DISSERTATION

A HUMAN-ANIMAL INTERVENTION TEAM MODEL IN AN ALTERNATIVE MIDDLE/HIGH SCHOOL

Submitted by

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY JUDITH D. WICKER ENTITLED A HUMAN-ANIMAL INTERVENTION TEAM MODEL IN AN ALTERNATIVE MIDDLE/HIGH SCHOOL BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

A HUMAN-ANIMAL INTERVENTION TEAM MODEL

IN AN ALTERNATIVE MIDDLE/HIGH SCHOOL

The therapeutic impact of the human-animal bond with at-risk youth attending two alternative public school secondary campuses was evaluated during school year 2002-2003. The purpose of this study was to investigate the effects of animal-assisted therapy or AAT in enhancing secondary-aged youth's social, behavioral, and interpersonal skills. Individual or small group AAT approaches were incorporated into the educational plans of 20 students receiving instruction on one campus site with 11 students comprising the control group on another campus.

This study utilized a quasi-experimental approach with manipulation of the independent variable (the presence or absence of AAT participation). The eight dependent variables of social skills, aggressive behavior, attitude to school, interpersonal relations, classroom absences, direction following, acceptance of staff feedback, and respectful responses were measured by a standardized behavioral rating instrument, daily attendance reports, and teacher observations. A posttest only, semistructured interview of participating staff and students was administered to ascertain underlying attitudes toward the use of AAT with at-risk adolescents.

A 3 x 2 factorial design with repeated measures on the second factor was employed. Each of the eight dependent variables was measured through pre and posttest data collection. Neither one-way analyses of variance nor independent samples *t* tests noted significant changes in social skills, aggressive behavior, attitude to school, interpersonal relations, and classroom absences between treatment groups. When individual and small group AAT results were combined, a paired samples *t* test analysis for social skills proved significant. Only one paired samples *t* test comparing daily campus observations showed significance.

Anecdotally, staff members saw AAT interventions as having a positive impact upon student behavior. Students also responded positively to their AAT experiences. Pet/client interactions during individual sessions appeared to increase student self-confidence. The small group trainers also felt subjects gained some benefit from their participation.

Recommendations for future research and practice included larger sample sizes, lengthier treatment sessions, development of more appropriate measurement tools, and incorporating recognized social skills curricula with AAT interventions. There is still a need for continued research in validating animal-assisted therapy via rigorous scientific methods.

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The completion of my doctoral studies would not have occurred if not for the support of numerous individuals. First and foremost, I must thank my doctoral committee, who weathered the stormy path of the formulation of my research design, its implementation and defense, and finally numerous revisions to my dissertation. Dr. George Morgan, as chair, provided boundless guidance and research supervision. His knowledge of measurement and statistical analyses paved the way for more clearly defined methods and results sections. Dr. Ann Foster, as co-chair, assisted in gaining research access to Poudre School District sites and lent her experiences with prior animal-assisted research projects. Dr. Ben Granger shared his vast knowledge of animal-assisted therapy as well as being instrumental in procuring private foundation dollars to support these campus interventions. Dr. Terry Deniston maintained a special education focus for at-risk youth and gave suggestions as to qualitative research opportunities. Above all, my committee was understanding and compassionate when my original timeline for thesis completion had to be re-scheduled.

Mr. Bram Sheafor, Executive Director of The CLASS Foundation, had the confidence to support this research financially by approving selected staff, supply, travel, and summary report costs. The animal-assisted therapy or AAT interventions were provided by the Human-Animal Bond in Colorado Program or HABIC. Mrs. Georgia

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Mrs. Deb Hewes, principal of the two alternative secondary sites utilized in this study, committed staff and student time over the course of one school year to AAT activities. Teachers, support staff, and classified employees were flexible in their schedules to accommodate dog handlers and trainers. Dr. Tom Cavanagh, research assistant with the Research and Development Center for the Advancement of Student Learning, a joint venture between Poudre School District and Colorado State University, assisted with qualitative analyses based on staff and student interviews and handler and trainer narratives.

Lisa Carroll, my typist, rescued me from constant frustration in preparing an accurate document meeting APA and university standards. Of course, family, friends, and co-workers continuously motivated me to finish this daunting task.

How could one forget the primary players in this research project—the students and their animal companions—who shared a brief moment in time as true models of the human-animal bond.

DEDICATION

When I decided on my dissertation topic of animal-assisted therapy and its potential impact on at-risk youth, I discussed this vision with my spouse, Harvey. He, of course, was the one who purchased me my very first dog, Dufus, as an anniversary present 29 years ago. Dufus was followed by General Beauregard and Sergeant Sam. Eventually Buford and Betty would take their place.

Harv and I didn't need any scientific evidence to know that dogs were very special family members, always ready for a walk or a hug and constant, loving companions. Given Harv's Air Force assignments, our hounds traveled far and wide to places, such as Colorado Springs, Dayton, Salt Lake City, Tucson, and Honolulu. We always managed to find housing suitable to a lonesome basset and beagle. When the time for military retirement came, Grand Junction, Colorado, beckoned. Our dogs soon found enjoyment in golf course jogs and Grand Mesa hikes.

In March of 2003 Harv was diagnosed with colorectal cancer, a disease he fought valiantly for 15 months. As I debated over completing my research and finishing my dissertation, my husband made me promise that I would accomplish this goal, over six years in the making. His encouragement will live on forever.

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CHAPTER 1: INTRODUCTION

Problem Statement and Context

Given the number of violent campus disturbances receiving nationwide attention in the past several years, violence in our schools has been a topic of paramount concern for students, staff, and parents. Hinshaw and Anderson (1996, p. 113) have stated that, "Among youth, the highest rates of referral for mental health services involve aggressive, acting-out, and disruptive behavior patterns." Antisocial behavior reflects social rule violations with conduct disorders defined as clinically significant misbehaviors well beyond the boundaries of normal functioning. Interventions are very costly with multi-agency involvement through collaboration by the schools, mental health organizations, and/or the judicial system. Kazdin (1997, p. 161) writes that, "Little in the way of effective treatment has been generated for conduct disorder."

Until the early 1970's ways of altering aggressive behavior relied on three major psychological approaches: psychodynamic/psychoanalytic, humanistic/nondirective, and behavior modification (Goldstein, 1988; Goldstein, & McGinnis, 1997). A new movement was on the horizon in the 1980's taking its cues from the social learning theory of Albert Bandura (1977). Focusing upon modeling, behavioral rehearsal, and social reinforcement techniques, social skills training or skill streaming assumed that individuals who were overly aggressive were deficient in the skills necessary for effective interpersonal functioning (Goldstein, 1988). This new model of intervention began in the

1980's and was a prosocial curricular attempt at ameliorating unacceptable aggressive behavior among school aged children and youth. Major categories of treatment types for managing antisocial behavior were listed by Kazdin (1987) as child focused, family focused, and community based. Subheadings included individual and group psychotherapy, behavior therapy, problem-solving skills training, pharmacotherapy, and parent management training. It is now time to take a serious look at yet another alternative to decreasing antisocial behavior among our youth while improving social and interpersonal skills.

The major purpose of this quantitative design is to examine the popularly held belief that the therapeutic use of animals with special needs youth will show beneficial results. Significant human-animal bonds have been anecdotally recorded since the beginning of human history. Attachment, psychoanalytic, and learning theories have been cited as probable bases for the efficacy of human-animal kinship. Using qualitative techniques primarily, investigators have inferred substantial benefits in the areas of cognitive, learning, socio-emotional, behavioral, communicative, and/or physical improvement when people bond in kinship with animals. Given the wide range of ages, settings, and disabling conditions cited in the literature, the following animal-assisted research studies offer a sampling of positive socio-emotional and behavioral outcomes for at-risk school age populations.

Several studies have addressed animal-assisted therapy (AAT) benefits for young children exhibiting autistic-like behaviors. Balcerak, Foster, Granger, Granger, and Kogan (2000) conducted a study to investigate the effect of weekly AAT sessions on three children with autism, ages six through eight. The therapy consisted of rapport

building and dog training activities. Two participants showed an increase in attention and task completion while a third participant demonstrated a marked decrease in aggressive behaviors. Redefer (1986) utilized a single-subject, repeated measures design to determine the effects of animal-assisted therapy on social interaction with children exhibiting autistic-like, developmental delays in a day treatment program. Twelve youngsters, ages five through ten, were given 18 sessions of pet-facilitated therapy with individual behaviors observed before, during, and following treatment. Isolated behaviors significantly declined while social interactions increased dramatically.

Self-contained public school settings serving children and youth with severe emotional needs have incorporated the use of companion dogs to improve classroom behavior. An ethnographic study by Primm (1999) involving five elementary and five middle school students in self-contained classrooms for pupils with severe emotional and behavioral needs investigated the therapeutic benefits of "community dogs." The purpose of these classroom companion animals was to de-escalate inappropriate behavior during crisis situations and to act as an incentive for more acceptable classroom conduct. Pupils indicated that the animals gave them comfort during periods of anger and sadness and that the dogs seemed to create a happier and calmer mood. A human-animal intervention team approach to animal-assisted therapy was described by Granger, Kogan, Fitchett, and Helmer (1998) in the treatment of two male students labeled emotionally disturbed in a self-contained public school setting. Student observations; parent, staff, and pupil interviews; and pre/post comparisons from the ADD-M Comprehensive Rating Scale or ACTeRS indicated positive growth on most individualized goals. Following

weekly sessions with a trained therapy dog, one or both participants exhibited increased self-esteem, improved peer relations, and decreased distractibility.

Nontraditional, therapeutic environments have also witnessed the benefits of AAT. Children with severe attention-deficit and conduct disorders in a residential treatment facility in a suburb of Philadelphia experienced a decrease in pathological and aggressive behaviors after exposure to a variety of pets (Katcher & Wilkins, 1998). A decrease in problem behavior was also witnessed in a day treatment program for elementary aged youth with significant emotional disorders (Heindl, 1996) using pet therapy as an intervention. Green Chimneys, a residential treatment program in New York State for youngsters with significant behavioral and academic difficulties, added farm programming to more traditional educational and therapeutic interventions (Ross et al., 1983). Research with 22 children, ages 9 through 15, indicated that farm animal programming may facilitate traditional special education interventions and that animal therapy is broadly applicable to diverse age groups and disabling conditions and is not constrained by length of residential stay.

Research in the area of animal-assisted therapy is gaining momentum. Schools and universities see the critical need for alternative interventions to improve the well being of children and youth with mild to severe disabilities. Pet facilitated therapies may hold that promise.

Purpose Statement

The purpose of this quasi-experimental study was to investigate the effects of animal-assisted therapy or AAT in enhancing secondary-aged youth's social, behavioral, and interpersonal skills. An alternative public secondary school in Colorado serving

teens at-risk for expulsion and/or adjudication was the site for both individual and small group AAT interventions. During the 2002-2003 academic year, students volunteered to participate on campus in individual AAT sessions for one hour weekly with activities personalized to meet individual behavioral goals. Small group AAT sessions, consisting of five student volunteers per ten-week period, met twice weekly for a total of two hours per week and assisted in training dogs belonging to residents of the community. Each AAT session, whether individual or small group, was under the supervision of a trained Human-Animal Bond in Colorado or HABIC staff member and a school employee. During the research period there were three small group AAT sessions of ten weeks each, for a total of 15 student participants. Youth enrolled in the individual AAT sessions had an opportunity to extend their canine contacts beyond the typical ten-week period. Students attending another alternative secondary campus in the community comprised the control group.

The design utilized one independent variable with three treatment levels (i.e., control, individual AAT, and small group AAT). The eight dependent variables of social skills, aggressive behavior, attitude to school, interpersonal relations, classroom absences, direction following, acceptance of staff feedback, and respectful and caring responses toward others were measured by a standardized behavioral rating instrument, daily attendance reports, and structured teacher observations. A single factor analysis of variance or ANOVA was performed to compare the AAT groups and the control group on the differences or gains noted between pre and posttest scores related to the first five of these eight dependent variables. The remaining three dependent variables were

analyzed through a paired samples *t* test because these data were only available for the AAT participants.

Supplementary narratives as to AAT's impact upon students and staff were obtained from exit interviews with both youth and adult participants. Individual and small group AAT sessions were also monitored for interactive behaviors between student and dog or student and adult. Each HABIC staff member assisting with individual AAT sessions was asked to maintain a weekly journal to record his/her student observations and therapeutic impressions. The HABIC head trainer and her assistant for small group AAT instruction submitted a written year-end summary of student contacts encompassing all three small group sessions.

The following quantitative research questions were investigated.

1. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in teacher rating scale scores on social skills?
2. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in teacher rating scale scores on aggression?
3. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in self-report rating scale scores on attitude to school?
4. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in self-report rating scale scores on interpersonal relations?

5. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in the number of classroom absences?
6. Is there a difference in the percentage of days with more compliant (or non-compliant) direction following, pretest to posttest, of students receiving either individual or small group AAT?
7. Is there a difference in the percentage of days with more positive (or negative) acceptance of feedback from staff, pretest to posttest, of students receiving either individual or small group AAT?
8. Is there a difference in the percentage of days with more respectful (or disrespectful) responses, pretest to posttest, of students receiving either individual or small group AAT?

Based on structured staff and student interviews, the following research question was also addressed: What perceptions of the effectiveness of animal-assisted therapy were reported by participating staff and students during the course of the AAT interventions?

Definition of Terms

The following definitions will aid the reader in understanding major concepts within this study.

Animal-assisted therapy (AAT) is a goal-directed intervention in which an animal meeting specific criteria is an integral part of the treatment process. AAT is delivered and/or directed by a health/human service provider working within the scope of his or 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 individual or group in nature. This process is documented and evaluated (Arkow, 1998, p. 11).

Individual AAT is one handler with his/her dog providing canine to student bonding opportunities that complement specific behavioral goals established for a particular child. Emphasis is placed upon enhancement of self-esteem, animal-human bonding, improved student-adult relationships, and knowledge of specific dog handling techniques.

Small group AAT is one lead trainer providing structured, multi-part lessons which engage four to six students at a time in dog to student bonding opportunities. As in individual AAT, similar emphases of improved self-esteem, animal bonding, interpersonal relationships, and dog handling skills are encouraged.

The Human-Animal Bond in Colorado or HABIC is a program of the School of Social Work, College of Applied Human Sciences, at Colorado State University in Fort Collins, Colorado. HABIC's goals are to provide animal-assisted activity (AAA) and animal-assisted therapy (AAT) programs in partnership with education, health, and social service programs; to educate students and professionals; and to conduct research and evaluation in the therapeutic use of companion animals. Its mission is to improve the quality of life for people of all ages, even those with social-emotional, behavioral, educational, or physical needs.

At-risk youth are those youngsters lacking a sense of identity, a sense of connectedness, and/or a sense of personal power (Dougherty, 1990, p. 13).

Conduct disorders have the primary features, as defined by the American Psychiatric Association (1994, p. 90), of repetitive and persistent patterns of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated.

A child with an *emotional disability* shall have emotional or social functioning which prevents the child from receiving reasonable educational benefit from regular education. Characteristics may include a pervasive sad demeanor, atypical affect for the situation, excessive fear or anxiety, persistent physical complaints, extreme social withdrawal, delusional ideation, perseverative thoughts, consistent aggressive behavior, oppositional and defiant responses, very limited self-control, and/or bizarre or exaggerated behaviors (Colorado State Board of Education, 2002).

Delimitations and Limitations of This Study

Delimitations or restrictions imposed prior to the study's inception included the narrow range of demographics associated with the research site. Participants were restricted to adolescents at risk of suspension or incarceration in one of two small alternative secondary schools in Colorado. Many more males than females were represented in the subject pool.

Possible limitations of the study, which could pose a threat to internal validity, may be grouped by participant characteristics and environmental variables. Subjects chose to voluntarily participate, and there was a high absentee rate among the participants leading to increased attrition. Since individual and small group AAT interventions did not occur at identical times throughout the school year, maturation over time and unique situational events may have clouded the true impact of the AAT interventions. Repeated testing may have alerted the participants to respond in a stereotypical fashion. Student self-report data can be very misleading if the subjects chose to answer in an untruthful manner.

Significance of the Study

A major current and pervasive social problem in the United States is that of troubled teens experiencing school failure. A key related question is how to help youth, who have serious behavioral and emotional problems, succeed in school and in the community. As a nation, all of us have a civic responsibility to provide the best possible learning environment for our children. Federal, state, local, and foundation funding sources have placed a priority on innovative programs to respond to the lack of student achievement and high dropout and expulsion rates based on serious social and behavioral concerns.

