

1-1-2014

Animal-Assisted Therapy For Incarcerated Youth: A Randomized-Controlled Trial

Nicholas P. Seivert
Wayne State University,

Follow this and additional works at: http://digitalcommons.wayne.edu/oa_theses

 Part of the [Psychology Commons](#)

Recommended Citation

Seivert, Nicholas P, "Animal-Assisted Therapy For Incarcerated Youth: A Randomized-Controlled Trial" (2014). *Wayne State University Theses*. Paper 392.

This Open Access Thesis is brought to you for free and open access by DigitalCommons@WayneState. It has been accepted for inclusion in Wayne State University Theses by an authorized administrator of DigitalCommons@WayneState.

**ANIMAL-ASSISTED THERAPY FOR INCARCERATED YOUTH: A
RANDOMIZED-CONTROLLED TRIAL**

by

NICHOLAS P. SEIVERT

THESIS

Submitted to the Graduate School

of Wayne State University

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

MASTER OF ARTS

2014

MAJOR: PSYCHOLOGY (Clinical)

Approved by:

Advisor

Date

© COPYRIGHT BY
NICHOLAS P. SEIVERT
2014
All Rights Reserved

TABLE OF CONTENTS

List of Tables	iv
List of Figures	v
Chapter 1	1
Introduction.....	1
Characteristics of Incarcerated Youth.....	1
Treatment for Incarcerated Youth.....	2
Youth Characteristics Associated with Delinquency.....	5
Interpersonal Dynamics and Delinquency	6
Empathy and Attachment.....	7
Animal-Assisted Therapy	9
The Current Study.....	10
Chapter 2.....	12
Method	12
Participants.....	12
Procedures.....	12
Conditions.....	13
The Current Study.....	10
Animals Used in the Project	14
Measures	14
Internalizing and Externalizing Behaviors.....	15
Empathy	15

Dog Attachment	16
History of Foster Care and Maltreatment	17
Social and Attachment Information	17
Hypotheses	17
Hypothesis 1	17
Hypothesis 2	18
Hypothesis 3	19
Chapter 3	20
Results	20
Preliminary Analyses	20
Treatment Effects on Behavior Problems and Empathy	21
Dog Attachment	23
Maltreatment and Foster Care History	24
Exploratory Analyses	27
Chapter 4	29
Discussion	29
Impact of Program on Empathy	29
Impact of Program on Internalizing Problems	30
Impact of Maltreatment/Foster Care History on Outcomes	31
Null Findings	32
Implications, Recommendations, and Future Directions	33
Appendix A	35
Appendix B	51

Appendix C	52
Appendix D	53
Appendix E	54
References	55
Abstract	62
Autobiographical Statement.....	64

LIST OF TABLES

Table 1: Demographics of Sample.....	35
Table 2: Description of Teacher's Pet Classroom Material Covered by Session	36
Table 3: Variables for Analyses, Measures Taken From, and Sample Items	40
Table 4: Results from Analyses of Relevant Variables	42
Table 5: Means and Standard Deviations (SD) of Behavior Problems and Empathy Scores by Group.....	43

LIST OF FIGURES

Figure 1: Overview of findings on percentage of incarcerated youth with psychiatric disorders	44
Figure 2: Percentage of juvenile detention facilities in the U.S. providing mental health service	45
Figure 3: Mean empathic concern score as a function of time and maltreatment/foster care history service	46
Figure 4: Empathic Concern by Group and Maltreatment/Foster Care History	47
Figure 5: Perspective Taking by Group and Maltreatment/Foster Care History.....	48
Figure 6: Staff Reported Internalizing Problems by Group and Maltreatment/Foster Care History	49
Figure 7: Youth Reported Internalizing Problems by Group and Maltreatment/Foster Care History.....	50

CHAPTER 1

Introduction

The broad goal of the current study is to examine scientifically the use of an animal-assisted therapy (AAT) with incarcerated youth. The most recent United States Census indicated that there were 70,792 juveniles incarcerated in 2010 (Sickmund, Sladky, Kang, & Puzzanchera, 2011). Research on diagnosis and treatment of mental illness found in these individuals is an extremely important endeavor. Successful treatment could have the potential to keep these youth from reoffending (recidivism), thus improving the quality of their lives and helping them become productive members of society.

Characteristics of Incarcerated Youth

Youth become incarcerated for a variety of different reasons. The U.S. Office of Juvenile Justice and Delinquency Prevention (OJJDP) uses the Violent Crime Index to define what crimes are considered severe; these include homicide, robbery, aggravated assault, and sexual assault. Approximately one out of four incarcerated youth are detained for committing a crime that falls into this category. The majority of adjudicated youth, however, are being held for committing other offenses such as property crimes (e.g. theft, burglary), drug related crimes, simple assault, weapon possession, and status offenses (e.g. running away, underage drinking, truancy, and incorrigibility). Approximately 87% of incarcerated youth are male and 56% are ages 16-17. As for race/ethnicity breakdown, 41% are identified as Black, 32% as White, 22% as Latino, and 5% were other ethnicities. (Sickmund, Sladky, Kang, & Puzzanchera, 2011)

Teplin and colleagues (2002) conducted a comprehensive study examining the mental health of incarcerated youth. They used the Diagnostic Interview Schedule for Children (DISC) (Shaffer et al., 1996) to obtain psychiatric diagnoses in a sample of individuals at intake into the

Cook County Juvenile Justice Center between 1995-1998 (see Figure 1). They found that 66.3% of males and 73.8% of females in the sample had a diagnosable mental disorder. For both males and females, the most common diagnoses were substance use disorders, with 50.7% and 46.8%, respectively, followed by disruptive behavior disorders, such as oppositional defiant disorder and conduct disorder, seen in 41.4% and 45.6%, respectively. These youth also had high rates of anxiety disorders (21.3% for males, 30.8% for females) and affective disorders (18.7% for males, 27.6% for females). Other studies with different samples of adjudicated youth have found similar rates of psychiatric diagnoses (Shufelt & Coccozza, 2006; Wasserman et al., 2005). Given the high rates of mental health problems in these youth, juvenile detention facilities should provide services to treat these conditions. However, many facilities fail to provide the comprehensive services, such as individual counseling, group therapy, and family therapy, which are needed to treat these individuals.

Treatment for Incarcerated Youth

One meta-analysis examined the effects of treatments for serious juvenile offenders (i.e. adjudicated delinquents with prior offenses involving person or property crimes) on rates of recidivism (Wilson, Lipsey, and Cothorn, 2000). Overall, these treatment programs reduced rates of recidivism by 12%. The types of programs that were most effective at reducing recidivism focused on interpersonal skills or were group homes. Interpersonal skills training primarily involves teaching the youth how to deal with both positive and negative social interactions in an adaptive way. Group homes, or teaching family homes, are community-based, family style homes led by supervising adults and focused on behavior modification using a token economy. Positive but inconsistent evidence for reduction in recidivism was found for other types of treatments. These include what the authors called “behavioral programs” that use a

group-cognitive behavioral approach, community residential programs that include individual and group counseling as well as vocational training, and multiple services that included camp-like components where services are provided and activities conducted in a cottage setting. Interventions that demonstrated no or weak effects included drug abstinence, vocational training, and milieu therapy. The study demonstrates that services can be provided effectively to adjudicated youth, but the extent to which the services match the youth's needs is unknown.

A national survey of mental health services provided in juvenile correction facilities in the U.S. (see Figure 2) indicated that the most common type of treatment was related to substance use, with 74% of facilities offering this service (Young, Dembo, & Henderson, 2008). Furthermore, 62% provided mental health assessments and 54% provided some type of mental health counseling. Other services included family therapy (41%) and communication/social skills development (50%). Although most facilities provide some form of treatment or mental health services for youth, it is unclear the extent to which the treatment and services provided are appropriately matched to the specific issues/disorders of the youth receiving the treatment. There is a lack of knowledge regarding what treatments work for the specific issues youth have in this setting. Researchers should focus on identifying mechanisms of change in these interventions to gain greater understanding about how and why they work.

As previously mentioned, substance use disorders are the most commonly occurring mental disorders in adjudicated youth (Teplin et al, 2002) so it is not surprising that services commonly target those problems (Young, Dembo, & Henderson, 2008). However, it is unclear whether these programs are effective at reducing substance use disorder rates in this population. Furthermore, incarcerated youth have high comorbidity rates, with the majority having at least two mental health diagnoses, which complicates treatment (Abram et al., 2003; Shufelt &

Cocozza, 2006). Thus, single focus treatments, e.g. for substance abuse alone, are not likely to be sufficient to address the complex problems identified in these youth. Considering the similar findings regarding high psychiatric diagnosis rates found in several studies (Teplin et al., 2002; Shufelt & Cocozza, 2006; Wasserman et al., 2005), these samples are likely representative of incarcerated youth across the US. Thus, there is a great need for high quality treatment in this population.

However, the fact that only 54% of facilities or less provide some type of treatment beyond substance use (e.g. counseling, family therapy, skills training) indicates that there is a large gap in need vs. availability of services. A major reason that services are not provided could be their cost. Much of the money used to run these facilities comes from a variety of public sources including federal, state, county, and city (Young, Dembo, & Henderson, 2008) all of which have been negatively affected by the recent economic crisis and may be unwilling to provide additional funds. Therefore, the need for detention facilities to be efficient in their use of resources could be one explanation for why more comprehensive treatment is not offered.

In sum, youth in juvenile detention demonstrate high rates of mental health problems, but many facilities do not provide adequate services. The ones that do provide services do not deliver the comprehensive treatments needed for the complex mental health problems facing these youth. Generally speaking, empirically supported treatments (ESTs) must have demonstrated efficacy through rigorous scientific evaluation, typically including the use of experimental research designs (Chambless & Ollendick, 2001). Some treatments, such as ones that involve interpersonal/social skills training, have been shown to be effective, but it is unclear how and why these programs work. Treatment programs should be empirically supported and include a thorough examination of the mechanisms through which these treatments work. One

way to examine treatment mechanisms is to look at whether and how characteristics of individuals receiving a specific intervention are related to outcomes, and based on those findings, provide services that are tailored to the specific needs of these individuals. The proposed project will examine one specific type of intervention, animal-assisted therapy (AAT) with adjudicated youth. This study aims to establish empirical support for the use of AAT with this population and examine potential predictors of treatment outcomes.

Youth Characteristics Associated with Delinquency

Lahey, Baldwin, & McBurnett (1999) propose a framework for understanding, generally, the development of antisocial behavior. Antisocial behavior in youth includes things like lying, theft, vandalism, use of a weapon, and bullying. As previously discussed, the causes for arrest in youth are frequently related to these antisocial behaviors. Age of onset of this type of behavior is an important predictor of its persistence. The younger in which this behavior begins, the more likely it is to persist throughout the lifespan. Expanding on this idea, those youth that demonstrate antisocial behavior at an early age (e.g. pre-adolescence) are more likely to be incarcerated. In addition to the timing of behavioral onset, it is also important to distinguish between aggressive and non-aggressive antisocial behavior. Generally speaking, there is a positive linear relation between age and non-aggressive antisocial behavior (e.g. truancy, status offenses) and an inverse relation between age and aggressive behavior (e.g. fighting). However, for a subgroup of individuals, their level of physical aggression increases. For this cohort, relatively benign behaviors like bullying are exchanged for more serious offenses, such as mugging, as they get older. In addition, the authors note that there is a strong association between childhood oppositional temperament and later antisocial behavior. This construct is viewed to have large biological and genetic components. Indicative behaviors include things like

throwing tantrums, irritability, and resistance to control during early childhood, which persist and could lead to serious antisocial/delinquent behavior during adolescence and adulthood.

These youth show deficiencies in a wider range of functioning beyond externalizing/antisocial behavior, including social, emotional, and academic deficits. Youth who often do things like fight, destroy of property, and steal, are more likely to be arrested, which can lead to incarceration (Nagin & Tremblay, 1999). These high externalizers are also likely to have academic weaknesses (Hinshaw, 1992). Incarcerated youth have other mental health issues, including elevated levels of internalizing and psychotic symptoms as well (Armistead, Wierson, Forehand, & Frame, 1992). Taken together, these factors demonstrate the importance of assessing and addressing a wide range of psychological functioning, including internalizing and externalizing symptoms, in adjudicated youth.

