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Measuring the Psychological Impacts of Prison-Based Dog Training Programs and In-Prison Outcomes for Inmates

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Abstract

As interest grows in programs that improve prison inmates' behavior and psychosocial well-being, any such interventions must be rigorously examined and their underlying mechanisms for change must be understood. This pilot study examined the use of prison-based dog training programs across Washington State Department of Corrections facilities for their impacts on inmates' infraction rates. The study also compared levels of empathy, self-efficacy, and anxiety between program participants and nonparticipants. Findings indicated that prison dog program participants' infraction rates improved and that participants had lower levels of anxiety than nonparticipants.

Keywords

prison, prison-based animal programs, prison dog programs, infraction rates

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Introduction

An estimated 2.3 million people were incarcerated in the United States in 2016, a significantly higher number than that of any other country in the world (Kaeble & Cowhig, 2018; Warren et al., 2008). Although efforts are underway to reduce prison populations, it is essential that any such efforts maintain safety for staff, inmates, and the wider population (Gelb & Stevenson, 2017; Grawert et al., 2017). Programs that reduce inmate in-prison infraction rates, particularly those that also improve inmates' psychosocial well-being, can be an effective way to maintain staff and inmate safety within correctional facilities while also reducing the likelihood of recidivism upon release (Cochran et al., 2014; Fournier et al., 2007; Steiner & Meade, 2016). Approximately 95% of prisoners are eventually released from prison, so successfully addressing inmate infraction and psychosocial well-being is an important component in improving the safety of both correctional facilities and broader society (Hughes & Wilson, 2018).

Policymakers have explored a variety of approaches to achieve these goals, including more conventional programs such as mental health therapy and addictions treatment as well as alternative programs ranging from meditation retreats to Shakespearean theater (Council of State Governments Justice Center, 2014; Heard et al., 2013; Perelman et al., 2012). One promising but understudied approach is the implementation of prison-based dog programs (PDPs), in which inmates become dog handlers who train the animals for adoption or service work (Van Wormer et al., 2017). Current research indicates that these programs improve inmates' well-being and reduce both infraction rates and recidivism (Cooke & Farrington, 2016; Van Wormer et al., 2017). However, that research has been limited by a number of factors, including small sample sizes, single-site studies, the use of nonvalidated measures, heavy reliance on qualitative data and anecdotal reports, omission of details regarding research processes that makes replication difficult, and the complexity of performing randomized controlled trials in prison settings (Cooke & Farrington, 2014b, 2016; Fournier et al., 2007; Mulcahy & McLaughlin, 2013; Van Wormer et al., 2017).

One recent study addressed some of these concerns using a larger sample size ($n = 1{,}001$) to compare infraction rates of participants in PDPs and a group of nonparticipating inmates statistically matched across several criteria, including average incarceration length, custody level, and baseline levels of outcome variables (Van Wormer et al., 2017). This study, the largest and one of the few to use a statistically matched comparison group to date, found that inmates who participated in PDPs had significantly lower serious and violent infraction rates than matched inmates who did not participate in them.

These findings support the use of such programs to create "safer and healthier" prison environments by reducing infraction rates (Van Wormer et al., 2017, p. 537). However, the underlying psychosocial mechanisms affecting the improved infraction rates are still poorly understood and warrant further study so that the impacts of PDPs can be optimized.

Literature Review

Although the incorporation of animals in prisons and other institutional settings is frequently considered innovative, it is not new. The first documented use of animal-assisted therapy (AAT) occurred in 1792, in which farm animals were used to teach mental patients self-control (Furst, 2011). Animal programs were introduced into prisons in 1981, starting at the Washington State Corrections Center for Women, and now exist in all 50 states in the United States as well as several foreign countries (Cooke & Farrington, 2014b; Strimple, 2003). Today, prison-based animal programs (PAPs) vary widely in scope, aim, eligibility, and even the species of animals involved. Although this variety poses challenges to studying the efficacy of PAPs, it is likely a contributing factor to their popularity (Cooke & Farrington, 2014b).

The Washington State Department of Corrections (WADOC) continues to be a leader in implementing these programs. Every WADOC facility has at least one animal training or adoption program, which are intended to provide dog training, care, and adoption services to local communities while improving inmates' responsibility and lowering their rates of violence and recidivism (LeRoy et al., 2012; WADOC, 2016).

