the ultimate goal, recidivism, or it may not. However, we argue that serious and violent infractions have a cost with regard to staff and inmate safety, case management, and will often be criteria for program prioritization for those treatments and services deemed to have a more direct influence on recidivism. Reducing serious infractions and grievances by over 10%, as was found in this research, allows for a strong pool of inmates to be considered for further interventions and supports post–dog handler programming.

Furthermore, as prisons often backload offender programming (providing interventions in the months just prior to release), programs such as PAPs can be important provisions along the continuum of care. Although we are not suggesting that an animal care/training program should take the place of cognitive behavioral therapy or substance abuse treatment, certainly there is a place for evidence-based programs that are intent on improving inmate conduct and safety as a result.

In addition, prison is a difficult place to learn and not every skill can be instructed in a classroom setting. There are many domains that are outlined for rehabilitation which simply do not have evidence-based, prison-provided interventions to plug in to (Wooditch, Tang, & Taxman, 2014). In addition, some established programs may be supplemented by those that focus on intermediate outcomes such as these. Skills, such as learning empathy, dealing with others, forming relationships with family and pro-social peers, are difficult concepts to fully teach in a classroom setting. Given that a research shows little to no evidence that incarceration (incapacitation alone) reduces recidivism and that in some prison environments, it can actually increase the propensity to reoffend (Cullen, Johnson, & Nagin, 2011), having programs available that teach such skills and characteristics can no doubt provide a counterbalance to the criminogenic effect of the prison environment. An inmate's time spent on training and being responsible for an animal may be the perquisite or booster needed to enhance program effectiveness and increase responsivity. Given the positive indicators PAPs have had on intermediate outcomes related to violence and antisocial behavior, it is hard to argue against the success achieved.

Finally, skills learned should improve offender employability. Participants are responsible for training and maintenance of these animals. Now not every participant will obtain employment in this specific industry, but those in the community will be aware of what these programs offer, and an inmate's resume will be bolstered by the skills attained. Obviously, additional follow-up is needed in the community to identify the long-term impact of the program and whether skills learned translate into greater employment viability.

Limitations

Although relatively comprehensive in our review, there were a few notable limitations. First, our focus was on the intermediate outcomes of infractions and grievances. Minimal attempts to track the impact of animal care programs on recidivism (Moneymaker & Strimple, 1991) have been completed, and Mulcahy and McLaughlin (2013) argued that any new attempt at establishing a PAP within a prison should entail an extensive outcome evaluation design from inception. This is a future goal of the project but one that was not feasible at the time of completion. With that said, prior studies attempts to examine the direct impact of similar programs on recidivism were fraught with methodological and sample limitations that will be avoided in future research. We intend to support the positive findings here through further examinations of reconvictions and reentry employment of participants once requisite data can be gathered.

Whenever a statistical technique like PSM is used over a more traditional method like random assignment, it comes with limitations. The first is obviously the unobserved bias that is not accounted for through our preintervention measures. We feel the variety and compressive nature of our measures limits the impact of this technical drawback of the PSM method. An issue of greater concern is with regard to the removal of nearly 150 treatment participants in which a comparison subject match was not found. What is a somewhat positive result of our sensitivity analysis is that those removed were notably lower risk. Therefore, it would seem that their removal prevented an evaluation of the "best of the best" inmates, or what is known in the field as "creaming." However, based on our findings, it is likely that, at least at the selection process, there may be a bias to provide the opportunity to participate to those of lower risk. Their inadvertent removal from our analysis provides an evaluation sample that is more representative of the general population but one might also question whether the "worst of the worst" were allowed to participate would the same results have been obtained? If it is the case, then our findings may not support the general use of the PAP to all levels of inmate risk. Further research is needed with higher risk populations to confirm (or refute) this point.

To reduce the likelihood that findings were as a result of the prison facility environment, we utilized random effects modeling. This form of multilevel regression techniques allowed us to control for the effect of individuals being nested within the facility they reside. The result of this technique is a sort of "general accounting" of the facility-level variance, in which the analyses do not indicate specificities about what makes a given facility more (or less) likely to produce violations or grievances. Although not feasible for the

current study, future prison-based evaluations conducted using state-level data sources should make an effort to examine predictors at the facility-level that may contribute to violations and/or program responsivity.

Summary and Future Directions

The intent of the dog handler programs across multiple WADOC institutions is to build offender accountability and skills, while providing a needed service to the community. This research was not focused on the training of the offender and skill adoption, but rather sought to address whether or not the program created a safer environment in the prison via stronger inmate accountability to their dogs and the institution as a whole.

As the findings above highlight, the program has clearly succeeded in building a higher level of accountability, as witnessed by the statistically significant decreases in infractions, grievances and sanctions among the dog handlers. The program lends to a safer and healthier prison environment in those pods and facilities where the programs are offered, at least among this selected population. Further research should include targeting measures of psychosocial changes (via survey assessment) in participants, as well as following the treatment and control group post release to measure for potential recidivism reductions.

Declaration of Conflicting Interests

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