Interpersonal Dynamics and Delinquency

Interpersonal relationships also play a role in the development and maintenance of delinquent behavior. First, peer relations are important to consider. For those youth that show earlier signs of antisocial behavior, having antisocial friends does not necessarily increase their already high likelihood of future delinquent behavior. However, those with later onset antisocial behavior are more likely to be influenced by delinquent peers. (Lahey, Baldwin, & McBurnett, 1999) Increased spending of time with delinquent peers is frequently the result of lax parental supervision (Patterson, Reid, & Dishion, 1992). Loeber & Stouthammer-Loeber (1986) found the strongest predictors of juvenile conduct problems and delinquency were lack of parental supervision and parental rejection. They suggest that these parental factors are due to poor parenting skills. Parental history of criminality was moderately associated with juvenile conduct problems and delinquency, further supporting that there are both learned and inherited (genetic)

factors contributing to delinquency. Other factors, such as maltreatment, have also been linked to delinquency. In a sample of urban male youth with substantiated reports of maltreatment, nearly half showed persistent, serious delinquency (Stouthammer-Loeber, Wei, Homish, & Loeber, 2002).

Children in the foster care system are also at increased risk for delinquent behavior and incarceration. One study found that male youth in foster care are five times more likely and female youth are ten times more likely than the general population to be incarcerated as juveniles (Jonson-Reid & Barth, 2000). The study also revealed specific factors predicting adjudication of youth in the foster care system, including being between ages 11-14 when entering first foster placement and having a history of multiple placements. These specific elements of a youth's social history show significant predictive power for delinquency and, therefore, are important to consider when developing effective interventions.

Youth high in externalizing symptoms may also show negative responses and be less able to understand others' emotions in contexts where positive responses are more adaptive (Casey & Schlosser, 1994). This deficient ability in appropriate appraisal of and response to social situations could be related to a lack of perspective taking, which may partially be due to lack of empathic modeling demonstrated by adults (Decety & Meyer, 2008). Giving youth the opportunity to learn about and practice good social behaviors may be a way to improve these deficiencies. AAT can be used as an experiential learning process to promote prosocial skills.

Empathy and Attachment

Broadly defined, empathy is "sharing the perceived emotions of another" (Eisenberg & Strayer, 1990, p. 5). One meta-analysis conducted by Miller & Eisenberg (1988) found an inverse relation between empathy and aggression. In addition, they found that children low in

empathy were at risk for abusing other children as well as being the victim of child abuse.

Another meta-analysis found that low cognitive empathy (i.e. perspective taking) was strongly associated with committing crimes, particularly for adolescents (Jolliffe & Farrington, 2004).

This research demonstrates a clear link between externalizing behavior and low empathy, both of which are commonly seen in juvenile offenders. Creating and implementing interventions that target these problems are needed, and AAT may be an effective method for doing so.

Empathy is often tied to secure attachment, as both predict prosocial behavior in adolescents (Thompson & Gullone, 2008). Bowlby (1982) broadly defines attachment as “any form of behavior that results in a person attaining or maintaining proximity to some other clearly identified individual who is conceived as better able to cope with the world” (p. 668). Many incarcerated youth, however, have families that are not involved or available to provide a secure attachment. A disorganized early attachment pattern in children is associated with increased likelihood of aggressive behavior during school age years (Lyons-Ruth, 1996).

Adolescents with histories of maltreatment are more likely to show maladaptive attachment patterns and are at increased risk for perpetrating and being the victim of violence in peer relationships (Wekerle & Wolfe, 1998). One study examined the relation between youth’s maternal attachment at age 16 and subsequent levels of delinquency and social skills up to age 18 (Allen et al., 2002). They found that adolescents with secure attachment at 16 had greater social skills at age 18 and those with insecure/preoccupied attachment organization were at higher risk for delinquency between ages 16-18.

Incarcerated youth that have been in foster care may be at greater risk for having experienced disruptions to attachment due to their experiences in the foster care system (Marcus, 1991; Newton, Litrownik, & Landsverk, 2000). Secure attachment, even when it is not in

relation to the child's original primary care giver, can act as a protective factor from maladjustment. One study found that African-American males in foster care were at significantly lower risk for delinquency when they had strong levels of attachment to their foster family (Ryan, Testa, & Zhai, 2008). In sum, attachment is an important predictor of outcomes and should be considered when designing, implementing, and evaluating interventions for incarcerated youth.

Kurdek (2009a) found evidence that pet dogs can serve as attachment objects for humans. They provide some of the same properties of a human attachment relationship such as physical proximity, being missed when absent, provision of comfort (i.e., secure base), and contact and reassurance when an individual is distressed (i.e., safe haven). Young adults in particular tend to turn to their dogs during times of emotional distress, especially when they were highly involved in their dog's care and the dog met their needs for emotional relatedness, e.g. feeling loved and cared about when with their dog (Kurdek 2009b). Attending to the feelings and needs of others has been linked to empathy development (Eisenberg & Strayer, 1990). Furthermore, there is evidence for a positive correlation between empathy and pet attachment in school age children (Melson, Peet, & Sparks, 1991). Animals can serve as catalysts or mediators of human social interaction (Krueger & Serpell, 2010), and may increase empathy in humans. Thus, AAT provides an opportunity for adjudicated youth to learn and practice prosocial behavior.

Animal Assisted Therapy

Animal assisted therapy (AAT) is a form of treatment that has promising potential for use with incarcerated youth. The Delta Society is an organization dedicated to studying and using animals therapeutically. They define AAT as the following:

A goal-directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. AAT is directed and/or delivered by a health/human service professional with specialized expertise, and within the scope of practice of his/her profession. AAT is designed to promote improvement in human physical, social, emotional, and/or cognitive functioning ... AAT is provided in a variety of settings and may be group or individual in nature. This process is documented and evaluated.

(Animal-Assisted Therapy)

However, despite AAT's growing popularity, the efficacy of such treatments has yet to be established. Studies that have been reported typically have small, unrepresentative samples and no control group. (Krueger & Serpell, 2010) AATs have been conducted with a variety of animals, including dogs, cats, rabbits, and horses, in a variety of settings, such as nursing homes, hospitals, and prisons, with a different populations, including children with autism, older adults, and criminals (Nimer & Lundahl, 2007). AAT offers a unique experience for adjudicated youth that can promote a secure attachment with a dog and thus help the youth manage their emotions and develop empathy skills.

The Current Study

The broad goal of the project is to test the effectiveness of an animal assisted therapy to promote secure attachment, increase empathy, and reduce internalizing and externalizing problems in incarcerated adolescents. The specific aims of the current study were to 1) examine dog attachment as a potential mechanism for reducing behavior problems and increasing empathy in the youth, and 2) examine the impact of the youths' previous experience of maltreatment and/or involvement in the foster care system as influences on treatment outcomes. For youth with externalizing problems, treatments tend to be especially effective when a strong

therapeutic alliance is formed (Shirk & Karver, 2003). In this study, therapeutic alliance is represented by the participants' attachment to their assigned dogs. Dog attachment was expected to mediate the relation between pre- and post-assessment outcomes behavior problems and empathy. The youths' development of a secure attachment relationship with the dogs through the non-threatening, healthy interaction of training was expected to decrease internalizing and externalizing behavior as well as increase empathy. Furthermore, youth with a history of maltreatment and/or involvement with the foster care system were expected to benefit the most from treatment due to the attachment-based nature of the intervention.

CHAPTER 2

Method

Participants

This study was a randomized controlled trial (RCT) of adjudicated youth to the AAT treatment group or a dog-walking control group. The current study was part of a larger project broadly examining the effectiveness of the intervention and was supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development and Mars-WALTHAM® (Grant #R03HD070621).

A total of 138 youth consented to participate. Demographic characteristics (See Table 1) are as follows: 69.6% male, 45.7% White/Caucasian, 44.2% Black/African American, 10.1% Other. The mean age was 15.7 (SD = 0.9), range 13 – 18 years. More than one-fourth of participants had a substantiated history of maltreatment and/or involvement in the foster care system. More than two-thirds had previously received a psychiatric diagnosis or psychological treatment of some kind. The detention center administration expressed concern about whether a control group was necessary, as they wanted all the youth to be able to participate in the intervention. Researchers agreed to a randomization such that approximately 60% of participants would be placed in the intervention group in order to maximize the number in the treatment and still maintain scientific integrity. As such, 60.1% were in TP and 39.9 were in DW. 73.2% participated at site 1 and 26.8% participated at site 2.

Procedures

Youth assent and parental consent were obtained for each participant. Participants were given a \$50 gift card to a local store at the end of their incarceration. As youth volunteer to participate and were given consent by their parents or guardians, they were randomly assigned to

one of two groups, either treatment or control conditioning. The program was run in cohorts, that is a group of 10 participants, with approximately half in the treatment and half in the control condition, will complete the entire 10 week program together. The intervention consisted of an AAT called Teacher's Pet (www.teacherspetmi.org) that was already been implemented in the study centers for several months prior to the start of the research project. The program has also been implemented in other settings including an alternative high school and a summer camp.

Conditions

Both treatment and control groups participated in 2-hour sessions twice per week for a total of 10 weeks. The sessions included an animal education (didactic) component and a dog interaction component. The didactic portion of the program took place in a classroom on the detention facilities' campus. For the treatment group, the dog interaction component consisted of experiential learning in the form of positive dog training with the aim of readying a shelter dog for adoption. Treatment group participants worked with one dog for the first half of the program and another dog during the second half. The control group had the same time spent in dog interaction and education content as the treatment group but will not engage in dog training. Rather, they simply walked a dog for the same duration (1 hour, twice per week, or 30 minutes 4 times per week) as the treatment group spent training their dogs. This allowed researchers to examine the specific effects of experiential learning of dog training on outcomes, not just the passage of time or contact with the animal. Weather permitting, the program activities involving dog contact took place outdoors on the campuses, otherwise space in the indoor gymnasiums at the facilities were utilized. Table 2 contains a detailed description of the material covered and activities conducted during each classroom session.

Animals Used in the Project

Dogs at the county animal shelters underwent a health exam and if deemed healthy, were considered for the program. They are then taken through a temperament evaluation, testing for aggression toward other dogs and humans. If they passed these examinations, they were considered safe for human interaction and suitable for use in the program. Most of the shelter dogs used previously in the program have been over 1 year old and had basic behavior problems, including jumping and pulling behavior (when leashed), as well as lacking socialization. Each day of the program, the dogs were transported between the county shelter and the detention center by program staff. Researchers provided \$500 to the shelters in which the dogs are obtained to aid with the cost of animal care.

Measures

Some measures were given individually (self-report) and others were obtained through chart review. The chart review is based on records kept by the detention centers and was completed by detention center staff or Teacher's Pet program staff. Staff read through the participants' charts and completed the Chart Review Form (See Appendix B). The form included demographic information, such as race/ethnicity, age, gender, and household structure. Also recorded on the form are reason(s) for adjudication, psychiatric history, medical problems, and number of previous incarcerations. Additional information gathered through chart review is discussed in a subsequent section of the proposal. Table 3 contains a list of all variables planned for use in analyses and measures from which they are derived, as described in the following sections.

Internalizing and Externalizing Behaviors

Internalizing and externalizing behaviors were assessed at baseline and post-intervention using the Teacher Report Form (TRF), completed by facility staff, and the Youth Self Report (YSR), completed by the youth themselves. These measures were drawn from the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach, 2009). The ASEBA measures are broad screening tools; respondents rate question items on a 0 - 2 scale (0 = Not true, 1 = Somewhat or Sometimes True, 2 = Very True or Often True). Sample items from the measure are included in Table 3. Taken together, responses to these items provide scores for three broad scales: Internalizing, Externalizing, and Total Problems. Other scales can also be obtained from the measures but are beyond the scope of the current study. These measures demonstrate excellent psychometric properties (Ebesutani et al., 2010; Greenbaum & Dedrick, 1998). Participants and their facility staff completed their respective forms before the program activities started (pre-intervention) and again for each youth upon completion (post-intervention). Scale T-scores for each youth were calculated through ASEBA software. The scores were used to compare symptoms from baseline to post-intervention for the treatment and control groups.

Empathy

Researchers examined empathy as an outcome of treatment using part of the Interpersonal Reactivity Index (IRI; Davis, 1983), a self-report measure of dispositional empathy. Two subscales of the measure were given to participants: Empathic Concern and Perspective Taking. Each subscale contains 7 items that are rated on a scale of 0 - 4 (0 = Does not describe me well, and 4 = Describes me very well). Total scores for each scale were used for analysis purposes and were obtained by summing all of the items on each respective scale. Table 3 includes sample items from the measure and indicates the subscale on which the item loads.

The full measure is included in Appendix C. As with the ASEBA measures, participants completed the form before the intervention and at post-intervention. This measure has been used with good reliability in studies of offenders, including adolescents (Jolliffe & Farrington, 2004). Internal consistency of this measure from project participants will be reported.