WADOC's dog programs are not designed to be therapeutic in nature, but rather to teach inmates skills in dog training, grooming, and general care (Van Wormer et al., 2017). However, findings from exploratory and qualitative studies suggest that PDPs may yield positive therapeutic impacts, such as increased self-efficacy, empathy, and emotional well-being (Cooke & Farrington, 2014b; Minton et al., 2015; Richardson-Taylor & Blanchette, 2001). Although intriguing, the current research on the potential therapeutic benefits of PDPs—like the research on PAPs more generally—has multiple limitations, as described above, particularly single-site studies and the use of nonvalidated measures. This pilot study aims to partially address current gaps by applying widely used, highly validated measures of empathy, self-efficacy, and anxiety to compare PDP participants and nonparticipants in 10 WADOC prisons. The three psychosocial variables examined in this study were chosen due to their inclusion in previous studies of participants in PDPs and association with inmates' infraction rates and rehabilitation.

Programs that aim to increase empathy, defined here as "the ability to understand and share the feelings of another" (Yogev, 2012, p. 61) among inmates are common in many prisons because this psychosocial parameter is a central component of prosocial behavior and is inversely related to violence, criminal offenses, and recidivism (Bock & Hosser, 2014; Hepper et al., 2014; Jolliffe & Farrington, 2004; Miller & Eisenberg, 1988; Van Langen et al., 2014). Although it remains unclear whether interactions with an animal increase empathy, human bonds with animals are positively correlated with empathy (Beetz et al., 2012). Furthermore, increased empathy toward dogs and other humans seems to occur among participants in PDPs and is a perceived benefit found in many surveys of both inmates and prison staff (Cooke & Farrington, 2014b, 2016; Furst, 2011; Minton et al., 2015).

Self-efficacy, or the "belief in one's capabilities to mobilize the motivation, cognitive resources and courses of action needed to meet given situational demands" (Gist & Mitchell, 1992, p. 184), is frequently noted as a benefit of PDPs in qualitative interviews (Cooke & Farrington, 2016; Furst, 2011; Lai, 1998; Richardson-Taylor & Blanchette, 2001; Strimple, 2003). For example, in an exploratory study conducted by Cooke and Farrington (2014b), five of the 11 PDP staff stated that self-efficacy was improved by participating in these programs, despite that their questionnaire did not directly ask about self-efficacy. Similar findings emerged from interviews with inmates who participated in PDPs (Cooke & Farrington, 2014a; Leonardi et al., 2017). General self-efficacy gained through prison programs is a powerful behavior change determinant because an individual's expectations of their own ability inform their decision to perform a behavior, expend effort, and persevere in the face of adverse conditions (Bandura, 1977, 1982). If PDPs are particularly effective in increasing inmate self-efficacy, it could have significant implications for inmate rehabilitation efforts.

High levels of anxiety or "tension, apprehension, nervousness, and worry," accompanied by "arousal of the autonomic nervous system" (Spielberger, 1983, p. 4), among inmates can lead to increased conflicts with correctional officers and other inmates (MacKenzie, 1987). Contact with animals correlates positively with improved human health and reduced stress, which tend to influence levels of anxiety (Beetz et al., 2012, Grinde & Patil, 2009; Wilson, 1984). PDPs have been frequently reported as increasing happiness and reducing stress among program participants as well as reducing the overall stressfulness of prison environments (Cooke & Farrington, 2014a, 2016; Furst, 2011; Harkrader et al., 2004; Richardson-Taylor & Blanchette, 2001; Strimple, 2003). In one survey, 76% ($n = 23$) of participants reported a clear reduction in stress, although others noted that their stress was sometimes increased due to having to care for dogs in lockdown situations (Minton

et al., 2015). Furthermore, anecdotal reports have linked PDPs to improvements in individual participants' anxiety symptoms as well as other potential anxiety markers such as high blood pressure (Osborne & Blair, 2003).

Further research is needed regarding the psychosocial impacts of PDPs (Cooke & Farrington, 2016; Van Wormer et al., 2017). The aim of this pilot study was to further examine the impact of PDPs on infraction rates as well as psychosocial outcomes, specifically empathy, self-efficacy, and anxiety, and to explore whether validated self-report instruments can be used to examine the efficacy of dog programs within a prison setting. If so, this supports further research to implement these tools on a broader scale, allowing for a more consistent and reliable set of data to be used to analyze the impacts of these programs over time.

