**An Investigation of the Psychosocial Impact of Human-Animal Interaction
On a Forensic Population**

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ABSTRACT

This quasi-experimental field study tested the psychosocial effects of a forensic human-animal interaction (HAI) program on prison inmates. The study assessed the impact of the HAI program using both between-subject and within-subject methods and analyses. A total of 54 male inmates participated in the research by completing self-report measures, keeping journals, and allowing researchers access to their institutional files. In general, it was hypothesized the HAI program would result in positive psychosocial outcomes for inmates. Dependent measures included inmate self-reported treatment level within the prison's therapeutic community, frequency of institutional infractions, and scores from self-report measures assessing social skills, inmate perception of the prison environment, optimism, mood disturbance, and HAI. Between-subject analyses compared a sample of the participants (n = 48) in a pretest-posttest repeated-measures design, comparing a Treatment group of participants in the HAI program with a Control group of participants on the waiting list for the program. Results indicated that the HAI program was associated with increased treatment progress in the therapeutic community, improvement or maintenance of social sensitivity, and improved scores on a measure of transient depressed mood. The within-subject portion of the research consisted of evaluating the relationship between daily HAI and mood with a smaller group of participants (n = 6) who completed journals in a single-subject repeated-measures fashion. Results suggested mood was differentially related to HAI for Treatment and Control group participants. Findings are discussed in relation to proximal versus distal outcomes of HAI and suggestions are made for future research.

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There is a growing collection of literature on the beneficial impact of human-animal interaction (HAI). Such literature describes situations in which humans interact with animals and potentially benefit in the domains of physical and emotional health. The present study investigated the impact of HAI on emotional health and well-being in an applied setting. In that regard, there are several studies citing improvements in clinical symptoms of mental disorders, psychological states, and human behavior in association with HAI (e.g., Garrity, Stallones, Marx, & Johnson, 1987; Hecht, McMillan, & Silverman, 2001). These *psychosocial* effects of HAI have been discussed in a variety of settings, from people interacting with their own pets to programs that introduce animals to nursing homes and hospitals (Johnson, Odendaal, & Meadows, 2002).

Review of Human-Animal Interaction Literature

While historical descriptions of animals as therapeutic adjuncts date as far back as the 18th century, empirical research evaluating HAI was initiated as recently as the 1970's (Hines, 2003). Since that time, the literature on HAI has grown consistently. Investigations into the impact of animals on human functioning have been multidisciplinary in nature, with veterinary medicine at the forefront of the field. Psychology as a discipline, despite its relevance to the topic, is far behind other disciplines in investigating the impact of animals on human thoughts, feelings and behaviors. Consequently, little is known about how HAI relates to current psychological theory.

The number of organized HAI programs is increasing at a rapid rate (Odendaal, 2002) and empirical study is needed in this area to determine what outcomes may be resulting. To date, research suggests HAI programs may result in outcomes benefiting clinical symptomatology,

psychological functioning, and social behavior. The following is a review of empirical research investigating psychosocial effects of HAI. The research includes investigations of pet ownership and animal-assisted therapies and activities in treatment and rehabilitation settings with promising findings in psychological states, mood and mood disorders, and social behavior.

Psychological States

Studies on psychological states are generally correlational in nature, comparing psychological variables between pet-owners and non pet-owners. Thus far, findings suggest pet-ownership may be associated with increased self-esteem, interpersonal trust, life satisfaction, a sense of control, and lower levels of depression. Research by Hecht et al. (2001) studied the impact of pet-ownership on elderly community members' life satisfaction, self-esteem, and sense of personal control. Results indicated no difference in personal control between the two groups. However, results did indicate a significant finding for self-esteem and life satisfaction. Male pet-owners were higher on both these variables than male non pet-owners. This finding was specific to men with few social contacts. Other studies on the relationship between pet-ownership and self-esteem have been inconsistent with this finding.

Johnson and Rule (1991) studied the relationship between pet-ownership and self-esteem with young adults and found no significant difference between pet-owners and non pet-owners. Similarly Hyde, Kurdek, and Larson (1983) found no significant difference in self-esteem between undergraduate college student pet-owners and non pet-owners. However, they also studied social sensitivity, measured with an empathy scale, and interpersonal trust. These variables were significantly higher in pet-owners than non pet-owners. Therapeutic effects of pet-ownership have also been found in child populations.

Bierer (2001) studied the relationship between pet-ownership and self-esteem and empathy in adolescents. The study resulted in higher self-esteem and empathy in the adolescent pet-owners than the non pet-owners. In a similar study, Van Houtte and Jarvis (1995) studied the variables of autonomy, self-concept and self-esteem in preadolescents and found that those who were pet-owners were significantly higher in all three variables.

To date, studies of pet-owners have been correlational in nature, indicating possible relationships between pet-ownership and self-esteem, self-concept, social sensitivity, empathy, and interpersonal trust. These studies have included various age groups, including preschool-aged, preadolescent, college student, young adult, and elderly populations. The relationships between pet-ownership and these variables could be the result of a beneficial impact of HAI. However, it is also possible that such relationships illustrate the tendency for people who are naturally high in these attributes to choose to keep pets, and thus choose HAI. In some cases, the relationship between pet-ownership and outcome variables is significant specifically in individuals with low levels of social support from significant others (e.g., Hecht et al., 2001). Such findings suggest HAI may produce psychosocial benefits by providing social support. In addition to these psychological states, research indicates HAI is associated with improved mood and positive social behavior.

Human-Animal Interaction, Mood, and Social Support

In an investigation of the impact of HAI on clinical symptoms, Garrity and colleagues (1987) studied the relationship between pet-ownership and depression in a random sample of elderly community members. Regression analyses indicated a significant influence of pet-ownership on depression, such that pet-owners reported less depression than non pet-owners. This relationship was specifically among bereaved participants who reported low levels of social

support. The authors suggest pet-ownership buffered depression in elderly participants in special circumstances.

Similarly, Siegel, Angulo, Detels, Wesch, and Mullen (1999) found that AIDS patients who owned pets reported significantly less depression than those who did not. The association between pet-ownership and depression was specific to participants with AIDS who reported low levels of social support. This relationship was not found for participants with HIV. The authors suggest the impending stress from an AIDS diagnosis, as compared to a diagnosis of HIV, was buffered by social support received from a pet when there was a lack of social support from human significant others. These studies support a premise held by some in the field of HAI that suggests social support is the route through which HAI impacts physical and mental health (Serpell, 2000). In fact, social support is the most frequently cited framework for understanding HAI findings (Barba, 1995).

Social support consists of resources, material or emotional, provided by significant others (Cohen & Wills, 1985). Cobb (1976) defined social support as information leading one to believe they are cared for, loved, esteemed, and a member of a network of mutual obligations. Numerous studies indicate social support has a beneficial impact on human health and well-being (e.g., Leavy, 1983; Mitchell, Billngs, & Moos, 1982). In addition to directly improving health and well-being, there is evidence social support impacts health indirectly by buffering the effects of stress (Cohen & Wills, 1985). It has been suggested the benefits people experience as a result of social support should extend to support provided by animals in HAI (Serpell, 1996).

Although the literature on social support is written exclusively in regard to human-human interactions, it seems relevant to HAI. Research on social support between humans suggests that the beneficial factor in a supportive transaction between two people is the message

communicated about a relationship; that one is loved, valued and unconditionally accepted; rather than what is actually performed (Sarason, Pierce, & Sarson, 1994). Although animals do not provide instrumental support (e.g., advice, material resources), they are often described as providing unconditional love and acceptance (Fine, 2000), communicating the same basic message.

The HAI research in the field of psychophysiology has quite clearly demonstrated a moderating effect of animal-based social support on the physiological outcomes of stress. For example, participants completing stressful tasks experience lower blood pressure and heart rate in the presence of a dog than when alone or in the presence of another person (Allen, Blascovich, Tomaka, & Kelsey, 1991; Siegel, 1990). While the above studies investigated pet-owners in the community with limited social support, there is likely a strong association between social support and benefits of HAI in forensic programs, given the isolative nature of the correctional environment (Haney, 1997). In addition to potentially providing social support through companionship, HAI may benefit humans by facilitating socialization. The majority of findings in this area are demonstrated in institutional settings.

Animal-Assisted Therapies and Activities

Animal-assisted therapy, also known as animal-facilitated therapy or pet-facilitated therapy, is defined by Cass (1981) as "the introduction of a pet animal into the immediate surroundings of an individual or a group as a medium for interaction and relationships, with the therapeutic purpose of eliciting physical, psychosocial and emotional interaction and responses that are remedial" (p. 124). William Tuke first introduced animals into a therapeutic setting at the York Retreat, a social therapy institution, in 1792 (Odendaal, 2002). In more recent history, Boris Levinson, a child psychiatrist who wrote extensively on the subject in the 1960's and 70's,

is considered the "pioneer of pet-facilitated therapy" (Cusack, 1988). Today, animals are often used in therapy settings to facilitate ongoing treatment. Animal-assisted therapy and animal-assisted activities are most common in institutional settings such as medical and psychiatric hospitals, nursing homes, facilitated-living homes, and correctional facilities.

Within these institutional settings, animals serve as (a) therapy facilitators, in which the animal is present as an adjunct to ongoing therapy; (b) individual companions, wherein individual residents keep an animal as their pet; and (c) "ward mascots," in which case an animal lives on the ward and is considered the pet of all the residents (Fine, 2000). The present research evaluated the impact of an HAI program on psychosocial factors among inmates in a prison setting. Research investigating the effect of HAI in the context of animal-assisted therapies has resulted in promising findings for facilitating positive social interaction.

Human-Animal Interaction and Social Behavior

Hart (2000) suggests animals stimulate human-human interaction, thereby increasing social behavior. This effect has been documented with pedestrians in the community (Wells, 2004) and, more pertinent to the present study, in HAI programs in institutional settings. For example, Salmon, Salmon, Hogarth-Scott, and Lavelle (1982) studied an animal visitation program in a geriatric hospital. Researchers observed increased positive social interaction between individual patients and between patients and staff as a function of the HAI program. Though resident conversations often began with the animal as the topic, they then generalized to topics other than the animal. The authors suggest the effect may be due to the animal giving people a common topic to discuss, or the presence of the animal reducing the tension and anxiety associated with social interaction, making it easier to talk to others. The latter is referred to as the social lubricant effect (Corson & Corson, 1980) and is consistent with physiological research that

indicates humans have reduced heart rate and blood pressure in the presence of an animal (Baun, Bergstrom, Langston, & Thoma, 1983; Grossberg & Alf, 1985; Wilson, 1987).

Corson, Corson, Gwynne, and Arnold (1977) evaluated the effect of animal-assisted therapy on 50 inpatients in a psychiatric hospital who were not responding to traditional psychotherapy. Participants assisted in the care of a dog or cat, and interacted with the animal during psychotherapy sessions. These therapy sessions were videotaped and the rate and amount of the patients' verbal responses were systematically recorded. Over the course of four sessions, patients showed an increase in the frequency of verbal responses, the rate of responding, and the length of verbal responses during therapy sessions. Researchers observed an increase in verbal interactions among the patients and between patients and staff.

Fick (1993) studied the impact of animals on the social behavior of residents in a nursing home. A treatment group aimed at increasing social interactions was divided into two sections – one with a dog present and one without. Observed verbal behavior between residents was the dependent measure. Researchers observed significantly more verbal interactions in the animal-assisted group than in the control group.

In a similar study, Perrelle and Granville (1993) evaluated the impact of a pet visitation program on nursing home residents. The participants were 53 male and female residents in a nursing home in which animals (i.e., dogs, cats, and rabbits) visited weekly. The dependent measures were social and self-maintenance behaviors, measured with a behavioral rating scale completed by staff. Scores were compared at pretreatment, during the pet visitation program, and one month after the program. Staff reported significantly more positive social behaviors and self-maintenance behaviors after the program. These increases remained one month following the program's completion.

In a more rigorously designed study, Zisselman, Rovner, Shmuely, and Ferrie (1995) investigated the effects of animal-assisted therapy on gero-psychiatric inpatients. Participants were 58 residents randomly assigned to intervention or control groups. The intervention group received animal-assisted therapy, operationalized as a one-hour visit with a dog, for five consecutive days. The control group received the facility's usual programmed activity for the same length of time. The dependent measures were level of functioning and response to treatment, as measured by the Multidimensional Observation Scale for Elderly Subjects (Helmes, Caspo, & Short, 1987). Between- and within-subject comparisons showed no significant differences in behavior, although there was a downward trend in irritable behavior for participants who received animal-assisted therapy.

In a second study of an animal-assisted program with gero-psychiatric inpatients, Barak, Savorai, Mavashev, and Beni (2001) studied the effects of a pet-visitation program on 20 elderly schizophrenic patients. The patients were randomly placed in an animal-assisted group or a control group. The animal-assisted group consisted of animals visiting the facility weekly for three-hour group sessions in which each group member interacted with a dog or a cat. Participants assisted in bathing, feeding, and grooming the animals and teaching them to walk on leashes. The dependent measure was social adaptation, measured with the Social-Adaptive Functioning Evaluation (Harvey, Davidson, & Mueser, 1997), administered at baseline, and 6 and 12 months after beginning the program. Overall, scores improved significantly in the animal-assisted group, compared to the control group. Comparisons within the animal-assisted group resulted in significant improvements in social functioning after beginning the group. More specifically, social functioning consisted of items on conversational skills, instrumental social

skills, social appropriateness/politeness, social engagement, friendships, recreation, communication skills, and participation in hospital programs.

These studies incorporated various methods to study different programs in diverse settings with diverse populations. Although details of the research and the outcomes are not uniform, most investigations resulted in a positive change in social behavior. As is illustrated in this review of the HAI literature, most programs and research have taken place in nursing homes and medical or psychiatric hospitals. However, animal-assisted therapies and activities have been rapidly increasing since the 1980's in another institutional setting – correctional facilities.

Human-Animal Interaction in Correctional Facilities

There are currently ten states within the U.S. and several countries abroad with forensic HAI programs, in which animals are housed and/or trained within correctional facilities (Correctional Services of Canada, 2003). In each program, animals live within the walls of the prison and participating inmates house, feed, and groom them. Depending on the program, inmates either keep animals as pets, train dogs for human service, or train dogs in preparation for pet adoption. The present research investigated the impact of a HAI program within a prison setting.

Although the research reviewed above took place almost exclusively in nursing homes and hospitals, the findings are relevant for the present research. It is likely nursing-home and hospital residents have some difficulties similar to inmates, namely loneliness, boredom, dependence due to a low sense of personal control, and low self-esteem (Ivanoff et al., 1992; Phillips, 2001). Therefore, it seems logical inmates in forensic programs may experience the benefits experienced thus far by nursing-home and hospital residents. Programs that result in psychosocial improvements for inmates would likely be welcomed by correctional

administration. This becomes especially clear when considered within the context of the current social and political environment of the American correctional system.

Need for rehabilitative programs in corrections. Beginning in the 1970's, the role of incarceration in the United States shifted from an effort to provide rehabilitation for inmates to an emphasis on "incapacitation" and "containment" (Ogloff, 2002). As a result, psychological treatment for inmates has been drastically reduced, despite an increase in the number of incarcerations (Haney, 1997). Currently, the United States incarcerates a larger percentage of its population than any other country in the world (International Centre for Prison Studies, 2004). According to the Bureau of Justice Statistics (BJS), American prisons have been operating above maximum capacity for the past few decades (BJS, 2001), with over two million people incarcerated in jails and prisons (BJS, 2003).

This overcrowding comes at a high financial cost. In 1994, it was reported that state and municipal governments spent more on criminal justice than on education (Chambliss, 1994). The annual cost of criminal and civil justice is estimated at $22 billion for the federal government, $50 billion for state governments, and $35 billion for local municipalities (BJS, 2001). One factor influencing overcrowding, and the subsequent financial cost of incarcerating inmates, is criminal recidivism.

Each year, a proportion of incarcerated men and women are released from prison and returned to society. Unfortunately, a large percentage of those released from prison return to criminal behavior and are sentenced to additional correctional sentences. In 1994, a cohort of inmates released from state and federal prisons in 15 states were studied to determine rates and conditions of recidivism (BJS, 2002). This cohort represented two-thirds of all prison inmates

released that year. Of the 272,111 inmates released, 67.5% returned to prison within three years of their release. These incarceration rates are further complicated by mental illness.

The prevalence of mental illness among incarcerated inmates is estimated to be as high as 15%, compared to the prevalence rate of 2-3% in the normal population (Lamb & Weinberger, 1998). The entire spectrum of clinical disorders are represented in correctional facilities, including mood disorders, anxiety disorders, personality disorders and psychotic disorders (e.g., Cote, Lesage, Chawky, & Loyer, 1997). These figures highlight a serious need for treatment and rehabilitative programs in correctional facilities. In contrast, relatively few offenders receive treatment while incarcerated. The BJS reports only 36% of prison inmates receive treatment (BJS, 1999). In addition to clinical disorders, inmates often suffer psychosocial deficits as a result of being incarcerated.

The Stanford Prison Experiment (Haney, Banks, & Zimbardo, 1973) is likely the most notable demonstration of the detrimental effects of incarceration. In this investigation into the power of the situation, psychologically healthy college students placed in a prison-like environment quickly took on the role of an inmate, becoming blindly obedient and suffering acute psychological trauma (Haney & Zimbardo, 1998). Prisonization is a process in which inmates take on the customs, habits, and general culture of a correctional facility (Clemmer, 1940). The prison culture includes adopting the inmate code, a code specifying an alliance *with* fellow inmates and *against* the facility administration and its policies (Clemmer, 1940). In this process of socialization to the prison environment, inmates reject societal norms, including social norms.

Peat and Winfree (1992) surveyed 72 medium-security prison inmates and found the construct of prisonization consists of two dimensions: (a) inmate code adoption and (b) rejection

of prison caseworkers, mental health professionals, and custody staff. While socialization to the prison environment may be adaptive for an inmate while incarcerated (e.g., reduces inmate-to-inmate violence; Phillips, 2001), it is maladaptive for the inmate released back into the community, and may contribute to criminal behavior and subsequent return to prison. Thus, the rejection of social norms associated with prisonization can lead to inmates being released from prison without basic interpersonal skills needed to maintain a job, interact with family and friends, and live independently (Maltz, 1984).

This is unfortunate as inmates are expected to have improved functioning and behavior upon release from incarceration. In contrast to this expectation, Haney (1997) suggests incarcerated men and women undergo a psychological "deep freeze" in prison and must recover from the negative effects of incarceration prior to re-entering society. In other words, they are expected to have undergone treatment or rehabilitation while incarcerated.

Rehabilitation is the process of "correcting" or changing offenders' behavior to prevent future criminal behavior (Redono, Sanchez-Meca, & Garrido, 2002). In contrast, treatment involves the identification and targeting of a specific clinical disorder or pattern of abnormal behavior by a mental-health professional. Without treatment or rehabilitative services, inmates are likely to return to criminal behavior when released from custody, and eventually be reincarcerated, thus continuing the cycle of recidivism and overcrowding. In an effort to meet this need, some correctional facilities are designed as therapeutic communities in which inmates receive treatment while incarcerated. The present research was conducted in a prison using the therapeutic community approach.

Therapeutic community. A therapeutic community is a community-based residence within a correctional facility aimed at treating inmates with substance abuse disorders (Lipton,

Pearson, Cleland, & Yee, 2002). Within the therapeutic community, substance abuse is seen as a problem with individual behavior, not with the drug itself (Lipton et al., 2002), and treatment is aimed at changing maladaptive behaviors one has learned. *Community* or a sense of belongingness is central to the treatment and is described as the primary method for facilitating social and psychological change in individuals (De Leon, 1995). Inmates participating in this treatment manage the prison community, with the help of staff.

Therapeutic communities typically incorporate principles of applied behavior analysis (Skinner, 1953), an effective method to increase desired behaviors among prison inmates (Geller, Johnson, Hamlin, & Kennedy, 1977; Johnson & Geller, 1974). With this approach, inmates are made aware of the consequences of their own behavior and learn to give supportive and corrective consequences to fellow inmates following their desired or undesired behavior (Briggs, 1980). In addition, inmates in therapeutic communities are encouraged to confront fellow inmates and provide corrective feedback about their behavior, specifically behavior supporting a drug-abusing or criminal lifestyle (Briggs, 1980). Empirical investigations of therapeutic communities support their efficacy in reducing substance abuse relapse within the correctional setting and after release from the institution (e.g., Field, 1985; Inciardi, Martin, Butzin, Hooper, & Harrison, 1997). Research suggests therapeutic communities are also effective in preventing future criminal behavior.

Dietz, O'Connell, and Scarpitti (2003) studied the impact of a therapeutic community on institutional disorders and found a significantly lower rate of institutional disorders in the therapeutic community than in the general population. In addition, inmate perceptions of the social climate within the prison, measured with the Correctional Institutions Environment Scale (Moos, 1974) were more positive in the therapeutic community than in the general population. In

a similar study, Prendergast, Farabee, and Cartier (2001) studied the impact of a therapeutic community on prison management and found inmates in the therapeutic community had significantly fewer failed drug screens, lower rates of rule violations and less serious rule violations than inmates in the general population.

Consistent with therapeutic communities resulting in less institutional disorder, research also supports their efficacy in reducing recidivism. Lipton et al. (2002) conducted a meta-analysis on the effectiveness of correctional programs providing therapeutic community and milieu therapy. In this study of over 1,500 research studies, taking place from 1968 to 1996, therapeutic communities were associated with moderate effect sizes ($r = .14$) for reducing recidivism. Finally, participation in a therapeutic community is associated with less negative effects of incarceration. Peat and Winfree (1992) studied the effects of a therapeutic community on prisonization, indicated by inmates' self-reports on scales assessing adoption of the inmate code and rejection of correctional staff. Results showed that inmates in the therapeutic community reported less inmate-code adoption and staff rejection than inmates in the general population.

Thus, it seems therapeutic communities in correctional settings have a positive impact on the inmates involved. After accounting for level of security within the institution, inmates participating in a therapeutic community experience significantly more positive outcomes than those in the general population. These outcomes include prevention of substance-abuse relapse, reduced rule violations and institutional infractions, reduced recidivism, and more positive perceptions of the prison environment and staff. On the other end of the continuum of treatment and rehabilitation efforts, many inmates are required to work while incarcerated, an aspect of incarceration assumed to be rehabilitative in nature.

Institutional work. Institutional work may be in the form of contributing to the day-to-day operations of the correctional facility (e.g., cooking for inmates and staff or maintenance of prison property) or providing a service to the community (e.g., picking up litter on community roadways). In addition to the actual services inmate work provides, they are also meant to serve a rehabilitative function. Working may give the inmate knowledge and experience that will aid him/her in finding work when released from prison, and it also may prevent future criminal behavior by occupying inmates' time and instilling in them the value of work (Flanagan, 1995).

However, the nature of the specific job an inmate receives and its impact on rehabilitation are not considered when jobs are distributed (Dominguz, Rueda, Makhlouf & Rivera, 1976). More commonly, jobs are distributed in a hierarchical fashion so inmates with the best behavior are allowed the most-envied jobs, thereby enabling jobs to serve an incentive function. Recently, prisons have begun adopting programs in which inmates provide a service to the community by working with animals, referred to hereafter as forensic HAI programs.

Forensic human-animal interaction research. Although inmates most often work with dogs, animals as diverse as birds, horses, and fish are currently involved in forensic HAI programs (Correctional Services of Canada, 2003). Inmates' duties range from controlling the day-to-day operation of fisheries, to caring for and grooming horses, to training dogs for adoption or human service. The latter is the type of program evaluated in the present research. Although not surprising given the current state of corrections outlined above, little scientific research has been conducted on the effects of forensic HAI programs on prison inmates. To date, only four studies examined the impact of such programs, as reviewed below.

In order to study the impact of pet ownership on inmates, Katcher, Beck and Daniel (1989) investigated the physiological and behavioral impact of a pet program on inmates in a

Virginia prison. A total of 20 inmates kept an animal (i.e., birds, fish, cats and dogs) as their pet. Participant blood pressure was recorded in the presence and absence of the pet. In addition, criminal records were reviewed for the two years prior to the pet program and the year after the pet program, compared to a control group. Findings did not support a beneficial impact of pets on inmates. No differences were found in blood pressure when a pet was present versus when a pet was not present, and there was no difference in the number or type of criminal infractions between treatment and control groups.

In a similar study, Moneymaker and Strimple (1991) evaluated a program in which male inmates were trained in laboratory-animal technician skills. Inmates learned basic animal care and were responsible for the welfare of animals within the institution. The program was evaluated by reporting a) termination from the program, b) recidivism rate, c) drug involvement within the correctional facility, and d) participation in work release. The authors report the proportion of the participating inmates (n = 88) for each of these variables.

Results indicated a recidivism rate of 11.3%, but did not compare this rate to the institution's typical rate. Regarding drug involvement, 45% of inmates were involved with drugs while in the program, not necessarily a positive finding. However, the authors reported drug use as a serious problem within that institution and therefore were not surprised at the finding. Lastly, 95% of the inmates in the program chose not to participate in the facility's work-release program. The authors suggest inmates did not want to leave their animals to work a menial job in the community, a possible unintended negative outcome of the program. Although the authors report their findings as support for the benefits of the HAI program, results were not tested with statistical analyses.

Unlike pet programs, service-dog programs are programs in which prison inmates prepare dogs for human service (e.g., seeing-eye dog). Such programs have been in operation since 1981 and are currently functioning in several states across the nation (Correctional Services of Canada, 2003). However, program efficacy is typically based on successful placement of the animals. There is little research investigating program outcome for the inmates involved. Although there are numerous descriptions of programs in magazines and on television (e.g., Beard, 1984; Haight, 1986; Wade, 1986), only one empirical study has investigated the outcome of such programs for inmates.

Walsh and Mertin (1995) studied a program with minimum-security inmates at a women's prison in Australia. The eight participating inmates cared for and trained guide dogs for the elderly and visually impaired. The dogs were in the prison an average of 12 weeks before their service placement. The program was evaluated in a pretest-posttest design, assessing participating inmates' levels of self-esteem and depression before beginning the program and after leaving the program, an average of six months after becoming involved. Dependent measures included scores on the Coopersmith Self-Esteem Inventory (Coopersmith, 1967) and the IPAT Depression Scale (Krug & Laughlin, 1976). Results indicated the participants reported a significant increase in self-esteem and a significant decrease in depression from pretest to posttest (Walsh & Mertin, 1995). While these findings are promising, they are limited by a significant potential confound. posttest measures were completed when inmates left the program because they were about to be released from prison. Thus, the change in self-esteem and depression may have been the result of participants' impending parole rather than the HAI program.

Finally, based on the research reviewed here on pet-ownership, animal-assisted therapy, and forensic HAI programs, a pilot study was conducted to prepare for the present research. Suthers-McCabe, VanVoorhees, and Fournier (2005) investigated the impact of a service-dog training program on 16 inmates in a study of clinical symptomatology, self-esteem, empathy, and personal control. Inmates completed self-report measures of these variables before beginning the program and bimonthly thereafter during a one-year training period.

There were no significant differences from pretest to posttest any of the assessment measures. In addition to a small sample size, the lack of significant findings may be explained by a "ceiling effect," in that mean pretest scores on all measures were in the normal/healthy range, which precluded much movement during the program in the direction of improved psychological functioning. In qualitative interviews, participants reported improved social interactions with each other and with correctional staff as a result of interacting with the dogs and working together to care for and train the dogs.

Although previous studies of HAI have resulted in a reduction of clinical symptoms (e.g., Barker & Dawson, 1998) and there is an increased prevalence of mental illness in correctional settings (Lamb & Weinberger, 1998), clinical symptoms and diagnostic status may not be appropriate dependent measures for studies of this type. The inmates in this program were relatively healthy, a finding consistent with inmates being carefully screened prior to being accepted into the program.

Summary

The HAI field aims to explore and understand the relationship between humans and animals and the psychosocial impact of interacting with animals. Existing literature discusses outcomes of pet-ownership and animal-assisted therapies and activities. Research suggests

individuals, particularly individuals in institutional settings, may experience reduced clinical symptoms (e.g., Barker & Dawson, 1998), improved social behavior (e.g., Byersdorfer & Birkenhauer, 1990), and improved psychological states, namely self-esteem, empathy and interpersonal trust (Hyde et al., 1993) as a result of interacting with animals.