Dog Attachment

Participants' attachment to the dogs they work with was also examined, as dog attachment is theorized to be the primary mechanism through which the intervention works. Existing measures of human-animal attachment assume a prior existing relationship with an animal (e.g. a pet), so only applicable subscales were selected from two relevant measures to comprise a 10-item measure for this project. These included five items from the Companion Animal Bonding Scale (Poresky, Hendrix, Hosier, & Samuelson, 1987), which assesses the youth's perceived responsiveness of and felt closeness to dog, and the Affectionate Companionship subscale (5 items) of the Pet Relationship Scale (Kafer, Lago, Wamboldt, & Harrington, 1992), which assesses aspects of the respondents' attachment, such as perceiving the dogs as a safe haven and secure base. Both selected scale sets have items with a 7-point Likert-type scale ranging from Strongly Disagree to Strongly Agree, and they have shown good inter-item reliability in previous research cited above. This 10-item measure was administered after the first contact with the dog, half way through the program, and again upon program completion. To create a measure of dog attachment, responses to the 10 selected items were summed. Reliability of this constructed measure was good ($\alpha = .883$). Table 3 contains sample items from the scale; the full measure can be found in Appendix D.

History of Foster Care and Maltreatment

History of maltreatment and/or involvement in the foster care system was gathered through the chart review previously described. These variables were recorded in a dichotomous manner (i.e. yes/no). The questions addressing these items on the chart review form are: 1) *Child abuse/neglect history (Has the adolescent been a victim?)*, and 2) *Has child ever been in foster care?* Based on information provided in the participant's record, the chart reviewer made a determination of whether or not youth has a history of maltreatment and/or involvement in foster care system. (See Appendix B). The chart reviewer was a licensed counselor with experience working with incarcerated youth and was a co-investigator on the project.

Social and Attachment Information

At baseline, participants were asked to report information about their social environment; however this data is beyond the scope of the current study. Youth are asked: 1) *How many friends do you have (include close friends and casual friends)?*; 2) *How many close friends do you have? Close friends are people you would talk to if you wanted to share a secret about yourself*; and 3) *How many adults would you share a secret with?* They respond to each question by selecting a number on a scale of 0 - 10 or more. They were then asked, *Have you every hurt an animal or pet on purpose? Yes/No.* See Appendix E for a copy of the complete measure.

Hypotheses

Hypothesis 1

Overall, the Teacher's Pet (intervention) group were expected to show significantly more positive outcomes compared to the Dog Walking (control) group on Internalizing and

Externalizing scores from the YSR and TRF as well as Empathic Concern and Perspective scales taking from the IRI.

Young adults tend to turn to their dogs during times of emotional distress more so when they have been highly involved in their dog's care, and their dog meets their needs for emotional relatedness, e.g. feelings of loved and cared about when with their dog (Kurdek, 2009b). The activities of this project's treatment are designed to promote the development of these kinds of relations between youth and the dogs. Animals can serve as significant attachment figures (Kurdek, 2009a) and having significant attachment figures is associated with better adjustment (Cooper, Shaver, & Collins, 1998) and empathy (Thompson & Gullone, 2008) among adolescents. Thus, the intervention group was predicted to show significant benefit over the control group as measured by lower Internalizing and Externalizing scores, as well as higher empathy scores.

Hypothesis 2

Dog attachment was expected to be the mechanism for lower behavior problems and greater empathy in the treatment group. In this study, therapeutic alliance was operationalized as the participants' attachment to their assigned dogs. Treatments tend to be the most effective for youth with externalizing problems when a strong therapeutic alliance is formed (Shirk & Karver, 2003) and by definition, youth that are incarcerated have problems with externalizing behavior. Much research has shown the importance of attachment relationships to internalizing and externalizing behavior as well as empathy (Bowlby, 1982; Thompson & Gullone, 2008; Lyons-Ruth, 1996). Therefore, dog attachment was hypothesized to be the mechanism through which symptoms are reduced and empathy increased.

Hypothesis 3

Youth that have a history of maltreatment and/or involvement in foster care system in the intervention group were expected to show greater benefit through reduction in behavior problems and increase in empathy. Adolescents with histories of maltreatment are more likely to show maladaptive attachment patterns and are at increased risk for perpetrating and being the victim of violence in peer relationships (Wekerle & Wolfe, 1998). In addition, incarcerated youth that have been in foster care are at greater risk for having experienced disruptions to attachment given the loss of their family of origin (Marcus, 1991; Newton, Litrownik, & Landsverk, 2000). Attachment relationships influence internalizing and externalizing behavior as well as empathy (Bowlby, 1982; Thompson & Gullone, 2008; Lyons-Ruth, 1996). Therefore, AAT can help promote secure attachment in these individuals, which they likely lack due to their previous experiences of maltreatment or foster care involvement. They were theorized to benefit the most from the intervention because of its attachment-based nature.

CHAPTER 3

Results

Preliminary Analyses

Of the 138 youth, 21 participants did not have one or more of the TRF, YSR, and IRI measures completed at one or more time points. Due to illness or transfer to another facility, 6 did not complete the study. Behavior problems caused 1 participant to be removed from the program. For 14 who completed the study, data were not gathered for them due to logistical difficulties (e.g. youth was not present on day of post assessment, staff did not complete measure for those particular youth). Chi-square tests comparing those with and without missing data from TRF, YSR, and IRI indicated that there were no systematic associations with race ($X^2 = 0.514, p = .474$), group ($X^2 = 0.623, p = .430$), or gender ($X^2 = 4.818, p = .306$). MANOVA demonstrated no systematic difference between those with and without missing data on age, pre-test scores for TRF and YSR Total Problems, and pre-test scores for both empathy measures [$F(5, 132) = 0.570, p = .723$, Wilks' $\lambda = 0.979$]. Violation of equal sample size rule occurred but homogeneity of variance-covariance matrices were satisfactory, as indicated by Box's M. Due to the lack of significant findings, missing data points for these measures were treated as random.

Approximately half way through data collection, researchers decided to add a dog attachment data collection time point mid-intervention and 76 completed this assessment. Although mid-intervention dog attachment data are systematically missing for certain cohorts of participants, no other participant characteristics were associated with missing data. This was demonstrated by conducting chi-square tests race ($X^2 = 8.621, p = .071$), group ($X^2 = 0.159, p = .699$), and gender ($X^2 = 0.460, p = .498$) and a MANOVA for age, pre-test scores for TRF and YSR Total Problems, and pre-test scores for both empathy measures [$F(4, 129) = 1.180, p =$

.323, Wilks' $\lambda = 0.965$]. Homogeneity of variance-covariance matrices were satisfactory, as indicated by Box's M. Due to the lack of significant findings, missing data points for this measure were treated as random.

For all of the previously discussed variables, missing data were imputed via SPSS Missing Value Analysis Expectation Maximization (EM) method. This method assumes data were missing at random and is preferable to other methods of imputing missing values because it introduces less bias into the imputed data (Roth, 1994).

Preliminary analyses were conducted to test for baseline differences between treatment and control group. MANOVA results showed no differences on age, pre-test scores for TRF and YSR Internalizing, Externalizing, and Total Problems, as well pre-test scores for both empathy measures (Perspective Taking and Empathic Concern), [$F(7, 130) = 0.870, p = .545$, Wilks' $\lambda = 0.955$]. Homogeneity of variance-covariance matrices were satisfactory, as indicated by Box's M. A chi-square test showed there were differences between treatment groups in gender distribution ($X^2 = 4.703, p = .030$); there were more females in the intervention group. There were no differences between groups with regard to race/ethnicity ($X^2 = 1.939, p = .747$) and maltreatment/foster care history ($X^2 = 0.003, p = .955$).

Treatment Effects on Behavior Problems and Empathy

Repeated measures multivariate analysis of variance (RM MANOVA) was used to test several hypotheses. As such, the data were examined to determine if they met the necessary assumptions of RM MANOVA. Analyses of YSR (Youth Report) and TRF (Staff Report) Internalizing and Externalizing scores as well as Empathic Concern and Perspective Taking scores indicated no outliers at $p < .001$. These data also appeared to be normally distributed when plotted as histograms and the measures did not have significant skew at $p < .001$.

Homogeneity of variance-covariance matrices were also satisfactory for all subsequently described analyses, as indicated by Box's M. (Tabachnick & Fidell, 2007)

The first RM MANOVA examined change from beginning to end of treatment in Staff Report Internalizing and Externalizing scores as a function of Group. Results indicated an overall significant effect on Internalizing problems, regardless of Group, $F(1, 136) = 5.323, p = .023$, Wilks' $\lambda = .962$. Mean Internalizing T-scores increased slightly pre to post from 56.4 to 57.4 (see Table 4). No Group effects for Externalizing [$F(1, 136) = 0.133, p = .716$, Wilks' $\lambda = .999$], Internalizing [$F(1, 136) = 0.015, p = .901$, Wilks' $\lambda = 1.000$], or overall effects on Externalizing problems [$F(1, 136) = 0.771, p = .382$, Wilks' $\lambda = .994$] were found for staff reported ratings of the youth.

The second analysis examined change in youth reported problems (YSR) as a function of Group using RM MANOVA. Results indicated a significant overall effect on Internalizing problems, regardless of Group, $F(1, 136) = 126.069, p < .001$, Wilks' $\lambda = .519$. Mean Internalizing T-scores increased slightly pre to post, from 54.8 to 55.8 (see Table 4). No Group effects for Internalizing [$F(1, 136) = 0.637, p = .426$, Wilks' $\lambda = .995$], Externalizing [$F(1, 136) = 0.037, p = .847$, Wilks' $\lambda = 1.000$], or overall effects on Externalizing [$F(1, 136) = 0.318, p = .574$, Wilks' $\lambda = .998$] were found for youth reported symptoms.

A third analysis examined change in Empathic Concern and Perspective Taking as a function of Group using a RM MANOVA. Results showed a significant change in Empathic Concern, regardless of Group, $F(1, 136) = 44.197, p < .001$, Wilks' $\lambda = .755$, with youth reporting that their Empathic Concern is higher at the end of participation (See Table 4). No Group differences were found for Empathic Concern [$F(1, 136) = 2.485, p = .117$, Wilks' $\lambda = .982$]. Overall effects of Perspective Taking [$F(1, 136) = 3.766, p = .054$, Wilks' $\lambda = .982$] and a

Perspective Taking by Group interaction [$F(1, 136) = 3.271, p = .073, \text{Wilks' } \lambda = .977$] approached significance, with the Control group, who walked dogs, having a higher mean score in Perspective Taking after the intervention compared to the Teacher's Pet group (see Table 4). Follow-up independent samples t -tests were conducted to determine if significant differences exist between Dog Walking and Teacher's Pet groups on Perspective Taking at both before and after the program. Perspective Taking scores between Groups at pre-test were not significantly different from each other. Post-test Perspective Taking scores differences approached significance ($t(136) = -1.87, p = .064$).

Dog Attachment

Dog Attachment was examined as a potential mechanism for change in Internalizing and Externalizing problems as well as empathy scores in the program. This was tested through mediated regressions using the method described by Shrout and Bolger (2002). In order to establish a variable as a mediator, it must be measured during the course of the treatment (Kraemer, Wilson, Fairburn, & Agras, 2002). Thus, although dog attachment was collected at three time points, the mid-intervention measure was used in these analyses. An analysis based on the 76 participants that completed the measure mid-intervention showed acceptable reliability ($\alpha = .883$). Assumptions of regression were also examined. Data were normally distributed and no outliers were present. Examination of residual plots for the following analyses demonstrated that all residuals are normally distributed and homoscedastic.

After establishing the data met assumptions, a series of regressions were conducted to examine if a relationship exists between pre-test scores on Total Staff Report Problems, Total Youth Report Problems, Empathic Concern, and Perspective Taking and mid-intervention Dog Attachment scores. Because no group differences were observed in previous analyses, group

was not used as a predictor variable in this model, that is, analyses looked for overall effects. Results indicate a significant relation between pre-test Total Staff Reported Symptoms ($R^2 = .032$, $b = .340$, $p = .036$) and mid-intervention Dog Attachment as well as pre-test Total Youth Reported Problems ($R^2 = .032$, $b = .235$, $p = .037$) and mid-intervention Dog Attachment. No relations were observed between Empathic Concern and mid-intervention Dog Attachment ($R^2 = .003$, $b = .131$, $p = .558$) or Perspective Taking and mid-intervention Dog Attachment ($R^2 < .001$, $b = .054$, $p = .806$) so no further analyses were conducted with these measures.