The inclusion of the power of the human-animal bond through the therapeutic use of companion animals is a positive, proactive approach to working with youth at risk. The Human-Animal Bond in Colorado or HABIC is an established university-based program that has as its mission: "Improving the quality of life for people of all ages through the therapeutic use of companion animals" (HABIC brochure). The protocol for HABIC's human-animal intervention team is "focused on providing a consistent pattern of operation that can be evaluated in determining validity, reliability, and the merits for replication" (Granger & Kogan, 2000, p. 229). HABIC, in teaming with an alternative secondary public school campus, has the potential of motivating our troubled youth to learn and become more responsible and caring individuals. Within the human-animal bond field, HABIC has developed a substantial literature base contributing to journal articles, a textbook chapter, and project reports. Findings from this project can be shared with other alternative secondary schools in the region and nationally, as well as with other programs seeking different approaches to helping emotionally disadvantaged youth.

A Researcher's Perspective

Having experienced the joy of owning numerous canines throughout my adult life, I am personally convinced of the inherent strength of the human-animal bond. In my role as special educator and as school psychologist I have introduced family pets in both "show and tell" and individual companion animal formats. It was common place for me to have children and youth with mild to moderate disabilities be more attentive and verbally expressive when my basset hound entered the classroom. Colleagues frequently related stories of how their own personal pets, when brought to schools, motivated students to be more alert and on task. Children were always willing to relate the classroom pet to animals in their lives or neighborhood.

When my mother was placed in a nursing home years ago, the residents were visited by a companion animal. It was a time for these senior citizens to share their own experiences with household pets. Though my mother never owned a dog of her own, she engaged with the therapy dog and appeared to enjoy these monthly visits.

Nationwide, I feel that our public schools are proactively seeking positive instructional alternatives to deter adolescents at risk from committing violent acts. Animal-assisted therapy may be that viable option. By utilizing trained community volunteers and their animal companions, I feel strongly that schools can benefit from this unique human-animal intervention at a very reasonable cost. When one commits to forming a positive relationship with an animal, we, as a society, become more human and humane.

CHAPTER 2: LITERATURE REVIEW

The major objectives of this literature review are to examine the commonly held tenet that the therapeutic use of animals with special needs children and youth has shown positive results. Historical accounts of the significance of the human-animal bond have been anecdotally recorded for thousands of years. Using qualitative techniques primarily, researchers have inferred substantial benefits in the areas of cognitive, learning, socio-emotional, behavioral, communicative, and/or physical improvement when people form a strong human-animal relationship. Four major questions to be addressed by this review are: 1) What attributes define at-risk youth and those identified with conduct or emotional disorders? 2) What interventions have been attempted to ameliorate disruptive behavior patterns with these special needs populations? 3) What are the theoretical bases for human-animal kinship? 4) What appear to be the positive outcomes of animal-assisted therapy with special needs children and youth? A summary section including research limitations will conclude this chapter.

Attributes of Youth At-Risk and Those Identified with Conduct or Emotional Disorders

Kazdin and Weisz (2003) cite the adolescent years as a period of time where problem or at-risk behaviors occur more frequently. These at-risk activities increase the likelihood of negative psychological, social or physical health outcomes. Examples include drug or alcohol use, truancy, theft, vandalism, and unprotected sex. The authors maintain that these problems can appear at various times during the developmental years

and that several million children and adolescents could benefit from some form of intervention.

Holmbeck and Shapera (1999, p. 635) also confirm that "Adolescence is a transitional period between childhood and adulthood that is characterized by a host of dramatic biological, psychological, and social role changes." In reviewing 465 articles (circa 1992 through 1997) from 9 clinical and developmental journals, which focused upon the adolescent period, a variety of research outcomes were categorized. These subtopics included 315 studies emphasizing individual psychopathology and behavior problems, 49 studies referencing school failure, and 30 studies noting negative peer relations and rejection.

The most recent fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994) defines a conduct disorder as persistent and repetitive behavior that violates the basic rights of others or of societal norms. These misbehaviors must significantly impair social, academic, or occupational functioning. Features of this disorder include aggression towards people or animals, destruction of property, deceitfulness, and serious rule violations.

Larson and Brendtro (2000) in describing the "rootless generation" of youth prone to serious delinquency and violence use terms of unattached, adult-wary, with a distorted morality, and seething with anger and frustration. These youngsters have failed in bonding securely to family, school, prosocial peers, and their community. In simplistic fashion the "Pathway of Rebellion" (p. 59) consists of early childhood temper tantrums, middle childhood disobedience, pre-adolescent resistance to authority, and adolescent truancy or suspension. Some children learn early in life that coercion meets their needs

and wants and that thrill-seeking behavior in our fast-paced culture is a diversion from inner conflict.

The terminology in the field of children and youth with conduct or emotional disorders remains confusing (Kauffman, 2001). Labels, such as emotionally disturbed, behaviorally disordered, socially maladjusted, and emotionally handicapped, are commonly found in the behavioral sciences literature. A child or teen who has a conduct disorder exhibits persistent antisocial behaviors that significantly interfere with daily life functions. Major societal rules are violated, such as engaging in theft, vandalism, firesetting, lying, or truancy. Older youth may become involved in criminal acts, substance abuse, and early promiscuity. Kaufman states that, "The most useful definition for educators is one that clearly focuses on the behavior problems of students in schools" (p. 31).

Certain parent and professional organizations prefer to use a more inclusive definition of "children and youth with emotional or behavioral disorders" (Kauffman, 2001). Definitions are unavoidably subjective with aggression, academic failure, and antisocial behaviors typical traits of a predominantly male clientele. Often these emotional and behavioral problems are overlooked or neglected until they become painfully obvious and intolerable to adults.

In complying with federal legislation as established by the reauthorization of The Individuals with Disabilities Education Act (IDEA) of 1997, Colorado's rules for the Administration of the Education of Exceptional Children Act (Skalski, 2000, p. 10) define a child with a significant identifiable emotional disability as an individual having "emotional or social functioning which prevents the child from receiving reasonable

educational benefit from regular education." The child may exhibit one or more of the following traits including depression, atypical affect, excessive fear or anxiety, persistent physical complaints, withdrawal or avoidance from others, thought disorders and disorientation, obsessive behavior, consistent patterns of aggression, pervasive defiance, limited self-control, persistent stealing or lying, and chronic patterns of bizarre behavior. In addition, academic functioning and/or social/emotional functioning in the school environment cannot be maintained without a significant intervention.

Unique to Colorado Law (Skalski, 2000) is the "habitually disruptive " clause for any student, whether designated as having a disability or not, who substantially disrupts the classroom environment over the course of a school year and which permits schools to pursue expulsion from public school. Per IDEA, students with disabilities must have their misconduct reexamined to ensure that the misdeed was not related to their disability.

Though similar patterns of behavior exist among students identified as having an emotional or behavioral disorder, each child possesses unique strengths and needs (Turnbull, Turnbull, Shank, Smith, & Leal, 2002). Behavioral characteristics can be classified as either externalizing or internalizing. The former includes aggression toward objects or persons, noncompliance, chronic lying or stealing, and lack of self-control. The latter includes depression, atypical affect, somatic problems, suicidal ideation, extreme lethargy, and social withdrawal. Students, in general, have teacher or peer related adjustment problems.

Interventions to Ameliorate Disruptive Behavior Among our Youth

The following four programs have been utilized to a large extent by public schools in attempting to lessen the impact of disruptive behavior among adolescents. Two programs—*Skillstreaming* and *Why Try*—focus upon small group lessons to address social skill deficiencies. The remaining two programs—*Safe and Civil Schools Series* and *Bully-Proofing Your School*—rely on school-wide opportunities for every student to make appropriate behavioral connections with peers and adults on campus.

Begun in 1973 as one of the first social skills training programs, *Skillstreaming* has attempted to teach alternative, prosocial behaviors to chronically aggressive adolescents (Goldstein & McGinnis, 1997). Viewing teenagers more in educational terms rather than as clients in need of therapy, *Skillstreaming* became an active and deliberate teaching method to replace undesirable behaviors with more socially acceptable ones. Instructional procedures included modeling, role-playing, performance feedback, and generalization training. Both teachers and support staff were trained to deliver the program. Students were assessed as to their social skill attributes and placed in groups based on similar skill deficiencies. This intervention program when implemented on a school campus has been infused into a wide variety of subject areas, situations, and timeframes. Mastery of the *Skillstreaming* curriculum is highly dependent upon the youth's motivation to attend and participate in the lessons offered.

Often funded through Safe and Drug Free Schools grants, the *Why Try Program* (Moore, 2001) has as its purpose the goal of teaching youth ways to deal positively with life's daily challenges. The *Why Try Program* consists of ten visual or pictorial analogies which assist students in gaining insight on ways to problem solve stressful situations.

Lessons consist of teaching these analogies through music, hands-on activities, group discussions, peer sharing, real life application, and increased self-awareness. *Why Try* has requested that schools using this Program share their outcomes to enhance future curricular development. Responses from two different school districts indicated positive results including higher GPA scores, improved attendance, increased graduation rates, a less negative attitude towards school, and enhanced motivation for learning.

With an overarching goal of assisting all students to behave responsibly and respectfully, the *Safe and Civil Schools Series* provides practical materials to help school staff in maintaining a safe and civil campus so that students might be engaged in learning (Sprick, Garrison, & Howard, 1998). Emphasis is placed upon modifying school-wide and class-wide procedures first rather than addressing individual student needs. Pupils need to know what each teacher's precise classroom expectations are. There are eight teacher modules which assist the educator in evaluating his/her classroom management and discipline plan throughout the school year. Core beliefs include the importance of classroom organization in promoting responsible student behavior, teacher recognition of more positive than negative behaviors, and calm, consistent teacher responses to misbehaviors.

Bullying behavior at the elementary level can easily escalate into more violent behavior at middle and high school levels. *Bully-Proofing Your School* (Garrity, Jens, Porter, Sager, & Short-Camilli, 2000) is a comprehensive approach in identifying and intervening with campus bullies. The authors' definition of bullying is "When one person uses power in a willful manner with the aim of hurting another individual repeatedly" (p. 9). Its school-wide adoption plan includes staff and student training,

victim support, direct intervention with the bullies themselves, and parent support. The basic philosophy of this program is to shift the balance of power from administration and staff to the majority of caring students who will intervene in a proactive manner with bullying behavior.

Theoretical Bases for Human-Animal Kinship

The field of animal-assisted therapy lacks a cohesive and widely-accepted theoretical base for explaining why interventions involving animals are potentially beneficial (Kruger, Trachtenberg, & Serpell, 2004). A variety of possible theories have been considered without proper empirical validation. Attachment, psychoanalytic, and learning theories are prominent paradigms cited in the literature in forming the bases for human-animal bonding.

Per Thompson (1991), "Attachment can be defined as an enduring emotional bond uniting one person (or animal) with another" (p.100). Using Bowlby's ethological framework of attachment and Weiss' adult provisions of relationship building, a review of the literature on pets and attachment was undertaken by Sable (1995). Findings indicated that pets should now be included among the significant attachment figures throughout the life cycle, from childhood to old age. Melson (1991) distinguished four dimensions of children's attachment to their pets: time and activities with pet, interest in and emotional closeness toward pet, knowledge about pet and its care, and behavioral responsiveness to pet. Melson also cautioned that more time spent with a pet does not necessarily indicate a stronger bond. Collis and McNicholas (1998) prefer to use the term, social support, when referencing the generalized close and affectionate relationships between man and animal. As providers of social support, pets are perceived

as readily available, predictable in their reactions, nonjudgmental, and bearers of tactile comfort.

The psychoanalytic basis for human-animal bonding uses a preponderance of animal symbolism with animals representing one's primitive self (Cusack, 1988). "In psychoanalytical terms, the love and affection lavished on a favored pet is a displacement for the love felt toward a child or spouse" (p.32). The pet becomes the object of choice when the human figure is unavailable. Since the animal's behavior is perceived as human, its behaviors are translated into devotion, attachment, and loving regard toward its owner (Heindl, 1996). Popular interpretations for psychoanalytic theory have even been referenced to the horse (Jones, 1983).

Per Clark Brickel, humans bond with animals based on a learning process of classical, observational, and operant conditioning (Cusack, 1988). Families prepare the child for positive interaction with a companion animal both verbally and tactilely by using stuffed toys. Children also learn the positive worth of pets through modeling of family members who nurture household pets. Animals themselves can reinforce positive behavior and bonding when they respond with affection and interest. Interaction with a companion animal becomes a functionally meaningful activity (Heindl, 1996). Children can reassert their mastery over their environment by assuming responsibility for a pet.

It will require future investigation to determine which of a variety of proposed theories relate directly to improved behavior as a result of animal-assisted interventions. Perhaps further research will also specify which populations and/or diagnoses benefit the greatest from certain philosophical constructs associated with animal activities.

Positive Outcomes of Animal-Assisted Therapy with Children and Youth

For the purpose of this literature review, only studies of children and youth ages infancy through 21 with special needs who received individual or small group animal-assisted therapy will be examined. Both quantitative and qualitative research designs that explore the benefits of animal-assisted therapy will be referenced. Using the standards set forth by the Delta Society, an organization focused on the role of animals in human health and well-being, animal-assisted therapy or AAT will again be defined as "A goal-directed intervention in which an animal meeting specific criteria is an integral part of the treatment process. AAT is delivered and/or directed by a health/human service provider working within the scope of his or her profession" (Arkow, 1998, p. 11).

The research settings may be public school, residential/day treatment, or non-traditional with an academic or non-academic focus. Students will already have been identified as having one or more cognitive, learning, socio-emotional, behavioral, communicative, and/or physical deficits. All effects in eligible studies will be reported including (but not limited to) student achievement, self-esteem, self-discipline, attention, social and communicative skills, and physical strength. Given the wide range of ages and disabling conditions cited and the multiplicity of effects, these studies will be aggregated by setting—public school, residential/day treatment, and non-traditional.

Public school setting. Using an ethnographic design with an intact group, Chronister (1993) studied 10 elementary aged students in a large southwest suburban school district who were seriously emotionally disturbed. Students received the benefits of both animal and horticulture therapies during the course of one school year. Data collection consisted mainly of extensive field notes, participant observation, student records, and progress

reports. Five students took the *Kaufman Test of Educational Achievement* as a pre and posttest with the most dramatic gains reported in reading followed by math and spelling scores. Class work completion rates from first to second semesters slightly increased for five of eight students whose activities were tracked. Four of nine students increased their self-concept scores based on teacher input while the majority of students exhibited an unusually high level of appropriate behavior throughout the school year. Pupils also were more recognized and accepted by their peers as others noticed them walking or training the dogs and working in the class greenhouse. Chronister cautioned that the small sample size and students enrolling late in the academic year might have skewed results in either a positive or negative direction.

A single-case study of a 9-year-old male with a primary diagnosis of an emotional disability also confirmed the positive effect of animal-assisted therapy in increased classroom participation (McNulty, Foster, & Cobb, 1999). Social skill expansion, improved self-confidence, increased expressive language skills, and a reduction in hyperactive behavior were observed and documented as well. Balcerak, Foster, Granger, Granger, and Kogan (2000) conducted a study to investigate the effect of weekly AAT sessions on three children with autism, ages six through eight. The therapy consisted of rapport building and dog training activities. Two participants showed an increase in attention and task completion while a third participant demonstrated a marked decrease in aggressive behaviors. One student also showed improvement in gross motor skills. Because of the small sample size and the individualized nature of the AAT segments, it was not possible to generalize these findings to all children with autism.

Dismuke (1983) investigated the use of a structured horseback riding experience as the medium for speech and language intervention. Elementary aged students with moderate to severe language disorders and mild motoric involvement from the Albuquerque Public Schools were assigned to an experimental and a control group. The experimental group with a sample size of 15 received horsemanship lessons while the control group of 11 students experienced traditional language therapy in a public school setting. Using pre/post *t* test comparisons, the experimental group verbally expressed themselves with more complex sentence structures and used oral language more efficiently and appropriately. An additional benefit to this equestrian experience for children with moderate to severe language and learning needs was a significant gain in lower back and leg strength.

An ethnographic study by Primm (1999), involving five elementary and five middle school students in self-contained classrooms for pupils with severe emotional and behavioral needs, investigated the therapeutic benefits of "community dogs." The purpose of these classroom companion animals was to de-escalate inappropriate behavior during crisis situations and to act as an incentive for more acceptable classroom conduct. Students responded to semi-standardized interview questions regarding perceived benefits of the community dog program at their school. Pupils indicated that the animals gave them comfort during periods of anger and sadness and that the dogs seemed to create a happier and calmer mood.

A counterbalanced design with repeated measures was instituted to observe the behavior of eight children with Down syndrome when interacting with a real therapy dog and with an imitation, stuffed dog of similar appearance (Limond, Bradshaw, &

Cormack, 1997). These students, between seven and twelve years of age, were encouraged to interact with either dog (i.e., real or pretend) in brief training sessions. Results indicated that the real therapy dog evoked more cooperative verbal responses towards the adult in charge and increased attentive behavior more than the imitation dog did.