Method

Participant Selection

This pilot study included 229 male and female inmates from 10 of 12 WADOC facilities across all security levels. To be eligible to participate, inmates were required to be at least 18 years of age and proficient in reading English. The recruitment and consent process consisted of two phases. First, 1 month prior to data collection, approximately 450 inmates were identified by the research team as potential participants. Each inmate was sent a recruitment flyer by WADOC staff; individuals were able to ask the staff questions prior to the researcher being on site. The second phase took place on the day of the survey session. Inmates eligible to participate responded to a voluntary call out to the survey session. Respondents were gathered in groups and guided through a recruitment and consent script and allowed to ask questions regarding their potential participation. Those who agreed to participate and signed the consent form were included in the study. Participants were tracked by their WADOC identification numbers. Prior to data analysis, these numbers were replaced with randomly assigned study identification numbers.

Of the total of 229 inmates in the study, 150 were in the PDP group and 79 were included as comparison nonparticipants. For the sake of the study, inmates designated as participants were those who were ever in a PDP; they may not have been actively participating at the time of the survey data collection. Descriptive statistics of the sample by intervention and comparison groups were collected (Table 1). Of the participants, 85.6% identified as White, 9.6% as Black, and 4.4% as Other (Asian and American Indian.) One of the 10 prisons studied was a women's facility, with women making up 6.60% of the total participants. Inmates' risk levels were determined using

Table 1. Descriptions of Participant Demographics.

	Total (229), %/*M* (*SD*)	Intervention (*n* = 150), %/*M* (*SD*)	Comparison (*n* = 79), %/*M* (*SD*)	Chi-square/*U* test
Race				
White	85.6%	86.0%	84.8%	4.99
Black	9.6%	10.0%	8.9%	
Other (Asian, American Indian)	4.4%	4.0%	6.3%	
Gender—Female	6.6%	9.3%	1.3%	5.50*
Age at survey data collection	39.9 (12.3)	39.4 (13.0)	40.9 (11.0)	
Risk level				
Low	33.60%	37.30%	26.60%	2.79
Moderate	14.40%	13.30%	16.50%	
High	51.90%	49.40%	57.00%	
Pre-PDP infraction rate (*Mdn*)	0.68	0.54	0.68	3,939.00
Median post-/during-PDP infraction rate (*Mdn*)	0.59	0.34	1.01	4,155**

Note. PDP = prison-based dog program.
*$p < .05$. **$p < .01$.

standard WADOC protocol, which calculates scores based on a variety of weighted offender risk factors and classified inmates based on the score achieved (Washington State Institute for Public Policy, 2008). Of the total participants, 33.6% were rated as low risk, 14.4% as medium, and 51.9% as high. The categories of "high violent," "high property," and "high drug" risk levels were collapsed into "high." The infraction rates listed represent the number of infractions divided by the number of days in prison. No significant differences were found between the intervention and comparison groups in terms of race, risk level, or preprogram infraction rates.

Measures

Infractions

Change in infraction rates before and during the PDP was assessed using administrative data from WADOC. These data included infractions and entry and exits for each participating inmate from June 2011 to June 2017. Infraction rates were calculated, with the total number of infractions divided

Table 2. Wilcoxon Signed-Ranks Tests on Pre- and Postinfraction Rates.

	Preprogram: Median infraction rate	Post-/during-program: Median infraction rate	*z*-test	Significance
Intervention	0.68	0.34	–2.52	.012
Comparison	0.54	1.01	–1.47	.141

by the total number of days in prison during the two periods of the study (pre-PDP and during-PDP). Because participants had varying start dates in the PDP and may have exited and reentered prison between June 2011 and June 2017, the number of days in the program was calculated based on individual PDP start dates and actual days in prison. For the comparison group, since the first implementation of the PDP was June 22, 2014, with 25% of the intervention group starting on this date, June 22, 2014, was used as the cutoff between pre-PDP and "during" PDP. The mean number of infractions pre-PDP was 1.55 ($SD = 2.14$) and during the PDP was 1.60 ($SD = 2.66$). The infractions rates were not normally distributed, thus medians are reported, and nonparametric tests were utilized for infraction rate analyses. The comparative pre- and postinfraction rates between the dog and no dog groups were compared (Table 2).

Empathy

The Brief Interpersonal Reactivity Index (B-IRI) was used to measure empathy level (Ingoglia et al., 2016). The full-length Interpersonal Reactivity Index (IRI) consists of 28 Likert-type scale questions covering four subscales—Fantasy, Empathic Concern, Perspective Taking, and Personal Distress—that measure both cognitive and affective empathy (Davis, 1980, 1983). It is the most widely used self-report measure of empathy over the last 20 years and has been employed in prison populations (Gerdes et al., 2010; Jolliffe & Farrington, 2004; Loinaz et al., 2018). However, several studies have indicated that inmates, particularly those with lower IQs and weaker verbal skills, may have difficulty with some of the questions to an extent that lowers the IRI's reliability with those populations (Beven et al., 2004; Lauterbach & Hosser, 2007). To address those concerns, Ingoglia et al. (2016) developed the 16-question B-IRI as a shorter, more accessible version for special populations with low literacy skills. A series of studies across three independent samples demonstrated that the B-IRI preserves "a reasonable scale reliability and validity" compared with the full-length IRI (Ingoglia