There are currently many HAI programs implemented in correctional facilities, with inmates serving to care for and train dogs. Although anecdotal evidence suggests these programs result in rehabilitative outcomes for participating inmates (e.g., Harbolt & Ward, 2001), there is little empirical data to support this premise. The few studies of HAI programs with forensic populations have resulted in some promising findings, indicating inmates might experience an improvement in self-esteem, decreased depression, and reduced recidivism. However, the studies demonstrating these findings are limited by their design, and some findings were not validated with statistical analyses.

With these findings in mind, the present research aimed to study the impact of a forensic HAI program on inmates by measuring psychosocial variables related to well-being and healthy adjustment. The HAI studies to date have found a decrease in depression (e.g., Garrity et al., 1987; Siegel et al., 1999; Walsh & Mertin, 1995), yet a pilot study found the specially selected inmates were relatively healthy and thus were not suffering from clinical depression (Suthers-McCabe et al., 2005). Therefore, the present research assessed transient mood disturbance in general rather than clinical depression. In addition to a change in mood, it is possible HAI programs facilitate a change in inmate outlook.

Optimism is the general expectation one will experience good outcomes in life (Carver & Scheier, 2001). It is developed and influenced by the discrepancy or perceived discrepancy between actual outcomes and desired outcomes (i.e., goals). With consistent goal attainment, one

comes to expect good outcomes and thus has an optimistic outlook (Carver & Scheier, 2001). Forensic HAI programs like the one in the present research provide inmates with a meaningful goal to achieve (i.e., training a dog). Attaining that goal could give them a more optimistic outlook. Goal attainment and optimism are related to emotions in that positive emotions are associated with doing well (Carver & Scheier, 1990). HAI programs could provide an avenue through which inmates can achieve goals and as a result experience more positive emotions and have a more positive outlook. Thus, optimism was assessed in the present research.

Because findings on self-esteem have been mixed and research specifically with forensic populations suggests inmates selected for such programs are likely high in self-esteem at baseline (Suthers-McCabe et al., 2005), the present research did not include it as a dependent measure. Rather, optimism and perception of the prison environment, were measured. These specific variables have not yet been studied with regard to HAI programs. However, previous research on forensic HAI programs resulted in improved mood (Walsh & Mertin, 1995), a construct related to outlook variables such as optimism and pessimism (Affleck, Tennen, & Apter, 2001). Therefore, it is possible participating in a HAI program could also affect inmates' general outlook or perception of the prison environment. Given the numerous studies indicating change in social behavior as a result of animal-assisted therapy (e.g., Corson et al., 1977; Perrelle & Granville, 1993; Salmon et al., 1982) and improvement in social skills reported by inmates participating in forensic programs (Suthers-McCabe et al., 2005), social skills were assessed in relation to participation in an HAI program.

An improvement in these variables would be welcomed in the prison, as they are among the characteristics associated with crime and targeted by criminal rehabilitation efforts. For example, depressive mood disturbances has been found to precede unethical and criminal acts

(Schulte, 1954), and cognitive-behavioral social skills development programs are part of the most effective rehabilitation programs for offenders in prison, in jail, or on probation or parole (Pearson, Lipton, Cleland, & Yee, 2002). Finally, positive perceptions of the social climate of correctional facilities are associated with decreased rule breaking and decreased institutional infractions while incarcerated (Moos, 1974).

In addition to assessing psychosocial factors that could impact criminal behavior, it is important to understand if HAI programs in forensic settings impact criminal behavior directly. One study of forensic HAI, although limited in design, reported reduced recidivism as an outcome (Moneymaker & Strimple, 1991), indicating reduced criminal behavior after release from prison. Some suggest recidivism rate is not a useful indicator of program outcome because there are too many extraneous variables between participation in a given program and release and return to prison (Matthews & Pitts, 1998). Within the context of this information, the present research assessed criminal behavior while still in prison. Finally, the prison where the present research took place is designated as a therapeutic community in which inmates work through increasing treatment levels. Thus, the present research assessed progress in the therapeutic community treatment as a function of the HAI program.

Present Research

The HAI program studied in this research is the PenPals program, a dog-training program in which dogs are selected from local shelters and trained by inmates in prison for 8 to 10 weeks. During that time, dogs live with selected inmates who are educated in dog-training skills from a certified animal trainer. The inmates provide for the dogs' basic needs (i.e., food, shelter, grooming), and train them in obedience. After the training period, the dog is adopted by individuals in the community and the inmates begin the process again with a new shelter dog.

Inmates become involved in the program by first applying for the position and then being selected by the correctional officer coordinating the program. Participation in the program is voluntary and is in addition to treatment and educational responsibilities within the prison's therapeutic community. Inmates work on a team of four to care for and train one dog. One of the four inmates is with the dog at all times, rotating time with the dog according to daily treatment, educational, and vocational schedules. All inmates attend a one-hour weekly training meeting with the animal trainer.

The specific aim of the research was to determine if participation in the HAI program resulted in quantitative differences in beneficial psychosocial outcomes for inmates. Dependent measures included treatment level in the prison's therapeutic community, frequency of institutional infractions, social skills, perception of the social climate of the prison, optimism, mood disturbance, and HAI. Data were collected in a quasi-experimental field study, using both a between-subject approach and a within-subject approach. Quantitative between-subject comparisons were made between inmates in the HAI program and those on the waiting list for the HAI program on the following dependent measures: treatment level in the therapeutic community, frequency of institutional infractions, social skills, perception of the social climate of the prison, optimism, mood disturbance and HAI. Within-subject analyses followed a single-subject design, assessing the relationship between two of these dependent measures – HAI and mood disturbance – at a more proximal level by measuring them daily for several days. Data collection and analysis were followed-up with a focus group in which inmates reported their perceptions of the program and the research.

Study Design

Between-Subject Approach

This portion of the study incorporated a mixed between- and within-subject, pretest-posttest repeated measures design. Comparisons were made between phases, comparing pretest and posttest scores, and between groups, comparing a Treatment group and a Control group. The Treatment group was comprised of inmates in the HAI program and the Control group consisted of inmates on the waiting list for the HAI program. Participants were not randomly assigned to Treatment and Control groups, as the program coordinator made all selections based on criteria and a selection process in place prior to this research. Thus the groups were predetermined samples of convenience. The two comparison groups are described below in more detail:

Treatment group. Participants in the Treatment group were inmates in the therapeutic community who began working in the HAI program during the research period. They were subjected to all therapeutic community policies and procedures. In addition, they worked on a team with three other inmates to care for and train one dog. Once in the HAI program, inmates attended weekly training sessions with a certified dog trainer, where they learned basic concepts of positive reinforcement and specific skills to train dogs in obedience. Responsibilities also included attending regular meetings with the correctional officer coordinating the program and with the other dog trainers to review training progress. Participants in the Treatment group completed pretest measures prior to being in the HAI program and completed posttest measures after involvement in the program.

Control group. Participants in this group were inmates in the therapeutic community who applied to work in the HAI program, and met criteria for the program, but remained on the waiting list during the research period. As such, they were subjected to all of the policies and

procedures of the prison's therapeutic community, as were participants in the Treatment group.

Each time a participant from the Treatment group completed posttest measures, a participant

from the waiting list was randomly chosen to complete posttest measures, thus becoming a part

of the Control group.

Within-Subject Approach

In order to obtain more specific information on a) the amount of daily HAI experienced

by inmates, b) daily fluctuations in mood, and c) the relationship between daily HAI and mood, a

small sample of participants were studied with a within-subject approach. This portion of the

study followed a single-subject, repeated-measures design in which six participants, three each

from the Treatment and Control groups described above, reported daily mood and daily HAI.

Participants completed these measures every day for two weeks in personal journals.

Hypotheses

In general, it was hypothesized the HAI program would result in positive outcomes for

the inmates. Dependent measures included inmate self-reported treatment level within the

therapeutic community, frequency of institutional infractions, and scores from self-report

measures assessing social skills, inmate perception of the prison environment, optimism, and

mood disturbance. Based on the information cited, it was predicted that: (1) the Treatment group

would demonstrate a greater increase in optimism, positive perceptions of the prison

environment, and social skills from pretest to posttest in comparison to the Control group; (2) the

Treatment group would demonstrate a greater decrease in mood disturbance from pretest to

posttest in comparison to the Control group; (3) the frequency of improved mood disturbance,

optimism, positive perceptions, and social skills scores from pretest to posttest would be greater

in the Treatment group than the Control group; (4) HAI would be positively associated with

positive perceptions of the prison environment and negatively associated with mood disturbance; (5) the Treatment group would demonstrate greater increases in treatment level in the therapeutic community than the Control group; and (6) the Treatment group would demonstrate a decrease in institutional infractions from pretest to posttest in comparison to the Control group. While all hypotheses were tested with the between-subject approach, Hypotheses 2 and 4 investigating the relationship between the HAI program, HAI, and mood were explored with both the between- and within-subject approaches.

Method

Participants and Setting

The study was conducted at a minimum-security prison in southwest Virginia. The prison has been in operation since 1960 and has a maximum capacity of 352 inmates. Inmates are housed in two buildings, where they live in a dormitory-style setting. There are a total of four dormitories, which house approximately 96 inmates, each in two rows of bunk beds. Exclusion criteria for this facility include inmates serving sentences for kidnapping/abduction, violent sex offenders and those inmates determined to be escape risks. All inmates have fewer than five years of incarceration left to serve on their sentence. In addition to these criteria, the facility is a substance abuse treatment-oriented facility, and thus it is limited to inmates with a history of substance abuse or legal charges related to alcohol or drugs. The facility is transitional in nature, with inmates frequently being transferred in and out of the prison.

In conjunction with the facility's treatment orientation, two-thirds of the inmates participate in the prison's therapeutic community, in which they are encouraged to build a sense of community, and procedures and policies are based on applied behavior analysis. Inmates and treatment staff focus on inmate behavior, both criminal and drug-related, in need of change.

Treatment takes place in a series of four levels, with inmates entering treatment at Level I and advancing through Level IV when treatment goals for each level have been met. Approximately one-third of the inmates do not participate in the therapeutic community because they (a) refuse, (b) are unable to participate for medical or other reasons, or (c) have been involuntarily excused. In addition to the therapeutic community, inmates at the facility are offered educational opportunities and vocational training.

A total of 54 male inmates from the prison's therapeutic community participated in the research. This included 27 inmates who participated in the HAI program, serving as the Treatment group, and 27 inmates who applied to the HAI program but remained on the waiting list, serving as the Control group. The participants' mean age was 29 with a range of 21 to 46. Participants had completed a mean of 11.6 years of education with a range of 9 years to 15 years. All participants were able to read at least at an 8th grade reading level, as indicated by intake assessment scores reported in their institutional file. With regard to ethnicity, 56.3% of the participants were Caucasian, 29.2% were African American, 8.3% were Hispanic, and 2.1% were Native American. Demographic information is provided separately for the Treatment and Control groups in the Results section.

Materials

Institutional infractions were obtained from inmate records as a measure of criminal behavior. Therapeutic community treatment level was obtained via participant self-report. Other materials included several paper-and-pencil self-report measures. The measures included the short form of the Correctional Institutions Environment Scale, the Social Skills Inventory, the Life Orientation Test-Revised, and the brief form of the Profile of Mood States. In addition, a checklist measuring HAI and a demographic questionnaire to obtain information on variables

such as age, ethnicity, and level of education were developed for the purposes of the study. The demographic questionnaire is presented in Appendix A.

Social Skills Inventory. The Social Skills Inventory (SSI) is a 90-item 5-point measure designed to assess basic social and emotional communication skills (Riggio, 1986). It is based on the premise that socially intelligent people are skilled in correctly receiving and appropriately conveying social and emotional information in a given situation (Guildord, 1967; Mayer & Salovey, 1997; Riggio, 1986; Salovey & Mayer, 1990). The SSI consists of six scales that measure communication skills on emotional/nonverbal and social/verbal dimensions, evaluating expressivity, sensitivity, and control in each of these dimensions.

The measure's scales and their descriptions are presented in Table 1 of Appendix B. Test-retest reliability is favorable with correlations ranging from .81 to .96. The measure also has acceptable internal consistency, with Cronbach's alpha coefficients for the scales ranging from .65 to .88. In convergent and discriminant validity studies, the SSI correlated in predicted patterns with other skill-based emotional style measures, including tests of empathy, interpersonal perception, and nonverbal skills (Riggio, 1986).

Correctional Institutions Environment Scale. The Correctional Institutions Environment Scale (CIES) is a 90-item true-false measure designed to assess the social climate of juvenile and adult correctional programs, as perceived by inmates and staff (Waters, 1980). Inmate scores are separated into relationship, personal growth, and system maintenance dimensions. Each dimension is comprised of three scales for a total of nine scales. The nine scales are (a) involvement, (b) support, (c) expressiveness, (d) autonomy, (e) practical orientation, (f) personal-problem orientation, (g) order and organization, (h) clarity, and (i) staff control (Moos, 1974).

The three dimensions, their individual scales and a description of each scale are presented in Table 2 of Appendix B. The CIES is considered a valid measure for evaluating inmates' perceptions of the correctional environment. Test-retest reliability tests suggest the test is stable, with intraclass correlations ranging from .91 to .96 (Moos, 1987) and has been demonstrated to be an effective tool in assessing change in inmate perceptions associated with environmental interventions (e.g., Baldwin, 1985). A 36-item Short Form of the test was developed to make a relatively rapid assessment of perceived social climate. It is considered particularly useful for following changes in a correctional program over time (Moos, 1974). This form includes four items from each of the nine scales. Intraclass profile correlations between the original form and the short form standard scores range from .70 to .85, indicating the short form results in profiles similar to those obtained with the original form.

Life Orientation Test-Revised. The Life Orientation Test (Scheier & Carver, 1985) is a measure of dispositional optimism based on the generalized outcome-expectancy model of motivation (Carver & Scheier, 1981). It assesses one's generalized expectancies for positive versus negative outcomes. The measure was modified to increase validity by removing items that assessed proclivity to engage in positive thinking, a moderator of optimism (Scheier, Carver, & Bridges, 1994). This resulted in the Life Orientation Test Revised (LOT-R), a 10-item 4-point rating scale designed to measure optimism. Scheier and colleagues (1994) conducted reliability and validity studies of the revised measure with a college sample. These studies showed the LOT-R has acceptable internal consistency with a Cronbach's alpha of .78. Test-retest reliability coefficients ranging from .56 to .79 indicate the measure is fairly stable across time. Convergent and discriminant validity studies resulted in modest correlations in the predicted direction between the LOT-R and measures of neuroticism, self-mastery, self-esteem, and anxiety.

Profile of Mood States. The Profile of Mood States (POMS) is a 65-item, five-point adjective rating scale designed to assess transient, fluctuating affective states (McNair, Lorr, & Droppleman, 1971). A handout containing each adjective's definition, from the Meriam-Webster's Collegiate Dictionary, accompanied each POMS form (See Appendix C). Scores on the POMS are interpreted on six scales of mood disturbance: (a) Tension-Anxiety, (b) Depression-Dejection, (c) Anger-Hostility, (d) Vigor-Activity, (e) Fatigue-Inertia, and (f) Confusion-Bewilderment. These scales are summed, weighting Vigor-Activity negatively, to compute a Total Mood Disturbance Score.

A description of each scale is presented in Table 3 of Appendix B. The POMS has demonstrated to be sensitive to change associated with interventions including psychotherapy (Haskell, Pugatch, & McNair, 1969) and psychiatric medication (Lorr, McNair, & Weinstein, 1964). The measure's reliability and validity were assessed in a series of studies by McNair and Lorr (1964). Test-retest reliability coefficients on the individual scales range from .65 to .74, indicating moderate reliability. Internal consistency reliability coefficients were acceptable, ranging from .84 to .95.

A brief form of the POMS was developed for easier completion. This form is a 30-item, 5-point adjective rating scale, developed from the original version. Scores are calculated on the same six scales and summed in the same way to compute total mood disturbance. Intraclass profile correlations between the original form and the brief form standard scores range from .67 to .88 (Killen, Fortmann, Telch, & Newman, 1988), suggesting the brief form results in profiles similar to those obtained with the original form. The present research used the brief form of the POMS. Participants were asked to complete the form according to how they have felt for "the

past week, including today." Due to copyright restrictions, the CIES, SSI, LOT-R, and POMS are not provided in appendices.

Human-Animal Interaction Checklist. In addition to the measures above, the present research required a measure of HAI. While there are some measures of human attachment to pets (e.g., Garrity et al., 1989; Holcomb, Williams, & Richards, 1985), there are no validated measures of HAI to date. Thus a HAI Checklist, in which respondents endorsed the amount and type of interaction they have had with animals, was created for the purpose of measuring HAI in this study. The HAI Checklist, located in Appendix D is an 11-item 4-point rating scale on which participants were asked to report their interactions with program dogs over the past week.

Inmate journals. Inmate journals consisted of one POMS and one HAI Checklist for each of 14 consecutive days. These measures of mood disturbance and HAI were the same as described above, except the instructions asked participants to report on these variables for "today," rather than "the past week, including today." In addition, space was provided for participants to write comments each day. These materials, one POMS, one HAI Checklist, and one Comments Page for each of 14 days, were stapled together and labeled "PenPals Journal." Journal instructions were attached to the inside of the journal. Appendix E contains these journal instructions.

Procedures

Appendix F contains correspondence with the prison, providing permission from the prison warden to conduct the research. All procedures were subject to full review and were approved by the Virginia Tech Institutional Review Board for Research with Human Subjects and the Human Subjects Review Board for the Virginia Department of Corrections.

Participant recruitment. The research was initially announced to all inmates in the therapeutic community through flyers placed in the dormitories (see Appendix G) and announcements made in each dormitory during a nightly meeting by the individual dormitories' inmate coordinator. Interested inmates were given a recruitment letter, explaining the purpose and procedures of the research, and informed consent forms to read and sign (see Appendix H).

As an incentive to participate in the research, inmates were informed they would earn two Certificates of Participation (see Appendix I) to put in their institutional file should they choose to participate. Inmates interested in participating attended a single mass testing session in which the principal investigator administered the self-report measures to all volunteer participants at once. Because of the transitional nature of the facility, there is a constant flow of new inmates arriving at the prison and applying to the HAI program and inmates being transferred or paroled from the prison and leaving the HAI program. Therefore, participant recruitment was ongoing throughout the study.

After the initial mass testing session, the correctional officer coordinating the HAI program instructed all inmates who applied to be dog trainers on the nature of the research and asked if they would volunteer to participate. A total of 109 inmates applied for the HAI program during the research period, all of whom volunteered to participate in the research. The sample included 55 inmates who volunteered for the research but did not meet criteria for the HAI program; these inmates were excluded from the research.

Inclusion criteria for the HAI program, as predetermined by the facility, include (a) being in the therapeutic community for at least 30 days, (b) having at least three months of prison sentence remaining, and (c) having no history of animal/child/spouse abuse. In addition, the coordinator chose inmates based on answers to subjective questions on the program's application

form, indicating a positive attitude toward the therapeutic community and the HAI program. See Appendix J for a copy of the facility's application form. The final sample included 54 inmates on the waiting list for the HAI program.

Data collection. All participants were instructed not to write their name or any identifying information on self-report measures. Instead, they were instructed to create a confidential code. The code was based on personal information and thus could be recreated at a later time. Confidential codes were linked to participants' names on the demographic questionnaire only. Participants were tracked as they naturally began the HAI program. Pretest-posttest data were collected for six months, from May 2004 until December 2004. The mean number of days between Pretest and Posttest measures was 96, with a range of 13 to 160. Inmate journal data were collected for two weeks in December 2004. All participants were given two certificates of participation, one after completing pretest measures and one after completing posttest measures.

Therapeutic community treatment level. The dependent measure treatment level was operationalized as treatment level in the therapeutic community. Due to inconsistent documentation of this variable in institutional records, treatment level in the therapeutic community was measured via participants' self-report. Each time participants completed paper-and-pencil measures, they recorded what treatment level they were at in the therapeutic community. These reported treatment levels (i.e., Pulsar East I) were ranked from 1 to 5, with 1 representing the lowest (i.e., beginner) level and 5 representing the highest level. Higher scores indicate better psychosocial functioning. Mean treatment levels were compared in between-subject analyses.

Institutional infractions. After all participants completed both assessment phases with the self-report measures, researchers reviewed institutional records of the 48 participants for the between-subject analysis. This archival data were collected via recording the number and type of institutional infractions incurred during the research period from individual inmate records. Data were analyzed on the mean frequency of institutional infractions per Group and Phase.

Self-report measures. The CIES, LOT-R, POMS, SSI and the HAI Checklist were administered to participants at two assessment phases – before Treatment group participants were involved in the HAI program or "Pretest" and after Treatment group participants were involved for two weeks or "Posttest." For both the Treatment group and the Control group, Pretest measures were completed either at the mass testing session described above or when individual inmates applied for the HAI program. Participants became a part of the Treatment group when they began working as a dog trainer in the HAI program. The Posttest assessment occurred after two weeks of working in the HAI program. The time span of two weeks was chosen to allow sufficient time to adjust to the HAI program without the risk of missing inmates who left the program before the full eight weeks of dog-training were over.

Each time a participant from the Treatment group completed Posttest measures, a participant from the waiting list was randomly chosen to complete Posttest measures, becoming a part of the Control group. All decisions regarding which inmates worked in the HAI program, and hence were in the Treatment group, were made by the HAI coordinator. Thus, the Treatment and Control groups were not randomly selected but rather were predetermined groups studied systematically.

Inmate journals. A separate sample of six inmate participants were given journals to complete for two weeks, with all participants beginning the journals on the same day, thus

completing the journals simultaneously. The journals were initiated one week before the three

Treatment group participants began working in the HAI program and ended two weeks later.

Prior to beginning the journals, all participants attended a brief training in which a research

assistant reviewed the purpose of the study and trained participants on making daily journal

entries. Participants were instructed to complete one HAI Checklist and one POMS at the end of

the day for the next 14 days. They were also encouraged to write any comments they had about

the HAI program or the research on the Comments/Notes Page. Researchers collected the

completed journals at the end of the two-week period. Daily mood disturbance and HAI were the

only data collected for these six participants.

 Focus group. After data collection was complete, participants attended a 90-minute focus

group with the principal investigator and a research assistant. Participants were encouraged to

discuss their impressions of the HAI program and the research evaluating it. Appendix K

contains questions participants were asked during this discussion and their comments.

<div align="center">

Results

</div>

Group Demographics

 Because participants were not randomly assigned to groups, demographic variables were

compared between the Treatment and Control groups at Pretest to assess for potential sampling

bias. Participant age, education, treatment level, length of stay in the therapeutic community, and

Table 4.
Mean Values for Demographic Variables, Classified by Condition.

Variable	Treatment (n=27)			Control (n=27)		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
Age in years	26.1***	21	34	32.8***	23	46
Education in years	12.1	9	15	11.2	9	13
Treatment level at Pretest	1.8	1	2	1.8	1	2
Days in TC at Pretest	174.6	7	960	118.3	14	912
Days left of sentence	333.3	120	660	120.0	820	348

Note: TC = Therapeutic Community, the treatment in place at the prison independent of the HAI program.
***p<.001

time left of prison sentence were compared at Pretest using one-way ANOVAs. As Table 4 on

the previous page indicates, there was a significant difference in age between the two groups.

The mean age in the Treatment group (M = 26.1) was significantly lower than the mean age in

the Control group (M = 32.8), F

(1, 43) = 17.8, $p < .001$.

No other demographic

variables differed significantly

between the two groups, p's>.05.

Participant ethnicity in the

Treatment and Control groups

Table 5.
Participant Ethnicity, Classified by Group.

	Treatment (n=27)		Control (n=27)	
Ethnicity	n	%	n	%
Native American	0	0.0	1	3.7
Hispanic	2	7.4	2	7.4
African American	5	18.5	11	40.7
Caucasian	18	66.7	12	44.4
Unreported	2	7.4	1	3.7

was compared by calculating the Chi Square statistic on the frequency of participants in each

ethnic category. This test indicated the observed frequencies within each category were not

significantly different from what would be expected by chance after weighting by the ethnicity

variable , $p>.05$. However, the Chi Square test was limited due to cells having an observed count

of zero. Furthermore, as is illustrated in Table 5, the Control group appears to be more ethnically

diverse, particularly with regard to the number of African American and Caucasian participants,

than the Treatment group.

In addition to demographic variables, the two groups were compared based on the

criminal charge that resulted in their incarceration. Figure 1 on the next page illustrates

frequencies of different criminal charges leading to the participants' incarceration, classified by

Group. Again, Chi Square analyses were invalid because several cells had an observed count of

zero. Visual inspection of these charges does not indicate any obvious differences between the

groups.
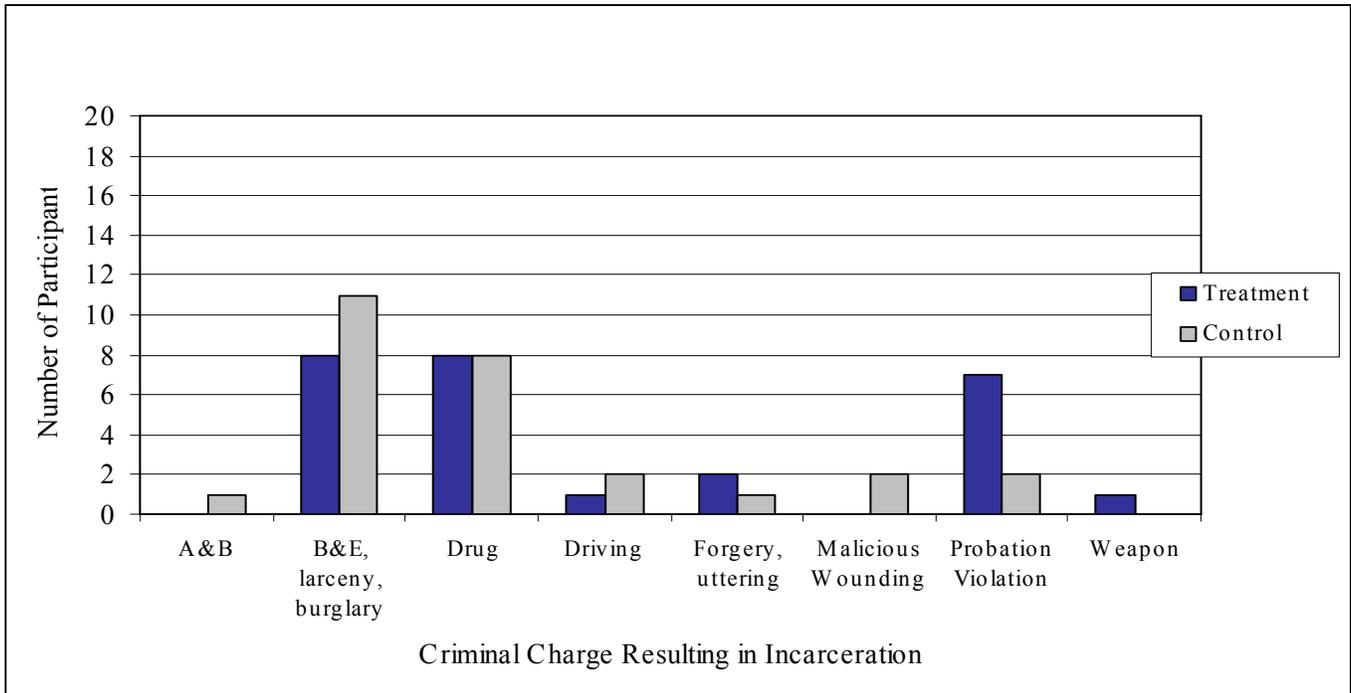
Figure 1. Criminal charge precipitating incarceration sentence, classified by Group.

Reported criminal charges were further classified as violent or non-violent. The difference in frequency of violent charges between the Treatment and Control groups again could not be calculated with statistical analyses because the observed cell count was zero for one cell. As Figure 2 illustrates, only three participants reported violent charges. However, all three were in the Control group. Although it is not supported with statistical analyses, there is a trend in that participants in the Control group reported being incarcerated for violent offenses, albeit a small number, while participants in the Treatment group did not.
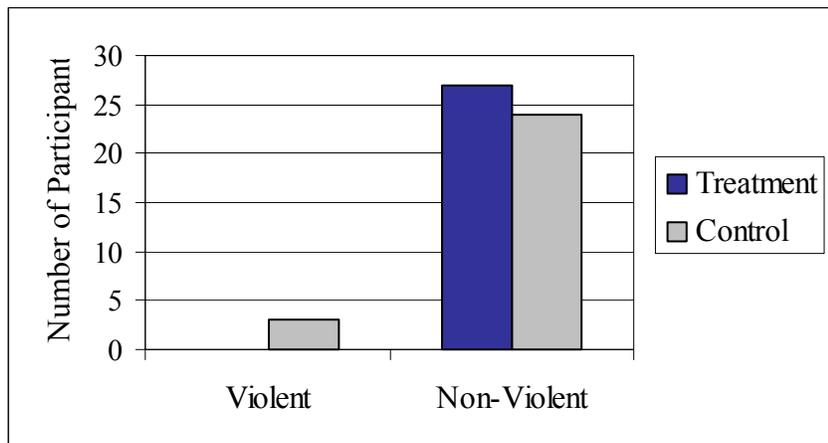
Figure 2. Frequency of violent and non-violent charges reported as reason for incarceration, classified by Group.