A human-animal intervention team approach to animal-assisted therapy was described by Granger, Kogan, Fitchett, and Helmer (1998) in the treatment of two male students labeled emotionally disturbed in a self-contained public school setting. Student observations; parent, staff and pupil interviews; and pre/post comparisons from the *ADD-M Comprehensive Rating Scale* or *ACTeRS* indicated positive growth on most individualized goals. Following weekly sessions with a trained therapy dog, one or both participants exhibited increased self-esteem, improved peer relations, and decreased distractibility.

Two school districts in Taylor, Texas, formed a therapeutic partnership with a working cattle farm that included a variety of farm animals including goats, sheep, pigs, a llama, and an alpaca (Katcher & Teumer, 2004). Children arrived by school bus accompanied by school staff to participate in animal care activities once per week during the school year. Over 90% of these students had one or more special education diagnoses. Farm activities transitioned into the regular classroom via related reading materials, campus visitations by selected animals, special class projects, and entry into school science fairs with topics related to animal care. Children were evaluated during the first year of the program with the *Achenbach Teacher's Report Form for Ages 6-18* and in the second and third years with the *Behavior Assessment System for Children* or

BASC. Statistically significant results reported less symptomatic behavior when students participated in the farm animal activities in comparison to regular educational tasks at school.

Residential/day treatment settings. Utilizing a case study approach, Clark (1981) documented a significant increase in peer play by a 21 month old male with Down syndrome enrolled in a special education preschool after being introduced to a golden retriever as pet therapist. Generalization was difficult due to a sample size of one. Students with multiple handicaps ages 6 to 21 in a day treatment center were motivated toward academic learning using an equestrian instructional theme based on subjective staff, student, and parent appraisals (Bieber, 1983). The five-week horse unit was incorporated into tasks of visual discrimination, language, reading, math, social studies, and movement.

Children with severe attention-deficit and conduct disorders in a residential treatment facility in a suburb of Philadelphia experienced a decrease in pathological and aggressive behaviors after exposure to a variety of pets (Katcher & Wilkins, 1998). Utilizing a controlled crossover experimental design, 52 children were randomly assigned to an Outward Bound type class or to a nature and companion zoo program involving a collection of small animals. The *Achenbach Teacher Report Form* was utilized by staff to rate the frequency and intensity of misbehaviors. Therapy structured around animal contact in the nature and zoo program resulted in decreased aggression. This same intervention also appeared to accelerate learning patterns and improve attendance by students enrolled in the regular school program. Though positive behavioral changes were evident when students participated in the traditional academic school setting, the

authors did not observe improvement in the student living quarters. A decrease in problem behavior was also witnessed in a day treatment program for elementary aged youth with significant emotional disorders (Heindl, 1996) using pet therapy as an intervention. Self-concept with this same group of youngsters was unaffected. The author postulated that the self-reporting nature of the self-concept scale might have biased the results.

Green Chimneys, a residential treatment program in New York State for youngsters with significant behavioral and academic difficulties, utilized farm programming in addition to more traditional education and therapeutic interventions (Ross et al., 1983). A random selection of 20 boys and 2 girls were rated by staff on their level of involvement with the animals, people, and tasks, and their overall adjustment to farm life, group living, and the classroom setting. There was no statistical relationship between levels of involvement and age, psychiatric diagnosis, nor length of residential stay. Children with multiple high involvements (i.e., animals plus people plus tasks) demonstrated no inadequate adjustment ratings. Animal programming in a total therapeutic milieu appeared to be justified. A later mixed design approach by Mallon (1994) surveyed 80 students with a mean age of 11 and 5 adult staff members residing at Green Chimneys regarding their views on the farm program. Five salient themes emerged including the healing and therapeutic effects of farm visitations, the nurturing aspects of student-animal bonding, and the animal as a confidant to which the children can communicate their inner feelings. In contrast to Ross et al. (1983), Mallon's qualitative responses noted that the younger the child the greater the contact with the resident farm animals.

Pace (1996) explored whether or not an eight-week animal-assisted therapy program for female adolescents in a Chicago treatment center for substance abuse would lead to a change in self-concept. Three teenage girls, ages 14 to 16, composed the convenience sample. A descriptive data analysis gave credence to increased self-concept. In addition, the adolescents frequently mentioned that AAT had enhanced their ability to be patient with others.

Redefer (1986) utilized a single-subject, repeated measures design to determine the effects of animal-assisted therapy on social interaction with children exhibiting autistic-like, developmental delays in a day treatment program. Twelve youngsters, ages five through ten, were given 18 sessions of pet-facilitated therapy with individual behaviors observed before, during, and following treatment. To establish the presence of general trends among the group, data from all 12 children were also combined. Isolated behaviors significantly declined while social interactions increased dramatically.

Five children, ages 9 to 11 years, enrolled in a private therapeutic day school for students with emotional and behavioral disorders were randomly selected to participate in AAT (Stanton, 1998). A single-subject design was again employed focusing upon scores obtained on *The Taxonomy of Problem Situations* measure in the areas of responding to aversive events, anxiety caused by depression, and off task behaviors. Treatment activities included dog obedience and agility tasks and pet care and grooming. No significant behavioral changes were noted among dependent variable scores though student observations indicated participants enjoyed the AAT activities and were actively engaged.

In determining whether animal-assisted therapy is beneficial for multiply handicapped, medically fragile infants and toddlers, Tipton (1994) studied 13 children with a mean developmental age of 9.15 months residing at a respite care center for the mentally retarded. Children's behaviors prior to treatment and in the presence of an animal puppet followed by a live dog were measured by an activity checklist from a nationally recognized curriculum for handicapped infants. A repeated measures analysis of variance, followed by planned paired comparisons, was used to determine any significant treatment differences. Children's activity levels increased in regards to social skills, communication, and motor responses when both puppet and dog treatments were presented during normal play time. No differences were observed between the puppet and canine treatments inferring that puppetry can be a legitimate alternative to AAT intervention.

In 1995 Colorado Boys Ranch, a residential treatment facility for males ages 12 through 20 with severe emotional and behavioral needs, initiated a canine rescue program in cooperation with local animal shelters. Over ten-week periods, this voluntary *New Leash on Life* program provided opportunities for boys to assume responsibility for the complete care of a dog until it was successfully adopted. It is *New Leash on Life's* basic belief that the experiences associated with humane animal treatment will transfer to more positive human interactions. Between May, 2002, and June, 2003, an experimental study with random assignment to treatment and control groups using multiple pre-post measures was undertaken (Seiz & Koralewicz, 2003). Data from two standardized measures, the *Canine Bonding Scale* and the *Balanced Emotional Empathy Scale*, and from Boys Ranch clinical forms referencing following directions, accepting feedback,

and respectful interactions were collected and analyzed. A paired-samples *t* test found increased canine bonding by the boys who participated in *New Leash on Life* activities. It inferred that these males had developed increased attachment to their dogs over the ten-week training course. An independent-samples *t* test comparing the mean scores of treatment and control groups also found a significant difference in social performance ratings. It appeared that *New Leash on Life* involvement improved social behaviors.

The Youth Diagnostic and Development Center (YDDC) in Albuquerque, New Mexico, developed an intensive three-week animal assisted program to aid juvenile delinquents in the exploration of their emotional health attributes through positive canine interactions (Ward, 2004). YDDC is a residential juvenile correctional facility with approximately 100 male and female residents from throughout New Mexico ages 12 to 21. About 60% of the residents have special education needs. Held seven times per year, *Project Second Chance* pairs four local shelter dogs with four residents who are responsible for daily care and training of their individual canines for three-week periods. Issues of empathy, compassion, respect, responsibility, and kindness appeared to be in need of enhancement among YDDC's residents. The greatest research challenge was discovering a measurement tool that would be appropriate for this unique population. A Likert-like satisfaction survey was administered on the last day of *Project Second Chance* with six month and one-year follow-ups including information on client school or work attendance, further law violations, and pet ownership. Student journal entries detailing the program's effects appeared quite positive.

Non-traditional settings. Six outpatient male adolescents diagnosed with conduct disorder enrolled in an alternative learning environment in Ohio were able to successfully

complete a 10-week academic training program in sub-novice dog obedience (Boatfield, 1987). Pre/post comparisons using a self-care and a self-responsibility measure did not indicate any significant differences. The author recommended that the study be replicated using a larger sample size and increasing the number of pet-facilitated therapy sessions to cover one or two semesters.

A pre-post crossover design was used to evaluate animal-assisted activities with five classes of three and four-year-old Head Start youngsters of Native American origin (Barker, Best, Fredrickson, & Hunter, 2000). Animal activities involving rabbits, goats, dogs, and a rooster were introduced twice weekly for 15 to 20 minutes over a six-week period. Data from the *Social Skills Rating System Parent and Teacher Scales*, the *Oregon Assessment for 3 – 5 Year Olds in Developmentally Appropriate Classrooms*, and attendance logs were collected. No statistical significance was found in the increase of social skills, but a significant difference was noted related to a decrease in absenteeism for children receiving treatment during the first six-week period. Preschool teachers' informal perceptions of the animal-assisted activities included increased student curiosity, cooperation, and expressive language.

A total of five different equine-facilitated therapy programs were evaluated involving 126 youth ages 8 to 17 years (MacDonald, 2004). Each program varied in timeframe with sessions ranging between 1 to 2 hours in length on a weekly or bi-weekly schedule over a 6 to 14 week cycle. Areas of outcome interest included self-esteem, depression, locus of control, loneliness, empathy, and aggression. When all five programs were analyzed together, no statistically significant pre/posttest differences between any of the above constructs were found. Individually though, two equine programs did produce

statistically significant differences. Jackson County, Missouri's *4-H Therapeutic Program* showed a significant increase in self-esteem and internal locus of control on paired sample *t* tests. The *Horsepower Therapeutic Learning Center* in Colfax, North Carolina, revealed a significant decrease in self-reports of hostility via paired sample *t* tests as well.

Eight autistic children engaged in six encounter sessions over a period of nine months at a seaquarium with Atlantic bottlenose dolphins showed a consistent increase of sustained attention and were observed to be calmer and happier in temperament (Smith, 1983). Nathanson, de Castro, Friend, and McMahon (1997) researched the effectiveness of a two-week dolphin-assisted therapy program in comparison to a six-month conventional speech-language therapy program with 47 children with severe disabilities. Thirty children with a mean age of 6 years, 8 months and with multiple etiologies experienced a 17 session, two-week therapy regimen from Dolphin Human Therapy, a multidisciplinary Florida based program that advocates operant conditioning treatment procedures. Data was analyzed via a series of single-subject, multiple baselines across settings comparisons. Seventeen of the 30 children were able to independently say their first word or phrase by the end of the two-week period, a feat that all 30 had been unable to accomplish in the previous six months of traditional speech therapy.

Nathanson et al. (1997) also assessed the effectiveness of this dolphin-assisted therapy program upon independent motor responses. Twelve of 17 children with severe developmental disabilities were able to independently reach for and touch an object or place a ring on a peg by the end of the two-week period, tasks that were unsuccessful for them in prior traditional physical therapy sessions. These authors felt strongly that

dolphin-assisted therapy seemed to achieve positive results more expeditiously and may also have been more cost effective in the long term. Since children did not typically have access to dolphins on a regular basis, this unique therapeutic mode complemented and did not replace more traditional therapies. By significantly increasing a child's attention and motivation to perform, Dolphin Human Therapy's primary purpose was to "jump start" a youngster's treatment process.

In order to assess the long-term effectiveness of Dolphin Human Therapy, Nathanson (1998) undertook a survey of 71 parents whose children had attended dolphin therapy at least 12 months prior to data collection and whose children had received at least 9 therapy sessions in one week's time. Parents were asked to rate their children's behavioral improvement as a result of this unique marine animal intervention. Using analyses of variance, *t* test comparisons, and descriptive statistics, results indicated positive student outcomes in socio-emotional, behavioral, and communicative areas.

Marino and Lilienfeld (1998) have expressed serious reservations regarding both the 1997 and 1998 dolphin research by Nathanson and colleagues. Methodological flaws relevant to internal and external validity were described rendering the efficacy of dolphin therapy questionable in these authors' view. Validity threats included the absence of an experimental control group, multiple intervention interference, subject maturation, informant bias, and practice effects.

Summary and Research Limitations

Twenty-six studies using both qualitative and/or quantitative designs were reviewed to determine the effects of animal-assisted therapy with special needs populations in public school, residential/day treatment, and non-traditional settings. The age ranges

encompassed infancy through age 21 with the greatest number of subjects at the elementary level followed by secondary youth, and infants and toddlers. There were diverse disabling conditions with the most common being students identified as emotionally disturbed. Other categories included severe multiple handicaps, mental retardation, autism, conduct disorders, learning difficulties, speech and language disorders, and substance abuse. Studies of public school settings and residential/day treatment centers focused more upon socio-emotional and/or behavioral outcomes. All three venues reported one or more positive effects in the areas of learning, socio-emotional, behavioral, communicative, and physical development but with only one cognitive outcome (i.e., improved problem solving) referenced in a public school study. Overall, more positive socio-emotional and behavioral indicators (i.e., increased attention and concentration, enhanced social skills, improved self-esteem and self-discipline, greater peer acceptance, improved classroom adjustment, and a calmer and more nurturing demeanor) were reported than cognitive, learning, communicative, or physical benefits when children and youth were engaged in animal-assisted therapies. The pet of choice in most studies was the canine.

As one compares and contrasts these results, limitations of a literature review in the field of animal-assisted therapy should be discussed. Though this writer presented a standardized definition of AAT, there exist multiple interpretations of pet-facilitated therapy. Research designs were extremely varied with certain designs and data collection methods lacking scientific rigor. Instrumentation, when available, was often nonstandard. Almost half of the sample sizes had 10 or fewer participants and were typically nonrandom, making generalization of results beyond the immediate research

group inappropriate. The maintenance of outcomes beyond the scope of the treatment period was only reported in one study. The engagement of more exotic animals, which might prove greater attention motivators, was not apparent.

In a more in-depth literature review Barba (1995) analyzed 52 research reports on the human/companion animal relationship published between 1988 and 1993. These studies were primarily nonexperimental in design with under representation of rural settings and adolescent populations. Only four of the researchers used experimental methods meeting the criterion of random assignment to control and treatment groups when investigating the use of animals as therapeutic interventions. In her summary statement, Barba also recommended that future research involving AAT assess the reliability and validity of its measurement tools.

Granger and Kogan (2000) compared and contrasted a variety of animal-assisted therapy approaches involving varied settings and client populations. Much of the literature has yet to adequately define AAT protocols so as to confuse implementation practices. With canines being the most common species utilized, cats, rabbits, birds, horses, farm animals, and even dolphins were cited in research studies. The human partner linked to the animal of choice varied in training and understanding of basic AAT concepts. Numerous specialized settings, such as nursing homes, hospitals, psychiatric facilities, schools, and correctional facilities, have been sites for AAT interventions.

Well thought out and meticulously evaluated research designs are essential to responsible animal-assisted programming and in justifying funding for the allocation of resources. Outcome based research with adolescents is especially lacking in the literature. Carefully controlled studies may legitimize the power of the AAT method

itself filling a present research void on the efficacy of this therapeutic approach. It is the intent of this study to minimize prior research design flaws through the use of one standard animal-assisted therapy definition, direct observational techniques, and a reliable and valid measurement tool. Voelker (1995) concluded that, "The biggest challenge facing advocates who say animal-assisted therapy improves outcomes can be summed up in two words: Prove it" (p.1898).

CHAPTER 3: METHOD

Research Approach and Rationale

A carefully constructed research project can help validate the authenticity of animal-assisted therapy in an educational setting and may assist in understanding which factors are deemed essential for a quality AAT program. Knowing the skepticism that may surround the effectiveness of using animals as co-therapists, greater scientific rigor will assist the field of animal-assisted therapy in becoming a more recognized alternative for eliciting positive behavioral outcomes. Granger et al. (1998, p. 172) wrote that "Despite the positive results often witnessed with animal-assisted therapy (AAT), there continues to be the need for well-designed studies to substantiate the validity of this innovative therapy intervention."

This study utilized a quasi-experimental approach with manipulation of the independent variable (the presence or absence of AAT participation) among students enrolled in two alternative public secondary schools in Colorado. Primary data collection methods included pre and posttest administrations of standardized teacher and student behavior rating scales; pre and posttest observations related to student indices of direction following, acceptance of staff feedback, and respectful and caring responses toward others; and pre and posttest comparisons of the number of classroom absences. A brief, posttest only, semistructured interview of participating staff and students was administered to ascertain underlying attitudes toward and concerns about the use of AAT

with adolescents at-risk. Individual and small group AAT sessions were also monitored for interactive behaviors between student and dog or student and adult. Each HABIC staff member assisting with individual AAT sessions was asked to maintain a weekly journal to record his/her student observations and therapeutic impressions. The HABIC head trainer and her assistant trainer for small group AAT instruction submitted a written year-end summary of student contacts encompassing all three small group sessions.