The second step in this method of meditational analysis for those analyses that returned significant results in step one is to examine if there is a relationship between the mediator (mid-intervention Dog Attachment) and the criterion variable (post-test Total Problems for Staff and Youth Reports). Follow up analyses for both Staff Report ($R^2 < .001$, $b < .001$, $p = .999$) and Youth Report ($R^2 = .011$, $b = .075$, $p = .223$) Behavior Problems did not yield significant results, thus a meditational relation was not established.

Maltreatment and Foster Care History

Another set of analyses examined the extent to which the youth's history of maltreatment and/or involvement in foster care affected the intervention outcomes. These included Staff and Youth Reported Internalizing and Externalizing Problems as well as Empathic Concern and Perspective Taking. These analyses were tested in two ways. The first is a similar method to previous analyses, using three RM MANOVAs with History of Maltreatment/Foster Care as the dependent variable. Due to the lack of finding a difference between treatment and control groups on outcome measures, Group was not taken into account. For these analyses, particular attention was paid to the interaction term *History of Maltreatment/Foster Care by the dependent variable* to identify whether or not there was a differential effect. Although the equal sample size

assumption is violated, homogeneity of variance-covariance matrices were satisfactory for all subsequently described analyses, as indicated by Box's M, therefore this test is robust to violations of this assumption (Tabachnick & Fidell, 2007).

First, a RM MANOVA compared pre and post Internalizing and Externalizing scores from the Staff Report measure between those youth with and without Maltreatment/Foster Care History. The interaction terms of interest did not yield significant findings for either Internalizing [$F(1, 136) = 0.22, p = .881, \text{Wilks' } \lambda = .999$] or Externalizing [$F(1, 136) = 0.010, p = .919, \text{Wilks' } \lambda = .999$]. The second RM MANOVA compared pre and post Internalizing and Externalizing scores from the Youth Report measure between those youth with and without Maltreatment/Foster Care History. As before, the interaction terms of interest did not reveal significant findings for either Internalizing [$F(1, 136) = 0.134, p = .715, \text{Wilks' } \lambda = .999$] or Externalizing [$F(1, 136) = 0.304, p = .582, \text{Wilks' } \lambda = .998$]. The third RM MANOVA compared pre and post Empathic Concern and Perspective Taking scores between those youth with and without Maltreatment/Foster Care History. This analysis revealed a trend toward significance for the *Empathic Concern by History of Maltreatment/Foster Care* interaction term [$F(1, 136) = 3.461, p = .065, \text{Wilks' } \lambda = .975$]. Both groups appear to have improved from pre to post intervention; however, those with Maltreatment/Foster Care history had higher pre-intervention scores than those without, which were maintained for post intervention such that their scores remained higher than the other group (See Figure 3). No significant findings were demonstrated for *Perspective Taking by History of Maltreatment/Foster Care* [$F(1, 136) = 0.483, p = .488, \text{Wilks' } \lambda = .996$].

The second method used the previously described dependent variables but took Group into account as the independent variable and used History of Maltreatment/Foster Care as a

covariate. This was done to see if any group difference effects were being suppressed by the covariate. As such, particular attention was paid to the *dependent variable by Group* interaction for each analysis. Before conducting the analyses, assumptions of RM MANCOVA were tested. A test for homogeneity of regression was conducted in order to examine if there were interactions between the covariate and group membership. Results indicated no interactions for the Staff Report and Youth Report Behavior Problem measures, so the analyses can be run for these variables. Homogeneity of variance-covariance matrices were satisfactory for these subsequently described analyses, as indicated by Box's M. As for Empathic Concern and Perspective Taking, there was a significant interaction between History of Maltreatment/Foster Care and Group, so the RM MANCOVA cannot be run for this group of variables. Figures 4 and 5 graphically represent this interaction; it appears that those in the Dog Walking group showed an increase in Empathic Concern, as noted in the above analysis, whereas the Teacher's Pet Group remained the same. This also appears to be the case for Perspective Taking.

For Staff Reported Behavior Problems, no group effects for Internalizing [$F(1, 135) = 0.016, p = .901, \text{Wilks' } \lambda = 1.000$] or Externalizing [$F(1, 135) = 0.132, p = .717, \text{Wilks' } \lambda = .0999$] were present with the inclusion of the covariate. Although not statistically significant, a graph examining Staff Reported Internalizing Problems (See Figure 6) shows that those in the Dog Walking Group with a History of Maltreatment/Foster Care had a decrease as compared to the other groups who showed a slight increase. For Youth Reported Behavior Problems, no group effects for Internalizing [$F(1, 135) = 0.635, p = .427, \text{Wilks' } \lambda = .995$] or Externalizing [$F(1, 135) = 0.038, p = .488, \text{Wilks' } \lambda = 1.000$] were present with the inclusion of the covariate. Although not statistically significant, a graph examining Youth Reported Internalizing Problems (See Figure 7) reveals that those in the Dog Walking Group with a History of

Maltreatment/Foster Care started off lower than other groups but showed a greater increase as compared to the other groups who showed a slight increase or stayed the same.

Exploratory Analyses

Due to the unexpected finding of an increase in Internalizing Problems per youth and staff report, additional analyses were conducted to examine the effect of Time Incarcerated on Internalizing Problems. As such, Time Incarcerated was calculated using the total number of days the youth had been at the facility at the end of the intervention (gathered from youth's records). Of the 138 total participants used in previous analyses, data on length of time incarcerated was gathered on 132. Thus, mean substitution was method was used to impute the 6 missing cases. Since these were exploratory analyses, as opposed to being tests of an a priori hypothesis, a more sophisticated data imputation method that takes into account scores on multiple variables, such as EM, was not used. The inclusion of the time incarcerated variable with other variables in EM imputation method would alter the other imputed values. No pattern for missing data on this variable was apparent.

Time Incarcerated was used as a covariate in two separate RM MANCOVAs. The first included Staff Reported Internalizing and Externalizing Behavior as outcome variables and Group as the between subjects factor. The second analysis included Youth Reported Behavior Problems as outcomes and Group as the between subjects factor. Before conducting the analyses, assumptions were tested. A test for homogeneity of regression was conducted in order to examine if there were interactions between the covariate and group membership. Results indicated no interactions so the analyses can be run. Homogeneity of variance-covariance matrices were satisfactory for all subsequently described analyses, as indicated by Box's M. For the Staff Reported Behavior Problems, Internalizing was no longer significant [$F(1, 135) =$

0.082, $p = .775$, Wilks' $\lambda = .999$] when time incarcerated was included in the model (see Table 4). For Youth Reported Behavior Problems, the analysis of Internalizing scores did not reach the customary level of significance when time incarcerated was included in the model [$F(1, 135) = 2.970$, $p = .087$, Wilks' $\lambda = .978$], but could indicate that an increase of Internalizing Problems was still present even when Time Incarcerated is taken into account (see Table 4).

CHAPTER 4

Discussion

Impact of Program on Empathy

The combination of time spent with dogs and animal-related didactics could increase empathy in incarcerated youth. An increase in Empathic Concern was observed in youth who did dog training with particular animals and those who simply walked dogs. Empathic Concern involves genuine caring for the well being of others. This care may have been developed as a result of the direct contact with the animals. However, this was not represented in the Dog Attachment meditational analyses conducted for Hypothesis 2; the results did not show support for general or specific attachment to dogs influencing outcomes. Contrary to our central expectation, no differences were seen between the treatment and control groups. This could be because the “active ingredient” of spending time with dogs was present in both groups; therefore, training the dogs did not show any benefit to the youth above and beyond simply spending time with them, at least not in terms of their behavior as seen by detention center staff nor in terms of how youth saw their problems. However, training has a tremendous benefit to the dogs as they are more likely to be adopted if they are trained. In addition, youth in the control group were almost certainly aware that the dogs were being trained by other youth. This knowledge could have led them to feel greater Empathic Concern for the animals, because they realized this increased the dogs’ chances of being adopted.

An overall effect of Perspective Taking regardless of group approached significance ($p = .054$). Youth in both the intervention and control reported an increased ability to take the perspective of others. This too could be due to the relationships they developed with the dogs, although, again, this was not seen in the dog attachment meditational analysis. In addition, a

Perspective Taking by Group interaction approached significance ($p = .073$) with the Control group having similar scores to the Intervention group at pre and higher scores at post, as determined by follow-up t -tests. The greater Perspective Taking scores seen in the Control group could be due to the fact that the time youth spent with the dogs was less structured than it was for TP group, which may have allowed them to utilize the time for greater bonding.

Impact of Program on Internalizing Problems

Contrary to our expectation, a significant increase in Internalizing Problems, per both Staff and Youth Report, was also observed. Although Internalizing Problems were not clinically elevated at either pre or post intervention as determined by the Achenbach (2009) criteria, this nevertheless could reflect an important change in the youth. There are a few potential explanations for this observation. The youth may have recognized that at the end of the intervention, they were no longer going to be working with the dogs. They could have been somewhat saddened at this prospect, thus leading to the increase in rated internalizing.

Another potential reason for the Internalizing increase is that the youth gained greater awareness of their emotions. Interacting with animals as well as topics covered in the didactic component (e.g. emotion identification, discussion of animal abuse) could provide an opportunity for the teens to experience their emotions, particularly sad feelings, more deeply than is typically the case for incarcerated youth. Thus, the youth gained greater awareness of a wider range of emotions, causing a slight increase in negative affect related behaviors. The reliability of this finding is likely high because the youth and their staff “mindors” reported it. Also consistent with these findings, another study (Hanselman, 2001) found a slight increase in depression symptoms after non-incarcerated teens participated in an AAT with dogs that focused on anger management, although the sample size was small.

This increase in Internalizing Behavior could also be due to the length of time the teens have spent incarcerated. Spending greater time in an environment where freedom is limited and youth are isolated from the outside world can conceivably increase feelings of depression and anxiety, accounting for the increase in internalizing symptoms. Although the exploratory analyses conducted provide some support for this notion, they should be interpreted with caution as they provide a post-hoc explanation. Any youth who were incarcerated at these facilities could have shown similar increases in Internalizing Problems, though unfortunately, no data exist to confirm whether that is the case. Furthermore, no known studies track behavior problems or symptoms of incarcerated youth overtime, so the typical progression of problems in these youth during their time adjudicated is unknown.

Impact of Maltreatment/Foster Care History on Program Outcomes

Having a documented history of maltreatment and/or being in foster care appears to have also influenced the change in Empathic Concern. As shown in Figure 3, those with this history initially had higher scores than those that did not. They also appear to have higher scores at the end of the intervention, although the rate of increase is similar in both groups. It may be adaptive for youth that have been maltreated and in unstable living environments, as is often the case in foster care, to have greater empathy. Being able to read social cues well, which is associated with high empathy (Riggio, Tucker, & Coffaro, 1989), could allow youth to anticipate aggression from their abuser and lead to removing themselves from a harmful situation or behaving in a way that would reduce the likelihood of abuse. Also, as Feshbach (1989) notes, “the distress in the child caused by abuse might foster sensitivity to distress in others” (p. 358). These youth could have a greater propensity for connection with others because of their unfortunate history. Feshbach (1989) states that other factors, such as gender, intelligence, and

gender of abuser, may affect the relationship between empathy and experience of maltreatment, however investigating the influence of each of these factors is beyond the scope of the current study.

Also of note is the change in Internalizing Problems seen in the Dog Walking group with a History of Maltreatment/Foster Care. Although this change was not detected statistically, likely due to small sample size ($N = 15$), it is apparent when graphed. Per the Staff Report, they showed a decline in Internalizing Problems from pre to post-intervention while the other three groups increased (see Figure 6). This is directly opposite of what the youth themselves reported. Per the Youth Report, they began the intervention lower on Internalizing Problems than all other groups but had a drastic increase from pre to post intervention that brought them up to similar scores reported by the other three groups. The youth reported that they experienced more problems consistent with Internalizing behavior at the end of the intervention, but the staff observed less. The youth ratings could be reflective of an increase of internal emotional awareness. The staff ratings could be reflective of a decrease in external display of Internalizing problems. The greater emotional awareness, reported by the youth, could lead to decreased outwardly visible internalizing problems, reported by the staff.

Null Findings

The lack of significant findings for Dog Attachment as a mediator of outcomes could be related to the validity of the measure. As previously noted, the Dog Attachment scale was composed of items from two different scales (Poresky, Hendrix, Hosier, & Samuelson, 1987; Kafer, Lago, Wamboldt, & Harrington, 1992), as no available measures were completely applicable to the current study. Although the current measure shows acceptable reliability and the items were taken from two previously validated measures, validity of the current measure

was not established. Therefore, it is possible that the measure did not accurately capture the bond between the youth and their animals, or it was not sensitive enough to detect the degree of attachment that occurred.