Validity Checks

Prior to calculating statistics, self-report data were examined to rule out haphazard responding and ensure validity of the data. The number of individual items left blank was calculated and was found to be less than five percent, an acceptable amount. Because several of the measures consist of multiple scales on the same measure, scale intercorrelations were calculated with the Pearson Product-Moment Correlation to compare their relatedness with the measures' published intercorrelations. Intercorrelations on all subscales of the POMS, SSI, and CIES were significant at *p*<.05 or higher.

Furthermore, individual correlations were in the same direction as in the measures' validity studies. For example, all intercorrelations for scales of the POMS correlate in the positive direction, with the exception of Vigor, which is negatively correlated with the other scales (McNair et al., 1992). As is

Table 6.
Intercorrelations Among the POMS Factor Scores for all Participants.

	Subscale					
Subscale	Tension	Depression	Anger	Vigor	Fatigue	Confusion
Tension	-	.55**	.73**	-.01	.71**	.73**
Depression	.55**	-	.57**	-.19	.41**	.60**
Anger	.73**	.57**	-	-.04	.62**	.64**
Vigor	-.01	-.19	-.04	-	-.04	-.35*
Fatigue	.71**	.41**	.62**	-.04	-	.61*
Confusion	.73**	.60**	.64**	-.35*	.61*	-

Note. *p<.05. **p<.01.
n = 48 for all cells.

presented in Table 6, scale intercorrelations for the present study were consistent with this pattern. In addition to scale intercorrelations, individual items were examined to determine if participants responded in the same way to similarly-worded items. This visual inspection of the data revealed no overt inconsistencies in responses.

Research hypotheses were tested with two broad approaches, including (a) a between-

subject approach that followed a factorial of 2 Group x 2 Phase on a sample of participants (n = 48) using survey data, self-reported treatment level in the therapeutic community, and frequency of institutional infractions; and (b) a within-subject approach that followed a single-subject design on a separate, smaller sample of participants (n = 6) using survey data from inmate journals. Analyses pertaining to each approach are presented separately.

Between-Subject Approach

For these comparisons, 2 Group (Treatment vs. Control) x 2 Phase (Pretest vs. Posttest) repeated-measures analyses of variance (ANOVA), or multivariate analysis of variance (MANOVA) when the dependent measure included multiple scale scores from the same measure were conducted on the dependent measures. These dependent measures included: (a) inmate self-reported treatment level in the prison's therapeutic community, (b) frequency of institutional infractions recorded from inmate participants' institutional files, (c) social skills measured with the SSI, (d) perception of the prison environment measured with the CIES, (e) optimism measured with the LOT-R, (f) mood disturbance measured with the POMS, and (g) HAI measured with the HAI Checklist.

In addition to comparing means for the self-report measures (letters c through g above) Chi Square analyses were conducted on the frequency of raw scores that improved from Pretest to Posttest. The 2 x 2 Chi Square analyses tested whether the observed frequency of improved scores was significantly different in either the Treatment or Control group than what would be expected by chance. Lastly, the predicted associations between HAI and mood disturbance and perception of the prison environment were tested with the Pearson Product-Moment Correlation by combining scores across both Phase and Group.

Human-Animal Interaction

Scores on the HAI Checklist were summed. Means and standard deviations are presented in Table 7. Means were

Table 7.
Means and Standard Deviations of HAI, Classified by Group and Phase.

Measure	Treatment Group (n=24)		Control Group (n=24)	
	Pretest	Posttest	Pretest	Posttest
HAI	28.8 (10.9)	34.2 (9.1)	17.8 (8.9)	21.6 (10.9)

compared between groups and across phases with a 2 Group x 2 Phase repeated-measures ANOVA. The ANOVA resulted in a main effect for Group, $F(1, 46) = 24.1$, $p < .001$ and a main effect for Phase, $F(1, 46) = 7.9$, $p < .01$. There was no significant Group x Phase interaction, $p > .05$. The main effect for Group indicated that HAI was significantly higher in the Treatment group ($M = 31.5$) than in the Control group ($M = 19.8$). The main effect for Phase represented higher HAI scores at Posttest ($M = 27.9$) than at Pretest ($M = 23.3$).

Therapeutic Community Treatment Level

Self-reported treatment level within the therapeutic community was ranked from 1 to 5, with 1 representing the lowest level and 5 representing the highest level. Higher scores indicate

Table 8.
Means and Standard Deviations of Treatment Level, Classified by Group and Phase.

Group	Phase	
	Pretest	Posttest
Treatment (n=24)	1.8 (0.4)	3.1 (1.4)
Control (n=24)	1.8 (0.4)	2.3 (1.0)

better psychosocial functioning. Table 8 presents the treatment level means and standard deviations, classified by Group and Phase. Treatment level was compared across Group and Phase by calculating a 2 Group x 2 Phase repeated-measures ANOVA.

The analysis resulted in a significant main effect for Phase, $F(1, 44) = 33.4$, $p < .001$, and a significant Group x Phase interaction, $F(1, 44) = 6.5$, $p < .05$. With regard to the main effect for Phase, treatment level was significantly higher at Posttest (M = 2.7) than at Pretest (M = 1.8). As for the Group x Phase interaction, treatment level improved more in the Treatment group from Pretest (M = 1.8) to Posttest (M = 3.1) than it did from Pretest (M = 1.8) to Posttest (M = 2.3) in the Control group. Figure 3 illustrates the Group x Phase interaction.
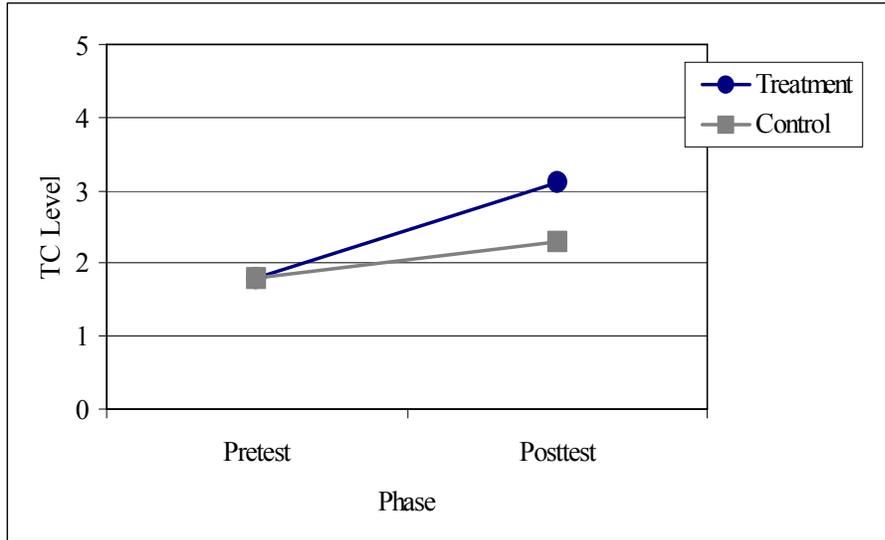
Figure 3. Significant Group x Phase interaction on treatment level in the therapeutic community (TC).

Criminal Behavior

Criminal behavior was measured via frequency of institutional infractions in individual participants' institutional files. Pretest frequencies included infractions incurred within the three months before Pretest surveys were completed. Posttest frequencies included infractions incurred after beginning the HAI program, for the Treatment group, and after completing Pretest surveys, for the Control group. Means and standard deviations of criminal infractions are presented in Table 9.

Table 9.

Means and Standard Deviations of Institutional Infractions, Classified by Group and Phase.

Group	Frequency of Institutional Infractions	
	Pretest	Posttest
Treatment (n=24)	.32 (.48)	.23 (.89)
Control (n=24)	.09 (.29)	.32 (.57)

As with other dependent measures, frequencies were compared within subjects and between subjects using a 2 Group x 2 Phase repeated-measures ANOVA on number of institutional infractions. The ANOVA resulted in no significant main effects or interaction, p's>.05. It is important to note this dependent measure had a very limited range (i.e., 1 at Pretest, 4 at Posttest).

Social Skills

Social skills were measured with the SSI. Scores were calculated on the six SSI subscales. In addition, a total social skills score was calculated by summing these individual scales. The means and standard deviations for these scales are presented in Table 10. The 2 Group x 2 Phase repeated-measures MANOVA calculated on the SSI scale scores resulted in a significant main effect for Phase, $F (6, 40) = 2.5$, $p < .05$, and a significant Group x Phase interaction, $F (6, 40) = 3.0$, $p < .05$.

Table 10.
Means and Standard Deviations of SSI Scores, Classified by Group and Phase.

Social Skills Scale	Scale Mean[1]	Treatment Group (n=24)		Control Group (n=24)	
		Pretest	Posttest	Pretest	Posttest
Emotional Expressivity	45.0 (7.7)	42.7 (10.9)	45.5 (8.9)	41.2 (8.2)	41.5 (6.5)
Emotional Sensitivity	45.7 (9.0)	44.0 (13.4)	43.1 (11.2)	41.0 (8.8)	40.3 (8.4)
Emotional Control*[a]	46.1 (8.2)	40.9 (10.8)	45.1 (9.8)	41.1 (8.0)	42.0 (6.8)
Social Expressivity	41.7 (11.9)	40.4 (14.6)	40.5 (10.8)	37.0 (9.8)	37.0 (8.0)
Social Sensitivity*[b]	42.9 (8.8)	36.8 (12.6)	39.8 (8.8)	38.0 (7.8)	35.5 (7.6)
Social Control	51.4 (10.0)	51.8 (17.7)	48.8 (11.4)	40.6 (16.0)	42.0 (12.6)
Total Social Skills	272.9 (31.9)	254.8 (64.3)	260.9 (44.8)	238.9 (49.6)	238.3 (39.1)

Note. Scale means and standard deviations are from the SSI adult normative sample.
a = main effect for Phase. b = Group x Phase interaction.
*p<.05.

ANOVAs on each subscale were calculated as a follow-up to the MANOVA main effect and interaction. The ANOVAs indicated the main effect for Phase was significant for the Emotional Control scale only, $F (1, 45) = 5.2$, $p < .05$, with Emotional Control scores increasing

significantly from Pretest (M = 41.1) to Posttest (M = 43.7).

With regard to the Group x Phase interaction, the ANOVAs indicated the interaction was significant for the Social Sensitivity scale, $F(1, 45) = 4.0$, $p < .05$, with Social Sensitivity scores increasing from Pretest (M = 35.9) to Posttest (M = 39.4) in the Treatment group and scores decreasing from Pretest (M = 38.0) to Posttest (M = 35.5) in the Control group. Figure 4 illustrates this interaction. Because the total social skills score is calculated by summing the individual scale scores, and is thus dependent upon the scale scores, total social skills was analyzed in a separate ANOVA. This test resulted in no significant main effects nor interaction, p's > .05.
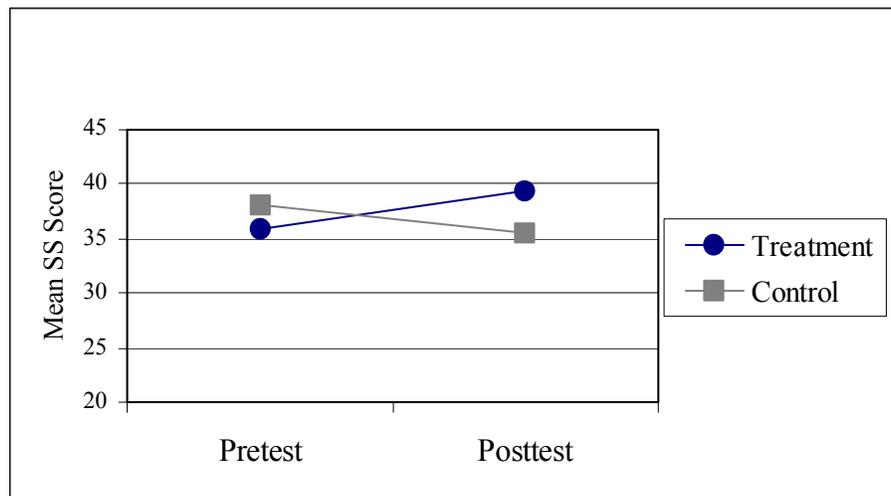
Figure 4. Group x Phase interaction on scores of the Social Sensitivity (SS) scale of the SSI.

In addition to comparing mean scores, the frequency of raw scores that improved from Pretest to Posttest was compared between the Treatment and the Control groups with a 2 x 2 Chi Square analysis. The two variables were improved scores with two levels (improved, not improved) and Group with two levels (Treatment and Control). The frequency of improved scores and Group were not significantly related, $p > .05$, for any of the SSI scales.

Perception of Prison Social Climate

Participants' perception of the social climate of the prison was measured with the CIES. Scores were calculated on the nine scales. Means and standard deviations for the individual scales are presented in Table 11 on the next page. The 2 Group x 2 Phase repeated-measures

MANOVA calculated on the CIES scales resulted in a significant main effect for Group, F (9, 38) = 3.1, $p<.01$. There was no significant main effect for Phase and no significant Group x Phase interaction, p's>.05.

Table 11.
Means and Standard Deviations of CIES Scores, Classified by Group and Phase.

CIES-S Scales	Scale Mean[1]	Treatment Group (n=24)		Control Group (n=24)	
		Pretest	Posttest	Pretest	Posttest
Involvement	1.4 (0.6)	1.6 (1.2)	1.5 (1.3)	1.3 (1.2)	0.8 (0.7)
Support**	1.1 (0.5)	1.8 (1.2)	1.4 (1.2)	1.1 (1.2)	0.8 (0.7)
Expressiveness*	1.1 (1.7)	1.4 (1.2)	1.3 (1.2)	0.9 (1.1)	0.7 (0.8)
Autonomy***	1.1 (0.8)	2.5 (1.1)	2.6 (0.9)	1.7 (0.8)	1.5 (1.1)
Practical Orientation***	1.7 (0.7)	3.0 (1.0)	3.1 (0.9)	1.9 (1.6)	1.7 (1.6)
Personal Problem Orientation***	1.4 (0.6)	2.8 (1.3)	2.3 (1.2)	1.7 (1.1)	1.3 (0.9)
Order and Organization*	1.8 (0.9)	2.9 (1.1)	2.8 (0.9)	2.4 (1.0)	2.1 (1.0)
Clarity	1.2 (0.6)	1.7 (1.3)	1.3 (1.0)	1.4 (0.9)	1.4 (0.8)
Staff Control	3.2 (0.5)	2.4 (1.0)	2.6 (0.9)	2.4 (0.9)	3.0 (0.8)

Note. Scale means and standard deviations are from the CIES-S male adult resident normative sample.
P-values reflect main effects for Group.
*p<.05. **p<.01. ***p<.001.

ANOVAs on each scale were conducted as follow-up tests to the MANOVA main effect for Group. The ANOVAs indicated scores were significantly higher in the Treatment group than the Control group for the following scales: Support, F (1, 46) = 8.3, $p < .01$; Expressiveness, F (1, 46) = 5.3, $p < .05$; Autonomy, F (1, 46) = 18.8, $p < .001$; Practical Orientation, F (1, 46) = 13.3, $p < .001$; Personal Problem Orientation, F (1, 46) = 14.7, $p < .001$; and Order and Organization, F (1, 46) = 4.9, $p < .05$.

As with the analyses on social skills, a 2 x 2 Chi Square analysis was conducted to evaluate whether the frequency of raw scores that improved from Pretest to Posttest was significantly different in either group than what would be expected due to chance. Again, these two variables were not related for any of the scales, p's > .05.

To test the relationship between HAI and perceptions of the prison environment,

Treatment and Control group scores were combine and correlation coefficients were computed between the average CIES scale scores (averaging Pretest and Posttest scores) and the HAI checklist scores (averaging Pretest and Posttest scores). The results indicated a significant positive correlation for the following scales:

Support, $r = .36$, $p < .01$; Autonomy, $r = .36$,
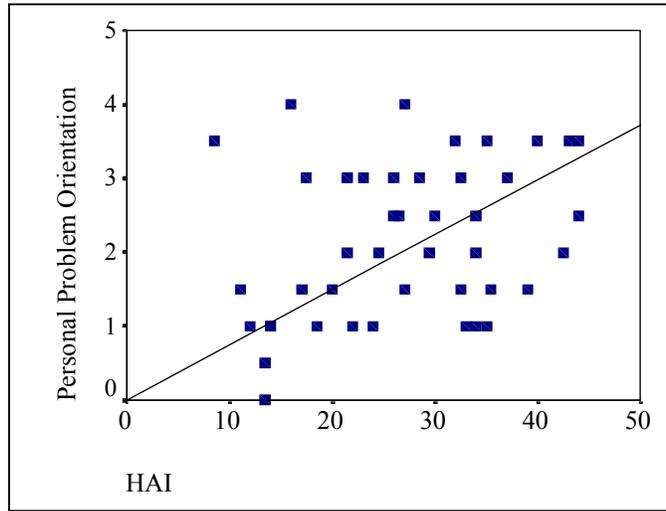
Figure 5. Correlation between average HAI scores and average Personal Problem Orientation scores.

$p < .01$; Practical Orientation, $r = .45$, $p < .001$; and Personal Problem Orientation, $r = .41$, $p <$

.01. As an example, Figure 5 illustrates the correlation between scores on the HAI and the

Personal Problem Orientation scale. These results signify that higher more positive perceptions

of the prison environment, with regard to these specific scales, are associated with increased

HAI.

Table 12.
Means and Standard Deviations of LOT-R Scores, Classified by Group and Phase.

	Scale	Treatment Group (n=24)		Control Group (n=24)	
Measure	Mean[1]	Pretest	Posttest	Pretest	Posttest
LOT-R*	14.3 (4.3)	15.1 (4.3)	15.7 (3.6)	12.9 (3.8)	13.7 (2.9)

Note. This is the mean and standard deviation from the LOT-R normative college sample.

P-value reflects a main effect for Group.

*p<.05.

Optimism

Optimism was measured with scores on the LOT-R. The means and standard deviations

for this measure are presented in Table 12. A 2 Group x 2 Phase repeated-measures ANOVA

calculated on LOT-R scores resulted in a significant main effect for Group, $F(1, 46) = 4.5$, $p<.05$. Specifically, scores were significantly higher in the Treatment group (M = 15.4) than the Control group (M = 13.3). Similar to analyses on the CIES, a 2 x 2 chi square statistic was calculated to determine whether the frequency of raw scores that improved from Pretest to Posttest was related to the variable Group. The test indicated the variables were not related, $p>.05$.

Table 13.
Means and Standard Deviations of POMS Scores, Classified by Group and Phase.

Mood Subscale	Scale Mean[1]	Treatment Group (n=24)		Control Group (n=24)	
		Pretest	Posttest	Pretest	Posttest
Tension-Anxiety	6.4 (3.7)	3.8 (2.8)	4.9 (3.1)	4.3 (3.8)	4.2 (3.2)
Depression-Dejection	4.0 (4.1)	4.3 (3.4)	3.3 (3.0)	4.2 (3.6)	4.7 (3.3)
Anger-Hostility	4.5 (4.4)	4.4 (3.7)	4.3 (3.9)	4.4 (4.2)	6.7 (3.3)
Vigor**	11.6 (4.2)	13.2 (5.0)	10.7 (3.4)	7.8 (6.1)	7.1 (5.4)
Fatigue*	7.4 (4.4)	5.5 (3.6)	4.6 (4.0)	6.1 (6.2)	4.7 (3.5)
Confusion-Bewilderment	5.0 (3.3)	4.7 (2.6)	4.8 (2.8)	4.1 (2.8)	4.0 (3.4)
Total Mood Disturbance		9.5 (12.5)	11.2 (12.3)	15.4 (18.5)	14.1 (13.2)

Note. These are the means and standard deviations from the POMS normative college sample.
P-values reflect main effects for Phase.
*p<.05. **p<.01.

Mood

Mood scores from the POMS were calculated resulting in a total mood disturbance score and six individual scale scores. Means and standard deviations for these scales are presented in Table 13. The repeated-measures MANOVA calculated on the POMS scale scores resulted in a significant main effect for Phase, $F(6, 41), = 4.02, p<.01$. There was no significant main effect for Group and no significant Group x Phase interaction. ANOVAs on each scale were conducted as follow-up tests to the MANOVA main effect for Phase.

The ANOVAs calculated on the Vigor-Activity, F (1, 46) = 8.07, p<.01, and Fatigue-

Inertia F (1, 46) = 4.308, p<.05, scores were statistically significant. Specifically, Vigor-Activity

scores decreased from Pretest (M = 10.5) to Posttest (M = 8.9) and Fatigue-Inertia scores also

decreased from Pretest (M = 5.8) to Posttest (M = 4.7). Because the total mood disturbance

score is calculated by summing the individual scale scores, and is thus dependent upon the scale

scores, total mood disturbance was analyzed in a separate 2 x 2 ANOVA. This test resulted in no

significant main effects and the Group x Phase interaction was not significant, p's>.05.

The frequencies of raw individual scale and total mood disturbance scores that improved

from Pretest to Posttest were analyzed with a 2 x 2 Chi Square analysis, similar to SSI, CIES and

LOT-R analysis. Table 14 presents the frequency of scores that did and did not improve,

classified by Group. Results indicated the observed frequency of improved scores was

significantly different than what would be expected by chance between the two groups,

indicating that the variables improved score and Group were significantly related. This finding

was specific to the Depression-Dejection subscale, X^2 (1, N = 48) = 4.3, p < .05, Cramer's V =

.26.

Table 14.
Frequency of Improved POMS Scores from Pretest to Posttest, Classified by Group.

	Treatment Group (n=24)		Control Group (n=24)	
	Improved	Not Improved	Improved	Not Improved
Mood Subscale	n	n	n	n
Tension-Anxiety	7	17	7	17
Depression-Dejection*	13	11	6	18
Anger-Hostility	11	13	9	15
Vigor	5	19	7	17
Fatigue	12	12	8	16
Confusion-Bewilderment	9	15	8	16
Total Mood Disturbance	11	13	9	15

Note. P-value reflects significant relationship, as determined by the chi square statistic.
*p<.05.

As is illustrated in Figure 6, the observed frequencies of participants whose Depression-Dejection raw scores improved from Pretest to Posttest was significantly different than what is expected by chance, with frequencies in the Treatment group (n = 13) greater than in the Control group (n = 6). There were no significant differences for the remaining scales, *p*'s > .05 or the total mood disturbance scale.

Finally with regard to mood, the relationship between total mood disturbance and HAI was analyzed with the Pearson Product-Moment Correlation,
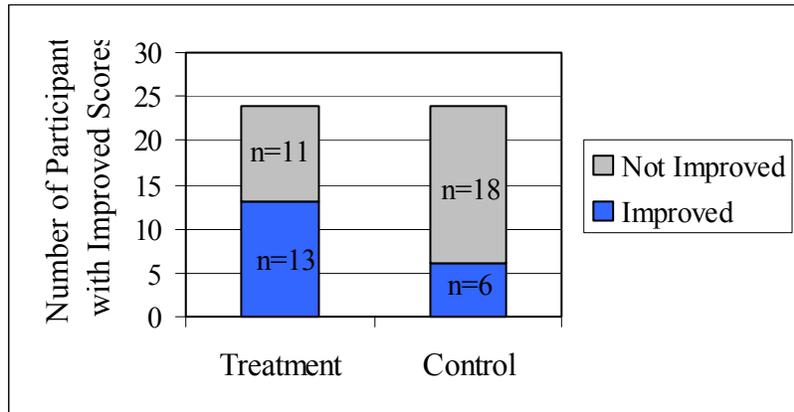
Figure 6. Frequency of improved scores on the Depression-Dejection scale of the POMS, classified by Group.

across Phase and Group. Combining both groups of participants, average mood disturbance scores (averaging Pretest and Posttest scores) were not significantly correlated with average HAI scores.

Within-Subject Analysis of Inmate Journals

Each of the six inmates who participated in the journals portion of the research completed the POMS and HAI Checklist for 14 consecutive days. Participants' daily HAI and POMS scores were plotted in time-series graphs for visual inspection of the data. Appendix L contains a time-series graph for each participant. As an example, Figure 7 on the following page depicts the data from an individual participant in the Treatment group. The x-axis depicts individual days and the y-axis depicts scores on the dependent measures. Each data point represents reported HAI (in blue) or mood disturbance (in gray) for one day. Data points 1 through 7 represent the Pretest phase of the study; points 8 through 14 represent the Posttest phase.
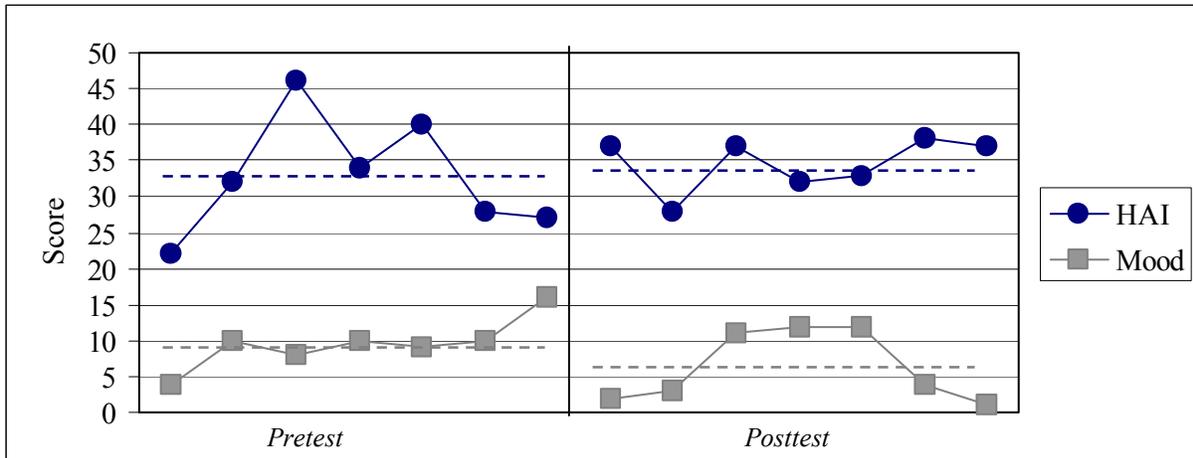
Figure 7. Journal scores for an individual participant of the Treatment group.

As Figure 7 illustrates, there is not a discernable difference in reported mood disturbance between phases. While the mean appears to have decreased slightly from Pretest (M = 9.6) to Posttest (M = 6.4), daily mood scores are variable and these means do not seem to represent a stable decrease in mood disturbance. Likewise, there is not a distinct change in HAI Checklist scores between Pretest (M = 32.7) and Posttest (M = 34.6). This graphed data is representative of all participants in the Treatment group (n = 3).