Given the difficulty of establishing significant statistical differences between AAT and control groups with very small samples, the presence of supplementary narratives from staff and youth were added to assess the use of AAT as a unique intervention with troubled adolescents. Combining quantitative and qualitative data approaches in a single study is advantageous by adding scope and breadth to the original design, in enabling fresh research perspectives to emerge, and through a better understanding of the concept under investigation (Creswell, 1994). Defined by Creswell as a dominant-less dominant design, this study maintained its primary quantitative focus on hypotheses testing with a qualitative interview component and individual and small group AAT session narratives embedded in the data collection phase.

Participants

Students and staff in two alternative public secondary schools in Colorado voluntarily participated in this study. These alternative sites provided intensive educational and counseling services to a population of between 30 to 50 youth, ages 12 through 18. These teenagers were either expelled from regular secondary school settings or in danger of being expelled, with some students already involved with the youth correctional system. The vast majority of students were male, representing a variety of

ethnic groups, with some adolescents already identified with special education needs. School staffs consisted of a building principal assigned to both campuses, counselors, instructional staff, paraprofessionals, secretary, and custodian.

Both schools' overall goal was to provide an academic and therapeutic program designed to assist students in becoming re-engaged in the learning process through successful classroom experiences and through the development of appropriate internal and external behavioral controls. A three-tiered, semi-token economy system was in place with positive and negative student interactions recorded on a daily basis. Students were expected to work independently and in small groups, follow rules and instructions, demonstrate responsibility, solve interpersonal problems appropriately, maintain a friendly demeanor, and assume a constructive leadership role. Most students remained in the program for one year, transitioning back to their neighborhood school once evidence existed that at-risk, disruptive behaviors had been remediated.

Between September of 2002 and May of 2003 both quantitative and supplemental narrative data were collected on 31 middle and high school age students attending the two alternative public secondary school sites in Colorado. Though the original design opted for using only subjects in attendance on one secondary campus, enough students were unavailable at that location. Thus, the control group was obtained from a nearby community site serving similar at-risk adolescents. Eleven students comprised the control group; they attended a campus whose primary focus was academic and social skill remediation. The 5 students receiving individual AAT and 15 students receiving small group AAT attended a separate campus with both an academic and behavioral orientation as well. This particular site's student population included pupils expelled or

at risk for expulsion. The same building administrator supervised the day to day activities at both campuses. This same administrator personally contacted the parents or guardians of interested students explaining the study's requirements and the consent process.

Student demographics. Overall, demographic data consisted of 22 male and 9 female participants ranging in age from 12 years 2 months to 17 years 5 months. By grade level there were five 7^{th} graders, ten 8^{th} graders, thirteen 9^{th} graders, two 10^{th} graders, and one 11^{th} grader. Ethnically, 17 Caucasian, 11 Hispanic, 2 African American, and 1 Asian/Polynesian student participated in the study. There were seven students identified with a special education disability as determined by Colorado of Education guidelines in line with federal statute. Six boys were found to have an emotional disability and one boy exhibited autistic-like behavior. Treatment assignments were based on student availability during the course of the school year with individual AAT referrals generated mainly by staff members who saw a critical need for more intense intervention with these particular students.

A cross-tabulation analysis was conducted showing gender, ethnicity, and special education status for each treatment level. Tables 3.1, 3.2, and 3.3 cite these statistics per respective category. The discrepancy between each of the above actual and expected counts was not significant based on standardized residual scores less than plus or minus 2.0. The similarity between actual and expected counts for gender, ethnicity, and special education status was not significantly different from what one would anticipate by chance assignment to the respective treatment levels of control, individual AAT, and small group AAT. Thus, although the students were not randomly assigned to the three treatment

groups and cannot be assumed to be equivalent on all possible attributes, they did not differ significantly on the key demographics of gender, ethnicity, and special education status.

Table 3.1

Cross-Tabulation Analysis of Gender by Treatment Level

			treatment levels			
			control	individual AAT	small group AAT	Total
gender of student	males	Count	6	5	11	22
		Expected count	7.8	3.5	10.6	22
		% of Total	19.4	16.1	35.5	71
		Std. residual	-.6	.8	.1	
	females	Count	5	0	4	9
		Expected count	3.2	1.5	4.4	9
		% of Total	16.1	.0	12.9	29
		Std. residual	1.0	-1.2	-.2	

Table 3.2

Cross-Tabulation Analysis of Ethnicity by Treatment Level

			treatment levels			
			control	individual AAT	small group AAT	Total
ethnicity	Caucasian	Count	7	4	6	17
		Expected count	6.0	2.7	8.2	17
		% of Total	22.6	12.9	19.4	54.8
		Std. residual	.4	.8	-.8	
	Hispanic	Count	3	1	7	11
		Expected count	3.9	1.8	5.3	11
		% of Total	9.7	3.2	22.6	35.5
		Std. residual	-.5	-.6	.7	
	African American	Count	1	0	1	2
		Expected count	.7	.3	1.0	2
		% of Total	3.2	.0	3.2	6.5
		Std. residual	.3	-.6	.0	
	Asian/Polynesian	Count	0	0	1	1
		Expected count	.4	.2	.5	1
		% of Total	.0	.0	3.2	3.2
		Std. residual	-.6	-.4	.7	

Table 3.3

Cross-Tabulation Analysis of Special Education Status by Treatment Level

			treatment levels			
			control	individual AAT	small group AAT	Total
special education status	yes	Count	1	3	3	7
		Expected count	2.5	1.1	3.4	7
		% of Total	3.2	9.7	9.7	22.6
		Std. residual	-.9	1.8	-.2	
	no	Count	10	2	12	24
		Expected count	8.5	3.9	11.6	24
		% of Total	32.3	6.5	38.7	77.4
		Std. residual	.5	-1.0	.1	

Individual AAT sessions were conducted throughout the school year with pupils beginning their canine activities in September, February, March, and April. Attendance at individual AAT gatherings ranged from 5 to 13 sessions per pupil. Small group AAT sessions closely followed school calendar breaks. The first small group started on September 10, 2002, and ended on November 19, 2002, comprising 20 training meetings. Unfortunately, there was no attendance log kept for this timeframe to determine individual student participation. The second small group met from December 3, 2002, through February 20, 2003, for a total of 16 meetings. Student participation ranged between 13 and 15 days of attendance. The third small group met from February 25, 2003, through May 22, 2003, interrupted by several weeks of vacation and state mandated testing. Out of a possible 19 meetings, students attended between 11 and 17 sessions.

Staff demographics. Seventeen staff members, 4 males and 13 females, assigned to the campus where individual and small group AAT treatments were conducted, voluntarily gathered informal and/or formal data during the 2002-2003 school year. Five

staff members, 2 males and 3 females, assigned to the control campus voluntarily gathered informal and/or formal data as well. The combined staff roles included 10 teachers, 8 classified (i.e., paraprofessionals, campus security, an in-school suspension coordinator, and building secretary), principal, social worker, therapist, and office manager. Staff members' employment experiences working on an alternative campus ranged between 6 months to 6 years with total years in public education spanning 6 months to 25 years. Of the 22 staff participants all were Caucasian with the exception of one teacher of American Indian heritage.

Measures

The Behavior Assessment System for Children. To determine the effectiveness of individual and small group animal-assisted therapies (AAT) toward improved socialization and social/peer behavior of students within an alternative secondary school setting, a well-known, standardized behavior rating scale, the *Behavior Assessment System for Children* or BASC, measured the presence of pro-social behaviors among these adolescents as reported by staff members and the youth themselves. McConaughy and Ritter (1995) have cited the following advantages to using standardized behavioral rating scales in viewing children and youth's emotional and behavioral levels of functioning.

> Information is quantifiable and thus amenable to psychometric standards of reliability and validity. Information is organized in a systematic way by aggregating problems according to different scores and scales . . . Normative data provide a standard for judging the severity of problems by comparing an individual to large samples of nonreferred children...Sets of related rating scales can be used to compare similar data from multiple informants, such as parents, teachers, children's self-reports, and observers. (p. 869)

The *Behavior Assessment System for Children* (BASC) is a multi-method and multi-rater approach to analyzing the behavior and self-perceptions of children and youth ages 4-18 (Reynolds & Kamphaus, 1992). The BASC was normed on approximately 2,400 teacher respondents, 3,500 parent respondents, and 9,900 student respondents nationwide. Children and youth with emotional and/or behavioral disorders were represented at every age level. Emphasis was placed upon including items for the student self-report and parent/teacher rating scales that had strong content and construct validity. At least 20 other behavioral and self-rating instruments were reviewed during the development of the BASC teacher, parent, and student scales. Each of the BASC rating scales may be computer-scored with respect to general, gender-specific, or clinical norms. Given the intense emotional and behavioral needs of these student participants, clinical norms were utilized when available.

The BASC Teacher Rating Scales—Adolescent Form (TRS-A). The *Teacher Rating Scales* measures both adaptive and problem behaviors in a school, residential, or clinical setting using a summated Likert scale format. Teachers, aides, or care providers who have had a minimum of six to eight weeks of several-times-per-week prior contact with the student or client can complete the TRS-A without difficulty. As cited in the publisher's technical manual, comprehensive factor analyses found a complementary relationship between the TRS-A social skills and aggression scales, which were the two teacher scales included in this study's data collection. The BASC manual statistics indicated that the social skills scale, based on clinical norms, correlated positively (.87) with the adaptive skills factor while the aggression scale correlated positively (.89) with the externalizing problem factor. In comparison to each other, these two scales showed a

modest negative relationship of -.28. Internal consistency ratings, again based on clinical norms, were .90 for the social skills scale and .94 for the aggression scale. In the development of the BASC, a sample of adolescents was rated twice by the same teacher with a two to eight week interval between ratings. Test-retest reliability coefficients, which were reported for general norms only, were .82 for the social skills scale and .86 for the aggression scale.

The BASC Self-Report of Personality—Adolescent Form (SRP-A). The *Self-Report of Personality* consists of problem statements that youth respond to as either True or False. Given the dichotomous nature of the response (i.e., agreement or disagreement), students in this study had no problems reading and responding to True/False items on the SRP-A. As noted in the publisher's manual, comprehensive factor analyses showed a complementary relationship between the SRP-A attitude to school and interpersonal relations scales, which were included as the two self-report scales in this study's data collection. The BASC manual statistics showed that the attitude to school scale, based on clinical norms, correlated positively (.89) with the school maladjustment factor while the interpersonal relations scale correlated positively (.81) with the personal adjustment factor. In contrast with each other, these two scales showed a modest negative relationship of -.21. Internal consistency ratings, again based on clinical norms, were .87 for both the attitude to school scale and for the interpersonal relations scale. In the development of the BASC, a sample of adolescents completed the SRP-A twice with a four-week interval between ratings. Test-retest reliability coefficients, which were reported for general norms only, were .83 for the attitude to school scale and .75 for the interpersonal relations scale.

A review of the *Behavior Assessment System for Children* by Jonathan Sandoval in *The Thirteenth Mental Measurements Yearbook* (Impara & Plake, 1998) indicated that the test had been carefully orchestrated representing current views of psychopathology and personality development. Each of the clinical scales on the TRS had established constructs and high content validity. The TRS and the SRP correlated reasonably well with other published teacher and self-report ratings. Internal consistency and test-retest reliabilities typically ranged between the mid 80's to mid 90's. A second review by Joseph Witt (Impara & Plake, 1998) also compared the BASC favorably to existing rating scales but admonished clinicians to continue to include direct observations of student behavior in conjunction with informant (i.e., teacher, parent, and/or student) ratings. Mitchell, Crosby, Wonderlich, and Adson (2000) advised a cautious interpretation of self-report data (i.e., SRP-A scores) since adolescents may wish to present themselves in a socially desirable or undesirable way distorting their true behaviors.

Campus data sources. To determine the effectiveness of individual and group AAT toward improved educational adjustment of students, campus data sources were utilized. Because the control group's daily behavioral logs were organized in a different, noncomparable format than the AAT treatment campus logs, only those student logs belonging to subjects assigned to either individual or small group AAT intervention were utilized. School staff collected data on students participating in individual or small group AAT treatments that demonstrated how these pupils were progressing through their three levels of performance (i.e., daily points, progress, and transition) adapted from the Boys Town Model and Sopris West. Staff evaluated students periodically, focusing upon following directions, accepting positive feedback, and respectful, caring responses.

These data were used as a way to evaluate any differences between students who participated in HABIC individual and small group AAT to assess whether these behaviors changed due to receiving an AAT intervention. School based, data collection record sheets were coded prior to and during the treatment phases (refer to Appendix B). Daily absences were also recorded, both excused and unexcused, for each participant in all three treatments. Tardies were not tallied by school personnel.

Structured Interviews and HABIC Staff Narratives

The final major assessment components to this research design were the investigation of youth and staff interview perceptions of the AAT process and trainer/staff narratives related to student to canine and student to adult interactions. A brief, posttest only, semi-structured interview of participating staff and youth engaged in either individual or small group AAT was individually administered to ascertain their underlying attitudes toward and concerns about the use of AAT with at-risk adolescents (refer to Appendix C).

Each HABIC staff member assisting with individual AAT sessions was asked to maintain a weekly journal to record his/her student observations and therapeutic impressions. The HABIC head trainer and her assistant for small group AAT instruction submitted a written year-end summary of student contacts encompassing all three small group AAT sessions. The HABIC narratives will be addressed more fully in Chapter 5 regarding their impact on future research designs.

This study focused on quantitative and qualitative measures of a consistent and/or standardized nature described in earlier sections to identify and confirm those outcomes of animal-assisted therapy that are most effective versus those that are not. A significant change or difference in social behavior and/or educational adjustment following the

presence of animal-assisted therapy could support its effectiveness. Youth and staff interview responses and individual and small group AAT session observations could also add to the qualitative discourses of positive reactions to this unique therapeutic intervention .already cited in the literature.

Procedure

In late August of 2002 students enrolled at a Colorado public alternative secondary school received a brief demonstration of animal-assisted therapy (AAT) techniques and an explanation of their role as participant if they chose to volunteer for either individual or small group AAT. The building principal personally contacted parents/guardians of students who volunteered to obtain their written permission. Staff members also received a brief orientation in late August as to their potential role in this animal-assisted process and had an opportunity to volunteer if interested. Again, written permission was obtained from the building employees. Because the actual number of student volunteers was less than originally anticipated, all volunteer students were initially assigned to either individual or small group AAT treatments. The control group of 11 students was established at a later time on another campus servicing pupils with similar academic and behavioral needs. The five individual AAT subjects were mainly referred by staff members based on perceived critical need. Small group AAT membership, numbering a total of five students for each of three ten-week sessions, was determined through student availability at the beginning of each ten-week cycle. One of the small group AAT participants in the February to May timeframe chose to leave the study after only three weeks of attendance. This male student was observed to be unmotivated and with minimal enthusiasm for completing the weekly activities. He left the project voluntarily,

and a female student replaced him. Her data was included in the analysis while his was not.

Students in the control group followed their typical, daily school routine. Students in the individual AAT group received one hour per week of animal-assisted therapy focusing upon specific behavioral goals and objectives. A certified Human-Animal Bond in Colorado (HABIC) handler and his/her canine met with the individual student on campus with a school staff member acting as facilitator.

The small group AAT members received two one-hour sessions per week of animal-assisted therapy on campus under the supervision of HABIC's animal trainer, her assistant, and a school staff member. The dogs involved in these small group sessions were owned by community members. A primary purpose of the small group sessions for the HABIC staff was to have the students train the dogs to become more dependable and well disciplined canine companions by acquiring specific dog handling techniques. In addition, social skills related to caring and nurturance and the development of self-control were this researcher's focus. At the conclusion of each small group ten week AAT session, the five students had an opportunity to meet the owners and demonstrate the extent of training their dogs had achieved.

Utilizing the ten-week small group treatment intervals as a data collection period, both control and AAT student participants were rated on a pre/posttest basis by selected school staff using the social skills and aggression scales of the *Behavior Assessment System for Children's Teacher Rating Scale—Adolescent Form* or TRS-A. Both control and AAT student participants also rated themselves on a pre/posttest basis using the attitude to school and interpersonal relations scales of the *Behavior Assessment System*

for Children's Self-Report of Personality—Adolescent Form or SRP-A. Given only 25 TRS-A and 26 SRP-A items to respond to, staff and students each averaged 15 minutes or less to complete the teacher or student behavioral ratings.