The lack of significant effect on Externalizing Problems could be due to the components of the intervention. Much of the intervention involves the youth exploring their feelings through activities such as journaling, identifying emotions in animals and people, and promoting bonding with the dogs. There is not much focus on externalizing behavior, with the exception of discussing and watching a video on animal abuse. Perhaps a greater focus on the causes of aggression towards animals and humans and methods for decreasing aggression could lead to decreased externalizing behavior in the youth.

Implications, Recommendations, and Future Directions

The current intervention has the potential for demonstrating effects beyond those seen immediately post-intervention. Since low empathy is linked to aggression and externalizing behavior in adolescents (Miller & Eisenberg, 1988; Jolliffe & Farrington, 2004), youth that participated in the intervention may have a decreased likelihood of being aggressive and committing crimes in the future. As a result, these youth may have reduced rates of recidivism and be less likely to enter detention again as teens or be imprisoned as adults. This could greatly improve their quality of life, allow them to be contributing members of society, and decrease the growing costs of incarceration in the United States.

Although the findings of the current study show great promise, there are several improvements that could be made. Adding control groups, such as classroom only, dog walking only, and a no treatment control will allow for greater confidence in the effects found in the current study. In addition, the use of a previously validated measure of Dog Attachment could

allow for detecting mediation effects, if they exist. The youth's initial feelings towards animals in general or owning a pet in the past may also influence outcomes; measuring and accounting for this may help better understand results. Graphical representations of scores indicate that there may be a differential effect for those youth with a troubled relational history (e.g. maltreatment, foster care), particularly in the areas of internalizing behavior and empathy, so increasing the sample size of this group will allow for greater power to detect differences between those with and without this history, if any exist. Also, having more participants complete the mid-Dog Attachment and not relying on imputations for nearly 50% of the data on this measure could affect results. Finally, a multi-method assessment could provide an alternative perspective and increase the likelihood of detecting an effect, if one exists. For example, an independent observer could measure dog bonding. Other measures of externalizing behavior could be utilized, such as number of disciplinary actions taken before, during, and after the intervention, could be informative.

Future research in this area may benefit from altering a few components of the intervention, such as increasing focus on aggression and externalizing behavior and increasing the amount of unstructured time the youth spend with the dogs, as this may allow for greater bonding and lead to greater change in empathy, as seen in the Dog Walking (Control) group. Future research should also follow up with participants to examine the medium- to long-range effects of the intervention, if any exist.

APPENDIX A

Table 1.

Demographics of Sample

Variable	% of Sample	Total	TP	DW
Ethnicity				
White/Caucasian	45.7	63	41	22
Black/African American	44.2	61	33	28
Hispanic/Latino	3.6	5	3	2
Biracial	2.9	4	3	1
Other	3.6	5	3	2
Sex				
Male	69.6	96	52	44
Female	30.4	42	31	11
History				
Maltreatment/ Foster Care	27.5	38	23	15
Lifetime Psychiatric Diagnosis or Treatment	66.7	92	55	37
Site 1	73.2	101	63	38
Site 2	26.8	37	20	17
Totals				
Treatment (TP)	60.1	83		
Control (DW)	39.9	55		
Overall	100.0	138		

Note: TP = Teacher's Pet (Intervention), DW = Dog Walking (Control)

Table 2.

Description of Teacher's Pet Classroom Material Covered by Session

Session	Activities	Description
1	<ul style="list-style-type: none"> • Introduction/ Class overview • Journal • Stress reduction • Positive training • Clicker/Yes game 	<p>Students are told the structure of the classes will be twice per week for one hour and that they will work with the dogs for a total of two hours per week. They do some journaling about their current thoughts and feelings. The instructor gives a presentation on the best way to approach stressed dogs and how to identify dogs' emotions. Students are encouraged to think like a dog. Also discussed and demonstrated through a game are dogs' short attention spans (2-3 seconds).</p>
2	<ul style="list-style-type: none"> • Journal • Body language • Hand out bags and treats 	<p>Students are taught how to read a dog's body language, with the goal of being able to empathize with the dog. Understanding people's body language is also discussed. They are instructed to give dogs treats and say "yes" after the dog performs a specified command (e.g. sit, stay). Students meet their dogs for the first time following this session.</p>
3	<ul style="list-style-type: none"> • Journal • Dog goal sheet • Positive dog training 	<p>Students in the treatment group set goals for their dog and themselves. Also, a discussion of how positive reinforcement is used in training and is the best way to get desired results from dog. Instructors emphasize that dogs should respond to trainer out of want for attention/affection/reward, not fear. Students in the treatment group begin training their dogs following this session. Students in the control group begin walking the dogs.</p>
4	<ul style="list-style-type: none"> • Journal • Review stress reduction • Tamar Gellar Presentation 	<p>Students are given a test on identifying emotions of dogs. This is then discussed as a group. Then, the instructor shows a video about Tamar Gellar, a girl who was abused as a child and relied on the comfort dogs to cope. She grew up and became a dog trainer, studying wolf packs in Israel and training dogs for Oprah Winfrey.</p>
5	<ul style="list-style-type: none"> • Journal • Finish Tamar Gellar • Dog behavior video clips 	<p>Instructor finishes the Tamar Gellar presentation and shows video clips of dog training, emphasizing practice and persistence.</p>

Table 2 continues on next page

Table 2.
(Continued)

Session	Activities	Description
6	<ul style="list-style-type: none"> • Journal • Start Shelter Dogs video 	Documentary about a woman who runs a dog shelter in New York. It provides a look inside dog shelters and discusses why dogs cannot live in shelters forever. It also discusses the animal euthanasia versus no kill shelter debate.
7	<ul style="list-style-type: none"> • Journal • Update on goal sheets • Continue Shelter Dogs video 	Check in on the students' progress on goals for their dogs and themselves.
8	<ul style="list-style-type: none"> • Journal • Create flyers, write letters • Write about reactions to film • Write a story from dog's point of view 	Students write letters to the potential adoptive families of the dogs. They are a way for students to express their emotions about no longer working with their dogs and give instructions to future owner regarding training and a description of the dog's behavior. Also, students write about five things that they learned from the film and discuss with class. Students then create stories from their dog's perspective, including things like the conditions in which they have lived, the things they have had to endure, and how the program has helped them.
9	<ul style="list-style-type: none"> • Journal • Dog breed presentation 	Students are given a presentation by the instructor about various different dog breed classifications and primary uses for certain breeds (e.g. hunting, herding)
10	<ul style="list-style-type: none"> • Journal • Finish breed presentation • Breed game • First graduation 	After the breed presentation is finished, students play the breed game. This game involves passing a dog toy around in a circle with each individual having to identify a dog breed. If someone cannot identify a breed, they are out. The winner gets a prize. Students in the treatment group have now completed training process with their first dog. During the training session, they demonstrate what their dog has learned. During the follow training sessions, students are given a new dog.

Table 2 continues on next page

Table 2.
(Continued)

Session	Activities	Description
11	<ul style="list-style-type: none"> • Journal • Puppy mill presentation • Puppy mill video • Create a public service announcement (PSA) 	Instructor gives students presentation on puppy mills, where many pet stores get their dogs. They also discuss the advantages and disadvantages of getting dogs from pet stores, breeders, and shelter adoption. In groups, students create a 30 second PSA about animal shelters and responsible pet ownership. Each group then shares their PSA with the other groups
12	<ul style="list-style-type: none"> • Journal • Goal sheets for second dog • Puppy mill video (continued) 	Students create goals for themselves and their second dog. Students watch additional video on puppy mills.
13	<ul style="list-style-type: none"> • Journal • Finish puppy mill video • Object building exercise 	Students pair up and use 5 Lego pieces to create an object. The object is then photographed and disassembled. The other student in the pair has to reassemble the object in the same way getting only a prompt of “yes” for feedback, similar to the way youth work with the dogs. This helps facilitate team building as well as promoting perspective taking of other people and the dogs.
14	<ul style="list-style-type: none"> • Journal • Presentation on dog fighting 	The presentation focuses on animal abuse and how dogs can be trained to fight other dogs. They discuss how dog fighting negatively affects the animal and promotes aggression and violence. Students also discuss their feelings about animal abuse and what they can do to help stop it from happening.
15	<ul style="list-style-type: none"> • Journal • Dog fighting video 	Students watch a video about NFL player Michael Vick, his dog fighting ring, and the trauma the dogs in the ring experienced.
16	<ul style="list-style-type: none"> • Journal • Finish dog fighting video 	
17	<ul style="list-style-type: none"> • Journal • Update goal sheets • Read poems • Rehearse for graduation 	Students update their goal sheet and discuss the dog fighting video. They also read poems written by others about animal abuse and “The Ten Commandments of Responsible Pet Ownership.” While working with the dogs, they begin to rehearse for graduation by demonstrating the commands their animal has learned.

Table 2 continues on next page

Table 2.

(Continued)

Session	Activities	Description
18	<ul style="list-style-type: none"> • Journal • Write flyers/letters • Presentation on careers with animals • Discuss environmental impact of plastic bags • Rehearse for graduation 	<p>Students write letters to the potential adoptive families of the dogs. Instructor gives a presentation on different jobs involving animals. Students also learn about volunteer opportunities. Instructor leads discussion about how items used to help take care of dogs, specifically plastic bags, can have a negative impact on the environment.</p>
19	<ul style="list-style-type: none"> • Journal • Catch up on previous materials • Discussion of overall feelings about the program • Rehearse for graduation 	<p>This class is used to complete any work the students may have left to do as well as discuss their feelings about the program overall.</p>
20	<ul style="list-style-type: none"> • Graduation day • Discuss students' proudest moment in the program 	<p>Each trainer states one specific meaningful experience they had during the program. The instructors also talk about the students' accomplishments. Students in the treatment group demonstrate what their dog has learned through training.</p>

Note: Students in the intervention group engage in active dog training for 1 hour between each session following session 3. Students in the control group walk the dogs for 1 hour between sessions following session 3 and do not engage in training.

Table 3.
Variables for Analyses, Measures Taken From, and Sample Items

Variable	Source	Reported By	Scale	Sample Items
Staff Report Internalizing Behavior	Teacher Report Form (TRF) of the Achenbach System of Empirically Based Assessment (ASEBA) TRF	Detention facility staff	0 = Not true 1 = Somewhat or Sometimes True 2 = Very True or Often True	<ul style="list-style-type: none"> • Cries a lot • There is very little he/she enjoys • Feels dizzy or lightheaded
Staff Report Externalizing Behavior	TRF	Detention facility staff	0 = Not true 1 = Somewhat or Sometimes True 2 = Very True or Often True	<ul style="list-style-type: none"> • Lying or cheating • Impulsive or acts without thinking • Gets in many fights
Staff Report Total Problems	TRF	Detention facility staff	0 = Not true 1 = Somewhat or Sometimes True 2 = Very True or Often True	<p>Combines Internalizing and Externalizing items from TRF with additional items such as:</p> <ul style="list-style-type: none"> • Easily jealous • Nervous movements or twitching • Can't concentrate/can't pay attention for long
Youth Report Internalizing Behavior	Youth Self Report (YSR) of ASEBA	Participant	0 = Not true 1 = Somewhat or Sometimes True 2 = Very True or Often True	<ul style="list-style-type: none"> • I cry a lot • I would rather be alone than with others • I have nightmares
Youth Report Externalizing Behavior	YSR	Participant	0 = Not true 1 = Somewhat or Sometimes True 2 = Very True or Often True	<ul style="list-style-type: none"> • I break rules at home, school, or elsewhere • I argue a lot • I physically attack people
Youth Report Total Problems	YSR	Participant	0 = Not true 1 = Somewhat or Sometimes True 2 = Very True or Often True	<p>Combines Internalizing and Externalizing items from YSR with additional items such as:</p> <ul style="list-style-type: none"> • I'm too dependent on adults • I sleep less than most kids • I have trouble sitting still

Table 3 continues on next page

Table 3.
(Continued)

Variable	Source	Reported By	Scale	Sample Items
Empathic Concern	Interpersonal Reactivity Index (IRI) Empathic Concern Subscale	Participant	0 = Does not describe me well 4 = Describes me very well	<ul style="list-style-type: none"> • I often have tender, concerned feelings for people less fortunate than me. • Sometimes I don't feel very sorry for other people when they are having problems.
Perspective Taking	Interpersonal Reactivity Index (IRI) Perspective Taking Subscale	Participant	0 = Does not describe me well 4 = Describes me very well	<ul style="list-style-type: none"> • I sometimes find it difficult to see things from the "other guy's" point of view. • I believe that there are two sides to every question and try to look at them both.
Dog Attachment	New composite measure created from Companion Animal Bonding Scale and Pet Relationship Scale	Participant	1 = Strongly Disagree 7 = Strongly Agree	<ul style="list-style-type: none"> • There are times I'd be lonely except for my dog • I am responsible for my dog's care • I feel I have a close relationship with my dog.
Maltreatment/ Foster Care	Chart Review	Detention facility staff or program facilitators	Yes/No	<ul style="list-style-type: none"> • For Maltreatment: Child abuse/neglect history (Has the adolescent been a victim?)* • For Foster Care: Has child ever been in foster care?*

*Note: These questions were combined into a single variable that was marked "Yes" if the youth met criteria for either question.