Figure 8 on the next page depicts the daily journal scores from an individual participant in the Control group, and is representative of all participants in that group (n = 3). As the figure illustrates, HAI scores were relatively stable from Pretest (M = 9.1) to Posttest (M = 8.1). Similar to the data depicted in Figure 7, Figure 8 illustrates a slight decrease in mood disturbance scores from Pretest (M = 3.1) to Posttest (M = 1.3).
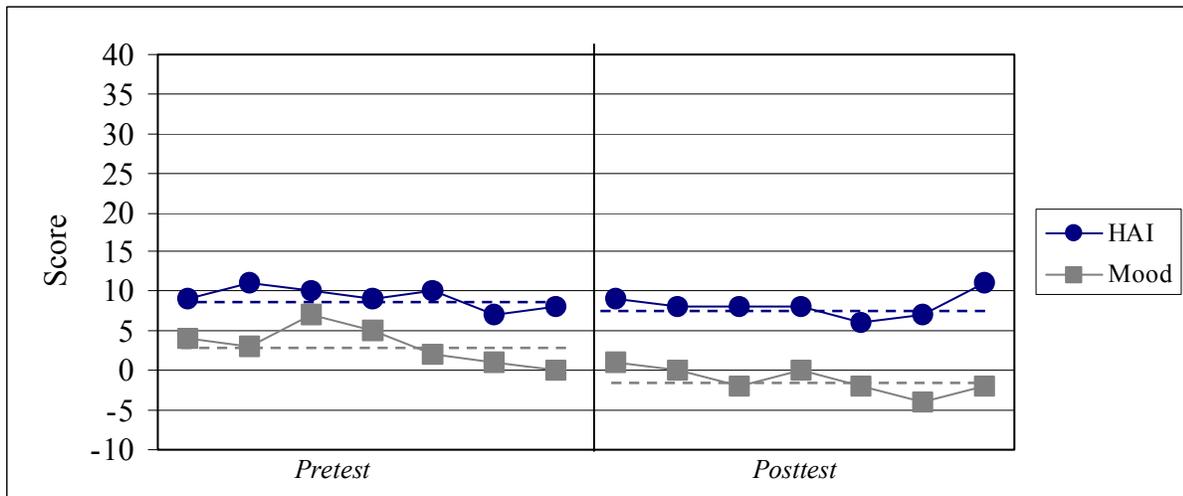
Figure 8. Journal scores for an individual participant of the Control group.

These graphs do illustrate that the Treatment group had higher HAI scores than the Control group, regardless of phase. Variability in scores is an additional, yet unpredicted difference between the Treatment and Control group. Contrasting the Treatment group participant's data in Figure 7 with the Control group participant's data in Figure 8, scores from the Treatment group participant are more variable than the Control group participant's data, with regard to both HAI and mood disturbance. In addition to inspecting time-series graphs for differences between Groups and Phases, the present study examined the relationship between daily paired POMS and HAI Checklist scores by visually inspecting scatter plots of the data. A scatter plot for each participant is located in
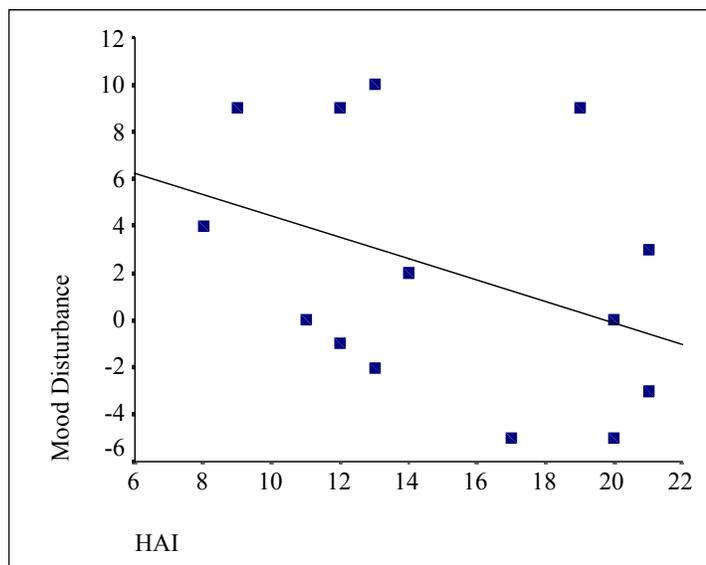
Figure 9. Scatter plot of daily HAI and mood disturbance scores for a participant in the Treatment group.

Appendix M.

Figure 9 on the previous page presents the data from an individual participant in the Treatment group. This graph is representative for all participants in the Treatment group (n=3). As the figure illustrates, results suggest a negative relationship between HAI and mood disturbance for participants in the Treatment group. Although the fit line was not as steep for one participant, there is a discernable negative slope to each participant's data.

In contrast to this finding, results suggest a positive relationship between HAI and mood disturbance for participants in the Control group. Figure 10 illustrates this result from an individual participant in the Control group. This graph is representative of all participants in the Control group (n=3). As with the Treatment group participants, the slope of the line differs among participants but there is a noticeable positive slope for each participant. In addition to these measures, participants were given space to write comments on the HAI program
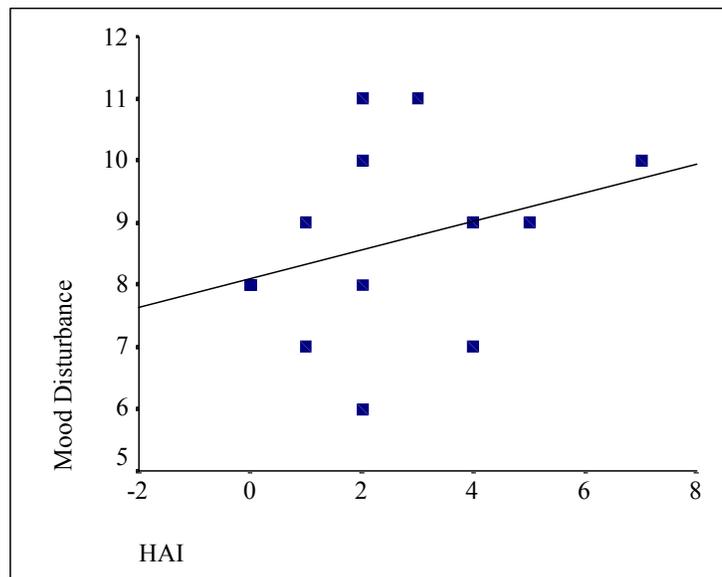
Figure 10. Scatter plot of daily HAI and mood disturbance scores for a participant in the Control group.

or the research. These comments are located in Appendix N.

Focus Group

General themes from the focus group are listed here. More specific participant reports are located in Appendix K. When asked if the HAI program had affected them, participants reported it had. They reported the following perceived outcomes: (a) stress reduction, (b) reduced

homesickness, (c) more responsible, (d) humbleness, (e) patience, and (f) increased compliance with therapeutic community policies. Participants communicated they knew the general purpose of the study and all participants indicated research investigating forensic HAI programs is worthwhile.

Discussion

This quasi-experimental field study tested the psychosocial effects of a forensic HAI program on prison inmates. Validity checks, including scale intercorrelations and visual inspection of the data, indicate self-report measures were not completed haphazardly and that scores likely represent a true sample of the measures' intended outcome. The study assessed the impact of the HAI program with both between-subject and within-subject methods and analyses. Overall, the general prediction that participation in the HAI program would result in psychosocial changes for inmates was partially supported. Most importantly, participation in the HAI program was associated with increased treatment progress in the therapeutic community and improvement or maintenance of social sensitivity. In addition to these findings, the results on mood, while not necessarily consistent with what was predicted, provide substance for future research. Conclusions pertaining to the two approaches (i.e., between-subject and within-subject) are discussed separately below.

Conclusions from Between-Subject Comparisons

Human-animal interaction. Although it was not specifically predicted, there was an underlying assumption that there would be a significant Group x Phase interaction on HAI. That is, it was assumed that HAI would increase significantly from Pretest to Posttest in the Treatment group but not in the Control group, or at least not to as great an extent. Based on the analyses, this underlying assumption was not met. There was a main effect for Group, indicating that

participants in the Treatment group reported more HAI than the Control group, and a main effect for Phase, indicating participants reported more HAI at Posttest than Pretest. However, this increase from Pretest to Posttest was not significantly different between the two groups.

This suggests the Treatment group participants interacted with the dogs prior to officially working in the HAI program. It is also possible, although inmates and staff reported the Treatment group participants had not begun working in the HAI program until after the Pretest assessment, that inmates had unofficially begun working with the inmates and dogs in the program prior to the Pretest assesment. Thus, unfortunately, the present research does not represent a true Pre-Post comparison with regard to HAI.

A second possibility is that there was a ceiling effect on the self-report measures, meaning scores were elevated at Pretest and thus could not increase at Posttest. Similar to the pilot study (Suthers-McCabe et al., 2005), mean scores on all measures were within normal limits at Pretest. Thus, it may not have been possible for scores to change significantly in the predicted direction.

Nonetheless, this is a surprising finding with significant implications for the remaining results of the study. Because this basic assumption was not supported, it stands to reason that the associated hypotheses also would not be supported. That was largely the case, with the exception of the dependent measures therapeutic community treatment level and social skills.

Treatment level. The comparison of treatment level within the therapeutic community across Group and Phase revealed that while both groups reported an increase in treatment level from Pretest to Posttest, the increase was significantly greater for the Treatment group. This is a substantial finding, as it suggests participation in the HAI program beneficially impacts the treatment already in place at the prison. This is consistent with research on animal-assisted

therapy in which the presence of an animal has been found to facilitate physical, occupational or psychological therapies already taking place (e.g., Fick, 1993).

The present research took place within a therapeutic community. Participation in therapeutic communities results in beneficial outcomes for inmates. Outcomes include factors associated with prison management, such as lower rates of institutional infractions (e.g., Dietz, et al., 2003), rule violations, and failed drug screens (e.g., Prendergast, et al., 2001). Participation in therapeutic communities is also associated more distal outcomes, including lower recidivism (e.g., Liption et al., 2002).

With regard to forensic programs, the impact of HAI programs on prison-based treatment has not been studied. Moneymaker and Strimple (1991) assessed the impact of a forensic HAI program on participation in a work-release program. They found that 95% of participating inmates chose not to be involved in work-release, indicating a potential negative outcome of the program. The present findings of increased success in the prison's treatment are inconsistent with this finding. However, participants in the current study were required to maintain their responsibilities in the therapeutic community in order to participate in the HAI program. Thus there was no choice, as there was in the program evaluated by Moneymaker and Strimple (1991).

Because the dependent measure was simply a number to signify treatment level, it remains unclear what this change in treatment level represents. Inmates advance to the next level of the therapeutic community when treatment staff at the facility judge them to have met the necessary requirements, a somewhat subjective procedure. Thus, advancement through treatment levels could have been increased in the Treatment group because they met the criteria or because treatment staff perceived them to have met the criteria sooner. It is possible being in the HAI program changes *others'* perceptions of the *inmates*, an important hypothesis the present

research did not study.

It is also important to consider this potential benefit of the program in light of the main effects for Group. That is, this finding could be due to sampling bias and thus the result of systematic differences in age, optimism, and perception of prison environment between the Treatment and Control groups independent of the HAI program. Nonetheless it is a promising finding and should be studied further by controlling for this sampling limitation. Should such a finding be replicated with a more controlled design, research would be necessary to explain how involvement in an HAI program facilitates treatment progress.

Participants in the focus group reported the HAI program "helps you go through it [the therapeutic community]" because it teaches responsibility and because involved inmates are monitored more closely by correctional staff, forcing them to adhere to the policies. Both of these factors, an increased sense of responsibility and increased treatment compliance, could facilitate treatment progress. A third possibility is the observed effect on social sensitivity. Perhaps improved social sensitivity facilitates treatment progress. Finally, it is possible participation in the HAI program impacts others' perceptions of the inmates, which causes therapeutic staff to advance those inmates at a higher rate than inmates not in the program.

The present research did not assess the correctional or therapeutic staff's perceptions of the inmates as a result of the HAI program. However, throughout the research, members of the prison staff often reported to the researchers their positive impressions of the program and its beneficial impact on the inmates involved. People's perceptions of others as a function of HAI is an important variable to assess in general, but may be particularly important with regard to inmates who are perceived negatively by most members of society (Haney, 1997). Furthermore, a change in perceptions of inmates as a result of being observed interacting with an animal would

likely affect social interactions between staff and inmates, and subsequently, affect personal attributes within the inmates, including mood, optimism and perception of the prison environment.

Institutional infractions. The results on criminal infractions indicate criminal behavior did not change as a result of participation in the HAI program. However, analyses were hindered by the small number of infractions and thus these findings do not lend themselves for inferences regarding the impact of such programs on criminal behavior. Incidentally, the small number of institutional infractions is consistent with research on the efficacy of therapeutic communities, which suggests there is less institutional disorder within therapeutic communities than in the general population of the same prison (Dietz et al., 2003). Beyond the low frequency of documented infractions and variability among inmates impeding statistical analyses, criminal behavior may not be an appropriate dependent measure.

One study has previously investigated the effect of a prison-based HAI program on criminal behavior (Katcher et al., 1989) and resulted in no significant differences. With regard to recidivism, Moneymaker and Strimple (1991) reported a reduced recidivism rate as a result of a prison-based HAI program. However statistics were not calculated to compare their reported rate with the typical rate for that institution. Thus the findings are questionable. With regard to investigating the efficacy of correctional programs in general, forensic psychologists suggest recidivism rate is not an appropriate measure because it is affected by various other factors.

Criminal behavior while incarcerated (i.e., institutional infractions) is likely also facilitated by various contributing variables and thus may not be an appropriate measure of the impact of an HAI program. This broaches an important topic not yet researched in the HAI literature, the temporal quality of HAI outcomes. That is, are the outcomes of HAI and

participation in HAI programs (a) transient, short-lived changes limited to the moments during and directly following the interaction with an animal or (b) enduring changes that extend outside of HAI and affect more distal variables. The answer may depend on the outcome being measured. This topic is discussed further in describing the current study's results regarding mood disturbance.

Social skills. It was predicted participants in the Treatment group would report a greater improvement in social skills from Pretest to Posttest than in the Control group. Such a finding would provide support for the HAI program's efficacy in facilitating inmate social skills and would be an extension of the HAI literature, which suggests improved social behavior is an outcome of animal-assisted therapy (e.g., Corson et al., 1977; Salmon et al., 1982). This hypothesis was largely unsupported, with a frequency of improved scores no greater than that expected by chance in both groups and mostly nonsignificant differences in mean scores. However, results indicated that scores in one specific area of social skills, social sensitivity, did improve for the Treatment group from Pretest to Posttest, while the Control group scores decreased on this variable.

Social sensitivity, as it is measured by the SSI, is defined as the ability to interpret verbal communication from others and sensitivity to norms governing appropriate social behavior (Riggio & Carney, 2003). This finding suggests that participants may have improved at this skill as a result of working in the HAI program. The broader implication of this finding is that such programs may have rehabilitative effects for prison inmates, by helping them to become more socially sensitive. Such an impact would be welcomed in the criminal justice system, as social-skill development is an integral part of many rehabilitation programs in correctional settings (Pearson et al., 2002). The existing literature on the impact of incarceration suggests the effect

found here is more likely due to the program preventing inmates from declining in social sensitivity, rather than improving this characteristic.

Although there is no research to date on the effect of incarceration on social sensitivity specifically, experts in the study of prisonization suggest adjustment to incarceration includes achieving "total emotional control, heightened levels of suspicion and guardedness, and mastery over the intricacies of interpersonal deceits" (Haney, 1997, p. 533). This adjustment, in addition to adopting the inmate code as described earlier, does not lend itself to social sensitivity as defined by the SSI. Thus, it is possible this construct, social sensitivity, naturally lessens with incarceration and that participating in the HAI program acted as a buffer to prevent the process from occurring within the Treatment group participants.

With regard to existing literature, there have been no studies of forensic HAI programs and social skills in general or social sensitivity in particular. However, when comparing pet-owners and non pet-owners, Hyde and colleagues (1983) found that pet-owners were higher than non-pet owners in social sensitivity, measured with Hogan's Empathy Scale. One explanation of such a finding is that HAI affects social sensitivity. Although not measured in the present research, empathy has been indicated in previous HAI research. Furthermore, the SSI correlates significantly with scales measuring empathy (Riggio, Tucker, & Coffaro, 1989). It is possible social sensitivity changes via an increase in empathy. Unfortunately, the lack of a significant Group x Phase interaction on HAI, as described above, makes it difficult to explain the present findings with the effect of HAI. However, participation in the present HAI program results in other changes for the inmates that could impact social sensitivity.

In addition to studying HAI, it may also be important to study human-*human* interaction to determine if the amount and type of social contact an inmate experiences changes as a result

of the HAI program. Inmates work on a team with other inmates to care for and train the dogs, making an increase in social interaction between inmates inherent. This act of working on a team alone may affect social skills. Research on cooperative learning with delinquent adolescents has resulted in increases in communication skills, even when communication skills are not directly instructed (Rutherford, Mathur, & Quinn, 1998). Inmates also report other inmates not in the program approach them to interact with the animals, thus increasing social interaction. In addition, participants reported increased interactions with staff, which further increases the amount of social interaction they experience.

It is important to note that the social subscales of the SSI – social expressivity, social sensitivity, and social control –correlate significantly with the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964; Riggio, Watring & Throckmorton, 1993), indicating the items of these subscales appear to contain some elements of social desirability. Thus, the Group x Phase interaction for social sensitivity may indicate a change in social desirability rather than a change in social skills. However, although the other social scales of the SSI correlate positively with social desirability, social sensitivity correlates negatively, meaning higher social sensitivity is associated with lower social desirability scores (Riggio et al., 1993). A more likely confound is the possibility of participants' attempting to please the researchers by responding systematically to support the hypothesis they think is under investigation.

Although specific research hypotheses were not revealed to them, it is likely the participants knew the general hypothesis was to determine if the program had a positive impact on them. Furthermore, participants in the focus group reported overwhelmingly the program does impact them positively. However, they also seem to have an inherent interest in the research finding a positive impact of the program, as any negative results could threaten the future of their

program specifically. Given these factors and the face validity of the measures used, it is important to consider the possibility of response bias with regard to participants trying to make it look like the program had a positive impact on them. However, if that were the case, the results would have likely been similar for all surveys administered. Social sensitivity was the *only* scale of the SSI, and of all the surveys for that matter, that resulted in a significant Group x Phase interaction, and thus it is not likely that it was due to this potential confound.

Statistical regression (Campbell & Stanley, 1963) is a second possible artifact. Looking more closely at the mean scores for social sensitivity, one can see the mean at Pretest was lower in the Treatment group than the Control group. The increased scores in the Treatment group and decreased scores in the Control group at Posttest could reflect natural regression toward the mean rather than actual change resulting from the HAI program. However, this confound is more likely when scores are extreme (Campbell & Stanley, 1963). As with the other self-report measures, social sensitivity scores were in the normal range, regardless of group or phase. In that regard, this statistically significant interaction may not represent clinically significant changes in inmate functioning.

Nonetheless, future research should investigate the relationship between HAI program participation and social sensitivity. If HAI programs do affect inmate social sensitivity, it is important to understand how. Increased social interaction is one possibility the present research did not evaluate. A second possibility is that social sensitivity is affected by an underlying change in empathy. Although the present research did not measure this variable, it is related to social skills and social sensitivity specifically (Riggio et al., 1993). Empathy is also discussed with regard to the findings on mood.

In addition to the Group x Phase interaction, a main effect for Phase on the Emotional

Control scale indicated Emotional Control scores increased significantly from Pretest to Posttest across both Treatment and Control groups. The Emotional Control scale of the SSI measures one's ability to control and regulate emotional and nonverbal displays, including conveying emotions on cue and hiding feelings behind an assumed "mask" (Riggio & Carney, 2003). This increase in emotional control across time is consistent with literature already reviewed on the detrimental effects of prisonization. However, in lieu of the previous discussion regarding social sensitivity, and the hypothesis that involvement in the HAI program buffered its natural decline for participants in the Treatment group, one might ask why such a buffering effect did not occur for Emotional Control. Negative interactions with correctional staff may be one possible explanation.

Although focus group participants reported social interactions as a result of the HAI program were mostly positive overall, they believed their involvement in the program sometimes facilitated negative interactions with correctional staff. Treatment group participants reported some correctional staff watch them more closely than other inmates and "correct" them unfairly for minor disobedience, an unintended outcome that may help explain the finding. Focus group participants reported that because they are watched more closely, they have to control their anger or frustration at staff so as not to jeopardize losing the HAI program. It must be noted that all social skills scores, regardless of Group or Phase, were within the normal range of functioning. Thus, the statistically significant findings discussed here do not necessarily reflect a clinically significant change in functioning.

Perception of the prison social climate. It was predicted participants in the Treatment group would report a greater increase in positive perceptions of the prison environment, indicated by increased scores on the CIES from Pretest to Posttest than the Control group. This

hypothesis was not supported for any of the CIES scales. However, analyses did indicate participants' scores in the Treatment group were significantly higher than those in the Control group, regardless of Phase. This was true for all scales of the CIES except three (i.e., Involvement, Clarity, and Staff Control).

These findings indicate participants in the Treatment group perceived (a) more encouragement to be helpful and supportive of others and to have received more support, (b) more encouragement to express their feelings, (c) more encouragement to take initiative and leadership, (d) the environment as oriented towards preparing them for release, (e) more encouragement to be concerned with and understand personal problems and feelings, and (f) the environment to put a greater emphasis on order and organization. This Group effect could be explained by effects of the HAI program that occurred prior to the Pretest phase of the research, or sampling bias in which inmates are selected for participation in the HAI program based on their perceptions of the prison environment and associated attitudes or behavior.

It was also predicted that HAI would be positively associated with positive perceptions of the prison environment. This hypothesis was supported for several of the CIES subscales. Specifically, these results suggest increased HAI is associated with a greater perception of support, encouragement to be autonomous, preparation for release, and encouragement to understand personal problems and feelings. Given the correlational nature of the data, it is unclear whether (a) HAI leads to changes in the inmates' perceptions, (b) inmates with more positive perceptions seek out more HAI, or (c) the relationship comes about via some third variable.

Optimism. It was predicted participants in the Treatment group would report a greater improvement in optimism, indicated by increased scores on the LOT-R, from Pretest to Posttest

than the Control group. This hypothesis was not supported; mean scores and frequency of improved scores did not differ significantly in the Treatment and Control groups. While the lack of a Group x Phase interaction on HAI may explain this finding, it is also important to examine the appropriateness of this particular dependent measure.

The LOT-R is designed to measure dispositional optimism, defined as the tendency to believe one will generally experience good versus bad outcomes in life (Scheier & Carver, 1985). Although it has been adapted to measure daily variability in state optimism (Affleck et al., 2001), it may not be appropriate in its original form, as it was used here, to detect small changes in positive outlook. Even further, the dispositional or stable nature of optimism may not be subject to change from intervention such as the HAI program studied here. Therefore, while inmate outlook or positive thinking may change as the result of an HAI program, one's *disposition* as optimistic versus pessimistic might not.

It is important to note that, similar to scores on the CIES, optimism scores were higher in the Treatment group than the Control group, across Phases. This finding is similar to correlational studies on pet-ownership, suggesting pet-ownership is associated with higher psychological states such as self-esteem and personal control (e.g., Breier, 2001). However, just as with those studies, inferences cannot be made regarding the reason for the difference between the groups. It is possible participants in the Treatment group began experiencing the impact on optimism prior to the Pretest phase of the research and thus the predicted impact of the HAI program did occur but was not detected by the dependent measures. Selection bias may be an alternative explanation. Because participants were not randomly assigned to groups but were predetermined by correctional staff, it may be that optimism was systematically, though not covertly, used to select inmates for the HAI program. Perhaps optimistic inmates were perceived

as more desirable or appropriate for the program.

    Mood. As with the other self-report data, analyses on POMS scores suggests the Treatment group, compared to the Control group, did not show greater improvements in mood from Pretest to Posttest, as was predicted. However, the more liberal measure of mood change in this study, comparing the frequency of participants whose mood improved from Pretest to Posttest across Group, suggests depressed mood of participants in the Treatment group did improve to a greater extent than in the Control group. It should be noted that discriminant validity of the individual POMS scales is questionable, and it is suggested that the combined scores of the measure, the total mood disturbance score, should be used as a general measure of mood disturbance rather than making inferences from the individual scale scores (Reddon, Marceau, & Holden, 1985). Furthermore, this statistically significant difference on the Depression-Dejection scale does not necessarily equate to clinically significant outcomes for inmate management or rehabilitation. Similar to social skills scores, all mood disturbance scores were in the normal range of functioning in both phases of the study.

    This is consistent with results from the pilot study, which suggest the process of selecting well-adjusted inmates to the HAI program creates a ceiling effect with regard to scores on psychological measures (Suthers-McCabe et al., 2005). However, given this potential ceiling effect, the significant difference on Depression-Dejection is a substantial finding and extends the current literature on HAI which suggest HAI programs and pet-ownership are associated with improvements in mood or mood disorders, namely depression (e.g., Garrity et al., 1987; Siegel et al., 1999).

    Finally with regard to mood, it was predicted there would be a significant negative correlation between HAI and total mood disturbance. This hypothesis was not supported; the two

variables were not significantly related. Of the individual mood scales, only the Vigorous-Activity scale correlated significantly with HAI, indicating higher levels of energy and activity were associated with increased HAI. Although there was no significant correlation between total mood disturbance and HAI, the dependent measures were not sensitive to treatment effects.

The inconsistency in findings on mood disturbance may be explained by the generally variable nature of mood as a construct. The POMS is a measure of transient fluctuating mood state (McNair et al., 1971). Mood can fluctuate from moment-to-moment and day-to-day, being affected by numerous environmental stimuli and events, but tends to fluctuate around a mean level that varies across individuals (Diener & Larsen, 1993). Due to the variability of mood, some mood disturbance scores actually increased from Pretest to Posttest while some decreased. That variability may have hindered the possibility of finding a significant increase in mean mood disturbance scores.

Furthermore, because of the transient nature of mood, it is possible HAI impacts mood in the present moment but does not override all other experiences throughout one's day, week or month that also impact mood. For example, an individual who has experienced a stressful week and subsequently reports a negative mood may feel short-term improved mood while interacting with an animal. However, when asked to reflect on their mood at the end of the week, they may still report a generally poor mood. From the present results, it seems overall mood is not significantly improved as a result of HAI. The second, within-subject approach to the current research involved an investigation of the relationship between HAI and mood at a more proximal level, measuring these variables daily for several consecutive days.

Conclusions from Within-Subject Comparisons on Journal Data

This portion of the research aimed to examine the daily impact of participation in the

HAI program and HAI in general on mood disturbance, using a single-subject repeated-measures approach. It was predicted participants in the Treatment group would report a greater decrease in mood disturbance from Pretest to Posttest than participants in the Control group. This hypothesis was not supported; there was not a discernable decrease in mood disturbance within the Treatment group as a function of the HAI program. Although the design and method of analysis are different, the findings of this within-subject approach are consistent with those found in the between-subject approach. That is, the Treatment group reported more daily HAI than the Control group regardless of Phase, similar to the main effect for Group on HAI scores. There was also a slight decrease in daily mood disturbance scores from Pretest to Posttest for both groups. This is similar to the main effect for Phase on POMS scores found with between-subject analyses.

Finally, also consistent with between-subject comparisons, participants in the Treatment group did not report a visible increase in HAI from Pretest to Posttest. Therefore, although the present data do not support a beneficial impact of the HAI program on inmate mood, they also cannot rule out an effect with regard to HAI. Again, this finding is likely the result of Treatment group participants interacting with the dogs and possibly acting as trainers prior to actually beginning the HAI program. Thus, any appreciable change that may have occurred because of the program may have already taken place at Pretest and thus the research may not have captured a true Pretest-Posttest comparison.

The second hypothesis predicted there would be a significant negative relationship between the two dependent measures, such that an increase in HAI scores would be associated with a decrease in mood disturbance scores. This hypothesis was not supported for all participants. While the graphed data do suggest a negative relationship between HAI and mood

disturbance for Treatment group participants, it suggests a positive relationship between these variables for Control participants. This difference likely reflects the differential impact of low versus high levels of HAI. The data suggest that for those who typically experience a greater amount of HAI, HAI is associated with decreased mood disturbance. Conversely, the data indicate that for participants who typically experienced lower levels of HAI, HAI is associated with increased mood disturbance.

This was an unexpected result that should be studied further. While the negative association was predicted, based on literature suggesting HAI results in improved psychological health and well-being (e.g., Fine, 2000), the positive association among Control participants was not. Remembering the data only represent an association between the two variables, not cause-and-effect, such a finding could represent participants' tendency to seek out HAI when distressed, thereby using HAI as a coping mechanism. One participant supported this explanation during the focus group by reporting he copes with his personal anxiety by interacting with the dogs.

Although there is not yet a programmatic line of research on HAI and coping, researchers have begun to explore HAI as a coping strategy. Guerney (1991) found that interacting with a pet was among the most common coping strategy for latchkey children when home alone, second only to watching television. As to how HAI aids coping, there are a number of ways. HAI may help inmates cope with mood disturbance by providing social support, by facilitating relaxation, or by providing a distraction from the mood disturbance and its source, all of which are coping strategies (Thoits, 1986).