et al., 2016, p. 9). Strong reliability was indicated for Empathic Concern ($\alpha = .757$), Perspective Taking ($\alpha = .798$), and Fantasy ($\alpha = .760$). Reliability was not as strong on the Personal Distress subscale ($\alpha = .570$), thus it was not included in the analysis.

Self-Efficacy

The General Self-Efficacy Scale (GSES) was used to measure self-efficacy (Schwarzer & Jerusalem, 1995). It contains 10 statements, written to a basic literacy level that the respondent scores on a Likert-type scale from "not true" to "completely true," and is designed to broadly assess a person's belief in their ability to cope with daily challenges and to adapt after experiencing common stressful events. The GSES is designed for a broad adult population and has been validated and implemented in a variety of environments, including prison education programs (Allred et al., 2013; Luszczynska et al., 2005; Luszczynska et al., 2010; Schwarzer & Jerusalem, 1995). The GSES had strong reliability within this sample ($\alpha = .884$).

Anxiety

The State/Trait Anxiety Index for Adults (STAI-AD) was used to measure anxiety (Spielberger, 1972, 1983; Spielberger et al., 1970). The STAI-AD, which is written to a sixth grade reading level, has been validated for measuring temporary, or "State," versus inherent, or "Trait," anxiety levels in individuals. It has been successfully employed in a wide variety of environments, including prisons (Barnes et al., 2002; Chen et al., 2016; Kabacoff et al., 1997). The State items ($\alpha = .942$) and the Trait items ($\alpha = .920$) had very strong reliability.

Participants completed the B-IRI, GSES, and STAI-AD at a single point in time, 3 years after the start of the study period (Figure 1).

Analysis

The change in infraction rates from pre-PDP to during-PDP was also assessed. Because the rate of infractions was not normally distributed, nonparametric tests were employed. The Mann–Whitney *U* test for nonparametric variables was used to examine differences pre-PDP between the infraction rates between the two groups, and the Wilcoxon rank-sum test to examine change in infraction rates from pre-PDP to during-PDP for each group. Independent sample *t*-tests were conducted to examine differences in psychosocial measures between the intervention and comparison groups. Differences in

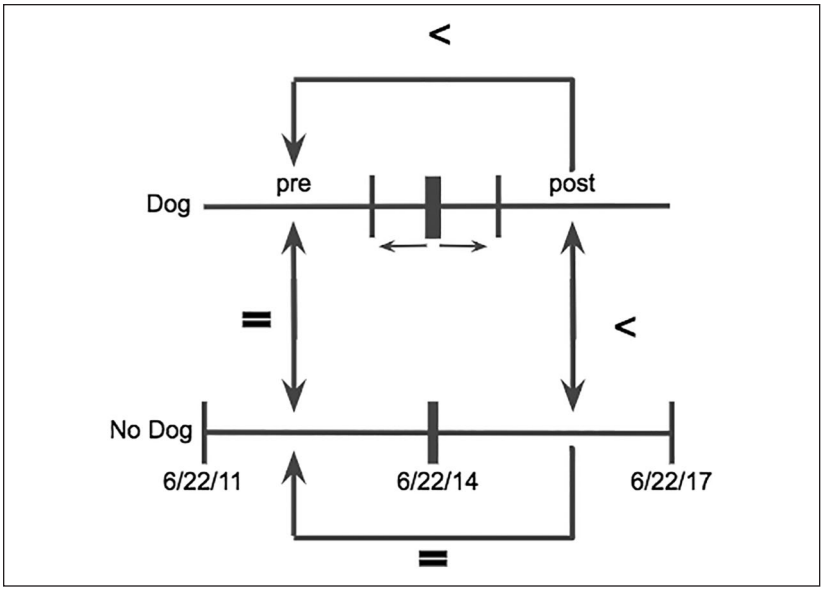

Figure 1. Infraction rate analysis timeline.

infraction rates were examined between the intervention and comparison groups pre-PDP.