TRS-A social skills item examples included: "Shows interest in others' ideas," "Makes suggestions without offending others," or "Politely asks for help." TRS-A aggression item examples included: "Threatens to hurt others," "Brags to others about getting into trouble," or "Bullies others." SRP-A attitude to school item examples included: "School is boring," "I can hardly wait to quit school," or "School is a waste of time." SRP-A interpersonal relations item examples included: "I am a likable person," "Others have respect for me," or "People like me because I am easy to talk to."

Because of the major differences noted between the two schools' (i.e., control and treatment campuses) behavioral logs, only those daily logs for individual and small group AAT participants were reviewed. As standard campus procedure, school staff evaluated these students on a daily basis focusing upon following directions, accepting feedback, and respectful and caring responses. These campus observations were tallied, and scores were compared on a pre/posttest basis using the ten-week small group interval. The number of classroom absences as recorded on daily attendance reports for the 10 weeks prior to the pretest and the 10 weeks during the intervention was compared. Weekly individual AAT journal entries by HABIC staff and small group AAT trainer summaries enhanced the data base.

The final research procedure was the administration of posttest only, semistructured interviews to AAT subjects and involved staff members. Individual and small group AAT treatment subjects were interviewed at the end of their respective treatment cycle.

The approximate time to complete the student exit interview was 20 minutes or less. Participating faculty, who were involved in individual and/or small group AAT data collection, were interviewed at the culmination of the AAT project in May of 2003 to gather their perceptions of the AAT intervention process. The estimated time to complete staff exit interviews was 30 minutes or less. Confidentiality of student and staff responses was assured.

Data Analysis

Since random assignment to the design's three treatment levels (i.e., control, individual AAT, and small group AAT) was not feasible given the student's optional choice to participate and staff initiated referrals for individual AAT inclusion, a quasi-experimental research approach was used. This study utilized a quasi-experimental 3 x 2 factorial design with repeated measures on the second factor. Three treatment levels existed in this project: a control group without AAT exposure, individual AAT, and small group AAT. Each of the five dependent variables (i.e., teacher report scale scores on social skills and aggressive behaviors, student self-report scale scores on attitude to school and interpersonal relations, and classroom absences) was measured through pre and posttest data collection. The *Statistical Package for the Social Sciences* (SPSS) was employed for the quantitative analyses (Morgan, Griego, & Gloeckner, 2001).

Quantitative research questions and methodology. Using the pre/posttest change scores from the TRS-A scales of social skills and aggression, the SRP-A scales of attitude to school and interpersonal relations, and classroom absence tallies, the following quantitative research questions were addressed:

1. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in teacher rating scale scores on social skills?
2. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in teacher rating scale scores on aggression?
3. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in self-report rating scale scores on attitude to school?
4. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in self-report rating scale scores on interpersonal relations?
5. Are there differences between the three levels (control, individual AAT, and small group AAT) of the treatment intervention in regard to the average change in the number of classroom absences?

The research questions 1, 2, 3, 4, and 5 were analyzed using the gain score approach which reduced the original mixed 3 x 2 factorial design to a single factor design with three treatment levels (Gliner & Morgan, 2000). Prior to running any inferential statistics, exploratory data analyses--including measures of the means, minimum and maximum scores, standard deviations, and skewness--were computed. Next, pretest scores were subtracted from posttest scores for every participant. Levene's Test was utilized to determine if the variances of the five main dependent variables (i.e., social skills, aggressive behavior, attitude to school, interpersonal relations, and classroom

absences) were equal for each group, an assumption critical to the use of a single factor ANOVA. A single factor analysis of variance or ANOVA was performed on these difference scores. A one-way ANOVA was the inferential statistic of choice because there was one independent variable with three nominal categories (i.e., control, individual AAT, and small group AAT), and each of the five dependent variables was measured on an interval/ratio scale. If any single factor ANOVA had shown overall statistical significance, a post hoc test would have been performed to determine differences among pairs of the three individual treatment levels.

Since the daily behavioral logs between the two alternative secondary school campuses for AAT participants and control subjects were incompatible, only AAT related logs were compared on a pre/posttest basis. Using the pre/posttest data results from the school-based records, the following quantitative research questions were addressed:

6. Is there a difference in the percentage of days with more compliant (or non-compliant) direction following, pretest to posttest, of students receiving either individual or small group AAT?
7. Is there a difference in the percentage of days with more positive (or negative) acceptance of feedback from staff, pretest to posttest, of students receiving either individual or small group AAT?
8. Is there a difference in the percentage of days with more respectful (or disrespectful) responses, pretest to posttest, of students receiving either individual or small group AAT?

Given the restricted availability of the daily behavioral logs for only AAT participants, research questions 6, 7, and 8 were analyzed using a paired samples *t* test.

Pretest/posttest paired comparisons consisted of the percentage of days with more compliant than noncompliant following direction comments, the percentage of days with more positive than negative acceptance of feedback observations, and the percentage of days with more respectful than disrespectful responses. The converse scores were also tabulated for the percentage of days with more noncompliant than compliant following direction comments, the percentage of days with more negative than positive acceptance of feedback observations, and the percentage of days with more disrespectful than respectful responses.

Because of the final sample size of only 5 for individual AAT participation and the similarity of the two types of AAT interventions, research questions 1 to 5 were also answered using five modified comparative analyses, undertaken by adding both the individual and small group AAT subjects into a combined treatment group which was then compared to the control group. Again, using the pre/posttest change scores from the TRS-A scales, the SRP-A scales, and school based attendance records, the following five modified quantitative research questions were addressed:

1. Is there a difference between the presence or absence of AAT participation in regard to the average change in teacher rating scale scores on social skills?
2. Is there a difference between the presence or absence of AAT participation in regard to the average change in teacher rating scale scores on aggression?
3. Is there a difference between the presence or absence of AAT participation in regard to the average change in self-report rating scale scores on attitude to school?

4. Is there a difference between the presence or absence of AAT participation in regard to the average change in self-report rating scale scores on interpersonal relations?
5. Is there a difference between the presence or absence of AAT participation in regard to the average change in the number of classroom absences?

Modified research questions 1, 2, 3, 4, and 5, which provided for two nominal categories of the independent variable (i.e., control and combined AAT groups), followed a similar gain score approach. Exploratory data were collected, and the Levene's Test was again performed to determine if the variances of the five dependent variables were equal for each group. Since there were only two nominal levels of the independent variable, an independent samples *t* test was chosen. If Levene's Test had proven significant, an adjusted *t* and *df* would have been used.

Qualitative research questions and methodology. The primary research question addressed was: What perceptions of the effectiveness of animal-assisted therapy were reported by participating staff and students during the course of the AAT interventions? Brief, posttest only, semistructured interviews of participating school staff and youth involved in either individual or small group AAT treatment were individually administered by this researcher (refer to Appendix C). Responses to each interview question were then compiled in summary format (refer to Appendix D).

A secondary research question of interest was: What behavioral interactions were observed between student and dog and between student and adult during individual and small group AAT treatment sessions? Additional qualitative narratives were gathered by recording selected individual and small group AAT intervention interactions between

student and dog and between student and adult using individual handler journals and small group trainer summaries.

CHAPTER 4: RESULTS

Quantitative Analyses

Research questions one through five. Descriptive data pertaining to the change in pre/posttest scores (i.e., gain scores) for all three treatment levels in relationship to the five dependent variables of social skills, aggressive behavior, attitude to school, interpersonal relations, and classroom absences can be found in Table 4.1. Measures of central tendency and variability are cited. A positive change score (refer to column *M*) indicates an increase in that variable's mean rating from pre to posttest while a negative change score indicates a decrease in that variable's mean rating pre to post.

Table 4.1

Descriptive Data Illustrating Changes in Social Skills, Aggressive Behavior, Attitude to School, Interpersonal Relations, and Classroom Absences as a Function of Treatment Group

Dependent Variable	Treatment Group	*n*	*M*	*SD*
change in social skills	control	11	+3.18	5.02
	individual AAT	5	+6.40	12.22
	small group AAT	15	+3.13	6.62
change in aggressive behavior	control	11	+ .91	2.51
	individual AAT	5	- 1.00	8.46
	small group AAT	15	- 1.40	6.67
change in attitude to school	control	11	+ .55	3.24
	individual AAT	5	- 3.20	6.61
	small group AAT	15	+ .07	5.31
change in interpersonal relations	control	11	- .36	4.52
	individual AAT	5	+1.80	4.02
	small group AAT	15	- 2.67	6.89
change in classroom absences	control	11	- 1.36	9.09
	individual AAT	5	- .60	1.67
	small group AAT	15	+4.07	12.07

Note. $M = M$ (post) – M (pre)

Levene's Test to determine if the assumption that variances of the five dependent variables were equal showed nonsignificant F values for the variances in the change scores in attitude to school ($F = 1.56$, $p = .228$), in interpersonal relations ($F = 1.13$, $p = .337$), and in classroom absences ($F = 2.86$, $p = .074$). Thus, for these three variables the assumption of equal variances was not violated. Levene's Test showed significant F values for the change scores in social skills ($F = 7.72$, $p = .002$) and in aggressive behavior ($F = 3.56$, $p = .042$). For these two variables the assumption of equal variances was violated, which would necessitate the use of post hoc tests designed for unequal variances if the overall F proved significant.

To analyze whether there was a difference between the three treatment groups on teacher ratings of social skills and aggression, on student self-report ratings of attitude to school and interpersonal relations, and on the number of classroom absences, five one-way analyses of variance were done (refer to Table 4.2). A nonsignificant overall F was found for each of the five variables studied. These findings illustrated that the average change in teacher ratings for social skills and aggression, the average change in student self-report ratings of attitude to school and interpersonal relations, and the average change in the number of classroom absences between the control group, the individual AAT group, and the small AAT group probably differed solely by chance. Treatment modality did not seem to make a significant impact on increasing or decreasing the skills necessary for successful peer and adult interaction, the tendency to act in a hostile fashion, the feelings of school dissatisfaction, the perception of having positive peer relations, or the number of classroom absences for at-risk adolescents.

Table 4.2

One-Way Analyses of Variance of Changes in Social Skills, Aggressive Behavior, Attitude to School, Interpersonal Relations, and Classroom Absences Between Treatment Groups

Source		*df*	*SS*	*MS*	*F*	*p*
change in social skills	Between groups	2	44.20	22.10	.42	.659
	Within groups	28	1462.57	52.24		
	Total	30	1506.77			
change in aggressive behavior	Between groups	2	35.23	17.62	.51	.608
	Within groups	28	972.51	34.73		
	Total	30	1007.74			
change in attitude to school	Between groups	2	51.93	25.96	1.08	.354
	Within groups	28	674.46	24.09		
	Total	30	726.39			
change in interpersonal relations	Between groups	2	84.81	42.40	1.27	.296
	Within groups	28	934.68	33.38		
	Total	30	1019.48			
change in classroom absences	Between groups	2	210.68	105.34	1.03	.372
	Within groups	28	2876.68	102.74		
	Total	30	3087.36			

Modified research questions one through five. Given the small *n* of 5 for the individual AAT treatment group, another comparative analysis, an independent samples *t* test, was undertaken by adding both the individual and small group AAT subjects into a combined treatment group of 20 students which was then compared to the original control group of 11 students. Descriptive data for these two treatments can be found in Table 4.3 citing measures of central tendency and variability. A positive change score (refer to column *M*) indicates an increase in that variable's mean rating from pre to posttest while a negative change score indicates a decrease in that variable's mean rating pre to post.

Table 4.3

Descriptive Data Illustrating Changes in Social Skills, Aggressive Behavior, Attitude to School, Interpersonal Relations, and Classroom Absences as a Function of Treatment Group (Control Versus Combined AAT)

Dependent Variable	*Treatment Group*	*n*	*M*	*SD*
change in social skills	control	11	+3.18	5.02
	combined	20	+3.95	8.11
change in aggressive behavior	control	11	+ .91	2.51
	combined	20	- 1.30	6.92
change in attitude to school	control	11	+.55	3.24
	combined	20	- .75	5.66
change in interpersonal relations	control	11	- .36	4.52
	combined	20	- 1.55	6.51
change in classroom absences	control	11	- 1.36	9.09
	combined	20	+2.90	10.59

Note. $M = M$ (post) – M (pre)

Levene's Test to determine if the assumption that variances for the two groups on the five dependent variables were equal showed non-significant F values for social skills ($F = 2.92$, $p = .098$), attitude to school ($F = 3.54$, $p = .070$), interpersonal relations ($F = 1.11$, $p = .301$), and classroom absences ($F = .23$, $p = .632$). Thus, the assumption of equal variances for these four variables was not violated. There was a significant F value though for change scores in aggressive behavior ($F = 5.79$, $p = .023$) which required an adjusted t and df score analysis.

To analyze whether there was a difference between the control and combined treatment groups on changes in social skills, aggressive behavior, attitude to school, interpersonal relations, and classroom absences, independent samples t tests with an adjustment for the aggression variable were done (refer to Table 4.4). A nonsignificant difference was found for each of the five variables under investigation. These findings again illustrated that the average change in teacher ratings for social skills and

aggression, the average change in student self-report ratings of attitude to school and interpersonal relations, and the average change in the number of classroom absences between the control group and combined AAT treatments probably differed solely by chance. Treatment modality did not seem to make a significant impact upon increasing or decreasing social skill acquisition, aggressive behavior, feelings of school alienation, positive peer relations, or classroom absences for at-risk youth.

Table 4.4

Treatment Differences (Control Versus Combined) in Social Skills, Aggressive Behavior, Attitude to School, Interpersonal Relations, and Classroom Absences

	Control		Combined			
	M	*SD*	*M*	*SD*	*t*	*p*
change in social skills	+3.18	5.02	+3.95	8.11	.28	.778
change in aggressive behavior	+ .91	2.51	- 1.30	6.92	-1.28	.211
change in attitude to school	+ .55	3.24	- .75	5.66	- .70	.492
change in interpersonal relations	- .36	4.52	- 1.55	6.51	- .54	.596
change in classroom absences	- 1.36	9.09	+ 2.90	10.59	1.13	.270

Note. $M = M$ (post) – M (pre)

Comparing pre and posttest gains for individual, small group, and combined AAT groups. A final analysis of the five dependent variables involved paired samples *t* tests measuring each participant's pre and posttest scores for each of these five variables in a repeated measures design. Individual, small group, and combined AAT treatments were analyzed separately to see if there were significant pre to posttest gains. Refer to Tables 4.5, 4.6, and 4.7 for respective analyses.

Note in Table 4.5 that for the individual AAT group, with the exception of pretest to posttest social skills scores, the other paired variables showed a high positive relationship as expressed by correlation coefficients of .53 to .96. One could, therefore, predict that high (or low) scores on the aggression, attitude to school, and interpersonal relations

rating scale pretests and on the absence report pretests would tend to be strongly associated with high (or low) scores on the corresponding posttest measures. Only the social skills pretest might be a poorer predictor of posttest results.

Nonsignificant paired samples *t* tests differences were found between all five pairs of dependent variables for individual AAT participants. This finding illustrated that the difference in means between pre and posttest administration for all five dependent variables probably differed solely by chance and not as a result of the individual AAT intervention.

Table 4.5

Paired Samples t Tests Involving Individual AAT Subjects (n = 5)

		M	*SD*	*r*	*t*	*p*
Pair 1	pretest social skills	50.40	10.97	.24	-1.17	.307
	posttest social skills	56.80	8.64			
Pair 2	pretest aggressive behaviors	49.20	9.42	.53	.26	.805
	posttest aggressive behaviors	48.20	7.69			
Pair 3	pretest attitude to school	53.00	4.42	.87	1.08	.340
	posttest attitude to school	49.80	10.08			
Pair 4	pretest interpersonal relations	49.00	8.25	.91	-1.00	.374
	posttest interpersonal relations	50.80	5.36			
Pair 5	pretest classroom absences	4.40	5.90	.96	.80	.468
	posttest classroom absences	3.80	5.40			

Table 4.6 indicates that for the small group ATT, with the exception of pretest to posttest classroom absence scores, the other paired variables showed a high positive relationship as expressed by a correlation coefficient of .66 or higher. One could, therefore, predict that high (or low) scores on the social skills, aggression, attitude to school, and interpersonal relations rating scale pretests would tend to be strongly

associated with high (or low) scores on the corresponding posttest measures. Only the classroom absence pretest might be a poorer predictor of posttest results.

Nonsignificant paired samples *t* tests differences were found between all five pairs of dependent variables for small group AAT participants. This finding illustrated that the difference in means between pre and posttest administration for all five dependent variables probably differed solely by chance and not as a result of the small group AAT intervention.