Another explanation could be that participants experienced increased mood disturbance as a result of HAI. Reports from inmates and staff do not support this explanation. However, it is

possible that HAI results in a change in mood the inmates are unaware of. Although not studied here, previous research found that HAI was related to increased empathy (Hyde et al., 1983; Poresky, 1996). Perhaps an increase in empathy causes one to experience more emotion in general, including negative emotion. However, if that were the case, one would expect the Treatment group to experience this change in empathy to the same extent or greater. The results do not support this argument. Perhaps the difference in the direction of the relationship for Treatment and Control group participants represents the difference between (a) approaching generic HAI when distressed as a means of coping and (b) experiencing distress relief as a result of HAI with a specific animal one has a relationship with. It is conceivable that HAI results in greater outcomes related to social support for Treatment group participants because they experience greater, more consistent HAI with the same animal, and thus a human-animal *relationship*.

Limitations

The findings and implications of the present research must be considered in light of several limitations. These limitations can be grouped into one of three general categories – internal validity, statistical power, and external validity.

Internal validity. The most important limitation is the quasi-experimental nature of the research. Participants were not randomly assigned to Treatment and Control groups and thus selection bias may be a factor in the results discussed here. Between-subject analyses indicated the two groups did differ across Phases on two of the dependent measures – optimism and perception of the prison environment – as well as one demographic variable at Pretest – age. However, it is possible the groups differed on other variables not measured, which may have impacted the results. Although this limitation would be of greater concern had all hypotheses

been supported by the data, the findings must be interpreted with this limitation in mind. Although it cannot be inferred from the results found here, the elevated optimism and positive perceptions of the prison environment within the Treatment group may still have been the result of the HAI program since HAI was also higher in the Treatment group at Pretest, a second limitation of the study.

The lack of a true Pretest-Posttest comparison with regard to HAI is a second threat to internal validity. Inmates interacted with the dogs just as much before beginning the HAI program as they did after. Thus, the Pretest-Posttest comparisons in the between-subject analyses may have assessed the impact of working in the HAI program (i.e., inmates did not begin working in the program until after Pretest assessments), but not the impact of HAI. Thus the reported effect on mood (i.e., frequency of improved Depression-Dejection scores from Pretest to Posttest) and social skills (i.e., increased Social Sensitivity) may have been the result of other variables related to participation in a prison-based HAI program (e.g., increased social interaction), not HAI.

The self-report measures used to assess the impact of the HAI program are a third limitation, as they have not been validated with forensic populations. Although the POMS has been used with male inmates in researching variables such as aggression (e.g., Swett & Hartz, 1984), it has not been standardized with a prison normative sample. Therefore, it is unknown how the current POMS scores compare with typical prison inmates. This lack of inmate norms is the case with all of the measures used in the present research, with the exception of the CIES, which was developed and normed solely for use with correctional populations. This is an important limitation of the research, but was unavoidable as there are no instruments measuring these and other variables specifically for forensic populations. This reflects the need for

development and validation of appropriate measures for research with correctional populations in general.

Despite the tremendous need for psychological intervention in correctional facilities (BJS, 1999; Teplin, 1994), there are not enough mental health professionals in most prisons (Benson, 2003). The 1996 Doctorate Employment Survey reported less than nine percent of doctorate-level psychologists work in the criminal justice system (American Psychological Association, 1999). Furthermore, there is a dearth of psychological research in the area of corrections necessary to develop reliable and valid forensic assessment instruments (Megargee, 1995).

Statistical power. The inferential statistical analyses calculated in the between-subject analyses were likely limited by low statistical power. The sample included 48 participants divided into two groups and two phases, thus giving 12 data points per cell. This is below the general recommendation of 30 data points per cell (Schulman, 1992). Due to the applied nature of the research, investigators could not control the number of inmates working in the HAI program nor the rate at which inmate status changed from the waiting list to working in the program. Therefore, future research would need to increase sample size by extending the research period and following a larger number of inmates as they begin the program.

Power is also reduced by inflated variance. The variance was quite large, relative to the mean, for several measures. For example, Table 11 on page 43 presents the means and standard deviations for scores on the CIES. Means on the scales ranged from 1.4 to 3.0 and standard deviations ranged from 0.7 to 1.3. Thus, the standard deviations are quite large relative to the means, a factor which further reduced the statistical power of analyses. This inflated variance is a function of the measures used. In order to reduce the amount of time required by participants,

brief forms of two of the measures were used, namely the POMS and the CIES. These brief versions of the measures have few items per scale (i.e., 5 and 4 items per scale, respectively) and by their nature lend themselves to inflated variance. Even further, items on the CIES are in true-false format, and thus the maximum score for each scale is 4. This is different from the other measures that employ a Likert-scale format, in which each item is answered on a scale from 1 to 4 or 5.

Nonetheless this factor, combined with the low sample size of the study, may have contributed to the lack of statistically significant findings in between-subject analyses. It is noteworthy that the one measure that did result in a predicted Group x Phase interaction was the SSI, which was administered in its original 90-item form with 15 items per scale, each item being answered on a scale from 1 to 5. Finally, the external validity of the research may be limited.

External validity. This research investigated a specific HAI program within a prison. The participants and the setting are unique, which make the generalizability of the findings questionable. The findings from this specific sample, inmates in a minimum-security therapeutic community, may not generalize to all inmates. Beyond the setting, the inmates themselves are different from the general population on several demographic variables. All participants had at least an eighth-grade reading ability and 72.2% had reportedly completed high school, obtained a GED, or higher degree.

According to the BJS (1999), 59% of inmates in state prisons have a high school diploma or GED. Thus, the present sample may not be representative of the typical prison inmate with regard to education. However, the nature of the research (i.e., self-report measures) required that inmates be able to read. Furthermore, it is unlikely reading ability or level of education would

significantly alter the overall effect of an HAI program or the findings of the present research.

Finally, there are some facets of incarceration that should generalize across all inmates, particularly lack of social support and empathy, which may set the stage for an HAI program to have the same effect, regardless of the specifics of the institutional setting. Beyond correctional populations, it is unclear what implications the present findings have for HAI research in general. There are likely some differences between the impact of an HAI program on incarcerated participants versus people in the community.

Summary and Future Directions

Despite the various limitations, the present research provides substance for future study in the area of HAI research in general and HAI programs in applied settings. The results suggest inmates may be benefiting in the areas of social sensitivity, mood, and progress in prison-based treatment. Despite limitations, these findings are promising and warrant follow-up research.

The most significant limitations were the lack of a true Pretest of HAI and possible selection bias because participants were not randomly assigned to groups. Although future research may benefit from replicating the current study with better control of these factors, it may not be feasible due to the closed nature of the prison environment. The present research suggests it is unlikely future researchers could control the amount or timing of HAI from an ongoing HAI program within a correctional setting. Furthermore, out of concern for animal safety, prison facilities are not likely to allow random assignment of inmates to a program in which they are responsible for animals.

Even if such a feat could be done, the external validity of such a controlled study with a specific program, participants, and setting would be questionable. Thus, it is suggested future research include basic laboratory studies in addition to applied research of the sort described

here. Various HAI programs are currently in place in our communities and applied research is

necessary to gain initial insight into possible outcomes. Factors identified as potential outcomes

should then be studied in controlled laboratory studies when possible, in order to further HAI

research as a science.

   For example, the present research cannot be said to have demonstrated a cause-and-effect

relationship between the HAI program and the dependent measures. However, it did result in

interesting findings with regard to prison-based treatment, social sensitivity, and mood that may

have implications for HAI programs. The relationship between HAI and mood disturbance found

with the within-subject analysis warrants further investigation. On the surface, it is inconsistent

with the existing literature which suggests pet-ownership and participation in HAI programs are

associated with decreased depression (e.g., Garrity et al., 1987; Siegel et al., 1999). However,

these studies used dependent measures assessing symptoms of clinical depression, while the

POMS measures transient mood. Although not assessed here, future research should aim to

further understand the relationship between HAI and mood. Two such possibilities include (a)

inmates sought HAI when distressed as a form of coping, and (b) inmates experienced more

distress as a result of HAI, due to change in a third variable such as sensitivity or empathy.

   Either as a method of coping or as a result of increased empathy, HAI could indirectly

result in a general improvement in mood over time, consistent with the Depression-Dejection

scores improving among Treatment group participants in the between-subject analyses. These

hypotheses should be tested in more controlled studies. Research could follow the lead of the

area of HAI research that has demonstrated the most rigorous empirical research – studies

investigating the psychophysiology of HAI. This area of HAI research includes a number of

studies that measured physiological correlates directly before, during, and after HAI (e.g., Allen,

Blascovich, Tomaka, & Kelsey, 1991). Such studies randomly assign participants to human-human, human-animal, and control conditions. This methodology would be particularly appropriate for extending the findings of the present research on mood.

In addition to replicating applied findings in laboratory-based studies, future research should aim to understand the outcomes of HAI in relation to psychological theory. Two theoretical explanations for HAI outcomes most often referenced are social support, discussed previously, and attachment (e.g., Budge, Spicer, Jones, & George, 1998). However, although these theories are often referenced, there has yet to be a thorough review and integration of the literature. Perhaps these theories can assist in differentiating how and when HAI results in transient versus permanent outcomes. It may be related to a differentiation between human-animal interaction and human-animal relationships.

Finally, variables associated with HAI should be studied to determine their impact on the psychosocial variables studied here. For example, with regard to mood, HAI may inherently be associated with other changes (e.g., being outside, increased physical activity) that affect mood for people in institutional settings as well as citizens in the community. While these variables were not studied here, one inmate's journal comments suggested a relationship between the weather outside and mood. Obviously, the field of HAI research is in its infancy and the present research is a demonstration of the challenge of studying this phenomenon with empirical research.

References

Affleck, F., Tennen, H., & Apter, A. (2001). Optimism, pessimism, and daily life with chronic

   illness. In E. C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research,*

   and practice (pp. 147-168). Washington DC: American Psychological Association.

Allen, K. (2003). Are pets a healthy pleasure? The influence of pets on blood pressure. *Current*

   directions in psychological science, 12 (6), 236-239.

Allen, K. A., Blascovich, J., Tomaka, J., & Kelsey, R. M. (1991). Presence of human friends and

   pet dogs as moderators of autonomic responses to stress in women. *Journal of Personality*

   and Social Psychology, 61 (4), 582-589.

American Psychological Association. (1999). 1996 *Doctorate employment survey*. Retrieved

   March 21, 2005, from http://research.apa.org/des96contents.html#settings.

Barak, Y., Savorai, O., Mavashev, S., & Beni, A. (2001). Animal-assisted therapy for elderly

   schizophrenic patients: A one-year controlled trial. *American Journal of Geriatric*

   Psychiatry, 9 (4), 439-442.

Barba, B. E. (1995). A critical review of research on the human/companion animal relationship:

   1988 to 1993. Anthrozoos, 81 (1), 9-19.

Barker, S. B., & Dawson, K. S. (1998). The effects of animal-assisted therapy on anxiety ratings

   of hospitalized psychiatric patients. *Psychiatric Services, 49* (6), 797-801.

Baun, M. M., Bergstrom, N., Langston, N. F., & Thoma, L. (1983). Physiological effects of

   human/companion animal bonding. *Nursing Research, 33* (3), 126-129.

Beard, W. (1984). Of people, pooches, and prisons: Inmates train hand-dogs. *Dog World, March*,

   14-15.

Benson, E. (2003). Rehabilitate or punish? *Monitor on Psychology, 34* (7), 46-47.

Bierer, R. E. (2001). The relationship between pet bonding, self-esteem, and empathy in

   preadolescents. *Dissertation Abstracts International: Section B: The Sciences &*

   Engineering, 61 (11-B), 6183.

Briggs, D. (1980). An enclave of freedom: Starting community at Chino. In H. Toch (Ed.),

   Therapeutic communities in corrections. New York, NY: Praeger.

Bureau of Justice Statistics. (1999). *Substance abuse and treatment, state and federal prisoners,*

   1997. Washington, DC: U.S. Department of Justice.

Bureau of Justice Statistics. (2001). Correctional populations in the United States. *Special report*

   NCJ 192929. U.S. Department of Justice.

Bureau of Justice Statistics. (2003). *Prison statistics: Summary findings*. Retrieved April 2, 2003,

   from http://www.ojp.usdoj.gov/bjs/prisons.htm.

Byersdorfer, P., & Birkenhauer, D. (1990). The therapeutic use of pets on an Alzheimer's unit.

   American Journal of Alzheimer's Care and Related Disorders & Research, 5 (1), 13-17.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for*

   research. Chicago, IL: Rand McNally.

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach*

   to human behavior. New York: Springer-Verlag.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A

   central-process view. *Psychological Review, 97*, 19-35.

Carver, C. S., & Scheier, M. F. (2001). Optimism, pessimism, and self-regulation. In E. C.

   Chang (Ed.), *Optimism and pessimism: Implications for theory, research, and practice*

   (pp. 31-49). Washington DC: American Psychological Association.

Cass, J. (1981). Pet-facilitated therapy in human health care. In B. Fogle (Ed.), *Interrelations between people and pets* (pp. 124-145). Chicago, IL: Charles C. Thomas.

Chambliss, W. (1994). Policing the ghetto underclass: The politics of law and law enforcement. *Social Problems, 41*, 177-194.

Clemmer, D. (1940). *The prison community*. New York: Prentice Hall.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98* (2), 310-357.

Coopersmith, S. (1959). A method for determining types of self-esteem. *Journal of Abnormal & Social Psychology, 59*, 87-94.

Correctional Services of Canada. (2003). *Animal-assisted therapy in correctional institutions*. Retrieved March 29, 2003, from http://www.csc-scc.gc.ca/test/prgrm/pet.

Corson, S. A., & Corson, E. O. (1980). Pet animals as nonverbal communication mediators in psychotherapy in institutional settings. In S. A. Corson, E. O., Corson, & J. A. Alexander (Eds.), Ethology and nonverbal communication in mental health: An interdisciplinary biopsychosocial exploration. New York: Pergamon.

Corson, S. A., Corson, E. O., Gwynne, P. H., & Arnold, E. (1977). Pet dogs as nonverbal communication links in hospital psychiatry. *Comprehensive Psychiatry, 18* (1), 61-72.

Cote, G., Lesage, A., Chawky, N., & Loyer, M. (1997). Clinical specificity of prison inmates with severe mental disorders: A case-control study. *British Journal of Psychiatry, 170*, 571-577.

Crowne, D. P., & Marlowe, D. (1964). *The approval motive*. New York: Wiley.

Cusack, O. (1988). *Pets and mental health*. Bringhamton, NY: Hawthorn Press.

De Leon, G. (1995). Therapeutic communities for addictions: A theoretical framework. *International Journal of the Addictions, 30*, 1603-1645.

Diener, E., & Larsen, R. J. (1993). The experience of emotional well-being. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 405-415). New York: Guilford.

Dietz, E. F., O'Connell, D. J., & Scarpitti, F. R. (2003). Therapeutic communities and prison management: An examination of the effects of operating on in-prison therapeutic community levels of institutional disorder. *International Journal of Offender Therapy and Comparative Criminology, 47* (2), 210-223.

Dominguez, B., Rueda, M., Makhlouf, C., & Rivera, A. (1977). Analysis and control of activities in custodial human groups. In E. Ribes-Inesta, & A. Bandura (Eds.), *Analysis of delinquency and aggression*, pp. 51-70. Hillsdale, NJ: Lawrence Erlbaum.

Fick, K. M. (1993). The influence of an animal on social interactions of nursing home residents in a group setting. *American Journal of Occupational Therapy, 47* (6), 529-534.

Field, G. (1985). The Cornerstone program: A client outcome study. *Federal Probation, 49*, 50-55.

Fine, A. (2000). *Handbook on animal-assisted therapy: Theoretical foundations and guidelines for practice*. San Diego, CA: Academic Press.

Flanagan, T. J. (1995). *Long-term incarceration: Issues of science, policy and correctional practice*. Thousand Oaks, CA: Sage.

Fournier, A. K., & Geller, E. S. (2004). Behavior analysis of companion-animal overpopulation: A conceptualization of the problem and a framework for intervention. *Behavior and Social Issues, 13*(1), 51-68.

Garrity, T. F., Stallones, L., Marx, M. B., & Johnson, T. P. (1987). Pet ownership and attachment as supportive factors in the health of the elderly. *Anthrozoos, 3* (1), 35-43.

Geller, E. S., Johnson, D. F., Hamlin, P. H., & Kennedy, T. D. (1977). Behavior modification in a prison: Issues, problems, and compromises. *Criminal Justice and Behavior, 4* (1), 11-43.

Grossberg, J. M., & Alf, E. F. (1985). Interaction with pet dogs: Effects on human cardiovascular response. *Journal of the Delta Society, 2* (1), 20-27.

Guildord, J. P. (1967). *The nature of human intelligence*. New York: McGraw-Hill.

Haight, A. (1986). Pets in prison. *The Olympian, October 15*, 4-6.

Haney, C. (1997). Psychology and the limits to prison pain: Confronting the coming crisis in eighth amendment law. *Psychology, Public Policy, and Law, 3* (4), 499-588.

Haney, C., Banks, W., & Zimbardo, P. (1973). Interpersonal dynamics in a simulated prison. *International Journal of Criminology and Penology, 1*, 69-97.

Haney, C., & Zimbardo, P. (1998). The past and future of U.S. prison policy: Twenty-five years after the Stanford Prison Experiment. *American Psychologist, 53* (7), 709-727.

Haskell, D. H., Pugatch, D., & McNair, D. M. (1969). Time-limited psychotherapy for whom? *Archives of General Psychiatry, 21,* 546-552.

Harbolt, T., & Ward, T.H. (2001). Teaming incarcerated youth with shelter dogs for a second chance. *Society and Animals, 9* (2), 177-182.

Hart, L. A. (2000). Psychosocial benefits of animal companionship. In A. Fine (Ed.), *Handbook on animal-assisted therapy: Theoretical foundations and guidelines for practice (pp. 59-78)*. Sand Diego, CA: Academic Press.

Harvey, P. D., Davidson, M., & Mueser, K. T. (1997). Social-adaptive functioning evaluation (SAFE): A rating scale for geriatric psychiatric patients. *Schizophrenia Bulletin, 23*, 456-463.

Hecht, L., McMillin, J. D., & Silverman, P. (2001). Pets, networks, and well-being. *Anthrozoos, 14* (2), 95-108.

Helmes, E., Caspo, R. G., & Short, J. A. (1987). Standardization and validation of the Multidimensional Observation Scale for Elderly Subjects (MOSES). *Journal of Gerontology, 42*, 395-405.

Hines, L. M. (2003). Historical perspectives on the human-animal bond. *American Behavioral Scientist, 47* (1), 7-15.

Holcomb, R., Williams, R., & Richards, P. (1985). The elements of attachment: Relationship maintenance and intimacy. *The Delta Society, 2* (1), 28-34.

Hyde, K. R., Kurdek, L., & Larson, P. (1983). Relationships between pet ownership and self-esteem, social sensitivity, and interpersonal trust. *Psychological Reports, 52*, 110.

Inciardi, J. A., Maritn, S. S., Butzin, C. A., Hooper, R. M., & Harrison, L. D. (1997). An effective model of prison-based treatment for drug-involved offenders. *Journal of Drug Issues, 27* (2), 261-278.

International Center for Prison Studies. 2004. *Entire world: Prison population totals*. http://www.prisonstudies.org.

Ivanoff, A., Grochowski, S., Smyth, N. J., & Jang, S. J. (1992). Problem solving and suicidality among prison inmates: Another look at the state versus trait. *Journal of Consulting and Clinical Psychology, 60* (6), 970-973.

Johnson, D. F., & Geller, E. S. (1974). Operations manual for a contingency management program in a maximum security institution. *JSAS Catalog of Selected Documents in Psychology, 4* (23), (Ms. No. 578).

Johnson, S. B., & Rule, W. R. (1991). Personality characteristics and self-esteem of pet owners and non-owners. *International Journal of Psychology, 26* (2), 241-252.

Johnson, R. A., Odendaal, J. S., & Meadows, R. L. (2002). Animal-assisted interventions research: Issues and answers. *Western Journal of Nursing Research, 24* (4), 422-440.

Katcher, A., Beck, A.M., & Levine, D. (1989). Evaluation of a pet program in prison: The PAL project at Lorton. *Anthrozoos, 2* (3), 175-180.

Killen, J. D., Fortmann, S. P., Telch, M. J., & Newman, B. (1988). Are heavy smokers different from light smokers. *The Journal of the American Medical Association, 260*, 1581-1585.

Krug, J. E., & Laughlin, J. E. (1976). *IPAT Depression Scale*. Champaign, IL: Institute for Personality and Ability Testing.

Lamb, R. H., & Weinberger, L. E. (1998). Persons with severe mental illness in jails and prisons: A review. *Psychiatric Services, 49* (4), 483-492.

Leavy, R. L. (1983). Social support and psychological disorder: A review. *Journal of Community Psychology, 11* (1), 3-21.

Lipton, D. S., Pearson, F. S., Cleland, C. M., & Yee, D. (2002). The effects of therapeutic communities and milieu therapy on recidivism: Meta-analytic findings from the correctional drug abuse treatment effectiveness (CDATE) study. In M. McGuire (Ed.), *Offender rehabilitation and treatment: Effective programmes and policies to reduce re-offending* (pp. 39-77). West Sussex, England: John Wiley & Sons.

Lorr, M. McNair, D. M., & Weinstein, G. L. (1964). Early effects of chlordiazepoxide (Librium) used with psychotherapy. *Journal of Psychiatric Research, 1,* 257-270.

Maltz, M. D. (1984). *Recidivism*. Orlando, FL: Academic Press.

Matthews, R., & Pitts, J. (1998). Rehabilitation, recidivism, and realism: Evaluating violence reduction programs in prison. *The Prison Journal, 78* (4), 390-405.

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & J. D. Slyter (Eds.), *Emotional development and emotional intelligence* (pp. 3-31). New York: Basic Books.

McNair, D. M., & Lorr, M. (1964). An analysis of mood in neurotics. *Journal of Abnormal and Social Psychology, 69*, 620-627.

McNair, D. M., Lorr, M., & Droppleman, L. F. (1971). *Profile of mood states manual*. Tonawnda, NY: Multi-Health Systems.

Mitchell, R. E., Billings, R. G., & Moos, R. H. (1982). Social support and well-being: Implications for prevention programs. *Journal of Primary Prevention, 3* (2), 77-98.

Moneymaker, J. M., & Strimple, E. O. (1991). Animals and inmates: A sharing companionship behind bars. *Journal of Offender Rehabilitation, 16* (3), 133-152.

Moos, R. H. (1974). *Evaluating correctional and community settings*. New York: Wiley & Sons.

Moos, R. H. (1987). *Correctional institutions environment scale,* Second edition. Redwood, CA: Mindgarden.

Odendaal, J. (2002). *Pets and our mental health: The why, the what, and the how*. New York: Vantage Press.

Ogloff, J. R. (2002). Offender rehabilitation: From "nothing works" to what next? *Australian Psychologist, 37* (3), 245-252.

Pearson, F. S., Lipton, D. S., Cleland, C. M., & Yee, D. S. (2002). The effects of behavioral/cognitive-behavioral programs on recidivism. *Crime & Delinquency, 48* (3), 476-496.

Peat, B. J., & Winfree, T. L. (1992). Reducing the intrainstitutional effects of "prisonization": A study of a therapeutic community for drug-using inmates. *Criminal Justice & Behavior, 19* (2), 206-225.

Pendergast, M., Garabee, D., & Cartier, J. (2001). The impact of in-prison therapeutic community programs on prison management. *Journal of Offender Rehabilitation, 32* (3), 63-78.

Perrelle, I. B., & Granville, D. A. (1993). Assessment of the effectiveness of a pet facilitated therapy program in a nursing home setting. *Society & Animals, 1* (1), 321-328.

Phillips, J. (2001). Cultural construction of manhood in prison. *Psychology of Men & Masculinity, 2* (1), 13-23.

Poresky, R. H. (1996). Companion animals and other factors affecting young children's development. *Anthrozoos, 9* (4), 159-168.

Redondo, S., Sanchez-Meca, J., & Carrido, V. (2002). Crime treatment in Europe: A review of outcome studies. In M. McGuire (Ed.), *Offender rehabilitation and treatment: Effective programmes and policies to reduce re-offending* (pp. 39-77). West Sussex, England: John Wiley & Sons.

Riggio, R. E. (1986). Assessment of basic social skills. *Journal of Personality and Social Psychology, 51*, 649-660.

Riggio, R. E., Tucker, J., & Coffaro, D. (1986). Social skills and empathy. *Personality and Individual Differences, 10*, 93-99.

Riggio, R. E., Watring, K. P., & Throckmorton, B. (1993). Social skills, social support, and psychosocial adjustment. *Personality and Individual Differences, 15*, 275-280.

Rutherford, R. B., Mathur, S. R., & Quinn, M. M. (1998). Promoting social communication skills through cooperative learning and direct instruction. *Education & Treatment of Children, 21* (3), 354-369.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognitions & Personality, 9* 185-211.

Salmon, I. M., Salmon, P. W., Hogarth-Scott, R. S., & Lavelle, R. B. (1982). A dog in residence. *The Lantham Letter, 4*, 6-13.

Sarason, I. G., Pierce, G. P., & Sarson, B. R. (1994). General and specific perceptions of social support. In W. R. Avison & I. H. Golib (Eds.), *Stress and mental health* (pp. 151-177). New York: Plenum Press.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219-247.

Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16* (2), 201-228.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67* (6), 1063-1078.

Schulman, R. S. (1992). *Statistics in plain English with computer applications*. New York: Van Nostrand Reinhold.

Schulte, W. (1954). Depressive mood disturbances with loss of self-esteem preceding unethical and criminal acts. *Psychotherapie Psychosomatik Medizinishche Psychologie, 4*, 122-132.

Serpell, J. A. (2000). Animal companions and human well-being: An exploration of the value of human-animal relationships. In A. Fine (Ed.), *Handbook on animal-assisted therapy: Theoretical foundations and guidelines for practice (pp. 3-19)*. San Diego, CA: Academic Press.

Siegel, J. M., Angulo, F. J., Detels, S. R., Wesch, J., & Mullen A. (1999). AIDS diagnosis and depression in the Multicenter AIDS Cohort Study The ameliorating impact of pet ownership. *AIDS Care, 11* (2), 157-710.

Skinner, B. F. (1953). *Science and human behavior*. Boston, MA: Cambridge.

Strimple, E. O. (2003). A history of prison inmate-animal interaction programs. *American Behavioral Scientist, 47* (1), 70-78.

Suthers-McCabe, H. M., Van Voorhees, E., & Fournier, A. K. (2005). *Prison PUP: An examination of the human-animal bond in an American prison*. Manuscript submitted for publication.

Teplin, L. A., Abram, K. M., & McClelland, G. M. (1997). Mentally disordered women in jail: Who receives services? *American Journal of Public Health, 87*, 604-609.

Thoits, P. A. (1986). Social support as coping assistance. *Journal of Consulting and Clinical Psychology, 54*, 416-423.

Van Houtte, B. A., & Jarvis, P. A. (1995). The role of pets in preadolescent psychosocial development. *Journal of Applied Developmental Psychology, 16* (3), 463-479.

Wade, M. (1986). Dogs for the disabled. *The Challenge 22* (18), 11-13.

Walsh, P.G., & Mertin, P.G. (1994). The training of pets as therapy dogs in a women's prison:

A pilot study. *Anthrozoos, 7* (2), 124-128.

Wells, D. L. (2004). The facilitation of social interactions by domestic dogs. *Anthrozoos, 17* (4),

340-352.

Wilson, C. C. (1987). Physiological responses of college students to a pet. *Journal of Nervous

and Mental Disease, 175* (10), 606-612.

Zisselman, M. H., Rovner, B. W., Shmuely, Y., & Ferrie, P. (1995). A pet therapy intervention

with geriatric psychiatry inpatients. *American Journal of Occupational Therapy, 50* (1), 47-

51.

Appendix A:

Demographic Questionnaire

PERSONAL INFORMATION

In order to keep your information private, we would like you to create a code name. Follow the instructions below to create your private code name.

1. Write the first two letters of your mother's maiden name in the blank labeled "**1**"
2. Write the first two letters of the town you were born in the blank labeled "**2**"
3. Write the number of the month you were born in the blank labeled "**3**"

Code: _____   _____   _____

                   1   **2**   **3**

      This is your code. Write this on all surveys you complete. After today, you will not write your name on any information you give us. You will only use your code. Please answer the rest of the questions.