Table 4

Results from Analyses of Relevant Variables

Variable(s)	Wilks' λ	F (df1, df2)	p	Partial η^2
Staff Report Internalizing	.962	5.323 (1, 136)	.023	.038
Youth Report Internalizing	.519	126.069 (1, 136)	<.001	.481
Empathic Concern	.755	44.197 (1, 136)	<.001	.245
Perspective Taking	.973	3.766 (1, 136)	.054	.027
Perspective Taking by Group	.977	3.271 (1, 136)	.073	.023
Empathic Concern by History of Maltreatment/Foster Care	.975	3.461 (1, 136)	.065	.025
Staff Report Internalizing with Time Incarcerated	.999	0.08 (1, 136)	.775	< .001
Youth Report Internalizing with Time Incarcerated	.978	2.970 (1, 135)	.087	.022

Table 5

Means and Standard Deviations (SD) of Behavior Problems and Empathy Scores by Group

Variable	Group	Pre Mean (SD)	Post Mean (SD)
Staff Report Internalizing	TP	56.76 (9.09)	58.36 (9.50)
	DW	55.72 (9.18)	55.84 (9.62)
	Overall	56.35 (8.93)	57.36 (9.86)
Youth Report Internalizing	TP	55.43 (10.74)	56.33 (11.04)
	DW	53.89 (11.09)	55.07 (10.86)
	Overall	54.82 (10.70)	55.83 (10.95)
Empathic Concern	TP	17.74 (5.54)	17.67 (5.42)
	DW	16.85 (5.50)	18.43 (4.63)
	Overall	17.39 (5.52)	17.97 (5.12)
Perspective Taking	TP	14.30 (5.92)	14.47 (5.58)
	DW	14.93 (5.12)	16.25 (5.35)
	Overall	14.55 (5.60)	15.18 (5.54)
Empathic Concern by History of Abuse/Neglect/Foster Care	With History	19.27 (5.35)	19.74 (5.04)
	Without	16.67 (5.48)	17.30 (5.01)

Note: TP = Teacher's Pet (Intervention), DW = Dog Walking (Control)

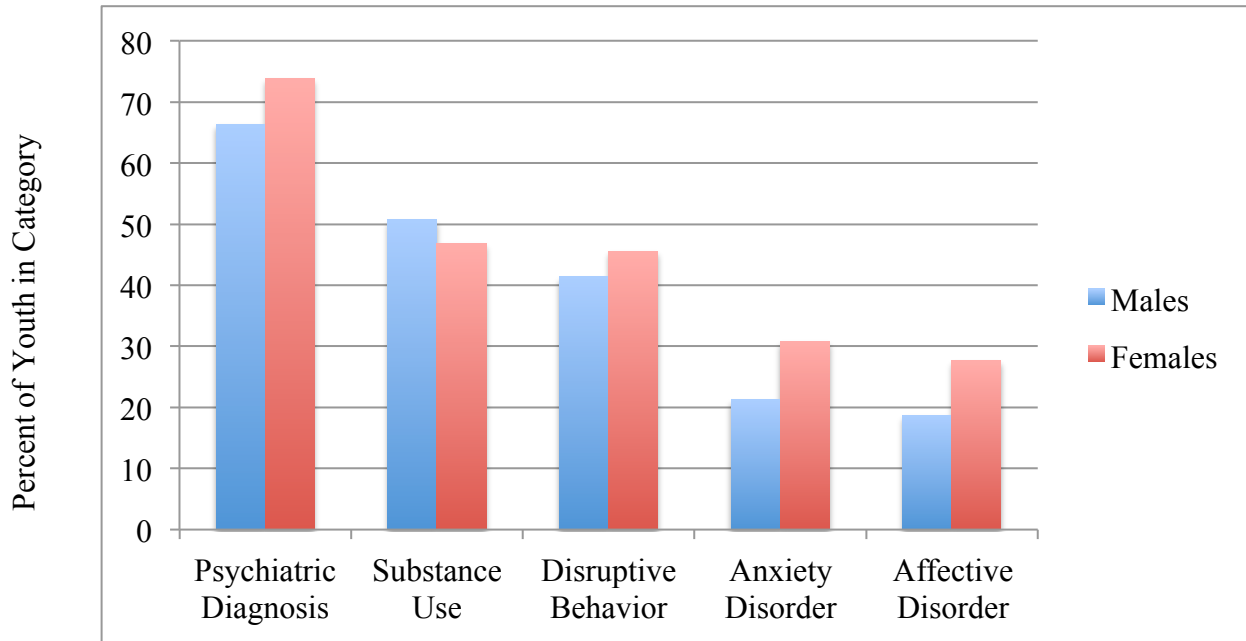


Figure 1. Overview of findings on percentage of incarcerated youth with psychiatric disorders (Teplin et al., 2002).

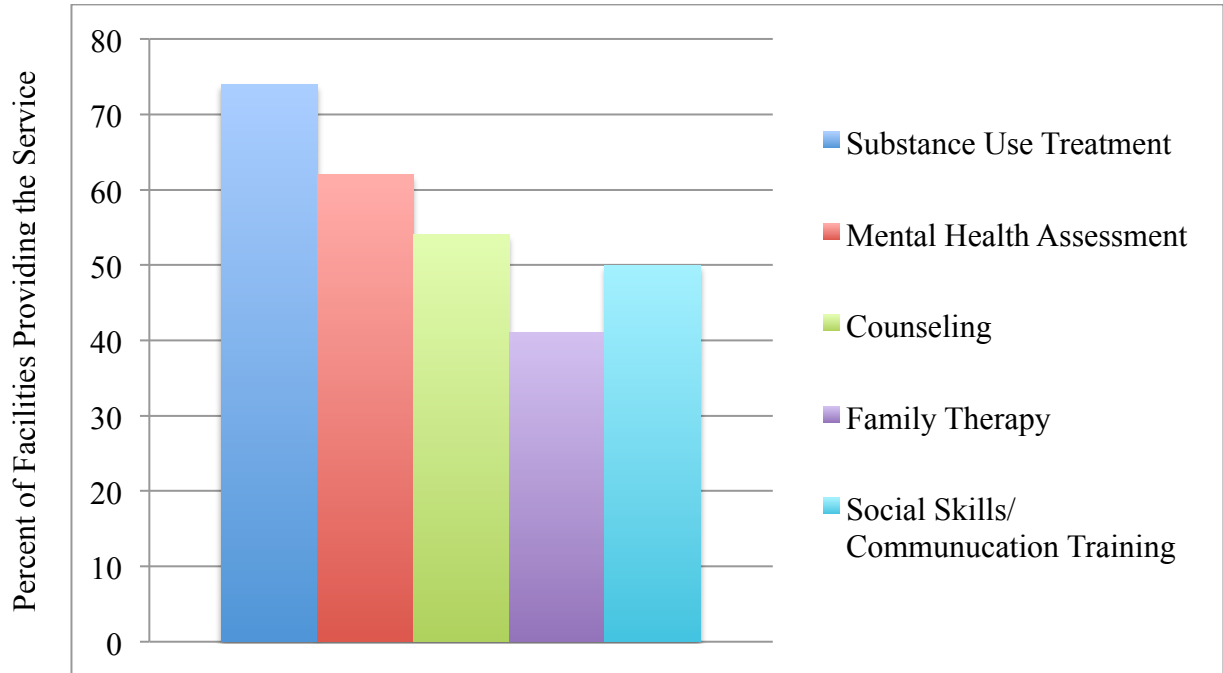


Figure 2. Percentage of juvenile detention facilities in the U.S. providing mental health services (Young, Dembo, & Henderson, 2008).

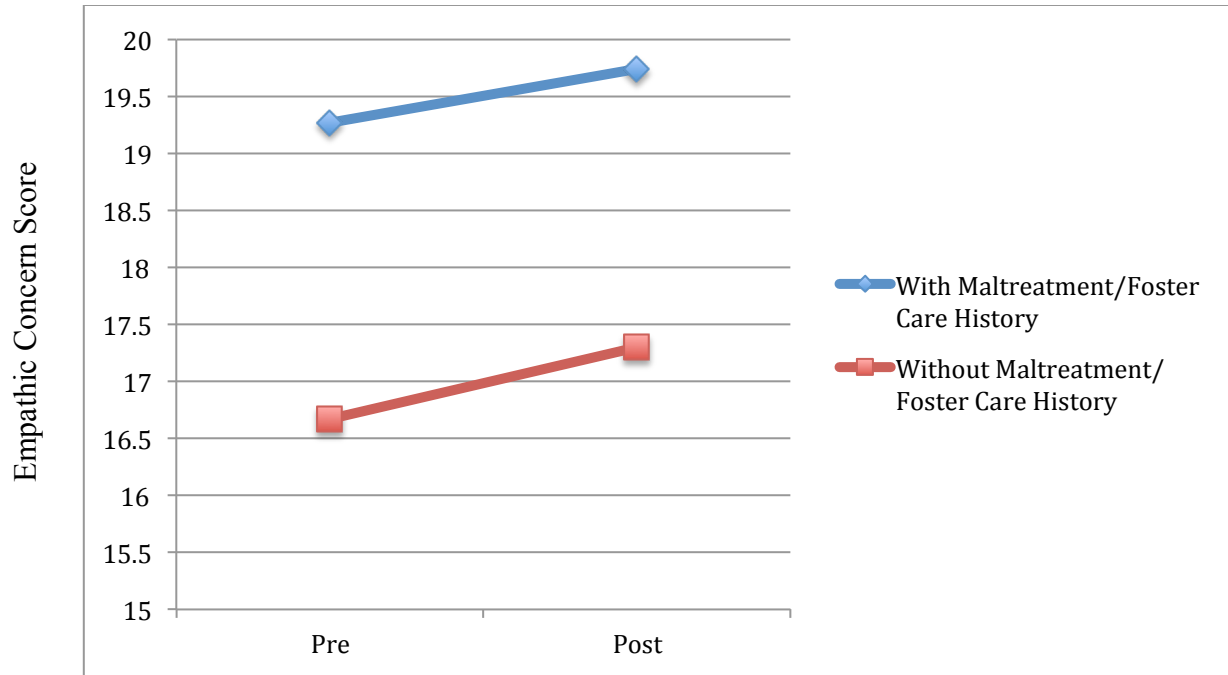


Figure 3. Mean empathic concern score as a function of time and maltreatment/foster care history.

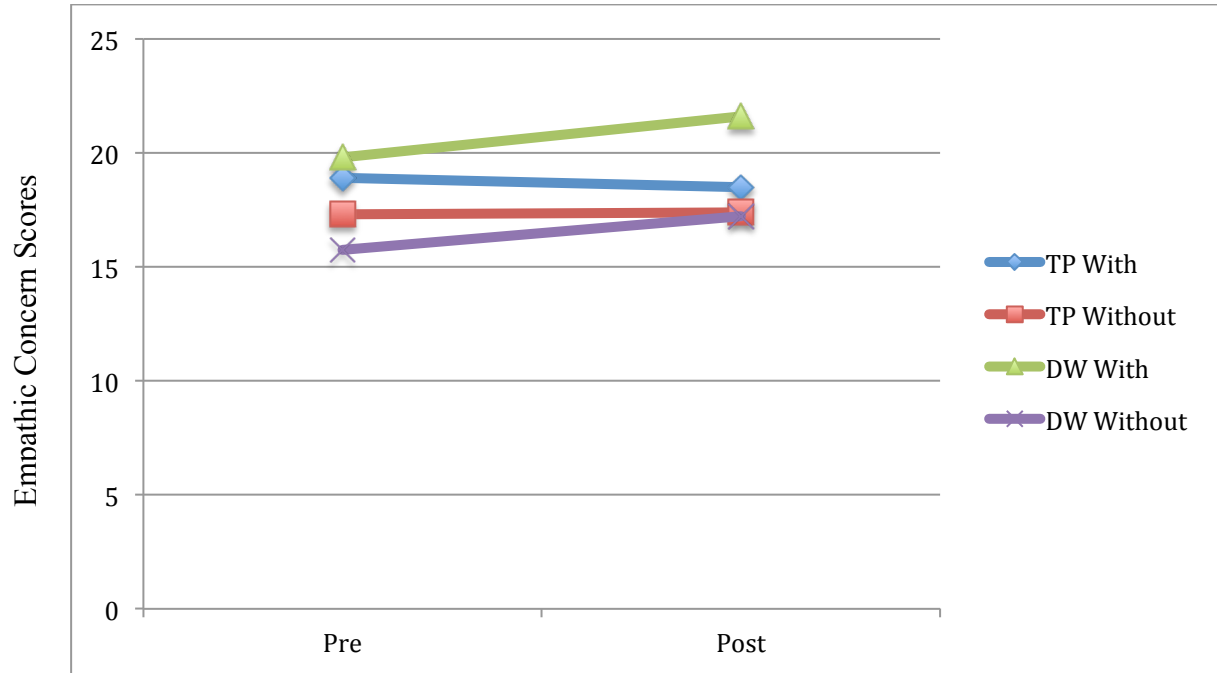


Figure 4. Empathic Concern by Group and Maltreatment/Foster Care History.