Table 4.6

Paired Samples t Tests Involving Small Group AAT Subjects (n = 15)

		M	*SD*	*r*	*t*	*p*
Pair 1	pretest social skills	56.87	8.37	.68	-1.83	.088
	posttest social skills	60.00	8.25			
Pair 2	pretest aggressive behaviors	48.80	8.37	.66	.81	.430
	posttest aggressive behaviors	47.40	7.81			
Pair 3	pretest attitude to school	43.87	8.30	.83	- .05	.962
	posttest attitude to school	43.93	9.44			
Pair 4	pretest interpersonal relations	54.87	4.63	.85	1.50	.156
	posttest interpersonal relations	52.20	10.40			
Pair 5	pretest classroom absences	10.93	10.78	.27	-1.31	.213
	posttest classroom absences	15.00	9.03			

Note that in Table 4.7 for the combined AAT groups, with the exception of pretest to posttest classroom absence scores, the other paired variables showed a high positive relationship as expressed by a correlation coefficient of .57 or higher. One could, therefore, predict that high (or low) scores on the social skills, aggression, attitude to school, and interpersonal relations rating scale pretests would tend to be strongly associated with high (or low) scores on the corresponding posttest measures. Only the classroom absence pretest might be a somewhat poorer predictor of posttest results.

Nonsignificant paired samples *t* tests differences were found between four of the five pairs of dependent variables (i.e., aggression, attitude to school, interpersonal relations, and classroom absences) for combined group AAT participants. This finding illustrated that the difference in means between pre and posttest administration for these four dependent variables probably differed solely by chance and not as a result of either individual or small group AAT intervention. A significant paired samples *t* tests difference of $t(19) = -2.18$, $p = .042$ was found between pretest and posttest teacher ratings in the area of social skills. This indicated that the average ($M = 55.25$) of teachers' social skills ratings of students receiving either individual or small group AAT before treatment was significantly lower than the average (M = 59.20) of teachers' social skills ratings after the treatments had concluded. Given an effect size of $d = .49$, the impact of AAT treatment on increasing the social skills attributes of successful peer and adult interactions in the school setting is of a moderate strength.

Table 4.7

Paired Samples t Tests Involving Combined Individual and Small Group AAT Subjects (n = 20)

		M	*SD*	*r*	*t*	*p*
Pair 1	pretest social skills	55.25	9.23	.57	-2.18	.042
	posttest social skills	59.20	8.24			
Pair 2	pretest aggressive behaviors	48.90	8.38	.63	.84	.411
	posttest aggressive behaviors	47.60	7.58			
Pair 3	pretest attitude to school	46.15	8.44	.81	.59	.561
	posttest attitude to school	45.40	9.69			
Pair 4	pretest interpersonal relations	53.40	6.07	.72	1.07	.300
	posttest interpersonal relations	51.85	9.28			
Pair 5	pretest classroom absences	9.30	10.07	.42	-1.22	.236
	posttest classroom absences	12.20	9.54			

Research questions six through eight. Because the control group's daily behavioral logs were organized in a different format than the AAT treatment campus logs, only those student logs belonging to subjects assigned to either the individual or small group AAT intervention were utilized in the following paired samples analysis. Of the original 20 students receiving AAT treatment, a total of ten student logs were complete enough to warrant data analysis. These logs were evenly divided between the individual and small group AAT treatment participant groups.

As shown in Table 4.8, paired comparisons consisted of (a) the percentage of days with more compliant than noncompliant direction following comments prior to treatment versus during treatment, (b) the percentage of days with more noncompliant than compliant direction following comments prior to treatment versus during treatment, (c) the percentage of days with more positive than negative acceptance of staff feedback prior to treatment versus during treatment, (d) the percentage of days with more negative than positive acceptance of staff feedback prior to treatment versus during treatment, (e) the percentage of days with more respectful and caring responses prior to treatment versus during treatment, and (f) the percentage of days with more disrespectful and uncaring responses prior to treatment versus during treatment.

Table 4.8

Paired Samples t Tests Involving Selected Individual and Small Group AAT Subjects (n = 10)

		M	*SD*	*r*	*t*	*p*
Pair 1	compliant direction following—prior to treatment	86.30	19.55	.52	.79	.449
	compliant direction following—during treatment	81.90	15.43			
Pair 2	noncompliant direction following—prior to trtmt	6.20	11.18	.90	-2.86	.019
	noncompliant direction following—during trtmt	11.20	12.65			
Pair 3	positive feedback acceptance—prior to treatment	48.30	28.26	.72	- .78	.453
	positive feedback acceptance—during treatment	53.30	15.75			
Pair 4	negative feedback acceptance—prior to treatment	7.80	9.14	.71	-1.67	.130
	negative feedback acceptance—during treatment	11.20	7.27			
Pair 5	respectful responses—prior to treatment	83.20	18.38	.46	.01	.989
	respectful responses—during treatment	83.10	22.84			
Pair 6	disrespectful responses—prior to treatment	7.20	10.95	.49	- .89	.397
	disrespectful responses—during treatment	12.00	19.54			

Note. The percentage of positives and negatives do not add up to 100% because on certain days the number of positive and negative observations was equal.

All of the paired (prior/during treatment) variables showed a moderate to high positive relationship as expressed by a correlation coefficient of .46 or higher. One could, therefore, predict that high (or low) percentages on the compliant and non-compliant direction following prior to treatment, high (or low) percentages on the positive and negative acceptance of staff feedback prior to treatment, and high (or low) percentages of respectful and disrespectful responses prior to treatment would tend to be associated with high (or low) percentages on the corresponding variables during treatment.

Nonsignificant paired samples *t* tests differences were found between five of the six pairs of dependent variables (i.e., compliant direction following responses, positive and negative acceptance of feedback responses, and respectful and disrespectful responses) for selected individual and small group AAT participants. This finding illustrated that the

difference in means prior to treatment and during treatment for these five dependent variables probably differed solely by chance and not as a result of either individual or small group AAT intervention. A significant paired samples t tests difference of t (9) = -2.86, p = .019 was found between prior to treatment and during treatment percentages of the number of days with more noncompliant direction following observations. This indicated that before treatment the average (M = 6.20) of the number of days in which observations of noncompliant direction following exceeded compliant for students receiving either individual or small group AAT was significantly lower than the average (M = 11.20) of the number of days in which observations of noncompliant direction following exceeded compliant for students during treatment. Given an effect size of d = .90, the impact of AAT treatment on increasing the instances of noncompliant direction following in the school setting is a strong relationship, in the opposite trend from that predicted.

Narrative Data Analyses

The primary qualitative research question to be addressed was: What perceptions of the effectiveness of animal-assisted therapy were reported by participating staff and students during the course of the AAT interventions? Brief exit interviews were conducted individually with campus staff and students who were engaged in the AAT treatment process. Patterns of similar responses were addressed in the analysis.

A secondary research question of interest was: What behavioral interactions were observed between student and dog and between student and adult during individual and small group AAT treatment sessions? HABIC staff, both individual handlers and small

group trainers, recorded their AAT student observations via weekly journal entries or by summative narratives at the end of each ten-week cycle.

Staff exit interviews. Thirteen staff members (3 males and 10 females), assigned to the campus where individual and small group AAT treatments were conducted, voluntarily participated in brief, one to one oral interviews in May of 2003. Four other staff members were invited to attend with three being absent the day of the interview and one "no show." The composition of this interview group included three teachers, six classified staff (i.e., paraprofessionals, campus security, and an in-school suspension coordinator), principal, social worker, therapist, and office manager. Staff members' employment period on this alternative campus ranged between 6 months to 6 years with total years in public education spanning 6 months to 25 years.

Staff members were very supportive of the AAT programs on campus. They felt that, overall, AAT nurtured responsibility and unconditional love and fostered self-confidence. Benefits to students were expressed by all staff with one or more statements focusing upon the AAT interventions' positive impact upon student behavior. Students were very eager on HABIC training days to get started with the lesson and often were disappointed that the timeframe was too brief. Observations of participating students included a calmer, more patient, and tolerant pupil demeanor with increased self-assurance. Emotions were freely shared in the presence of the animal. Adults interviewed indicated that students had expressed pride in being responsible for their dogs during training and that some had expanded this interest into the home and community. Specific comments overheard by the staff included: "I'm tight with my dog," "You gotta come and see what I can do with my dog," and "I've learned a lot about

myself." Any harsh student remarks were attributed to typical teenage negativity or to having dropped out of the AAT program.

In comparing the use of animal-assisted therapy to more traditional behavioral interventions, staff saw this approach as very personal and nonjudgmental. While traditional one-on-one counseling is considered a more intellectual process, students working through their emotions and misbehaviors with canine companionship seem more powerful. There is no perceived authority figure controlling the outcome of the session.

In reflecting upon the day-to-day administration of AAT activities, staff was pleased with the level of competency and commitment of both the individual AAT handlers and the small group AAT trainers. Informing the HABIC staff of student absences or special events to avoid making an unnecessary trip to campus was not always done. The main staff liaison did express initial frustration with HABIC paperwork and having to leave AAT sessions due to a campus crisis. Several teachers did voice some concerns over scheduling conflicts and time missed from instruction. Overall, the tone of the individual staff interviews was quite positive.

Future programmatic changes that were suggested included: inviting the entire school and community to the graduation ceremonies, increased time with dogs, encouraging more students to volunteer, a more structured and consistent curriculum, and debriefing of campus staff by handler/trainer. Appendix D summarizes the staff responses for each of the six exit interview questions.

Student exit interviews. All twenty students, who participated in either individual or small group AAT sessions, voluntarily completed a brief, one to one oral interview at the conclusion of their AAT intervention cycle. In general, these students responded

positively to their AAT experiences. Having the opportunity to work with a canine and getting out of class were the biggest benefits cited. One student even commented that he was surprised that the dogs' owners would permit "kids like us" (referencing students' negative school histories) to handle their pets.

Eleven out of 20 students felt differently about themselves when working with their dogs. Feelings of happiness, caring, and responsibility were expressed. Comments, such as "I feel more in control," "It makes me think I can change and do better," and "I felt happier and energetic," were shared. Eighteen out of 20 students did not see their peers treating them any differently as a result of AAT participation, and eleven students did not perceive their behavior towards staff as any different as a result of AAT. Those who did notice a difference in student-staff interactions mentioned: "I have a better sense of humor," "I give them more eye contact and accept their feedback," "I have more respect and talk to them more," and "I've been getting in less trouble." Twelve out of 20 students made comments that they now had developed a greater respect for dogs. One student indicated that she was no longer fearful of dogs and had used a HABIC handling technique when confronted with a strange canine in her neighborhood.

Few negative remarks were made regarding AAT. Some comments noted were: too many repetitive commands, allergic reaction to pet, stubbornness of canine, and journal writing. If given the opportunity, some students would have made the AAT sessions longer and on a daily basis, had unstructured time with their dog, would have held sessions outdoors, and would have wanted to self-select their canines. Appendix D summarizes the student responses for each of the six exit interview questions.

Individual AAT journal entries. Individual journals were kept by HABIC staff assigned to the five students receiving individual AAT treatment. These journal entries were then reviewed for salient observations of student/canine or student/adult interactions. The number of individual AAT sessions varied among subjects: Subject A with 13, Subject B with 12, Subject C with 10, Subject D with 8, and Subject E with 5. Three separate HABIC staff members worked with selected students. G. and her golden retriever, Dillon, mentored Subjects A and B; R. and his yellow lab, Sophie, mentored Subjects C and D; L. and her golden retriever, Daisy, mentored Subject E.

Subject A's establishment of a free flowing communication style was evident from his initial AAT sessions. Pet/client interactions were positive throughout with student confidence building observed as well. When A's dog needed extra motivation to participate, he modulated his voice and varied his commands as additional stimulation. For example, "So A worked hard at getting him excited—used enthusiastic voice and fast walking to do this." Subject B was able to establish a trusting relationship with his HABIC staff member though his communication patterns varied between positive and negative dialogue. When school staff was present, there was a greater tendency for B to exhibit more negative and rude behaviors. He once commented about "smoking, sneaking out at night, being caught by the police and being in detention." Pet/client interactions for Subject B were mainly positive. He showed gentleness, kindness, and compassion towards his animal. Dog commands were easily learned and implemented.

Trust was developed over time with Subject C. "He wouldn't rub her belly before work session, but would afterward." His eagerness to attend individual sessions and the presentation of a drawing of Sophie, the dog, at the last meeting appeared to confirm this

trusting bond. Communication flowed freely between this student and the HABIC member, and commands and techniques were easily taught. Subject D arrived eagerly and enthusiastically for his AAT sessions. Eye contact was emphasized to improve communication between student and adult. This subject interacted well with his canine, and commands were generally followed. "D tends to underestimate his abilities, though, saying he couldn't make Sophie do this or that—though the two of them soon prove him wrong." Given that the number of sessions was more limited for Subject E than the other four individual AAT participants, he expressed confidence in his dog by the third session. Discussions were noted during most meetings, and pet/client observations remained positive throughout the treatment even when his dog became distracted. "E knew Daisy loves to be brushed so E did that while we talked."

Summative small group AAT narratives. The summative narratives by the HABIC lead trainer and her assistant regarding their small group AAT observations were reviewed. General observations of each of the small group AAT ten week sessions varied. With the exception of one student, the first group, comprised of all males, was very willing to work with their canines from the initial meeting and established distinct group cohesiveness by the last session. Comments shared included: "He amazed us with his innate talent for working with animals. He is very kind and gentle and gives great praise." "Once he began working with the dog he would come home from school and converse with her (i.e., his mother) about working with the animal." "He also began to interact with the other boys in the group on a much more comfortable level."

The second group, comprised of two males and three females, was less cooperative. One female student was able to manipulate the others' engagement in the lessons

depending upon her mood or disposition for that particular session. For example, "She got more and more assertive and began to communicate with the other youths in the group." "It took five weeks for him to even start to show signs of bonding with the dog."

The third group, comprised of four males and one female, was forced to take a one month break between lessons because of spring break and statewide testing schedules. The trainers felt that this was a definite impediment to student-canine bonding and attainment of lesson goals. This group showed varied enthusiasm toward the dogs and the scheduled activities. An example of one student who did fulfill his dog handling goal was: "He was very concerned about doing his final presentation . . . He pulled himself together and did a great job and even had a great conversation with the dog's owner at the end of it."

Overall, the small group AAT trainers observed that 11 of the 15 students benefitted from animal-assisted therapy in relationship to student-dog interactions or student-adult interactions. Three students appeared to be unaffected by the small group AAT activities. Their behaviors consisted mainly of uncooperativeness, lack of lesson focus, and disinterest. A fourth student, who participated in the third ten-week small group session, was not individually described in the trainers' narratives.

CHAPTER 5: DISCUSSION

Overview

In this innovative project, the therapeutic impact of the human-animal bond with at-risk adolescent youth attending two alternative public school secondary campuses was evaluated during school year 2002-2003. Individual or small group animal-assisted therapy (AAT) approaches were incorporated into the educational plans of 20 students receiving instruction on one campus site with 11 students comprising the control group on another campus. Pupil demographics consisted of 22 male versus 9 female participants, age ranges between 12 and 17 years, grade levels spanning 7th through 11th, approximately 50% of students being Caucasian and 35% Hispanic, and 7 students identified with a special education disability.

This study utilized a quasi-experimental approach with manipulation of the independent variable (the presence or absence of AAT participation). Primary data collection methods included pre and posttest administrations of standardized teacher and student behavior rating scales; pre and posttest comparisons of the number of classroom absences; and pre and posttest observations related to student indices of direction following, acceptance of staff feedback, and respectful and caring responses toward others. A brief, posttest only, semistructured interview of participating staff and students involved in AAT activities was administered to ascertain underlying attitudes toward and concerns about the use of AAT with adolescents at-risk. Individual and small group

AAT sessions were also monitored for interactive behaviors between student and dog or student and adult.

Quantitative Results

Since random assignment to the design's three treatment levels (i.e., control, individual AAT, and small group AAT) was not feasible given the student's optional choice to participate and pre-determined staff referrals for individual AAT inclusion, a quasi-experimental 3 x 2 factorial design with repeated measures on the second factor was employed. Each of the eight dependent variables (i.e., teacher report scale scores on social skills and aggressive behaviors; student self-report scale scores on attitude to school and interpersonal relations; classroom absences; and campus observations by school staff regarding student direction following, acceptance of staff feedback, and respectful and caring responses) was measured through pre and posttest data collection. The *Statistical Package for the Social Sciences* (SPSS) was employed for the quantitative analyses (Morgan, Griego, & Gloeckner, 2001).