4. Name (print): _____

5. Age: _____

6. Race/Ethnicity: _____

7. How far have you gone in school?_____

8. How long have you been in the therapeutic community?_____

9. How do you feel about the therapeutic community?

10. How much longer will you be at Botetourt Correctional Unit? _____

11. What charge(s) lead to your incarceration at Botetourt Correctional Unit?

12. Do you intend to be part of the PenPals Dog-Training Program?
    Yes   No

    Why or Why not?

Thank you

Appendix B:

Self-Report Scale Descriptions

Table 1.

Scale Descriptions for the Social Skills Inventory (SSI).

1. Emotional Expressivity:	measures the skill with which individuals communicate nonverbally, particularly in sending emotional messages, but it also includes the nonverbal expression of attitudes, dominance and interpersonal orientation.
2. Emotional Sensitivity:	measures skill in receiving and interpreting the nonverbal communications of others. Individuals who are emotionally sensitive attend to and accurately interpret the subtle emotional cues of others.
3. Emotional Control:	measures ability to control and regulate one's own emotional and nonverbal displays. Includes the ability to convey particular emotions on cue and to hide feelings behind an assumed "mask."
4. Social Expressivity:	assess skill in verbal expression and the ability to engage others in social discourse. High scores on this scale are associated with verbal fluency in individuals who appear outgoing and gregarious and who are skilled in initiating and guiding conversations.
5. Social Sensitivity:	assesses ability to interpret the verbal communication of others and sensitivity to and understanding of the norms governing appropriate social behavior.
6. Social Control:	assesses skill in role-playing and social self-presentation. High scores indicate a person who is adept, tactful, and self-confident in social situations and who can fit in comfortably in most social situations.
7. Total SSI:	calculated by summing all subscales. This is a global estimate of social skills.

Table 2.

Scale Descriptions for the Correctional Institutions Environment Scale (CIES).

	Relationship Dimension
1. Involvement:	measures how active and energetic residents are in the day-to-day functioning of the program (i.e., interacting socially with other residents, doing things on their own initiative, and developing pride and group spirit in the program).
2. Support:	measures the extent to which residents are encouraged to be helpful and supportive toward other residents, and how supportive the staff is toward residents.
3. Expressiveness:	measures the extent to which the program encourages the open expression of feelings (including angry feelings) by residents and staff.
	Personal Growth Dimension
4. Autonomy:	assesses the extent to which residents are encouraged to take initiative in planning activities and take leadership in the unit.
5. Practical Orientation:	assesses the extent to which the resident's environment orients him toward preparing himself for release from the program: training for new kinds of jobs, looking to the future, and setting and working toward goals are among the factors considered.
6. Personal Problem Orientation:	measures the extent to which residents are encouraged to be concerned with their personal problems and feelings and to seek to understand them.
	System Maintenance Dimension
7. Order and Organization:	measures how important order and organization are in the program in terms of residents (how they look), staff (what they do to encourage order), and the facility itself (how well it is kept).
8. Clarity:	measures the extent to which the resident knows what to expect in the day-to-day routine of his program and how explicit the program rules and procedures are.
9. Staff Control:	assesses the extent to which the staff uses regulations to keep residents under necessary control (i.e., in the formulation of rules, the scheduling of activities, and in the relationship between residents and staff).

Table 3.

Scale Descriptions for the Profile of Mood States (POMS).

1. Tension-Anxiety:	measures heightened musculoskeletal tension and somatic tension which may not be overtly observable, as well as observable psychomotor manifestations.
2. Depression-Dejection:	measures a mood of depression accompanied by a sense of personal inadequacy. It is best defined by feelings of worthlessness, futility regarding the struggle to adjust, a sense of emotional isolation from others, sadness, and guilt.
3. Anger-Hostility:	measures a mood of anger and antipathy toward others. It describes feelings of intense, overt anger, milder feelings of hostility, and a more sullen suspicious hostility.
4. Vigor-Activity:	measures a mood of vigorousness, ebullience, and high energy. It may represent a positive affect factor.
5. Fatigue-Inertia:	measures a mood of weariness, inertia, and low energy level.
6. Confusion-Bewilderment:	measures bewilderment and muddle-headedness. It may represent cognitive inefficiency.
7. Total Mood Disturbance:	is obtained by summing the scores across all six subscales, weighting Vigor negatively. It is an estimate of global affective state.

Appendix C:

POMS Adjective Definitions

WORD DEFINITIONS

1. **Tense** - feeling nervous or worried
Example: Sue was tense before she took her test.

2. **Angry** - feeling or showing anger; feeling mad
Example: Susie was angry because Jim forgot her birthday.

3. **Worn out** - tired or used up
Example: I was worn out after playing basketball for three hours.

4. **Lively** – alert; full of energy; active; full of life, movement
Example: Randy was lively and could not stay in his seat.

5. **Confused** - being disordered or mixed up; do not understand
 Example: Kim was confused and took the wrong turn on the way to her friend's house.

6. **Shaky** – not stable; somewhat unsound in health; characterized by shaking; might give way or break down
Example: Neil was shaky as he walked into the boss's office.

7. **Sad** – not happy; depressed
Example: Jamie was sad when she heard her aunt had passed away.

8. **Active**- producing or involving action or movement
Example: Bill was very active this weekend when he ran three long races.

9. **Grouchy** - given to grumbling; bad temper, complaining
 Example: Cindy was grouchy when she got woken up at 5:00 a.m.

10. **Energetic** – full of energy
Example: Billy was energetic about tomorrow's football game.

11. **Unworthy** – lacking in goodness or value; poor, worthless, undeserving
Example: Jack felt unworthy when he forgot to call his father on his birthday.

12. **Uneasy** – feeling bad physically or mentally; awkward, embarrassed; worried; restless; not quiet
Example: John was uneasy when the teacher called on him for the answer first.

13. **Fatigued** – to feel tired
Example: Joey was so fatigued from work that he fell asleep as soon as he got home.

14. **Annoyed** – disturbed or irritated especially by repeated acts
Example: Todd was annoyed because the other boys kept throwing paper airplanes at him.

15. **Discouraged** – to deprive of courage or confidence; depressed; no enthusiasm
Example: Jody was discouraged when she did not get the job.

16. **Nervous** – easily excited or irritated; jumpy; tending to produce nervousness or agitation
Example: Jane was nervous during the first day of kindergarten because she didn't know what it was going to be like.

17. **Lonely** – being without company; alone; cut off from others; solitary
Example: When the twins were separated, they felt lonely because they were used to being with each other.

18. **Muddled** – a state of mental confusion; a confused mess
Example: Jackie was muddled and could not solve the puzzle.

19. **Exhausted** –extremely or completely tired
Example: Sue was exhausted when she got home from work.

20. **Anxious** –extreme uneasiness of mind; fear; worried
Example: Marvin was anxious because he had to give a speech in front of his group.

21. **Gloomy** – having a frowning or scowling appearance; low in spirits; lacking in promise or hopefulness
Example: Greg was gloomy when he heard his friend was not coming to visit.

22. **Sluggish** – slow to respond; slow in movement
Example: Christy was sluggish getting out of bed this morning and was late for work.

23. **Weary** – exhausted in strength or freshness; no patience, tolerance or pleasure
Example: Shawn was weary after a long day of work.

24. **Bewildered** –to be confused
Example: Jimmy was bewildered by the hard math problem.

25. **Furious** – extremely mad or angry
Example: Melissa was furious when her trip was cancelled.

26. **Efficient** – useful; productive without waste
Example: Johnny was efficient at his job and received an award for the most work done.

27. **Full of pep** – full of energy and high spirits
Example: Clay was full of pep and ready for tonight's baseball game.

28. **Bad-tempered** – having a poor state of mind, or emotion
Example: The child was bad-tempered and cried when her Mom did not buy her anything in the store.

29. **Forgetful** - likely to forget; failure to remember
Example: Craig was forgetful and had to write everything down in a notebook.

30. **Vigorous** –full of physical or mental strength or active force; feeling forceful and energetic
Example: Mike was vigorous and shook the paint can with a lot of force.

Appendix D:

Human-Animal Interaction Checklist

Instructions: Read each statement below and decide **if you did that in the past week, including today**. Then circle the number that best describes how much you did that.

	Not at all	A little	Average	Quite a bit	A lot
1. I saw/watched a PenPals dog.	0	1	2	3	4
2. I talked to a PenPals dog.	0	1	2	3	4
3. I touched/petted a PenPals dog.	0	1	2	3	4
4. I fed a PenPals dog.	0	1	2	3	4
5. I groomed a PenPals dog.	0	1	2	3	4
6. I practiced training with a PenPals dog.	0	1	2	3	4
7. I heard a PenPals dog bark, wine, scratch.	0	1	2	3	4
8. I walked a PenPals dog.	0	1	2	3	4
9. I held a PenPals dog.	0	1	2	3	4
10. I played with a PenPals dog.	0	1	2	3	4
11. I hugged or kissed a PenPals dog.	0	1	2	3	4

Appendix E:

Journal Instructions and Comments Page

Journal Instructions:

Please complete one "**Checklist"** and one "**POMS"** at the end of the day for the next 14 days. There is also a "**Notes/Comments"** sheet for each day. Feel free to write any comments you have about the program or this research, or important thoughts or feelings you have regarding the PenPals program, interactions with PenPals dogs, or interactions with the people (inmates and staff) involved in the PenPals program.

Comments/Notes

Appendix F:

Correspondence with Correctional Facility Regarding Permission to Conduct the Research

Virginia Tech

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Center for Applied Behavior Systems
Dept. of Psychology
Blacksburg, Virginia 24061-0436
(540) 231-8145   Fax: (540) 231-3652

May 20, 2003

To Whom It May Concern:

I am a graduate student in the Clinical Psychology program at Virginia Tech. I am pursuing my Ph.D. and would like to conduct my dissertation research with Save Our Shelters, evaluating the PenPals program at the Botetourt Correctional Center. I have attached a very general description of what my research would aim to do and a rationale for why I believe the study is worthwhile. My description does not include methodology, as I have not determined what that will be.

Of course, if given permission to work with the facility, all methods used in any research would first be approved by the Virginia Department of Corrections' Human Subjects Committee and by the Warden of the facility, as well as Virginia Tech's Human Subjects Committee. This letter is simply an initial description to determine if a research study of this type is possible.

In order to evaluate the impact of the PenPals program, my research methods will likely include self-report surveys and behavioral checklists as well as interpersonal interviews. I am currently working with Virginia Tech's Virginia-Maryland Regional Veterinary Medical School on a related study. We are evaluating the impact of the Prison PUP Program at the Bland Correctional Center through surveying and interviewing inmates. Another graduate student and I are considered volunteers of the Department of Corrections and thus we have passed the required orientation and background checks necessary to enter correctional facilities.

I have spoken with Cathy Leach of Save Our Shelters regarding evaluating your program for my dissertation and she has expressed interest. If it's at all possible, I would like to attend her next meeting at Botetourt Correctional Center to discuss potential research. Thank you for your time in considering a research project evaluating the PenPals program. Please contact me at the information below if any part of this letter could benefit from clarification. I look forward to hearing from you.

Sincerely,

Angie Krom Fournier, M.S.
Graduate Research Associate
Center for Applied Behavior Systems
Dept. of Psychology, Virginia Tech
5100 Derring
Blacksburg, VA 24061-0436
(540) 231-8145
akrom@vt.edu

To Whom It May Concern:

As Superintendent of the Botetourt Correctional Unit, I have read Ms. Fournier's and Dr. Geller's research proposal and I approve of their research plan. I give my permission to conduct the research at Botetourt Correctional Unity.

_____   _____

J. D. Terry   Date
Superintendent,
Botetourt Correctional Unit
P.O. Box 250
Troutville, VA 24175
(540) 857-7021

To Whom It May Concern:

As an officer at the Botetourt Correctional Unit and director of the PenPals program there, I have read Ms. Fournier's and Dr. Geller's research proposal and I approve of their research plan. I give my permission to conduct the research and am willing to be the liaison between Botetourt Correctional Unit and Virginia Tech.

_____   _____

Virginia Fulgham   Date
Director, PenPals,
Botetourt Correctional Unit
P.O. Box 250
Troutville, VA 24175
(540) 857-7021

Appendix G:

Recruitment Flyer

BE IN THIS STUDY AND EARN
A CERTIFICATE OF PARTICIPATION

WHAT IS IT?
Researchers at Virginia Tech are doing a study to learn about the PenPals Dog-Training Program. We need help from all the inmates in the therapeutic community, even those who are not in the dog-training program. The study will happen at Botetourt Correctional Unit throughout the next few months.

WHY?
This study is very important. It will help us understand the dog-training program at Botetourt. It will also help us understand dog-training programs in other prisons.

WHO CAN TAKE PART?
All inmates in the therapeutic community can take part.

WHAT YOU WILL DO:
You will be asked to read and answer questions on surveys two different times. The surveys will ask you questions about yourself, what you think, and how you feel.

WHAT YOU WILL GET:
If you want, you will get a certificate of participation to put in your file, saying that you helped in voluntary research. You will also learn the results of the study. You will help us understand inmate programs and make them better.

HOW?
Dorm coordinators will present the study at a meeting this week. They will tell you how you can participate.

Appendix H:

Recruitment Letter & Informed Consent Form

(RECRUITMENT LETTER)

Hello,

You are being asked to be part of a research study run by the Department of Psychology at Virginia Tech. The reason for the research is to study the PenPals program at Botetourt Correctional Unit (BCU). The PenPals program is a program where dogs from animal shelters live in BCU for 8 to 10 weeks. During that time, the dogs live with inmates in the program, who learn to train dogs from a dog trainer. The inmates take care of the dogs and train the dogs.

Your participation in this research is completely voluntary. If you do not want to be part of the study you don't have to and it will have no effect on you, your status at BCU, or your criminal record. You will not be given any money or gifts for your participation. However, if you choose to participate you will get a Certificate of Participation to put in your file, saying you gave your time to help with this research.

Your participation is private. We will not share anything you tell us with anyone at BCU or anyone outside of the facility. The only exceptions to this are if you say you plan to hurt yourself, someone else, or a dog; if you tell us about child abuse that has not already been reported; or if you tell us something that may harm the security of the prison. In these cases, we are forced by law to tell the proper authorities.

Please see the enclosed Informed Consent for Inmates form. It describes the purpose of the study, what will be asked of you, and how we will keep your information private. **If you would like to participate in the research, please sign the form and return it to the coordinator of your dorm**. If you have questions you need answered before agreeing to participate, please discuss them with Officer Fulgham. I am also available to answer questions you have about the study.

Thank you for your time. I look forward to working with you.

Sincerely,

Angie Krom Fournier, M.S.
Graduate Research Associate
Center for Applied Behavior Systems
Dept. of Psychology, Virginia Tech
202 Williams Hall
Blacksburg, VA 24061-0436

DOCUMENTATION OF CONSENT BY INMATE PARTICIPANTS

Virginia Polytechnic Institute And State University

STUDY TITLE: Program Assessment: Botetourt Correctional Unit PenPals Program

RESEARCHERS: Angie K. Fournier, M.S. and E. Scott Geller, Ph.D.

1. The Purpose of this Research Project
Other research studies have shown that programs like PenPals are good for the dogs and for the people who receive those dogs. Those other studies have not looked at how the program affects the inmates who train the dogs. This study is being done to understand how the PenPals program affects inmates at the Botetourt Correctional Unit.

In our study, we will include two groups: (a) inmates who are in the PenPals program and (b) inmates who are on the PenPals waiting list.

This research study is being done by Angie Fournier. She is a doctoral student in clinical psychology at Virginia Tech. This study is part of her graduate research project. Her research work is being supervised by Dr. E. Scott Geller, a professor of Psychology at Virginia Tech. Both of these researchers have been given training in ways to provide protection of human subjects in research. They know that any personal information about research subjects must be kept private and must not be shared with anyone.

2. What you will be asked to do
The researchers will ask for your permission to look at your files at the Botetourt Correctional Unit. They want to see if you have any criminal behavior while you are part of the study. If you do not want the researchers to see you records, then you will not be a part of the research study. That will <u>not</u> keep you from being a part of the PenPals program as that is separate from this research project.

If you agree to be a part of this research study, you will be asked to write answers to questions about yourself. You will be given questionnaires two times during the study. Those questionnaires will ask you about your feelings about different things and situations.

You may also be asked to write in a private journal about being in contact with the dogs and how you feel. You may be asked to attend a discussion group in which you will be asked what you think about the PenPals program and how it affects you, other inmates, and the staff. The discussion group meeting will be 1-2 hours in length.

3. Risks in Participating
The researchers believe that there should be no more than minimal risks to you in participating in this study. You might feel uncomfortable or embarrassed when answering some of the questions on the questionnaires. Some people do not like to think about their feelings or emotions. The researchers will use questions that have been asked to many people before, selecting questions that did not upset those other people. If you do not want to answer one or more questions, you do

not have to. If you refuse to answer any question, that will not affect your participation in the PenPals program, and you will not be punished.

4. Benefits and Compensation

The researchers will not give you money, gifts or anything else for being a part of the research study. Being a part of the study may help you to better understand yourself. They will give you a Certificate of Participation to put in your institutional file, showing that you gave some of your time to help with this research. If you would like to get a copy of the results of this study once it is finished, you can contact the primary researcher, Angie Fournier.

5. Keeping Your Research Information Anonymous and Private

The researchers know that things you say, do, and write about are usually shared with your therapeutic community. The researchers have gotten permission from prison officials to keep things you do as a part of the research project private. The things you write and say will not be shared with the therapeutic community. Only the researchers will have access to things you have written (journals or questionnaires) or things you have said in research discussion groups as a part of this research project. Correctional officers, other prison officials, or other inmates may know that you are a part of the study, but they will not know anything about how you are answering questions in writing or in discussion groups. There are several things which will require the researchers to break their privacy guarantee: (a) if you say you plan to hurt yourself, someone else, or a dog; (b) if you tell the researchers about child abuse that has not already been reported to the authorities; or (c) if you tell the researchers something that may threaten the security of the prison. In these cases, the researchers are required by law to alert the proper authorities.

Your name will not be included with any information that you give. The researchers will ask you to make up a name or a code number that will be put with your research information. That way no one else will be able to match you with the information you give. All of the information you give in this research project will be kept in a locked cabinet at Virginia Tech. Only the researchers will have a key to that cabinet. If any of the results of this study are given in talks or printed in research papers, there will be no information provided that could reveal your identity.

6. Freedom to Withdraw

If you do not want to be a part of this study, you are free to say no. No one can or should force you to be in this research study. You do not have to be in this research study to be allowed to be in the PenPals program. If you do not want to be in the study, that choice will not affect your status at Botetourt Correctional Unit.

If you want to be in the study, but later want to stop being in the study, you can tell the researchers that you want to stop being a part of the study. If you stop, there will be no punishment or penalty. It is your right to stop when you want. If you do not want to answer one or more questions asked by the researchers, you do not have to. If you refuse to answer any question, that will not affect your participation in the PenPals program, and you will not be punished.

7. Agreement to Participate

You should be given enough time to think about whether you want to be a part of the research project before you sign. If you need more time to think about it, tell that to the researchers.

The researchers should answer any questions that you have about the research project, your part in the research project, and any risks you might face, before you sign this document.

By signing this document by the X, you show that you have read or had read to you the information in this Consent document.

X_____   **X**_____

  Participant signature   Date

_____   _____

  Witness signature   Date

If you have any questions about this research, how it is conducted, and what your rights as a research subject are, you may contact:

Angie Fournier, Primary Researcher   (540) 231-8145
E. Scott Geller, Supervisor and Faculty Advisor   (540) 231-2663
David M. Moore, Chair   (540) 231-4991
Virginia Tech Institutional Review Board
Office of Research Compliance – CVM Phase II (0442)

Virginia Polytechnic Institute and State University

CONSENT TO ACCESS INSTITUTIONAL RECORDS
For Inmate Participants

STUDY TITLE: Program Assessment: Botetourt Correctional Unit PenPals Program

PRINCIPAL INVESTIGATORS: Angie K. Fournier, M.S. and E. Scott Geller, Ph.D.

I have read the Consent document describing this project, or have had it read to me. I have had all my questions answered. By my signature by the **X** below, I give permission to the researchers (listed above) to record the date and type of institutional infractions from my institutional file.

X_____   _____
  Participant signature   Date

_____   _____
  Witness signature   Date

Should I have any questions about the research study or my participation in it, I understand that I may contact:

Angie Fournier, Primary Researcher	(540) 231-8145
E. Scott Geller, Faculty Supervisor	(540) 231-2663
David M. Moore, Chair	(540) 231-4991

David M. Moore, Chair
Virginia Tech Institutional Review Board
for the Protection of Human Subjects
Office of Research Compliance – CVM Phase II
Virginia Tech
Blacksburg, VA 24061-0442

Appendix I:

Certificates of Participation

Certificate of Participation
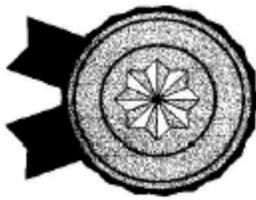
PenPals Research Part I
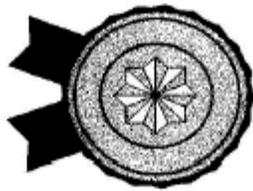
_____

(Participant)

The person named herein participated in voluntary research to assist researchers at Virginia Tech, inform the Department of Corrections, and benefit future prison-based dog-training programs.

Certificate of Participation

PenPals Research Part II

(Participant)

The person named herein participated in voluntary research to assist researchers at Virginia Tech, inform the Department of Corrections, and benefit future prison-based dog-training programs.

Appendix J:

PenPals Application Form

PenPals Application[1]

Name & Number:
Bed assignment:
Job Assignment:
Current Offense:
Education:
Age:
Release Date:
Any crimes of abuse child/animal (this includes dog fights)?

1. Do you have any experience working with dogs? If yes, explain.

2. Have you participated in a dog program at any other facility? If yes, explain.

3. Explain why you want to participate in the dog program, and how your participation will benefit the program.

4. What asset do you intend on sharing with this program?

5. This program may have different views of training than what you know now. Are you willing to put aside your knowledge and learn new tricks?

6. Working with the dogs takes a lot of time and a lot of commitment. In order for the program to be successful everyone must work together. Sometimes more than not you must put your principles of the dog program before the personalities of your team members. Can you be a team player?

7. Many of the guys will say anything to get into this program, what makes what you have stand out from the rest?

8. If you saw someone abusing a dog what would you do?

9. What would you do if you were with the 3 dogs and a dog fight broke out?

---

[1] This application form was created by the PenPals coordinator at the correctional facility and was not included in the materials of the present research.

10. There is a lot of public relations work associated with this position. Can you put aside your biases to answer questions or let the dog visit with someone you do not care for?

11. Is there anyone you would like to be teamed up with in the group?

12. What is your definition of abuse?

13. What would your requirements be for a "good home"?

14. What is your favorite activity to participate in here? Could you put that aside to take the dog out for a break?

Appendix K:

Focus Group Questions and Participant Comments

Has PenPals had a personal impact on you? Explain[2].

- "Yes. The program has given me a sense of humanity. I've learned a lot – about human behavior, how people relate to animals." (T)

- "I always had dogs. I was surprised to see dogs in prison. I think the whole environment is different. It's like therapy – it's a little bit like home. It helps me feel less homesick. And it's like a little freedom. Just watching 'em play is like a little freedom." (C)

- "I'm glad it's here – for the dogs. I had dogs on the street. It makes me feel good about myself to help them, give something to them." (T)

- I think it's helped everyone here who's had problems. You can go outside and play with the dogs. It's a stress reducer. And it's good for your self-esteem, a feeling of accomplishment. It should be state-funded." (T)

- I think it's therapeutic. It teaches responsibility. You have to be responsible. I like to watch 'em play, feed them crackers. I love the dogs. It gives you something to do, learn while you're here." (C)

- "I played with Lucy (a PenPals dog) a lot. It gave me stress relief. It also builds camaraderie. And I think it helps with reintegration because it's giving us a piece of the outside world." (C)

- "When I was on the street, I raised fighting dogs. The program has helped me look at dogs differently – to love and care for them. They respond." (T)

- "It teaches you to humble yourself and it teaches you patience." (C)

- "For me, it helped in learning a way to deal with the stress level. I've always been a stressful person. I used to take Xanax on the street when I was stressed. Now I have a new way to deal with everyday things. I go out and play with the dogs. I've learned a lot. I'm glad I came here." (T)

- "It relieves stress. Eases your mind." (T)

- "It got me ready to go home and be responsible. I'm a new father and it's helped me get used to being responsible so I can be responsible when I go home to my family." (T)

- "Acting out should go down because we're watched more closely by staff and inmates." (T)

- "We're watched more closely because of the dogs so we keep ourselves in line. It helps you go through it (the therapeutic community)." (T)

---

[2] Questions asked by researchers are in bold. Comments made by Treatment group participants are followed by (T); comments made by Control group participants are followed by (C).

- "You learn how to deal with emotions, when you get frustrated or when you're sad about one of the dogs leaving." (T)

What do you think was the purpose of this study?

- "I know you want to see a change, that we're more sociable and that it cures any emotional problems we have. And it's great to have the dogs and I think it affects us on some level that maybe we can't express. But you won't see a change in emotional well-being. Being depressed, having poor social skills – that doesn't apply to everyone." (T)

- "How it affects inmates. I don't know." (C)

- "To see if it helps us calm down." (C)

- "To find out what inmates really think." (C)

- "Our emotions depend on whatever crazy stuff staff's doing." (T)

- "The things you feel can't be expressed by those questions." (T)

Do you think it's important to study programs like PenPals? If so, how would you do it?