Results

Infraction Rates

A Mann–Whitney *U* test indicated that infraction rates prior to anyone experiencing the PDP were similar for the intervention and the comparison groups, $U = 3{,}939.00$, $p = .577$, although the intervention group had significantly lower infraction rates post-/during-PDP, $U = 4{,}155.00$, $p < .001$ (Table 2). Wilcoxon signed-ranks tests indicated that intervention participants had a significant decrease in infraction rates from pre-PDP to post-/during-PDP, whereas inmates not in the dog program experienced no significant change during these two periods (Table 2).

Psychosocial Measures

Inmates in the two groups had similar scores in all but one of the B-IRI subscales; however, PDP participants had higher scores on the empathy subscale

Table 3. Independent Samples *t*-tests on Psychosocial Measures.

	Intervention			Comparison				
	n	*M*	*SD*	*n*	*M*	*SD*	*t*-test	Cohen's *d*
GSES	149	3.23	0.47	78	3.15	0.55	1.16	0.156
S_Mean	149	1.54	0.48	78	1.70	0.61	−2.09*	0.292
T_Mean	149	1.91	0.49	78	1.98	0.56	−0.89	0.133
B-IRI Empathy	150	4.00	0.75	78	3.81	0.88	1.73***	0.232
B-IRI Perspective Taking	150	3.42	0.94	78	3.42	0.93	0.01	0
B-IRI Fantasy	150	3.09	1.00	78	3.09	0.96	0.04	0

Note. GSES = General Self-Efficacy Scale; B-IRI = Brief Interpersonal Reactivity Index.
*$p < .05$. ***$.5 > p < .1$.

of the B-IRI that approached significance ($p = .09$). No differences were found between the two groups on the GSES scores or the Trait anxiety subscale, but PDP participants reported statistically significant lower scores on the State subscale ($p = .03$) (Table 3).

Discussion

This study replicated previous findings across a different time frame indicating that participation in PDPs lowers infraction rates among participants compared with inmates who are not in the programs. The similar infraction rates between the two groups prior to entering PDPs and the maintenance of these rates in the non-PDP group across the entire study period indicate that programs involving dogs decrease problem behaviors. In this regard, it is important to note that infractions often lead to dismissal from PDPs. The study also demonstrated that psychosocial data that might further explain the mechanisms of change for PDPs can be collected in prison environments using validated instruments. No statistically significant difference was measured in self-efficacy between the participants and nonparticipants in PDPs, but the dog program inmates had lower anxiety ($p = .03$) and were approaching statistical significance for higher empathy ($p = .09$). The effect sizes for both differences were small. Because these data were only measured at a single time point, further research is necessary to state whether PDP participation lowers anxiety or if inmates with lower levels of anxiety are more likely to participate in PDPs. However, the fact that there was no difference in the Trait anxiety scores between the two groups suggests that PDPs may be effective in lowering anxiety for participants.

Limitations

This study has several strengths, including the inclusion of both male and female inmates from multiple prisons across security levels, as well as the use of well-validated psychosocial instruments. Although the participants did not differ on most major demographic variables (see Table 1), other unobserved differences likely existed related to risk, motivation, or other factors. Furthermore, the single time point does not allow determination of whether inmates in PDPs experience changes in psychosocial health or if individuals with these characteristics are attracted to such programs. However, the pilot findings support the expansion of these types of studies to better understand the impacts of PDPs on inmate outcomes.

Because all inmates are typically exposed to dogs within prisons that have PDPs, it is possible that some of the impacts of these programs were obscured: the mere presence of dogs may affect all inmates being studied, including those in the comparison group. The data may be further obscured because those in the intervention group did not necessarily have a dog at the time of data collection. This further bolsters the value of future research that uses these or similar well-validated measures to examine psychosocial data across multiple time points—to gather and assess data on both dog handlers and nonhandlers exposed to PDPs.

An additional point of note is that, while many of the inmates were eager to discuss their experiences with the PDPs, participants frequently expressed disappointment or frustration when the research consisted of psychosocial assessments rather than more qualitative opportunities to speak directly about the programs. Although further high-quality quantitative research is nonetheless called for, it would ideally be paired with qualitative approaches using mixed methods designs that also capture a nuanced understanding of the inmates' perceptions of PDPs.

Summary and Future Directions

The demonstration that potential psychosocial change mechanisms can be identified using validated instruments for inmates participating in PDPs supports further research aimed at delineating those mechanisms. By developing a better understanding of how PDPs impact participants, those leading or developing these programs can better optimize their impacts on inmate outcomes. Although these programs are increasingly common across the United States and internationally, little work has been done to establish best practices for the inmates, staff, or dogs involved. Such future work should include the further use of validated psychosocial measures, ideally across a greater number of sites and over multiple time points.

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