One-way analyses of variance of changes in social skills, aggressive behavior, attitude to school, interpersonal relations, and classroom absences between treatment groups was undertaken with a nonsignificant overall F found for each of these five variables. Another set of comparative analyses, using independent samples t tests, was undertaken adding both the individual and small group AAT subjects into a combined treatment group of 20 students which was then compared to the original control group of 11 students. A nonsignificant difference was again found for each of these five variables under investigation. Given the intensity of academic and behavioral services provided at both secondary campuses, the control group also received positive social skill support

though not in the form of an animal-assisted intervention. It may be that the AAT treatment protocols were more similar to control group instruction than was originally anticipated.

A final set of analyses of the above five variables involved paired samples *t* tests measuring each AAT participant's pre and posttest scores in a repeated measures design. Individual, small group, and combined AAT treatments were analyzed separately to see if there were significant pre to posttest gains. There were nonsignificant paired samples *t* tests differences for the separate individual and small group AAT comparisons. In spite of nonsignificant outcomes, Table 4.5, which depicted paired samples *t* tests results for the five individual AAT subjects, did show pre versus posttest scores progressing in the right direction (i.e., social skills increased, aggressive behaviors decreased, negative school attitudes decreased, interpersonal relations increased, and classroom absences decreased). Table 4.6, which portrayed paired samples *t* tests results for 15 small group AAT subjects, did not show all pre versus posttest scores progressing in an improved direction (i.e., interpersonal relations decreased and classroom absences increased).

With the combined AAT group's paired samples *t* tests analysis (refer to Table 4.7), only the pretest and posttest teacher ratings in the area of social skills proved significant with a difference of $t\ (19) = -2.18$, $p = .042$. This indicated that the mean ($M = 55.25$) of teachers' social skills ratings of students receiving either individual or small group AAT before treatment was significantly lower than the mean ($M = 59.20$) of teachers' social skills ratings after either treatment had concluded. Given a moderate effect size of $d = .49$, the impact of either form of AAT treatment seemed to have produced an increase in social skills attributes of successful peer and adult interactions in the school setting.

Prior studies by Granger et al. (1998), McNulty et al. (1999), Redefer (1986), Seiz and Koralewicz (2003), and Tipton (1994) supported this project's finding of apparently improved social skill acquisition following an AAT intervention. In contrast, Barker et al. (2000) found that, with the very young child, the rate of social skill acquisition was no different in the presence or absence of an animal-assisted activity.

Another paired samples *t* tests analysis compared daily campus observations of following directions, acceptance of staff feedback, and respectful responses prior to AAT treatment versus during AAT treatment. Nonsignificant paired samples *t* test differences were found between five of the six pairs of dependent variables (i.e., compliant direction following responses, positive and negative acceptance of feedback responses, and respectful and disrespectful responses) for selected individual and small group AAT participants.

A significant paired samples *t* test difference of $t(9) = -2.86$, $p = .019$ was found between prior to treatment and during treatment percentages of the number of days with more noncompliant direction following observations. This indicated that the mean ($M = 6.20$) of the number of daily observations of noncompliant direction following for students receiving either individual or small group AAT before treatment was significantly lower than the mean ($M = 11.20$) of the number of daily observations of noncompliant direction following during treatment. Given a strong effect size of $d = .90$, the impact of AAT treatment seems to have produced an increase in the instances of non-compliant direction following in the school setting, the opposite trend from that predicted. One possible explanation is that staff members, knowing which students were receiving an AAT intervention, rated these adolescents in a more critical fashion

regarding direction following abilities. Teacher expectations may have been unrealistic as to the perceived impact of animal-assisted activities. The present review of the literature did not cite any studies where direction following was either positively or negatively impacted by animal-assisted interventions. Noncompliance does not necessarily mean that there were no positive attributes to direction following in general.

Threats to Research Validity

Participant assignment to groups. Random assignment was not feasible given the student's optional choice to participate, the staff's predetermined selection of youth for individual AAT inclusion, and recruitment of the control group members from another alternative campus. Subjects were chosen as a matter of convenience based on volunteerism and parent cooperation in signing permission forms. Pupils entered and exited these alternative programs on a frequent basis. Program attrition became a serious issue. No female participants were found in the individual AAT treatment, and the percentage of students with an identified disability in comparison to regular education peers was somewhat greater in individual AAT treatment. This was to be expected given that staff members had the opportunity to refer the more needy students to the individual AAT grouping. The cross-tabulation tables, though, for gender and special education counts (refer to Tables 3.1 and 3.3), did not note statistically significant demographic differences, perhaps due to the small sample size.

Historical or environmental events. Treatment timeframes covered an entire school year with control group data collection occurring during the final grading quarter. Participants in the third small group AAT intervention experienced lengthy breaks in trainer/canine contacts because of vacation and statewide testing schedules.

Repeated testing and instrumentation. A possible carryover of information using identical pre and posttest instruments may have occurred. Staff and student raters may have established different scoring criteria between the first and tenth week of the BASC-TRS and BASC-SRP administrations. Given the limited availability of completed daily behavioral logs, staff responses may not have been consistent from student to student regarding compliant direction following, acceptance of staff feedback, and respectful and caring responses.

Threats to Measurement Validity

Treatment length. The timeframe for the individual and small group AAT treatments was only a ten week period on average. This may not have been intensive enough to produce significant results. Boatfield (1987) has recommended therapy sessions of at least one to two semesters in duration. Disjointed treatment segments during the third AAT session, in particular, established a major setting constraint. Student absentee rates compounded the brevity of treatment time.

Rater bias. Student self-report responses may not have been totally accurate since adolescents may wish to present themselves in a more socially desirable fashion. Kazdin and Weisz (2003) in their text on psychotherapeutic interventions shared the reluctance of children and adolescents to admit to stressful or problem behavior. Perhaps the participants may not have even been representative of those students with the most critical behavioral needs. Peer observations of possible changes in AAT participants' overall campus demeanor might prove useful.

Teacher bias may also have come into play. Staff members who volunteered to participate knew of the study's purpose beforehand and could have inferred a social

attractiveness associated with animal-assisted interventions (Barker et al., 2000; Katcher & Teumer, 2004).

Instrument sensitivity. Was the *Behavior Assessment System for Children* (BASC) sensitive enough to distinguish a change in selected behavioral traits over a brief AAT timeframe of ten weeks? School children attending a farm activity program in Taylor, Texas, were evaluated over the course of two to three years with the BASC and the *Achenbach* scales (Katcher & Teumer, 2004). Statistically significant results noted a decrease in negative behaviors during the animal intervention periods versus regular classroom activities.

Qualitative Results

Staff members, who voluntarily participated in brief, one to one oral interviews, were very supportive of the AAT programs on campus. Benefits to students were expressed by all staff with one or more statements focusing upon the AAT interventions' positive impact upon student behavior. Observations of participating students included a calmer and more patient pupil demeanor with increased confidence and self-assurance. Adults interviewed indicated that students had expressed pride in being responsible for their dogs during training and that some had expanded this interest into the home and community. Animal-assisted therapy provided a very personal and nonjudgmental learning environment with a natural link for improved student to student or student to adult communication. Teachers did voice some concerns over scheduling conflicts and time missed from instruction but were pleased with the HABIC staff's dedication and dog handling competency. Suggested changes for future AAT visitations included entire school and community participation in AAT graduation ceremonies, increased number of

student participants and lengthier training sessions, campus staff debriefings, and more structured lesson formats.

Students, who participated in either individual or small group AAT sessions, voluntarily completed a brief, one to one oral interview at the conclusion of their AAT intervention cycle. In general, these students responded positively to their AAT experiences. Having the opportunity to work with a canine and release from class were the biggest benefits cited. The vast majority of students did not see their peers treating them any differently as a result of AAT participation nor did many students perceive their behavior towards staff as any different as a result of AAT. These neutral self-perceptions might be a result of a non-committal attitude. Most students made comments that they now had developed a greater respect for dogs. Few negative remarks about AAT were mentioned. Those cited included a dislike for repetitive dog handling tasks, the stubbornness of certain canines, and a distaste for journal writing. If given the opportunity, some students would have made the AAT sessions longer and on a daily basis, would have held them outdoors and with free play opportunities, and would have preferred to choose their own animal.

Students responded in unique ways to the individual handler and/or the small group trainers and their respective canines. An abundance of anecdotal descriptors were recorded. Pet/client interactions for the individual AAT group were very positive with increased student self-confidence apparent. Only one student receiving individual AAT chose, probably as an attention getting mechanism, to occasionally act out in an impolite fashion. Small group AAT observations were more diverse. The first group of all males appeared the most cohesive and cooperative while the second group, with both male and

female members, appeared to be manipulated by one young lady's frequent refusal to engage in AAT activities. The third group had a four week calendar break between lessons which seemed to diminish the opportunity for optimal student-canine bonding and skill acquisition. These students exhibited varied enthusiasm toward the dogs and the handling tasks. In spite of these setbacks, the small group AAT trainers felt each student gained some benefit from his/her participation.

Future Research Implications

The availability of larger numbers of potential AAT participants and a random assignment to treatment groups may provide greater opportunities to establish quantitative significance. Chronister (1993) indicated that small sample size may skew research results in a positive or negative direction. "The typically small sample sizes used in most studies render their findings particularly susceptible to the effects of individual variation, while the lack of random sampling methods raises doubts about the representativeness of most of the study populations" (Kruger et al., 2004, p. 25). Utilizing both regular and nontraditional secondary school campuses would expand upon the subject pool.

The time exposed to AAT treatments was minimal at ten-week intervals. Successful therapeutic interventions may require a greater investment of time and manpower. One suggestion may be to maintain animal-assisted interventions over an entire semester or school year. Longitudinal studies could address the sustainability of positive outcomes for research participants (Kruger et al., 2004; Seiz & Koralewicz, 2003). There may be significant differences between short-term and long-term effects of animal-assisted interventions.

When limited to smaller numbers of participants, a modified single-subject research design, such as time series or multiple baseline models, could be an alternative method. Burch (2000, p. 147) wrote, "Effective, comprehensive program evaluation models can use single-subject techniques for the ongoing formative evaluation of the AAT program. Using single-subject designs, program evaluators can answer questions pertaining to the procedures and specifics of a program." Both Redefer (1986) and Nathanson et al. (1997) showed positive outcomes through the use of this methodology.

Ward (2004) noted that a prominent challenge for future AAT research was to develop an appropriate measurement tool sensitive to treatment outcomes. Standardized instruments utilized by Barker et al. (2000) with Native American preschoolers did not appear to address the positive clinical changes observed by teachers and animal trainers. The *Companion Animal Bonding Scale* (Poresky, Hendrix, Mosier, & Samuelson, 1987) measures the effect of human-animal bonding on social and emotional development. With good reliability, it can be self-administered in a group setting.

A wealth of qualitative data exists that this researcher was unable to thoroughly analyze. The journal entries by individual handlers and the summative narratives of the small group AAT trainers were simply reviewed for repetitive comments and illustrative observations. Three video tapes of individual AAT lessons involving Subjects B, C, and D and one small group AAT session filmed during the third ten-week cycle were never reviewed. Using a constant comparative method of qualitative analysis involving an open, axial, and selective coding process, a thematic matrix could then be established based on journal entries, summative narratives, and video clips. This would facilitate a

continuous comparison and contrast of the similarities and differences of emerging AAT concepts that could lead to a better understanding of the underlying data.

Future Implications for Practice

Student preference would be to increase the length of AAT contacts, to be able to choose his/her own companion dog, and to have more opportunities for unstructured activity with his/her canine. Staff members expressed an interest in having more time for lesson debriefing and increasing the number of student participants. Actively involving educators and students in the planning and implementation of various AAT interventions is well worth the time and effort. Administrative support is critical for animal-assisted activities to be fully accepted at the building level.

As witnessed through the use of HABIC trainers and handlers, human-animal teams must receive adequate instruction and supervision in appropriate AAT methodology. Individuals must understand school district policies and the nature of students' at-risk behaviors. The ability to communicate student outcomes as a result of AAT activities to building personnel is imperative. Interpersonal skills will need to be nurtured when dealing with both students and faculty. School staff needs to clearly define schedule restrictions and disciplinary guidelines. Appropriate space for dog training with outdoor access should be provided.

Since animal-assisted therapy is a goal-directed intervention, specific student objectives, in written form, should be provided to the trainer and/or handler as a guide for lesson development. Periodic reviews need to take place over the course of the AAT sessions. Building and AAT staff need to monitor student progress and make adjustments when necessary.

With multiple small group sessions taking place over time, a structured AAT curriculum might prove beneficial. This would encourage standard practices of implementation given a variety of trainers, handlers, and canines. Common terms could be defined, and step by step guidelines would foster consistent program delivery. Building staff could then utilize this written curriculum to reinforce weekly AAT goals and objectives.

This study indicated an improvement in peer and adult social interactions in the school setting for those students receiving either individual or small group animal-assisted therapy. The implementation of a complementary social skills program for use with individual classes or school-wide might extend or expand upon current findings in a positive manner. The following three programs have been undertaken in a variety of secondary settings throughout the country, are of minimal cost to schools, and could be useful adjuncts to animal-assisted intervention practices.

Skillstreaming (Goldstein & McGinnis, 1997) attempts to teach alternative, prosocial behaviors to chronically aggressive adolescents. Individual lesson plans utilize modeling, role-playing, performance feedback, and generalization training. *Why Try* (Moore, 2001) lessons assist teenagers in gaining insight into ways to successfully problem solve stressful situations. Music, hands-on activities, group discussions, peer sharing, and real-life situations appear to be critical motivators for students. The *Safe and Civil Schools Series* (Sprick et al., 1998) emphasizes school-wide and class-wide strategies to address individual student needs. Educators continuously re-evaluate their classroom management plans, and students are well aware of their teachers' precise behavioral expectations.

Conclusion

Use of a human-animal intervention team model with middle and high school students exhibiting at-risk behaviors did not show significant statistical gains following individual or small group AAT sessions other than growth in positive social skill interactions with peers and adults. Student and staff perceptions of animal-assisted therapy, based on qualitative exit interviews, were quite positive. Observations by individual handlers or small group trainers of interactions between students and dogs or between students and adults were recorded in narrative fashion. Pet/client interactions for the individual AAT group were very positive with increased student self-confidence apparent. The small group AAT trainers also felt that each student gained some benefit from their participation.

Several studies found similar outcomes to this research project's results. In a study of six male adolescents with conduct disorder issues who completed a 10-week dog obedience course (Boatfield, 1987), no significant pre to posttest gains for self-care and self-responsibility were found. Informal measures and observations by staff though indicated that attendance had improved, student comradarie had increased, and positive student-canine interactions were noted. Five children exhibiting emotional and behavioral difficulties participated in animal-assisted activities including dog obedience and pet care (Stanton, 1998). No significant behavioral changes were noted among the dependent variables of response to aversive events, anxiety caused by depression, and off task behaviors. Observations of children engaged in AAT seemed to indicate that animal-assisted interventions were emotionally satisfying and intrinsically motivating. The *New Leash on Life* program at Colorado Boys Ranch, a residential treatment facility

for male adolescents with severe emotional and behavioral needs, found a significant difference in social performance ratings at the conclusion of ten-week dog care units (Seiz & Koralewicz, 2003).

There are many at-risk adolescents in need of special assistance in the learning process. Animal-assisted therapy may provide a unique context in which behavioral and academic growth can be acquired. This research project, however, did not distinguish between the impact of students receiving individual AAT, small group AAT, and no treatment. Therefore, there is still a need for continued research in validating AAT via rigorous scientific methods including the developing and/or refining of instruments that will be more sensitive in the measurement of the therapeutic use of companion animals. While most practitioners in the field of animal-assisted therapy are convinced that AAT provides positive outcomes for adolescents experiencing intense behavioral difficulties, there is a paucity of trained researchers, adequate funding sources, and empirically supported treatments.

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APPENDIX A

BASC Rating Scales

Both *Behavior Assessment System for Children Rating Scales* (BASC) are copyrighted instruments. Copies of the *BASC Teacher Rating Scales—Adolescent Form* or TRS-A (1992) and copies of the *BASC Self-Report of Personality—Adolescent Form* or SRP-A (1992) may be purchased through American Guidance Service, Inc., 4201 Woodland Road, Circle Pines, MN 55014-1796. Use the toll-free number at 1-800-328-2560 or in Canada at 1-800-263-3558. Ask for item #3817 for the TRS-A forms (25 protocols per package) and ask for item #3822 for the SRP-A forms (25 protocols per package).

APPENDIX B

School Based, Data Collection Record Sheet

Student Name _____

Please record the **number of times,** not the actual point value earned or lost, that the following behaviors occurred on a given date for this student. Do not mark any other behaviors listed on the Daily Point Sheet.