Note: TP = Teacher's Pet (Intervention Group), DW = Dog Walking (Control Group), With = With Maltreatment/Foster Care History, Without = No History of Maltreatment/Foster Care.

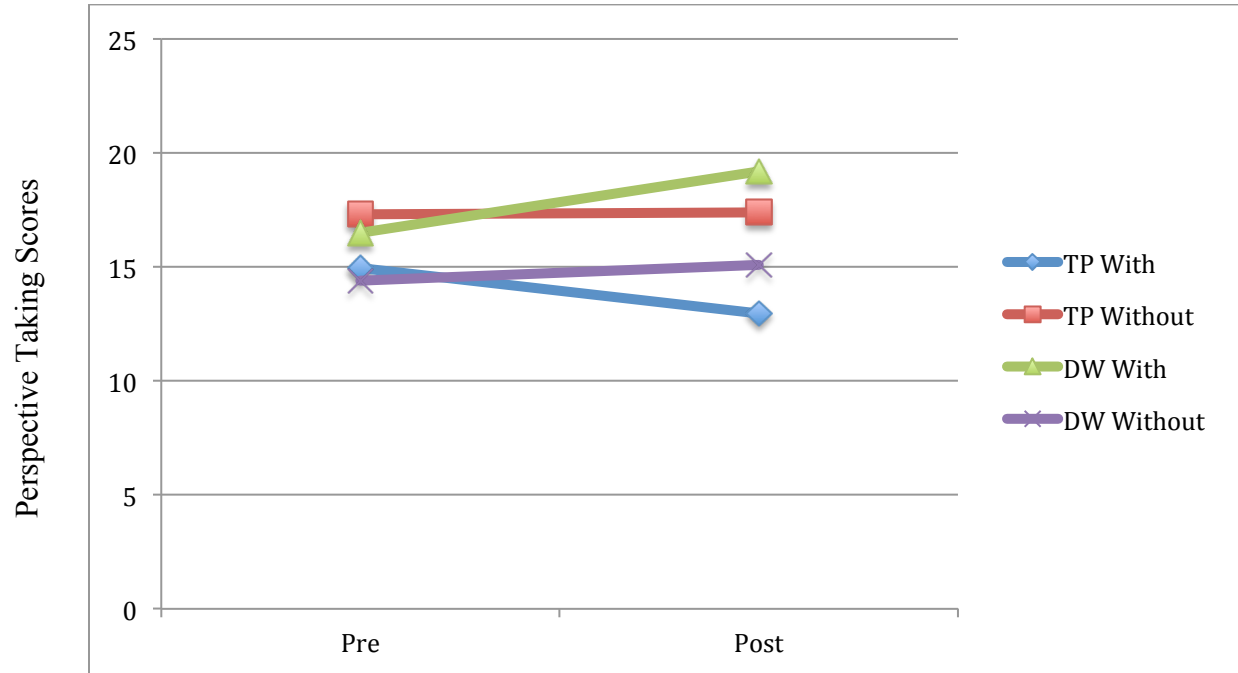


Figure 5. Perspective Taking by Group and Maltreatment/Foster Care History.

Note: TP = Teacher's Pet (Intervention Group), DW = Dog Walking (Control Group), With = With Maltreatment/Foster Care History, Without = No History of Maltreatment/Foster Care.

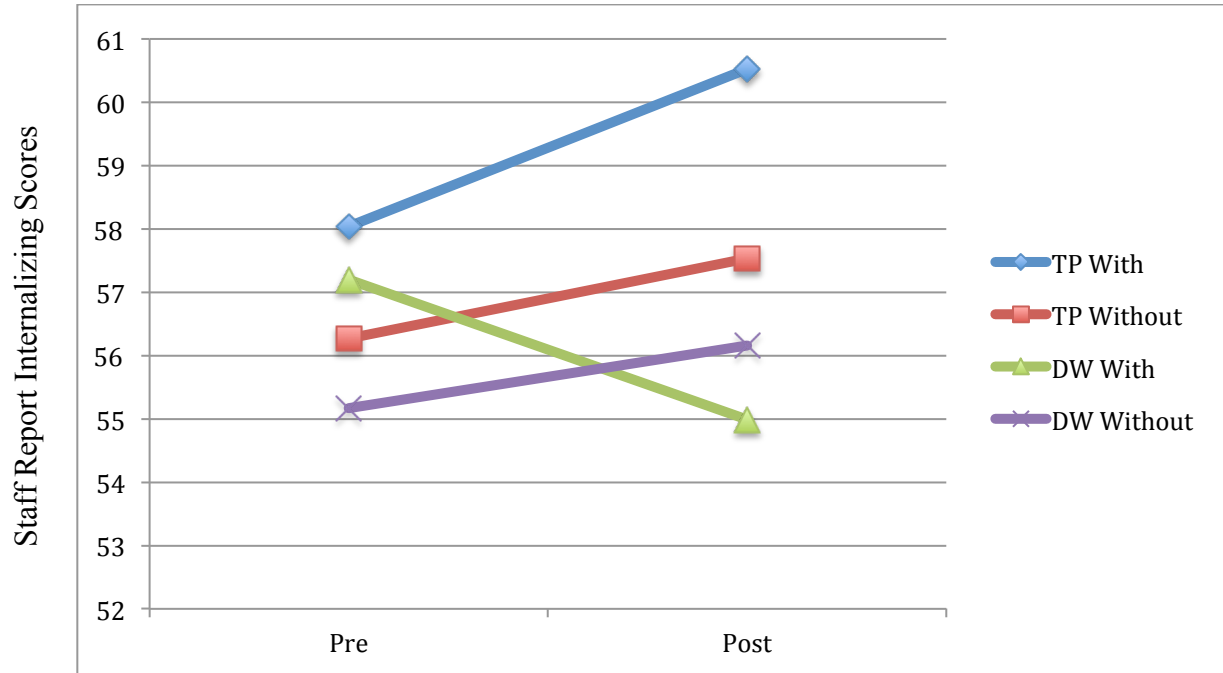


Figure 6. Staff Reported Internalizing Problems by Group and Maltreatment/Foster Care History.

Note: TP = Teacher's Pet (Intervention Group), DW = Dog Walking (Control Group), With = With Maltreatment/Foster Care History, Without = No History of Maltreatment/Foster Care.

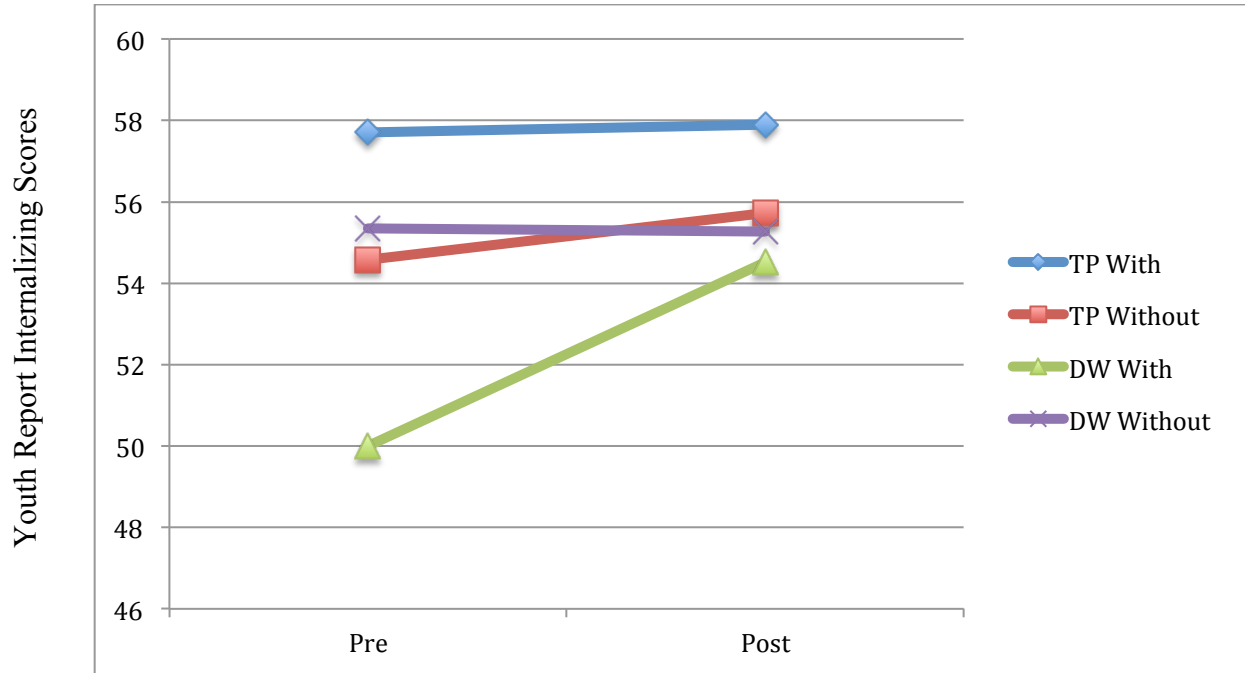


Figure 7. Youth Reported Internalizing Problems by Group and Maltreatment/Foster Care History.

Note: TP = Teacher's Pet (Intervention Group), DW = Dog Walking (Control Group), With = With Maltreatment/Foster Care History, Without = No History of Maltreatment/Foster Care.

APPENDIX B**Teacher's Pet****Chart Review Form**

Subject #: _____

Age: _____

Race: _____

Gender: _____

Ethnicity: _____

How many times has the adolescent been incarcerated? _____

Date entered detention: _____

Length of sentence (determined by court): _____

Household members: (Do not list names; only list relationships: e.g., father, sister, aunt):

Allergies (Note: if animal, specify what type(s)): _____

History of Animal Cruelty (e.g., intended to or actually hurt or killed pets, strays, or other animals on purpose, mutilated dead animals. Do not include dissection for a science class.)

YES NO

Medical history (e.g. diagnoses, surgeries):

Psychiatric history (Note: Write current diagnosis, if available):

Reason(s) for adjudication (Note: If CSC, indicate level, e.g. CSC I, CSC II, etc.):

Child abuse/neglect history (Has the adolescent been a victim?)

Has child ever been in foster care? YES NO

APPENDIX C

Interpersonal Reactivity Index (IRI)

The following statements ask about your thoughts and feelings in a variety of situations. For each item, fill in the bubble that best describes you. Read each item carefully before responding. Answer as honestly as you can.

	Does not describe me well				Describes me very well
1. I often have tender, concerned feelings for people less fortunate than me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I sometimes find it difficult to see things from the "other guy's" point of view.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Sometimes I don't feel sorry for other people when they are having problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I try to look at everybody's side of a disagreement before I make a decision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. When I see someone being taken advantage of, I feel kind of protective towards them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I sometimes try to understand my friends better by imagining how things look from their perspective.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Other people's misfortunes do not usually disturb me a great deal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. When I see someone being treated unfairly, I sometimes don't feel much pity for them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I am often quite touched by things I see happen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I believe that there are two sides to every question and try to look at them both.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I would describe myself as a pretty soft-hearted person.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Before criticizing somebody, I try to imagine how I would feel if I were in their place.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX D

Dog Attachment Scale

Instructions: For the following items, please think of the dog that you are training or walking while here. Use the following scale to answer each question.