- "Yes." (Everyone)

- "Questions won't cut it. You have to have more of this – 1:1 interaction. I know it takes a lot of time but the best way is to talk to us about what it's like here and what the program is like." (T)

- "The things that you feel can't be expressed by questions." (T)

Appendix L:
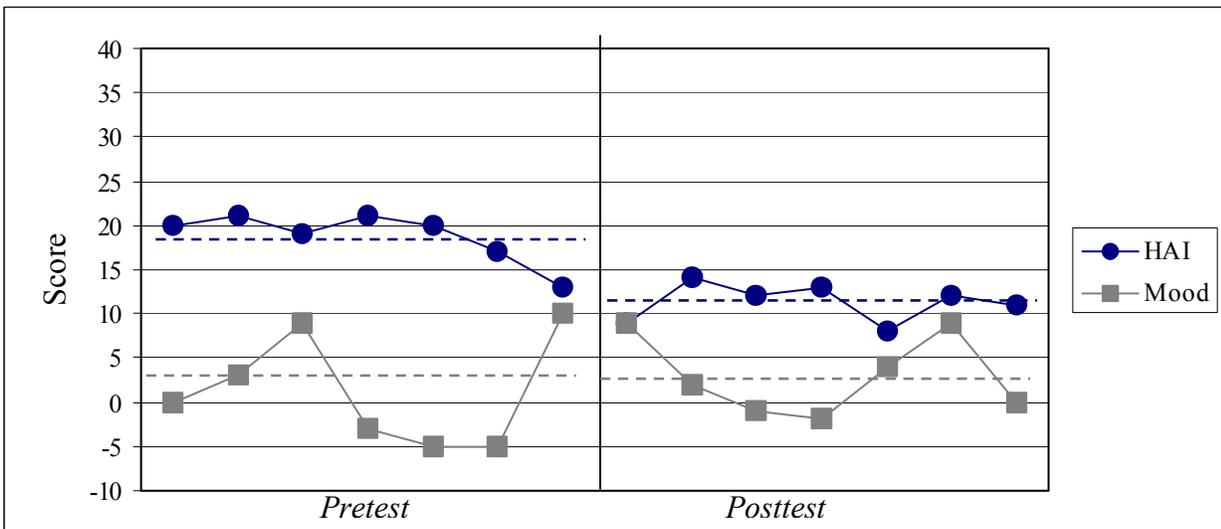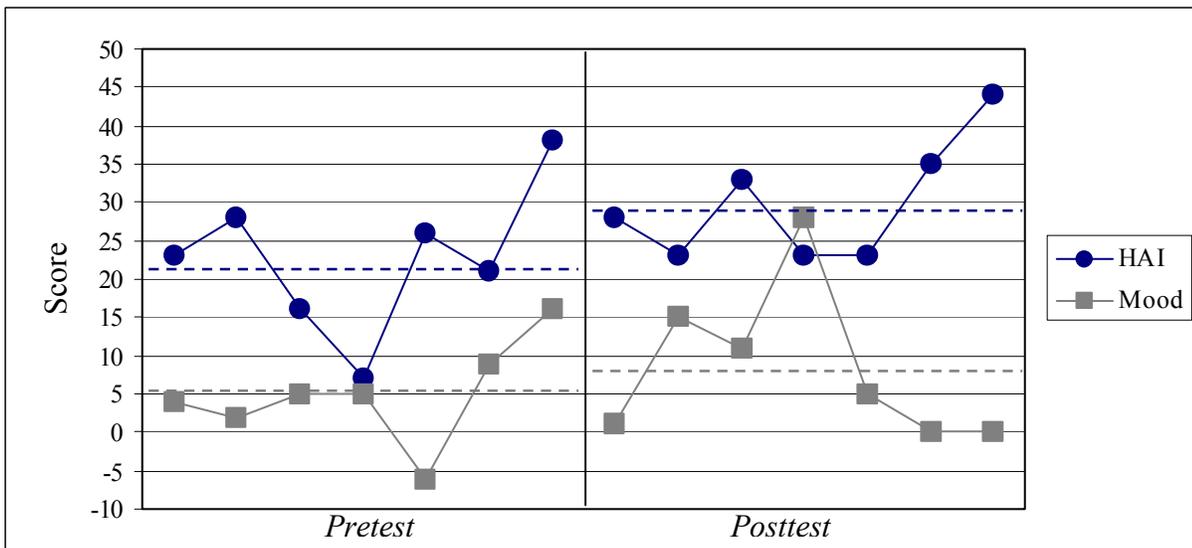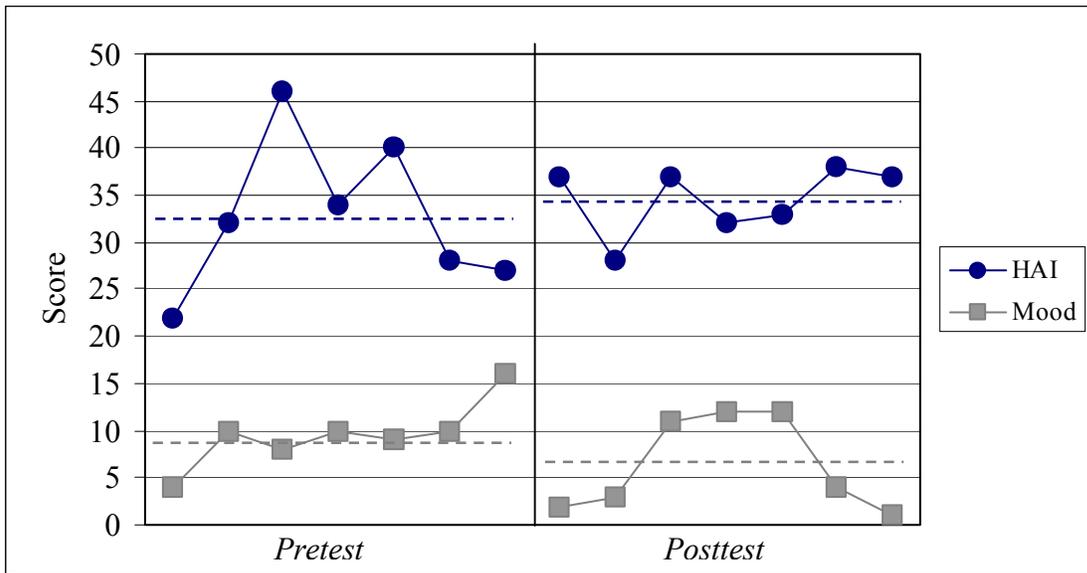
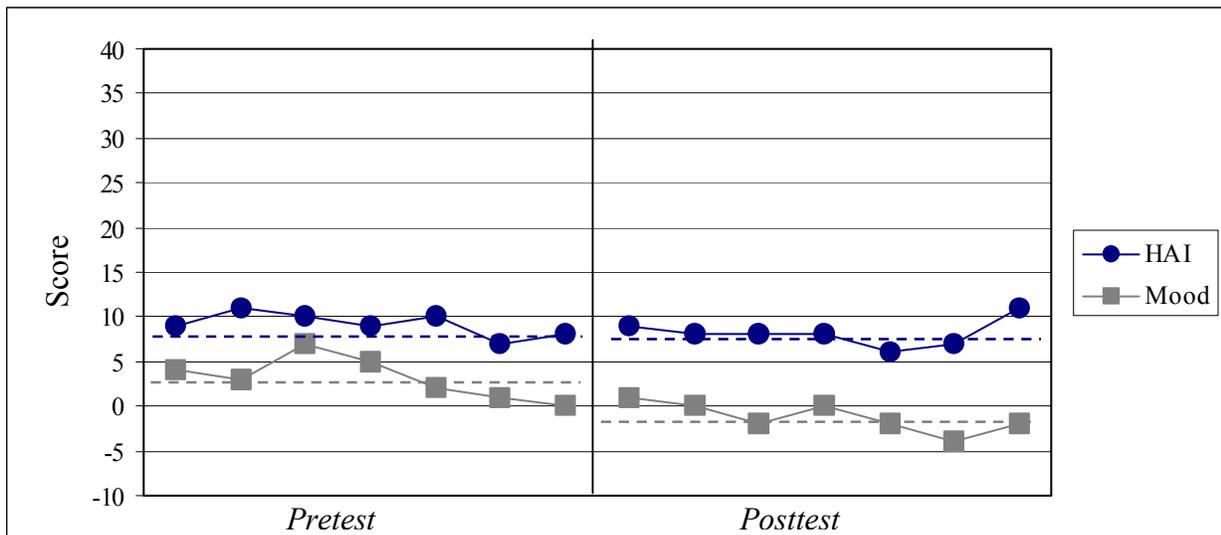*Individual Time-Series Graphs from Inmate Journals*

Figure 11. Daily Journal Scores for a participant of the Treatment Group.

Figure 12. Daily Journal Scores for a participant of the Treatment Group.

Figure 13. Daily Journal Scores for a participant of the Treatment Group.

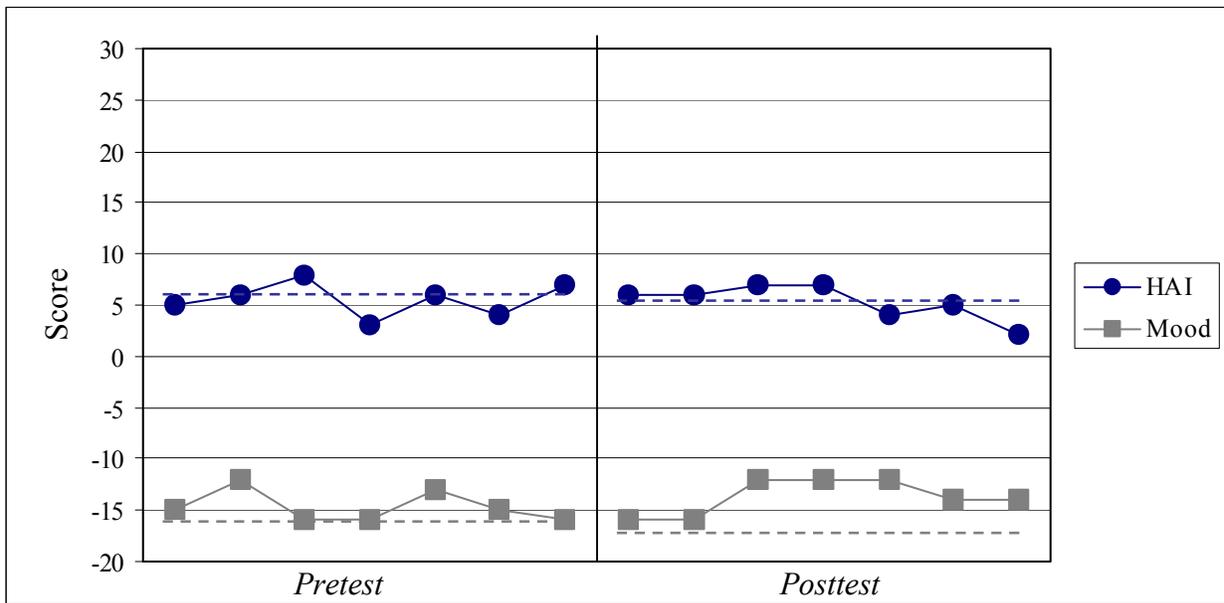***Figure 14***. Daily Journal Scores for a participant of the Control Group
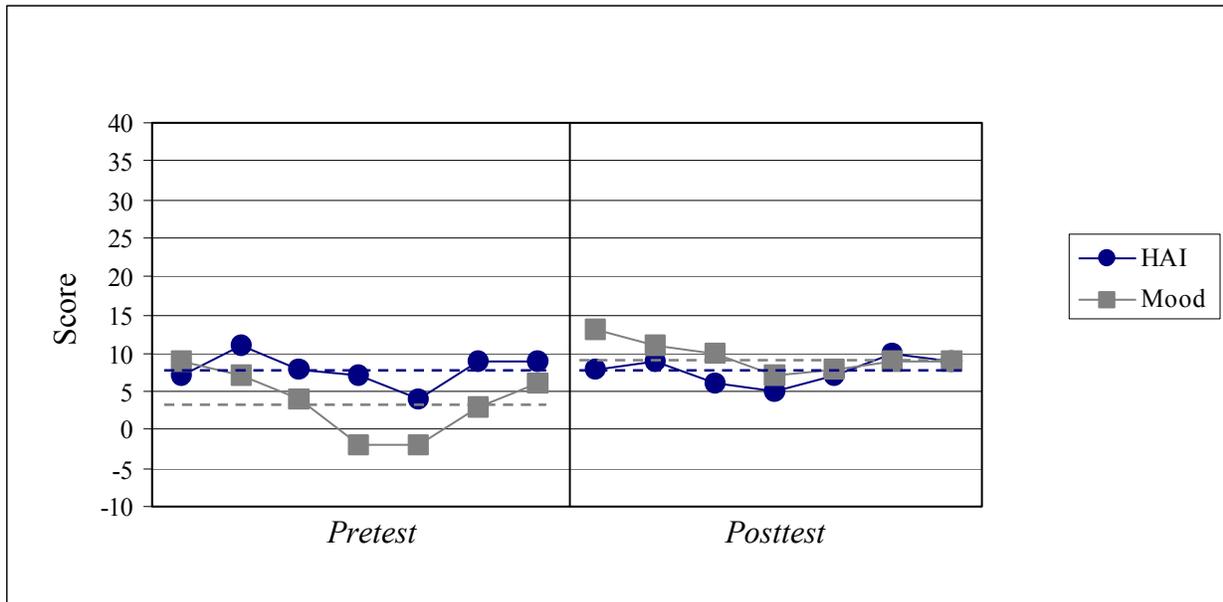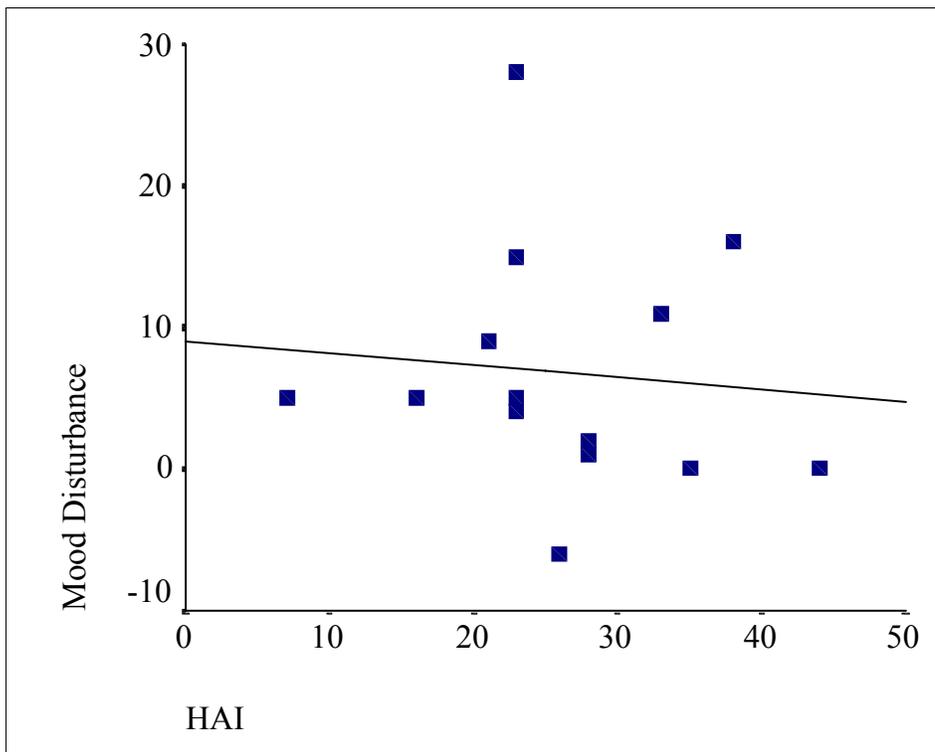
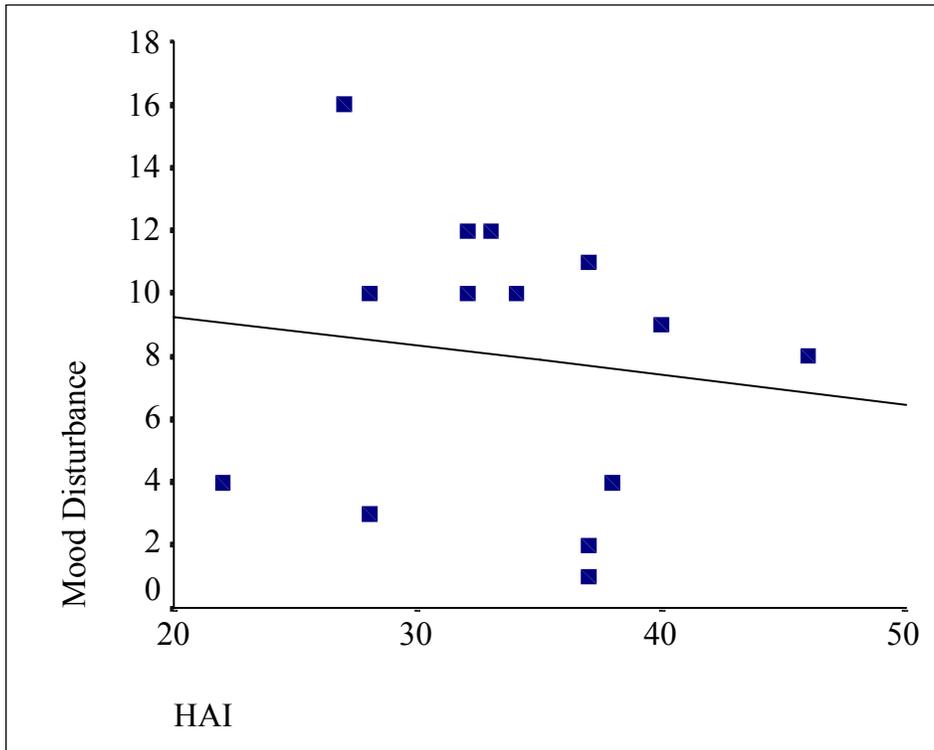***Figure 15.*** Daily Journal Scores for a participant of the Control Group.

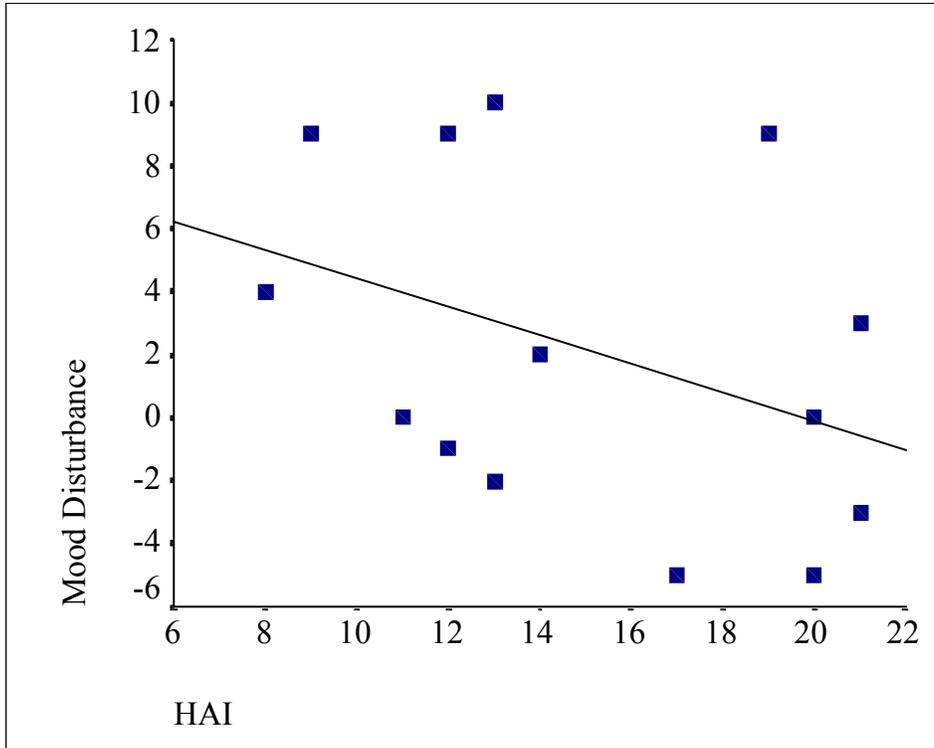*Figure 16.* Daily Journal Scores for a participant of the Control Group.

Appendix M:

Scatter Plot Graphs from Inmate Journals

Figure 17. Scatter plot depicting daily HAI and Mood Disturbance
for a participant in the Treatment group.

Figure 18. Scatter plot depicting daily HAI and Mood Disturbance for a participant in the Treatment group.
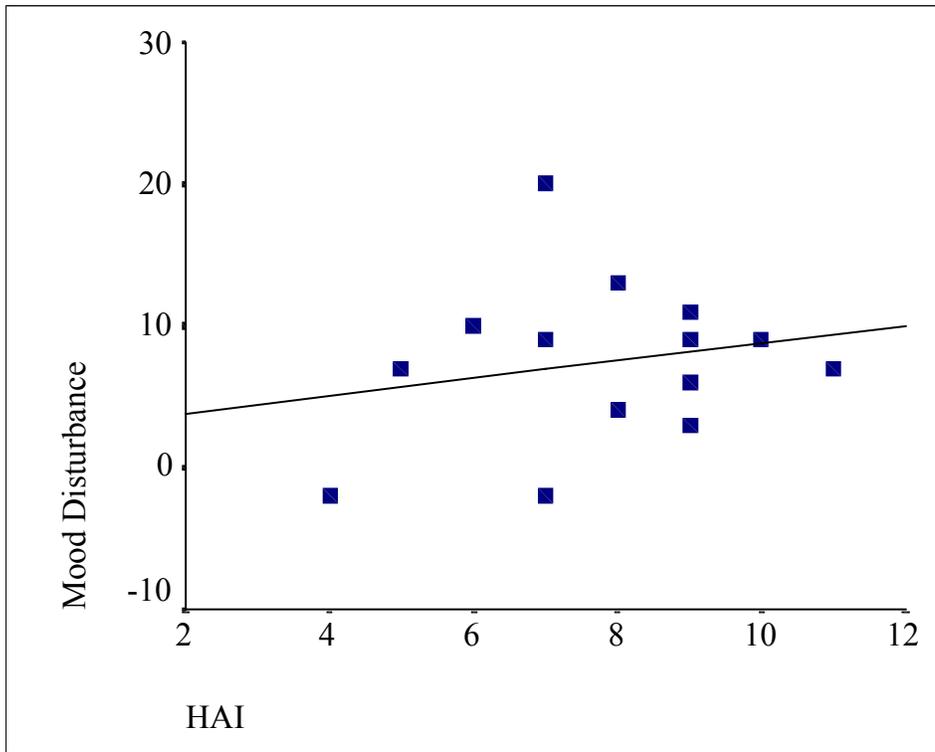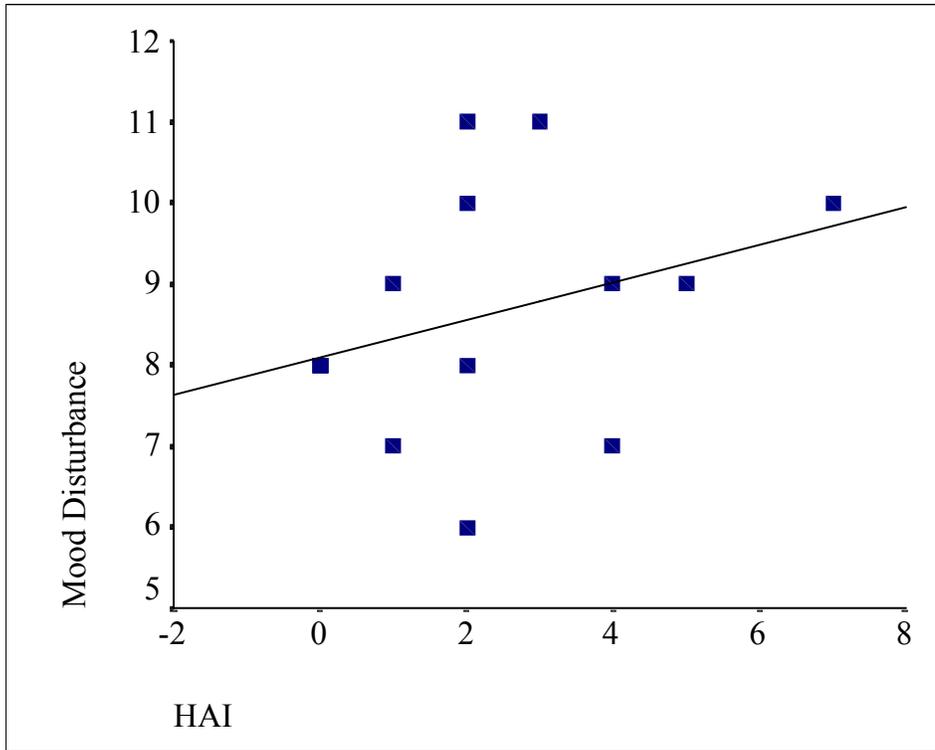
Figure 19. Scatter plot depicting daily HAI and Mood Disturbance for a participant in the Treatment group.

Figure 20. Scatter plot depicting daily HAI and Mood Disturbance
for a participant in the Control group.

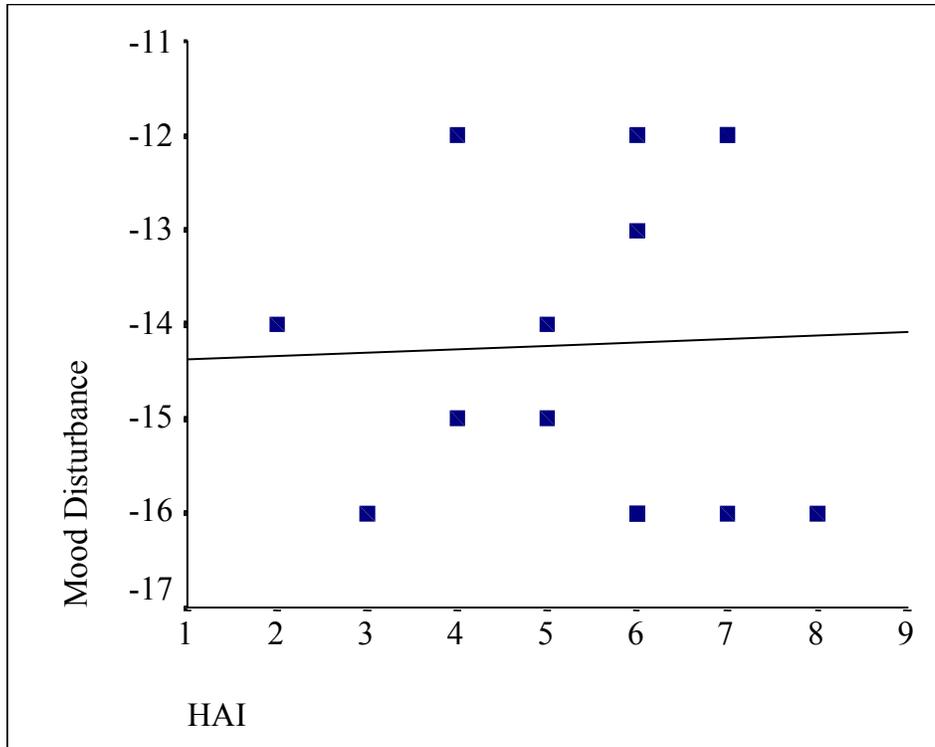***Figure 21.*** Scatter plot depicting daily HAI and Mood Disturbance
for a participant in the Control group.

Figure 22. Scatter plot depicting daily HAI and Mood Disturbance for a participant in the Control group.

Appendix N:

Participant Comments from Inmate Journals

Participant 1 – Treatment group
No Written Comments

Participant 2 – Treatment group
<u>Day 1</u>: *"I feel really good today. It was a very pretty outside until about 9:00 pm then it began to rain. Once it began to rain me and the dog came inside. But, over all it's a good day. Good Bye."*

<u>Day 2</u>: *"I really don't have too many comments this time. The dogs help my days go by and I love walking the dog."*

<u>Day 5</u>: *"She's a good dog. We're just trying to train her so she can have a good home and don't nobody do anything to hurt her."*

<u>Day 7</u>: *"I sat down most of the morning so I was angry. I couldn't play with the pup."*

Participant 3 – Treatment group
<u>Day 1</u>: *"I think that it's really good to have inmates and dogs together, because at one point all inmates get tired of seeing one another, and having a dog around gives some of us a kind of connection of being home."*

Participant 4 – Control group
No Comments

Participant 5 – Control group
<u>Day 1</u>: *"This helps me to overcome the fear I've always had about dogs from my childhood." I understand dogs now by getting past my fear of judgment."*

<u>Day 13</u>: *"This Pen Pal has allowed me to overcome my fear of dogs that I had since childhood and I'm 39 years old now. Thanks for it all!"*

Participant 6 – Control group
No Comments

Appendix O:

Curriculum Vita

CURRICULUM VITAE

Angela Krom Fournier

PRESENT POSITION AND CONTACT INFORMATION

Forensic-Psychosocial Rehab Psychology Intern, Eastern State Hospital
Department of Psychiatry and Behavioral Sciences
Eastern Virginia Medical School
825 Fairfax Ave., Hoffheimer Hall
Norfolk, VA 23507
Office Phone: (757) 253-4585
Home Phone: (757) 397-4178
E-mail: akrom@vt.edu

EDUCATION

Ph.D. Clinical Psychology. Virginia Polytechnic Institute and State University.
Cumulative GPA: 3.78. May 2005

M.S. Clinical Psychology. Virginia Polytechnic Institute and State University.
Cumulative GPA: 3.67. 2002

B.S. Psychology. Cum Laude Graduate, Christopher Newport University.
Cumulative GPA: 3.60. 2000

HONORS AND AWARDS RECEIVED

- Nominated for Graduate Student of the Year by Dept. of Psychology, *Virginia Tech*
- Who's Who Among Students in American Colleges and Universities
- Graduate Student Assembly Travel Awards, *Virginia Tech*
- Cum Laude Graduate, *Christopher Newport University*
- Award for Excellence in Undergraduate Research, *Christopher Newport University*
- Dean's List, *Christopher Newport University*
- Dean's List, *University of North Dakota*
- Graduate Research Scholarship, *American Psychological Foundation/Council of Graduate Departments of Psychology*

PROFESSIONAL MEMBERSHIPS

- American Psychological Association
- Eastern Psychological Association
- Virginia Psychological Association
- Virginia Academy of Science
- Association for Behavior Analysis
- International Society for Anthrozoology

TEACHING EXPERIENCE

COURSE INSTRUCTOR. *Department of Psychology, Virginia Tech. (2000-2004).* Sole instructor for a total of eleven undergraduate psychology classes, including two classes restricted to psychology majors. Class enrollment ranged from 15 to 86 students. Average student evaluations ranged from 3.4 to 3.8 on a 4-point scale. Duties included selecting textbooks and supplemental course materials; designing syllabi; determining evaluation criteria; preparing and presenting lectures; creating, administering, and grading assignments, activities, and exams; and advising students. Courses I have instructed include Abnormal Psychology, Social Psychology, Introductory Psychology, and Research Methods Lab.

ADJUNCT INSTRUCTOR. *Department of Psychology, Radford University, Radford, VA. (2003).* Sole instructor for one undergraduate Abnormal Psychology course at Radford University. Class enrollment was 40. Overall score on student evaluations was 4.3 on a 5-point scale. Duties included selecting textbooks and supplemental course materials; designing syllabi; determining evaluation criteria; preparing and presenting lectures; creating, administering, and grading assignments, activities, and exams; and advising students.