	Strongly Disagree						Strongly Agree
1. There are times I'd be lonely except for my dog.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I talk to my dog about things that bother me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I miss my dog when I am away.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Making me laugh is part of my dog's job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. My dog gives me a reason for getting up in the morning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am responsible for my dog's care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I clean up after my dog.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I hold, stroke, or pet my dog.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I feel that my dog is responsive to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I feel I have a close relationship with my dog.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX E

Demographics

1. How many friends do you have (include close friends and casual friends)?

0	1	2	3	4	5	6	7	8	9	10 or more	
---	---	---	---	---	---	---	---	---	---	------------	--

2. How many close friends do you have? Close friends are people you would talk to if you wanted to share a secret about yourself.

0	1	2	3	4	5	6	7	8	9	10 or more	
---	---	---	---	---	---	---	---	---	---	------------	--

3. How many adults would you share a secret with?

0	1	2	3	4	5	6	7	8	9	10 or more	
---	---	---	---	---	---	---	---	---	---	------------	--

4. Have you ever hurt an animal or pet on purpose?

- YES
- NO

REFERENCES

- Abram, K. M., Teplin, L. A., McClelland, G. M., & Dulcan, M. K. (2003). Comorbid psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry*, *60*, 1097-1108.
- Achenbach, T. M. (2009). *The Achenbach System of Empirically Based Assessment (ASEBA): Development, Findings, Theory, and Applications*. Burlington, VT: University of Vermont Research Center for Children, Youth and Families.
- Allen, J. P., Marsh, P., McFarland, C., McElhaney, K. B., Land, D. J., Jodl, K. M., & Peck, S. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during midadolescence. *Journal of Consulting and Clinical Psychology*, *70*, 56-66.
- Armistead, L., Wierson, M., Forehand, R., & Frame, C. (1992). Psychopathology in incarcerated juvenile delinquents: Does it extend beyond externalizing problems? *Adolescence*, *27*, 309-314.
- Beck, A. M., & Meyers, N. M. (1996). Health enhancement and companion animal ownership. *Annual Review of Public Health*, *17*, 247-257.
- Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry*, *52*, 664-678.
- Casey, R. J., & Schlosser, S. (1994). Emotional responses to peer praise in children with and without a diagnosed externalizing disorder. *Merrill-Palmer Quarterly*, *40*, 60-81.
- Cooper, M. L., Shaver, P. R., & Collins, N. L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. *Journal of Personality and Social Psychology*, *74*, 1380-1397.

- Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology*, *52*, 685-716.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, *44*, 113-126.
- Decety, J., & Meyer, M. (2008). From emotion resonance to empathic understanding: A social developmental neuroscience account. *Development and Psychopathology*, *20*, 1053-1080.
- Delta Society (n.d.). About animal-assisted activities and animal-assisted therapy [Online]. Available: <http://www.petpartners.org/page.aspx?pid=320>.
- Ebesutani, C., Bernstein, A., Martinez, J. I., Chorpita, B. F., & Weisz, J. R. (2011). The youth self report: Applicability and validity across younger and older youths. *Journal of Clinical Child & Adolescent Psychology*, *40*, 338-346.
- Eisenberg, N., & Strayer, J. (1990). Critical issues in the study of empathy. In N. Eisenberg & J. Strayer (Eds.), *Empathy and its development* (3-16). New York, NY: Cambridge University Press.
- Feshbach, N. D. (1989). The construct of empathy and the phenomenon of physical maltreatment of children. In D. Cicchetti & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect* (349-375). New York, NY: Cambridge University Press.
- Greenbaum, P. E., & Dedrick, R. F. (1998). Hierarchical confirmatory factor analysis of the Child Behavior Checklist/4-18. *Psychological Assessment*, *10*, 149-155.
- Hamilton, N. A., Karoly, P., Gallagher, M., Stevens, N., Karlson, C., & McCurdy, D. (2009). The assessment of emotion regulation in cognitive context: The emotion amplification and reduction scales. *Cognitive Therapy and Research*, *33*, 255-263.

- Hanselman, J. L. (2001). Coping skills interventions with adolescents in anger management using animals in therapy. *Journal of Child and Adolescent Group Therapy, 11*(4), 159-195.
- Hinshaw, S. P. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: causal relationships and underlying mechanisms. *Psychological Bulletin, 111*, 127-155.
- Jolliffe, D., & Farrington, D. P. (2004). Empathy and offending: A systematic review and meta-analysis. *Aggression and Violent behavior, 9*, 441-476.
- Jonson-Reid, M., & Barth, R. P. (2000). From placement to prison: The path to adolescent incarceration from child welfare supervised foster or group care. *Children and Youth Services Review, 22*, 493-516.
- Kafer, R., Lago, D., Wamboldt, P., & Harrington, F. (1992). The Pet Relationship Scale: Replication of psychometric properties in random samples and association with attitudes toward wild animals. *Anthrozoos: A Multidisciplinary Journal of The Interactions of People & Animals, 5*, 93-105.
- Kraemer, H. C., Wilson, G. T., Fairburn, C. G., & Agras, W. S. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of General Psychiatry, 59*(10), 877-883.
- Kruger, K. A., & Serpell, J. A. (2010). Animal-assisted interventions in mental health: definitions and theoretical foundations. In A.H. Fine (Ed.). *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice* (33-48). Burlington, MA: Academic Press.

- Kurdek, L. A. (2009a). Pet dogs as attachment figures for adult owners. *Journal of Family Psychology, 23*, 439-446.
- Kurdek, L. A. (2009b). Young adults' attachment to pet dogs: Findings from open-ended methods. *Anthrozoos: A Multidisciplinary Journal of The Interactions of People & Animals, 22*, 359-369.
- Lahey, B. B., Waldman, I. D., & McBurnett, K. (1999). Annotation: The development of antisocial behavior: An integrative causal model. *Journal of Child Psychology and Psychiatry, 40*(5), 669-682.
- Lipsey, M. W., Wilson, D. B., & Cothorn, L. (2000). Effective intervention for serious juvenile offenders. *US Department of Justice, Office of Juvenile Justice and Delinquency Prevention*. Retrieved from <https://www.ncjrs.gov/pdffiles1/ojjdp/181201.pdf>
- Loeber, R., & Stouthamer-Loeber, M. (1986). Family factors as correlates and predictors of juvenile conduct problems and delinquency. *Crime & Justice, 7*, 29.
- Lyons-Ruth, K. (1996). Attachment relationships among children with aggressive behavior problems: The role of disorganized early attachment patterns. *Journal of Consulting and Clinical Psychology, 64*, 64-73.
- Marcus, R. F. (1991). The attachments of children in foster care. *Genetic, Social, and General Psychology Monographs, 117*, 365-394.
- Melson, G. F., Peet, S., & Sparks, C. (1991). Children's attachment to their pets: Links to socio-emotional development. *Children's Environments Quarterly, 55-65*.
- Miller, P. A., & Eisenberg, N. (1988). The relation of empathy to aggressive and externalizing/antisocial behavior. *Psychological Bulletin, 103*, 324 - 344.

- Nagin, D., & Tremblay, R. E. (1999). Trajectories of boys' physical aggression, opposition, and hyperactivity on the path to physically violent and nonviolent juvenile delinquency. *Child Development, 70*, 1181-1196.
- Newton, R. R., Litrownik, A. J., & Landsverk, J. A. (2000). Children and youth in foster care: Disentangling the relationship between problem behaviors and number of placements. *Child Abuse & Neglect, 24*, 1363-1374.
- Nimer, J., & Lundahl, B. (2007). Animal-assisted therapy: A meta-analysis. *Anthrozoos: A Multidisciplinary Journal of The Interactions of People & Animals, 20*, 225-238.
- Patterson, G. R., Reid, J. B., & Dishion, T. J. (1992). *Antisocial boys*. Eugene, OR: Castalia Press.
- Poresky, R. H., Hendrix, C., Hosier, J. E., & Samuelson, M. L. (1987). The companion animal bonding scale-internal reliability and construct validity. *Psychological Reports, 60*, 743-746.
- Riggio, R. E., Tucker, J., & Coffaro, D. (1989). Social skills and empathy. *Personality and Individual Differences, 10*(1), 93-99.
- Roth, P. L. (1994). Missing data: A conceptual review for applied psychologists. *Personnel Psychology, 47*(3), 537-560.
- Ryan, J. P., Testa, M. F., & Zhai, F. (2008). African American Males in Foster Care and the Risk of Delinquency: The Value of Social Bonds and Permanence. *Child Welfare, 87*, 115-140.
- Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K., & Schwab-Stone, M. E. (2000). NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description,

- differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39, 28-38.
- Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The self-efficacy scale: Construction and validation. *Psychological Reports*, 51, 663-671.
- Shirk, S. R., & Karver, M. (2003). Prediction of treatment outcome from relationship variables in child and adolescent therapy: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 71, 452-464.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychological Methods*, 7, 422-445.
- Shufelt, J. L., & Coccozza, J. J. (2006). Youth with mental health disorders in the juvenile justice system: Results from a multi-state prevalence study. *National Center for Mental Health and Juvenile Justice*. Retrieved from <http://www.ncmhjj.com/pdfs/publications/PrevalenceRPB.pdf>
- Sickmund, M., Sladky, T. J., Kang, W., & Puzanchera, C. (2011). Easy access to the census of juveniles in residential placement. *Office of Juvenile Justice and Delinquency Prevention*. Retrieved from <http://www.ojjdp.gov/ojstatbb/ezacjrp/>
- Stouthamer-Loeber, M., Wei, E. H., Homish, D. L., & Loeber, R. (2002). Which family and demographic factors are related to both maltreatment and persistent serious juvenile delinquency? *Children's Services: Social Policy, Research, and Practice*, 5, 261-272.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.

- Teplin, L. A., Abram, K. M., McClelland, G. M., Dulcan, M. K., & Mericle, A. A. (2002).
Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry*, 59,
1133-1143.
- Wasserman, G. A., McReynolds, L. S., Ko, S. J., Katz, L. M., & Carpenter, J. R. (2005). Gender
differences in psychiatric disorders at juvenile probation intake. *American Journal of
Public Health*, 95, 131-137.
- Wekerle, C., & Wolfe, D. A. (1998). The role of child maltreatment and attachment style in
adolescent relationship violence. *Development and Psychopathology*, 10(3), 571-586.
- Young, D. W., Dembo, R., & Henderson, C. E. (2007). A national survey of substance abuse
treatment for juvenile offenders. *Journal of Substance Abuse Treatment*, 32, 255-266.

ABSTRACT**ANIMAL-ASSISTED THERAPY FOR INCARCERATED YOUTH: A RANDOMIZED-CONTROLLED TRIAL**

by

NICHOLAS P. SEIVERT**December 2014****Advisor:** Rita J. Casey**Major:** Psychology (Clinical)**Degree:** Master of Arts

This study is a randomized-controlled trial of a specific animal-assisted therapy (AAT) called Teacher's Pet (TP) with incarcerated youth. The intervention was expected to result in increased empathy and reduced internalizing and externalizing behavior problems as compared to the control. Dog attachment was theorized to be the mechanism for the increased empathy and reduced behavior problems. In addition, due to the attachment-based nature of the intervention, it was hypothesized that those with a history maltreatment/foster care would benefit the most. Participants were 138 youth at two Midwestern juvenile detention facilities. The TP intervention trained dogs for one hour, twice weekly for 10 weeks. The Dog Walking (DW) control group walked but did not train dogs for the same duration. Both groups participated in a one hour, twice weekly animal education class for 10 weeks. Results showed a significant increase in both staff and youth reported internalizing behavior problems regardless of group. A significant increase in empathy, regardless of group, was also observed. Dog attachment was not established as a mechanism for the changes observed. There may be a greater increase in empathy for those with a history of maltreatment/foster care when compared to those without. In sum, the combination of time spent with dogs, with or without doing dog training, and animal

didactics may increase empathy in incarcerated youth. The increased internalizing symptoms could be attributed to youth gaining greater awareness of emotions, being saddened to no longer be interacting with animals, or greater time incarcerated at post intervention. Additional follow-up of these youth and other comparison groups are needed.

AUTOBIOGRAPHICAL STATEMENT

The author was born in Rockford, IL on December 5, 1987. He graduated from Boylan Catholic High School in May 2006. He attended Loyola University Chicago where he earned a Bachelor of Science degree in Psychology in May 2010. He will graduate with a Master of Arts in Clinical Psychology from Wayne State University in Detroit, MI in December 2014. He is currently working towards a Doctor of Philosophy in Clinical Psychology at this university.