RESEARCH CENTER LEAD MENTOR. *Center for Applied Behavior Systems (CABS), Virginia Tech. (2002-2004).* Managed a research center within the Department of Psychology, coordinating and mentoring 70 undergraduate students and 7 graduate students. Duties included training students on research application and demonstrating research tasks, orienting new undergraduate and graduate students to the research center, editing manuscripts for publication, coordinating submission of proposals to professional conferences, scheduling and facilitating research meetings, and organizing and delegating duties for grant proposal submissions.

MENTOR OF UNDERGRADUATE RESEARCH LEADERS. *Department of Psychology, Virginia Tech. (2000-present).* Mentored and supervised undergraduate students as they planned and implemented seven independent research projects. One student went on to pursue an undergraduate honors thesis. Duties included instructing and advising on study design, data collection, data analysis, and presentation of findings. Individual student research projects are listed below:

- David Harris. *Investigating the effect of a prison-based dog-training program on inmate criminal behavior.* Independent Study.

- Rachael E. Budowle. *Literature Review and Recommendations for Animal-Facilitated Programs in Institutional Settings.* Independent Study.

- Trey Church. *An exploratory investigation of companion animal relinquishment to animal shelters: Behavioral determinants of adoption and relinquishment.* Independent Study.

- Chandra L. Johnston. *An Investigation of Information Pet Owners Receive from Facilities of Companion Animal Acquisition.* Independent Study.

- Hillary Sewell. *An exploratory investigation of companion animal relinquishment to animal shelters: Behavioral determinants of adoption and relinquishment.* Independent Study.

- Andrea Cincotta. *A Behavioral Analysis of Red-Light Running in a College Town.* Independent Study.

- Tiffany Tanner. *Exploring the Effect of Gender on Risky Driving.* Independent Study.

- Rachael E. Budowle. *An Evaluation of an Animal-Facilitated Program in an Adolescent Substance Abuse Treatment Facility.* Undergraduate Honor's Thesis.

RESEARCH EXPERIENCE

DISSERTATION RESEARCH. Investigating the Therapeutic Effects of Animal-Assisted Activities in Forensic Settings: Implications for Attachment and Social Support Theories. *Clinical Psychology, Virginia Tech (2005).* Conducting a quasi-experimental field study to investigate potential therapeutic effects of a dog-training program on the inmates in a minimum-security prison in Virginia. Inmate participants care for and train dogs from local animal shelters in basic pet obedience. The research includes a quantitative between-subject pretest-posttest comparison of inmate trainers and inmates in the general population. Dependent measures include scores on measures of mood, optimism, social skills, perception of the correctional environment and criminal behavior. The research also includes a qualitative study following a single-subject design, in which a small group of dog-training inmates and controls complete daily measures of mood and provide written accounts of their experiences. Findings will be made relevant to attachment theory and social support theory, expanding their use to explain human-animal interactions. **Committee Chair:** *E. Scott Geller, Ph.D.*

MASTER'S THESIS RESEARCH. An Incentive/Reward Intervention to Decrease College Alcohol Abuse at Fraternity Parties: Differential Reinforcement of Blood Alcohol Concentration. *Clinical Psychology, Virginia Tech. (2002).* Conducted a quasi-experimental field study to assess whether an incentive/reward intervention could change the drinking behavior and subsequent levels of intoxication among college students attending fraternity parties. Blood alcohol concentration (BAC) assessments, using hand-held breathalyzers, were obtained from 409 participants at two baseline and two intervention parties. At the intervention parties, the students were informed they could win a cash prize if their BAC was below .05, and they were given nomograms to aid in monitoring their levels of intoxication. **Committee Chair**: *E. Scott Geller, Ph.D.*

GRADUATE RESEARCH ASSOCIATE. *Center for Applied Behavior Systems (CABS), Virginia Tech. (2002-present).* Conduct research aimed at large-scale behavior change in the community to improve health and safety. Research projects have targeted safety-belt use, red-light running, aggressive driving, college alcohol use, industrial worker safety, and child safety-seat misuse. Duties include research planning; writing research protocols; organizing data collection, entry, and verification; data analysis; brainstorming and writing research

grant proposals to NICHD, NIAAA and DOE, and leading undergraduate students in research activities.

CO-INVESTIGATOR. *Virginia-Maryland Regional Veterinary Medical School (VMRVMS) Center for Human-Animal Interaction Research, Virginia Tech. (2002-2004).* Conducted research investigating the psychological impact of a prison-based service-dog training program on prison inmates. Duties included research planning; writing research protocols; collecting, entering, and analyzing data. Data collection involved interviewing and assessing inmates of a medium-security prison in Bland, VA.

RESEARCH ASSISTANT. *Psychological Services Center of Virginia Tech and New River Community Corrections, Blacksburg, VA and Roanoke, VA. (2001-2002).* Duties included data collection and entry, data analysis, and manuscript preparation for research investigating the treatment outcome of a dual-diagnosis group for drug offenders on probation or parole in the community.

UNDERGRADUATE INDEPENDENT RESEARCH. An Intervention to Increase the Hand-Hygiene Behavior of College Students. *Department of Psychology, Christopher Newport University. (2000).* Implemented and evaluated an intervention to increase hand-hygiene behavior of college students in a university residential dining facility. Observed and recorded student behavior in baseline and intervention conditions. The intervention consisted of prompts on posters and flyers and a change agent promoting hand sanitizer. **Faculty Supervisor**: *Thomas D. Berry, Ph.D.*

RESEARCH PROJECT LEADER. *Science of Psychology: Analysis, Research, and Cogitation Laboratory (SPARC), Christopher Newport University, Newport News, VA. (1999-2000).* Conducted research investigating health-related behaviors in the community. Specific projects aimed to increase handwashing behavior of college students and fast-food patrons. Duties included research planning, writing research protocols, training research assistants, creating databases, supervising research assistants, and analyzing data.

RESEARCH ASSISTANT. *Science of Psychology: Analysis, Research, and Cogitation Laboratory (SPARC), Christopher Newport University, Newport News, VA. (1998-1999).* Assisted in community health and safety research. Specific projects investigated safe-sex behavior and traffic-safety behaviors. Duties included library research, data collection, data entry, and attending weekly meetings.

RESEARCH ASSISTANT. *Psychological Research Laboratory, Old Dominion University, Norfolk, VA. (1999).* Assisted in a research study of traffic-safety behaviors. Duties included data collection via surveillance of traffic safety behaviors, specifically red light running.

PUBLICATIONS

Fournier, A. K., Ehrhart, I. J., Glindemann, K. E., & Geller, E. S. (in press). Intervening to decrease alcohol abuse at university parties: Differential reinforcement of intoxication level. In R. J. Peteva, (Ed.), *A cross section of nursing research: Journal articles for discussion and evaluation, Second edition.* Los Angeles, CA: Pyrczak Publishing.

Fournier, A. K., & Geller, E. S. (2004). Behavior analysis of companion-animal overpopulation: A conceptualization of the problem and a model for intervention. *Behavior and Social Issues, 13* (1), 51-68.

Fournier, A. K., Rayne, S. R., & Geller, E. S. (2004). Positive reinforcement and intergroup competition facilitate participation in a university classroom. *Behavior Analysis Digest, 16* (1), 2-3.

Fournier, A. K., Ehrhart, I. J., Glindemann, K. E., & Geller, E. S. (2004). Intervening to decrease alcohol abuse at university parties: Differential reinforcement of intoxication level. *Behavior Modification, 28* (2), 167-181.

Suthers-McCabe, H. M., Van Voorhees, E., & Fournier, A. K. (2004). Prison PUP: An examination of the human-animal bond in an American prison. Article under review by *Anthrozoos*.

Fournier, A. K., & Budowle, R. E. (2003). The last chance project: Pairing troubled teens and shelter dogs in the community. *Newsletter of the American Association of Human-Animal Bond Veterinarians, 9*, 1, 12.

Timmerman, M. A., Geller, E. S., Glindemann, K. E., & Fournier, A. K. (2003). Do the Designated Drivers of College Students Stay Sober? *Journal of Safety Research, 34*, 127-133.

Krom, A. M., & Geller, E. S. (2001). Dummies change the driving behavior of a college town. *Behavior Analysis Digest, 13* (4), 15.

MANUSCRIPTS IN PREPARATION

Fournier, A. K., Budowle, R. E., & Geller, E. S. The Last Chance Project: Implementing an animal foster program in an adolescent residential treatment facility. Manuscript in preparation.

Francisco, J. Fournier, A. K., Donovan, K., & Cooper, L. D. Back on Track: Evaluation of a cognitive-behavioral treatment for dual-diagnosis offenders on probation or parole. Manuscript in preparation.

RESEARCH GRANTS AND OTHER FUNDING

GRANT DEVELOPER. 2005-2007: The epidemiology of alcohol use at tailgate parties. Grant under review by the National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD. $146,200. Principal Investigators: E. Scott Geller, Ph.D., Steve Clarke, M.S., and Kent Glindemann, Ph.D.

GRANT WRITER, KEY PERSONNEL. 2002-2005: Environmental factors affecting college party drinking. Grant proposed to and approved for funding by the National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD. $325,000. Principal Investigator: E. Scott Geller, Ph.D.

PRINCIPAL INVESTIGATOR. 2004: Investigating the Therapeutic Effects of Animal-Assisted Activities in Forensic Settings: Implications for Attachment and Social Support Theories. Research grant proposed and approved for funding by Virginia Tech Graduate Student Assembly. $500.

GRANT WRITER, KEY PERSONNEL. 2002-2004: An incentive approach to reduce alcohol abuse at parties. National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD. $538,653. Principal Investigator: E. Scott Geller, Ph.D.

GRANT KEY PERSONNEL. 2002: Program Assessment: Prison PUP Program. Grant proposed to and funded by Saint Francis of Assisi Service Dog Foundation. $50,000. Principal Investigators: Marie Suthers-McCabe, D.V.M., & Elizabeth Van Voorhees, Ph.D.

GRANT WRITER, KEY PERSONNEL. 2001-2003: Testing a communication system for reducing road rage. Grant proposed to and approved for funding by the National Institutes of Health Small Business Innovative Research, Bethesda, MD. $99,999. Principal Investigator: E. Scott Geller, Ph.D.

PRINCIPAL INVESTIGATOR. 2001: An Incentive/Reward Intervention to Decrease College Alcohol Abuse at Fraternity Parties: Differential Reinforcement of Blood Alcohol Concentration. Research grant proposed and approved for funding by Virginia Tech Graduate Student Assembly. $300.

PROFESSIONAL PAPERS AND PRESENTATIONS

Harris, D., Fournier, A. K., & Budowle, R. E. (2005). *Investigating the effect of a prison-based dog training program on inmate criminal behavior.* A paper to be presented to the Association for Behavior Analysis, Chicago, IL.

Fournier, A. K., & Berry, T. D. (2005). *Are women the cleaner sex? Gender differences in health-related behaviors and attitudes.* A poster to be presented to the Eastern Psychological Association, Boston, MA.

Fournier, A. K., & Budowle, R. E. (2004). *The last chance project: Measuring the impact of an animal-based intervention on client behavior.* A poster presented to the Association for Behavior Analysis, Boston, MA.

Fournier, A. K., Budowle, R. E., Rayne, S. R., & Geller, E. S. (2004). *The cognitive misers win! Applied behavior analysis in a social psychology class.* A poster presented to the Association for Behavior Analysis, Boston, MA.

Fournier, A. K., Van Voorhees, E., & Budowle, R. E. (2004). *When the going gets "ruff" Pitfalls of applied research on the human-animal bond.* A paper presented to the Association for Behavior Analysis, Boston, MA.

Suthers-McCabe, H. M., Van Voorhees, E., & Fournier, A. K. (2004). *Evaluating the impact of a prison-based service dog training program.* A paper presented to the American Veterinary Medical Association, Philadelphia, PA.

Suthers-McCabe, H. M., Van Voorhees, E., & Fournier, A. K. (2004). *The human-animal bond in an American prison: Inmate trainer outcomes.* A paper presented to the International Society for Anthrozoology, Glasgow, Scotland.

Van Voorhees, E., Fournier, A. K., & Suthers-McCabe, H. M. (2004). *Saint Francis of Assisi Prison PUP Project: The human-animal bond in a Virginia state prison.* A paper presented to the Eastern Psychological Association, Washington, DC.

Fournier, A. K., Cincotta, A. L., & Sewell, H. (2003). *Conceptualizing a people problem: A behavior-based model of companion-animal overpopulation.* A paper presented to the Association for Behavior Analysis, San Francisco, CA.

Fournier, A. K., Ehrhart, I. J., Rayne, S. R., & Stuart, M. L. (2003). *Using differential reinforcement to reduce intoxication at fraternity parties.* A paper presented to the Association for Behavior Analysis, San Francisco, CA.

Budowle, R. E., Fournier, A. K., & Geller, E. S. (2003). *A companion-animal intervention to facilitate psychological functioning within an adolescent therapeutic community.* A poster presented to the Virginia Academy of Science, Richmond, VA.

Glindemann, K. E., Fournier, A. K., Ehrhart, I. J., & Geller, E. S. (2003). *Using differential reinforcement to reduce alcohol abuse at university parties: DRL/BAC.05.* A poster presented to the 11th Annual Meeting of the Society for Prevention Research, Washington, DC.

Keene, W. R., Geller, E. S., Lehman, P. K., & Fournier, A. K. (2003). *Fast food can be healthier, and so can you: Intervening to educate and reduce the weight of fast-food consumers.* A poster presented to the Virginia Psychological Association, Charlottesville, VA.

Lehman, P. K., Fournier, A. K., Ehrhart, I. J., & Hirota, T. (2003). *Who trashed our river? A content analysis of shoreline litter on the New River.* A poster presented to the Association for Behavior Analysis, San Francisco, CA.

Rayne, S. R., Fournier, A. K., Hargrove, M. H., & Keene, W. R. (2003). *Drinking before a date: Effects of perceived closeness on levels of intoxication.* A poster presented to the Association for Behavior Analysis, San Francisco, CA.

Cincotta, A. L., Sewell, H. B., Fournier, A. K., & Geller, E. S. (2002). *An exploratory analysis of aberrant behaviors associated with companion animal relinquishment.* Paper presented to the Virginia Academy of Science, Hampton, VA.

Donovan, K., Fournier, A. K., Cooper, L. D., Walker, R., Callahan, R., & Berkeley, N. (2002). *A brief group treatment for dual diagnosis offenders on probation.* A poster presented to the Association for Advancement of Behavior Therapy, Reno, NV.

Rayne, S. R., Ehrhart, I. J., Fournier, A. K., & Glindemann, K. E. (2002). *Alcohol consumption: An agent for male intimacy.* Paper presented to the Virginia Psychological Association, Richmond, VA.

Sewell, H. B., Cincotta, A. L., & Fournier, A. K. (2002). *An exploratory investigation of companion animal relinquishment to animal shelters: Behavioral determinants of adoption and relinquishment.* Paper to be presented to the Virginia Psychological Association, Virginia Beach, VA.

Fournier, A. K., Glindemann, K. E., & Geller, E. S. (2001). *An incentive/reward intervention at fraternity parties: Implications for the theory of planned behavior.* A paper presented to the Department of Education's Annual Meeting for the Prevention of Alcohol, Drug, and Violence in Higher Education, Washington, D.C.

Krom, A. M., Tanner, T. N., Cincotta, A. L., & Sewell, H. (2001). *A behavioral analysis of red-light running and safety-belt use in a college town.* A paper presented to the Eastern Psychological Association, Washington, DC.

Rose, M., Newlon, M., Tarmy, G., Metts, L., Savage, L., Krom, A. M., & Berry, T. D. (2001). *Survey of hand washing behaviors and hygiene habits of university students.* A poster presented to the Eastern Psychological Association, Washington, DC.

Tanner, T. N., Sewell, H., Cincotta, A. L., Krom, A. M., & Geller, E. S. (2001). *Effect of gender on risky driving.* A poster presented to the Eastern Psychological Association, Washington, DC.

Krom, A. M., Rose, M., Tarmy, G., Metts, L., & Savage, L. (2000). *An intervention to increase the hand hygiene behavior of university students.* A poster presented to the Virginia Academy of Science, Radford, VA.

Krom, A. M., Berry, T. D., Edwards, S. L., & Savage, L. (2000). *An ecological analysis of "fast food restaurant" restroom designs as influencing hand washing behavior and the spread of disease.* A poster presented to the Eastern Psychological Association, Baltimore, MD.

Berry, T. D., Porter, B. E., Cawthorn, J., & Krom, A. M., (1999). *Survey of driver safety abilities, attitudes, habits, and perceptions: Implications for community and safety psychology.* A poster presented to the Eastern Psychological Association, Boston, MA.

Edwards, S., Krom, A. M., Savage, L., Tyree, S. D., Berry, T. D., & Cartwright, K. B. (1999). *Birth order influences on sex attitudes and intentions to use condoms for university students.* A poster presented to the Virginia Academy of Science, Norfolk, VA.

Singleton, S., Krom, A. M., Edwards, S., Savage, L., Cartwright, K. B., & Berry, T. D. (1999). *A context analysis of answering safe sex questions: Comparing mailed in surveys to surveys answered at bars and clubs.* A poster presented to the Virginia Academy of Science, Norfolk, VA.

EDITORIAL EXPERIENCE

TEXTBOOK REVIEWER. *Disorders of Childhood. Chapter in Davison, Abnormal Psychology, 10th Ed. (2005).* Reviewed chapter for revised edition of Abnormal Psychology textbook, critiquing the chapter, and giving written feedback regarding the chapter's vision, content, organization, and potential areas for improvement.

TEXTBOOK REVIEWER. *Late Life and Psychological Disorders. Chapter in Davison, Abnormal Psychology, 10th Ed. (2005).* Reviewed chapter for revised edition of Abnormal Psychology textbook, critiquing the chapter, and giving written feedback regarding the chapter's vision, content, organization, and potential areas for improvement.

GUEST EDITOR. *Environment and Behavior. (2003).* Duties included reviewing manuscripts submitted for publication to the journal, critiquing the article, and giving written feedback regarding decision to publish and potential areas for improvement.

MEDIA APPEARANCES PERTAINING TO RESEARCH

- "Study aims to curb pet abandonment," Collegiate Times, *Front-page story, 3/21/02.*

- "What's in that trash?" The New River Valley Current, Roanoke Times, *Front-page story, 11/10/02.*

- "Lending a helping paw – or hoof or claw," Virginia Tech Magazine, 26 (2), 20-23, *Feature Story, Winter 2004.*

CLINICAL EXPERIENCE

FORENSIC-PSYCHOSOCIAL REHAB PSYCHOLOGY INTERN. *(present position). Eastern Virginia Medical School Department of Psychiatry and Behavioral Sciences, Norfolk, VA*. Currently completing an APA-accredited pre-doctoral clinical internship with Eastern Virginia Medical School (EVMS). The internship includes two six-month rotations at Eastern State Hospital, an inpatient psychiatric hospital for adults, and a year-long assignment in the EVMS Outpatient Training Clinic. Outpatient caseload consists of three cases including adults and couples, treating mood disorders, anxiety disorders, personality disorders, and a variety of interpersonal problems. Receiving outpatient supervision in brief cognitive-behavioral therapy, long-term object relations therapy and interpersonal therapy. Rotations at Eastern State Hospital include six-month rotations each in the Forensic Treatment Unit and the Psychosocial Rehabilitation Program. Current duties in the Forensic Treatment Unit include maintaining a caseload of inpatients adjudicated not guilty by reason of insanity (NGRI) and inpatients awaiting adjudication but deemed not competent to stand trial. Provide the services of individual therapy, group therapy, intellectual and personality assessments, weekly behavioral rounds, assessing and recording on patient progress, participating in comprehensive treatment team meetings, treatment planning, and providing evaluations to inform the court, including determining competence to stand trial and mental status at the time of the offense with mentally ill offenders. Duties in the Psychosocial Rehab rotation included the above tasks with a caseload of 10 inpatients of the medically-fragile ward. In addition to the above duties, services included developing behavior plans and facilitating psychoeducational therapy groups on relapse prevention and community reintegration. Also attend weekly didactic seminars in a variety of areas including forensic psychology, personality assessment, and multicultural issues. **Internship Director**: *Robert Archer, Ph.D., ABPP.*

CLINICAL PRACTICUM. *Psychological Services Center, Virginia Tech. (2003-2004).* Served as a clinical supervisor to three second-year graduate students treating clients from the community in an outpatient training clinic. Scientist-practitioner model was advocated at the clinic. Duties included observing therapy sessions, reviewing videotape, reading and editing therapy notes and reports, and advising student clinicians in individual and group supervision. Supervised a clinician in the use of an empirically-supported treatment for anger management. Also maintained a caseload of two outpatients. Used empirically-supported treatments for adults with anxiety and substance-related disorders. Received individual and group supervision. **Supervisor**: *Robert Stephens, Ph.D.*

TRAINING CLINIC COORDINATOR. *Psychological Services Center, Virginia Tech. (2003-2004).* Served as part-time coordinator in an outpatient training clinic. Duties included providing first-year graduate clinicians with orientation to training clinic and instruction on initial therapy session, reviewing and developing clinic policy, reviewing therapy charts of graduate clinicians and giving feedback, calculating statistics on graduate clinician hours and clinic services rendered, completing monthly financial report, writing annual clinic report, and purchasing clinic assessment and therapy materials.

CLINICAL EXTERNSHIP. *New River Community Corrections, Virginia Department of Probation and* Parole, Roanoke, VA. *(2002).* Served as a co-facilitator for the Back-On-Track group, a psychoeducational therapy group for dual-diagnosis offenders on probation and parole. Duties included completing comprehensive diagnostic assessments prior to admission to the group; scoring, interpreting and reporting on assessment results; co-facilitating weekly psychoeducational therapy group; writing comprehensive intake reports and discharge summaries; conducting follow-up interviews and assessments. **Supervisor**: *Kristine, Donovan, Ph.D.*

CLINICAL PRACTICUM. *Psychological Services Center, Virginia Tech. (2001-2003).* Served as a graduate clinician in off-campus outpatient training clinic serving the community. Scientist-practitioner model was advocated at the clinic. Duties included evaluation, assessment, and treatment of outpatient adults, adolescents, and children in the community. Assessment included administering and interpreting intellectual and personality measures and diagnostic measures as well as comprehensive report writing. Caseload included individual, couple and family cases. Treated mood disorders, anxiety disorders, substance-related disorders, and a variety of interpersonal problems. Used empirically-supported treatments where appropriate, including manualized treatments for anger management with adults and children, substance abuse/dependence, post-traumatic stress disorder, dissociative disorders, and eating disorders. Maintained a caseload of four to seven clients. Co-facilitated two anger-management groups for court-ordered offenders, also using an empirically-supported, manualized treatment protocol. **Supervisors**: *Lee D. Cooper, Ph.D.*

CLINICAL PRACTICUM. *Psychological Services Center, Virginia Tech. (2000-2001).* Served as a graduate clinician in off-campus outpatient training clinic serving the community. Scientist-practitioner model was advocated at the clinic. Duties included maintaining a caseload of one outpatient therapy client, writing therapy notes and progress reports, attending individual and group supervision meetings. **Supervisor**: *George Clum, Ph.D.*

ASSESSMENT SPECIALIST. *Respond of Lewis-Gale Medical Center, Salem, VA. (2002-2003).* Served as an on-call assessment specialist responding to psychiatric emergencies in three local hospital emergency departments. Duties included interviewing patients who were in psychiatric crisis, assessing patients' level of risk for suicide/homicide, assessing for acute psychosis, and assessing for detoxification and substance abuse treatment. Consulted with emergency department physicians and nurses, inpatient psychiatrists and nurses, community mental health professionals, and outpatient service providers in the community. Facilitated admission to inpatient psychiatric hospital. Conducted pre-certification for services with third-party payers. Referred psychiatrically stable patients to outpatient treatment facilities.

RELIEF STAFF. *Sarah Bonwell Hudgins of ARC Peninsula, Hampton, VA. (1998).* Served as direct-care staff in a residential group home for adults with developmental disabilities. Duties included assistance with daily living skills, implementing behavior modification plans, documenting and reporting on client symptomatology and physical health.

DIRECT CARE STAFF. *REM North Dakota, Grand Forks, ND. (1996-1998).* Served as direct-care staff in a residential group home for adults with developmental disabilities and mental illness. Duties included assisting with daily living skills, administering medication, implementing behavioral intervention programs, attending psychological appointments and reporting and documenting on the physical and mental health of developmentally disabled individuals with mental illness.

PSYCHOLOGICAL TESTING EXPERTISE

DIAGNOSTIC AND TREATMENT PROGRESS ASSESSMENT

Anxiety Disorders Interview Schedule for DSM-IV	ADIS
Beck Anxiety Scale	BAS
Beck Depression Inventory, Second Edition	BDI-II
Beck Hopelessness Scale	BHS
Conners' Adult ADHD Rating Scale-Self and Other	CAARS-S, O
Conners' Continuous Performance Test II	CPT-II
Coopersmith Self-Esteem Inventory	SE
Correctional Institutions Environment Scale	CIES
Drug Abuse Screening Test	DAST
Empathy Questionnaire	EQ
Folsetin Mini Mental Status Exam	MMSE
Hamilton Rating Scale for Depression	HRS-D
Inventory of Drug/Alcohol Taking Situations	IDS
MacAndrew Alcoholism Scale	MAS
Mental Status Exam	MSE
Michigan Alcohol Screening Test	MAST
Paced Auditory Serial Attention Test	PASAT
Retrospective Structured Clinical Interview	RSCI
Rotter's Locus of Control Scale	LOC
Situational Confidence Questionnaire	SCQ
Social Problem Solving Inventory-Revised	SPSI-R
State Trait Anger Inventory-2	STAXI-2
Structured Clinical Interview for DSM-IV Axis I Disorders	SCID-I
Structured Clinical Interview for DSM-IV Axis II Disorders	SCID-II
Symptom Checklist 90-Revised	SCL-90-R
Wender Utah Rating Scale-Self	WURS-S
Wender Parents' Rating Scale	WPRS

PERSONALITY ASSESSMENT

Millon Clinical Multiaxial Inventory, Third Edition	MCMI-III
Minnesota Multiphasic Personality Inventory, Second Edition	MMPI-2
Minnesota Multiphasic Personality Inventory, Adolescent Version	MMPI-A
Personality Assessment Inventory	PAI
Thematic Apperception Test	TAT

INTELLECTUAL, ACHIEVEMENT, AND NEUROPSYCHOLOGICAL ASSESSMENT

Kaufman Brief Intelligence Test	K-BIT
Repeatable Battery for the Assessment of Neuropsychological Status	RBANS
Slossen Oral Reading Test-Revised	SORT-R
Stanford-Binet Intelligence Test	SBIT
Wechsler Intelligence Scale for Children, Third Edition	WISC-III
Wechsler Adult Intelligence Scale, Third Edition	WAIS-III
Wechsler Memory Scale-Third Edition	WMS-III
Woodcock-Johnson Achievement Test, Third Edition	WJ-III

CLINICAL GRADUATE COURSEWORK & SEMINARS

- Psychopathology
- Child Psychopathology
- Clinical Practicum
- Research Methods
- Introduction to Clinical Psychology Assessment
- Psychological Perspective of Social Psychology
- Ethics
- Personality Processes
- Biological Bases of Behavior
- Psychophysiology
- Behavioral Management of Large-Scale Systems
- Advanced Developmental Psychopathology
- Advanced Topics in Clinical Psychology: The Psychology of Justice
- Statistics for Social Sciences Research I
- Statistics for Social Sciences Research II
- Statistics for the Behavioral Sciences
- Forensic Psychology
- Suicide Assessment
- Sleep Disorders
- Personality Assessment
- Biofeedback
- Psychopharmacology
- Play Therapy
- Psychotherapy with Gay/Lesbian Clients
- Multicultural Issues
- Cognitive-Behavioral Therapy
- Neuropsychology

COMPUTER SKILLS

- **Website Creation:** HTML text, Netscape Composer
- **Data Analysis:** SAS, MS Access, SPSS
- **Data Management:** MS Excel, MS Access, SPSS
- **Documents:** Claris works, MS Word, WordPerfect
- **Presentations:** MS PowerPoint
- **Images:** Adobe Photoshop, Plustek Flatbed Scanner, Paint Shop Pro

REFERENCES

E. Scott Geller, Ph.D.
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