DATE											
Positives											
AF or AFB											
FI											
kind, polite, positive, or pleasant											
Point losses											
NAF or NAFB											
NFI											
rude, impolite											
DATE											
Positives											
AF or AFB											
FI											
kind, polite, positive or pleasant											
Point losses											
NAF or NAFB											
NFI											
rude, impolite											

APPENDIX C

Staff and Student Exit Interview Questions

Individual Exit Interview Questions for
STAFF Participants in the Animal-Assisted Therapy Program

Staff Code No._____ Position _____

# of yrs at Village School ____ # of yrs in public educ.____ Today's Date _____

Good morning. My name is Judy Wicker, a CSU graduate research assistant, collecting data on the animal-assisted therapy or AAT program here at Village School. I appreciate your taking the time to speak with me today. I'll be asking you to share your thoughts regarding AAT on this audio tape, which will be destroyed at the conclusion of the study. You can ask me to stop the interview at any time, and no other staff member will have access to your individual responses. Do you have any questions for me? (PAUSE) Then, let's begin.

1. What are your thoughts about using animals as a therapeutic intervention with troubled youth?

   How does using the dog as a co-therapist compare with other tools/strategies (e.g., behavior modification, social skills training, disciplinary contracts, etc.) you've observed or have knowledge of?

2. What behavioral changes, if any, have you observed in those students involved in AAT?

3. Please describe any comments student participants may have made regarding AAT.

   Please describe any comments other staff members may have made regarding AAT.

4. What has been your reaction to the day-to-day administration of AAT activities?

5. What changes, if any, might you make in the further implementation of AAT here at Village School?

6. Are there any other comments about the AAT program you'd like to share with me?

Thanks for spending some time with me today.

Individual Exit Interview Questions for
STUDENT Participants in the Animal-Assisted Therapy Program

Student ID No._____ Today's date _____

Hello, my name is Mrs. Wicker. I appreciate your taking the time to talk with me today. Your parent/guardian has already given me permission to speak with you. If you agree, then we'll chat for about 20 to 30 minutes. I'll be asking you to share your thoughts with me about the animal-assisted therapy program here at Village School. You can ask me at any time to stop the interview. None of the staff will see your individual answers. I will be the only person to listen to the audio tape, and it will be destroyed at the end of the study. Please tell me in your own words what I just said. (PAUSE) Do you have any questions for me? (PAUSE) Then, let's begin.

1. If you could tell other teenagers about the animal-assisted therapy (AAT) program here at Village School, what would you say?

   What do you enjoy most about AAT?

   What do you like least about AAT?

   If you had the power, what might you change about AAT?

2. Do you feel differently about yourself when you're working with your dog? In what way(s)?

3. Have you noticed any difference in the way you act around the other students since you started the AAT program? In what way(s)?

   Do the other students treat you differently since you began AAT? In what way(s)?

4. Have you noticed any difference in the way you act around the staff since you started the AAT program? In what way(s)?

5. Do you feel differently towards animals in general now?

6. Is there anything else you'd like to share with me about your experiences with AAT?

Thanks for spending time with me today.

APPENDIX D

Staff and Student Exit Interview Responses

STAFF Responses to Individual Exit Interview Questions

The following is an analysis of the individual interviews of 13 staff members who participated in the Animal-Assisted Therapy Program.

1. (A) What are your thoughts about using animals as a therapeutic intervention with troubled youth?

    - Good way for a kid with an emotional disability to show responsibility and ownership in a positive way.
    - Calming.
    - Fantastic, fabulous (3 respondees)
    - Gave students another way to be nice towards animals and transfer behavior to humans.
    - It's a great middle person (i.e., dog). A good listener for kids afraid to express their feelings. The animals help kids show and receive TLC not present in their home environment. As a kid, I'd go out into my backyard and cry to him (i.e., my dog).
    - For most, a great experience. Tougher kids have lowered their guard permitting staff to talk to them. In individual HABIC, they're more open to talking with the adults.
    - Absolutely imperative (2 respondees).
    - Some of the kids have nothing to bond with.
    - Unconditional love. They can care and love, get cranky; and the dogs still care.
    - I never would have believed it was so positive unless I had seen it with my own eyes. Have asked for a Teen Learning Center group next school year to work with HABIC.
    - On an individual basis with the right kid, it can benefit them for being wanted and loved. Can handle attachment issues positively. Builds self-confidence and self-esteem.
    - Intervention can be effective. HABIC uses volunteers and they appear to be more like handlers or dog trainers. With greater frequency per week could be more beneficial. Kids enjoy it; don't consider it therapeutic.
    - I've seen a change in the kids that have had access to HABIC. I sat in on some individual sessions. Empathy has increased. They have access to that emotion. Can express emotions without being negative or violent.
    - A great idea. Kids come from homes with poor people relationships. Over time they come to appreciate animals and see qualities of self they didn't know they had.
    - A great tool because of the nature of the historical relationships between students and dogs and horses. Students can be defensive relating to humans but have an unconditional relationship with animals. The animal is a conduit to the child's self-expression. Dogs have a natural sense of sharing affection.

- I love the way it works, and it does work.
- Works directly with aggravation and frustration as a tool to decrease these emotions. An empathetic tool, human-animal bond spills over into the human relationship. Depending upon the match between animal and student, a lot of self-reflection. A great and common respect for animals, a common thread or theme.

1. (B) How does using the dog as co-therapist compare with other tools/strategies (e.g., behavior modification, social skills training, disciplinary contracts, etc.) you've observed or have knowledge of?

- Most kids generally like pets or animals. Using the dog gives students a sense of ownership of the dog's responses and progress made.
- Classroom methods are more traditional. HABIC is non-traditional and broader based.
- The animal almost always gives positive feedback. They're always happy to see the kids (2 respondees).
- Dog is not a human person that can repeat the message and badger the child. Kids can settle down/calm down more with the dog.
- Students are friendlier with dogs. Less responsive with other strategies.
- It's easier to work through their problems rather than rule imposing. Gives kids a break from authority figures (2 respondees).
- With HABIC there's nobody else to impress. Some kids tend to puff up and bully. No false pretenses.
- Kids listen automatically and know what to do.
- A great form of therapy for most.
- The other strategies are fairly intellectual or cognitive. Dogs tap in at a whole other level.
- Experiencing things is more powerful.
- Empathy, love, kinesthetics cannot be offered in a talking therapy.
- The dog is something different and not here on a daily basis.
- It's a special time set aside for students. Don't have class.
- The efficacy is driven by the expertise of the handler.
- The establishment of specific treatment goals impacts its efficacy.
- In HABIC's current format it may not be as effective but understand its voluntary nature and limited financial resources.
- Dogs love unconditionally and are non-judgmental. They do not talk back nor try to analyze the kid (2 respondees).
- We get wrapped up in the consequences of the day.
- I like the fact the dog is not stagnant and one dimensional. The dog is a human element and incorporates feelings.
- Behavior mod is what it is.
- The animal can be used as a tertiary party or channel between client and therapist. No abstract contract necessary.
- Let's kids divert their attention and anxiety (2 respondees).

- A kinesthetic approach for communication.
- Adolescents are more willing to work with animals.

2. What behavioral changes, if any, have you observed in those students involved in AAT?

   - Students are much more confident with animals (2 respondees).
   - I have not seen the transference to the classroom for the most part.
   - On HABIC days they're here and eager to work with dogs (3 respondees).
   - In individual AAT, students talk more freely and open up.
   - In group AAT, kids are not afraid and are not embarrassed to show emotions and will show off their accomplishments. They are more reserved in class.
   - A couple students are more patient, understanding, and more willing to take responsibility. One example is a student who now can attend to a full day schedule versus a half day (2 respondees).
   - Some learned compassion, patience, good listening at times, and following basic instructions.
   - Overall, more tolerance and acceptance for others.
   - A confidence builder.
   - Negative behaviors (e.g., verbal assaults, physically challenging others) are suppressed. I've never seen them be violent to the dog and take out their frustrations on them.
   - One student who has not done well even with keeping eye contact with others has taken special interest in his dog and shows a sense of pride.
   - Students have used their animal experiences as a conversation point with other students.
   - Have heard students expressing an interest in owning an animal.
   - T. was a shining example where the dog meant so much to him.
   - Overall, a calmness, the ability to be more on task when returning to class.
   - Self-reflection by explaining their own actions better.
   - Some students have really felt bonded with their dog.

3. (A) Please describe any comments student participants may have made regarding AAT.

   - Very few comments but positive when given (2 respondees).
   - Four to one positive comments (3 respondees).
   - I've never heard anything negative.
   - Negative comments may have come from kids who dropped out (2 respondees).
   - Students like AAT.
   - A few complain but are happy when they get there. Part of their age to complain and try to look cool.
   - Always a general excitement running out to the car to get their dogs (4 respondees).
   - Very attached to the dogs, disappointed when dogs aren't here (2 respondees).

- Excited over their accomplishments with the dogs and will share with other class members upon returning to the classroom.
- Feelings really come out that might not with a peer or an adult.
- Enjoy getting out of class.
- Saddened when they can't participate.
- HABIC helps students make a positive connection and hold onto it.
- "I'm tight with my dog."
- Talk about dog's characteristics.
- Pride in ownership.
- "You gotta come and see what I can do with my dog."
- When I (as a staff member) was looking for a companion dog, students encouraged me to search the web and to consider different attributes of dogs they were working with.
- One student was observed at the local Humane Society wanting to view animals for himself.
- "I don't get as angry as easy."
- "I've learned a lot about myself."
- "Easier working with the dogs than people."
- "They make me laugh."
- "Feel really good when they do what I want them to."
- "I'm not afraid of dogs."
- "I'm not as intimidated to be assertive."
- "It makes me happy."

3. (B) Please describe any comments other staff members have made regarding AAT.

- Generally positive (5 respondees).
- Schedule difficulties may have been mentioned but not in dropping program.
- Also asked for help with personal pet problems.
- At one staff meeting mentioned that one student does better when he has HABIC training in the morning.
- When returning from monitoring HABIC sessions, 2 staff members are more positive with their comments.
- Everybody has been supportive and understanding even with schedule interruptions.
- Staff wants to know about "breaking moments" attributed to HABIC.
- Want to discuss at meetings which students would benefit the most (2 respondees).
- Our new hires see HABIC as mainly play.
- Impressed with the faithfulness of the HABIC volunteers.
- Even though it takes away an academic area, HABIC gives students a valuable social skill.
- It teaches them about positive bonding.
- Everybody thinks it's a great program (3 respondees).

- Because of being short staffed, sometimes we were not as prepared as we should have been with people available to assist HABIC volunteers.
- Students come back to class calm, focused, and ready to work.
- Can dogs be present in all of our classrooms?

4. What has been your reaction to the day to day administration of AAT activities?

   - Schedule conflicts with C Block were a problem because of two absences per week. Inform staff upfront of schedule. It was a challenge to plan curriculum.
   - J. does a good job of keeping us informed of HABIC/AAT schedule.
   - It's been smooth.
   - Sometimes it was hard to get a kid there or have a paraprofessional sit in on a session.
   - HABIC folks have been friendly.
   - Don't know administrative details.
   - No involvement (3 respondees).
   - Very efficiently run. B. and G. have always followed up with any staff questions.
   - Need to notify HABIC volunteers if a campus activity interferes with their training. Also student absences needed to be reported so that handler and dog do not make unnecessary trips to campus.
   - Individual programming is pretty common here. Students had to do catch-up work and I had to revise my assessment procedures for those involved in HABIC.
   - Simple for me to gather needed information. Not time consuming.
   - Tedious. Once we had the chart to observe the AAT sessions, it was better. Note taking was difficult if I was pulled out of the sessions to do crisis management on campus.

5. What changes, if any, might you make in the further implementation of AAT here at Village School?

   - Scheduling modifications.
   - Public knowledge of HABIC graduation ceremonies.
   - All school assembly to display student talents.
   - Would be good to compare HABIC in a regular class to an ED class.
   - I really don't see any changes. Overall, successful. All kids willing to participate (3 respondees).
   - More one to one exposure would increase bonding.
   - Finding students who wish to volunteer.
   - Would mix both small group and individual AAT participants.
   - At times it felt kind of unstructured.
   - Towards the end of the 10 week sessions kids required more motivation.
   - Absenteeism was a negative impact.

- Twice per week for 1 hour each was appropriate.
- Hopefully use HABIC with the Teen Learning Center program.
- Implement treatment goals to measure progress.
- Have a consistent methodology (e.g., social skills curriculum).
- More kids selected for individual AAT.
- Used more with kids identified as emotionally disturbed.
- Program grows to be available for more students to participate.
- Could a student spend more time over a weekend with the animal?
- Have time set aside for handler and staff member to debrief—15 minutes at end of session.

6. Are there any other comments about the AAT program you'd like to share with me?

- Graduation ceremony with whole school and families present.
- I think it's a great program—a good tool to learn caring skills, train an animal, be gentle. Hopefully they can carry these skills onward. These kids don't have consistent, positive love in their lives.
- T. has had a bullying problem but is now working with a very small dog and this takes away his bullying façade. Other kids see him as caring now.
- It was a great program starting the small HABIC groups—the best thing we've done this year (2 respondees).
- People are fabulous. G. is so patient, happy, willing and able. They have the students genuine welfare at heart (2 respondees).
- I'm impressed with trainers' knowledge base of kids and animals.
- Enjoyed having them on campus. HABIC is almost a part of our regular staff.
- Trainers' interactions with the kids were really positive. They related activities to real life situations. Were patient with absentees. Kids took to them quickly—in our setting this was unusual for outsiders to be accepted so quickly.
- It's been positive for me to be involved with dogs.
- It was nice to have something different on campus.
- The potential is huge.
- HABIC is about relationships.
- Could HABIC graduates relay their successes to other students? Could they network with vet offices?
- Hope program can survive.
- Would hope for therapy dogs in every school.
- A tremendous experience.
- Personally has helped me with my own pets.
- Consistency of training was appreciated with common language for animal commands—Kids could go with either handler and understand rules.

STUDENT Responses to Individual Exit Interview Questions

The following is an analysis of the individual interviews of 20 students who participated in the Animal-Assisted Therapy Program.

1. (A) If you could tell other teenagers about the animal-assisted therapy (AAT) program here at Village School, what would you say?

- I wouldn't say anything.
- Don't know many who would enjoy it because they'd see it as a pain—it takes time out of their precious day.
- A good program to relieve stress and to train your dog to follow commands (2 respondees).
- I enjoyed it. I got to work with animals (7 respondees).
- Got me out of class (3 respondees).
- You could train other people's dogs to be guard or life saving dogs (2 respondees).
- The dogs were really great to play with (2 respondees).
- It makes you feel good about yourself (2 respondees).
- It makes you do better in class.
- It's a really good program. You should only do it if committed to doing it.
- Helped me with my patience—I'm very impatient (2 respondees).
- Dogs know if you're mad or sad or there's something wrong.
- It's pretty fun to take (5 respondees).
- It's kind of a pain at first, but in the end it all pays off. At first my dog didn't listen. At the end all my dog needed were hand signals.
- It's a great learning experience (2 respondees).
- I've been in this really cool program where you train dogs for people so the dogs can help out the elderly.

1. (B) What do you enjoy most about AAT?

- Training the dog (3 respondees).
- Working with the animals (12 respondees).
- Getting to know the handler.
- I enjoyed all of it.
- Teaching the dogs new tricks (2 respondees).
- Talking with the trainer.
- The dogs were really cool (3 respondees).
- The trainer was really nice.
- That the owners would let kids like us work with their dogs.
- When the dog started to listen to me—the first 3 or 4 weeks.
- Got out of class.
- I made a friend with my dog.

- Getting to cuddle with the dogs, especially having them sit on my lap
- Made me laugh.
- Seeing what the dogs can do. Like teaching a little kid to walk, talk, ride a bike. You get the dog to sit, stay, and heel.

1. (C) What do you like least about AAT?

- Nothing (6 respondees).
- Sometimes when we were doing something fun in class, I had to be pulled out—it wasn't every time.
- Having to do the same thing over and over.
- The allergies that the dog stirs up.
- My dog wouldn't sit when the other dogs got in the way.
- My dog was stubborn (3 respondees).
- Didn't like working in a group. Wanted to work individually.
- We didn't get to teach the dogs our own stuff.
- Journal writing.
- I smelled like dogs sometimes.
- Missing school work. Most of the time I could make it up.
- Sometimes I was tired, but I did keep my commitment to attend.
- Sometimes I got frustrated training the dog (2 respondees).

1. (D) If you had the power, what might you change about AAT?

- Nothing (8 respondees).
- More time with the dog (3 respondees).
- We would get to pick our own dog.
- The kids in the program—I didn't like most of the kids who complained a lot.
- More free time with the dog.
- Take the dogs home.
- HABIC everyday (2 respondees).
- The people that ran it. Thought they were snappy.
- No writing about the dogs.
- Have a different dog since mine didn't like to listen.
- I'd rather be outside with my dog (2 respondees).

2. Do you feel differently about yourself when you're working with your dog? In what way(s)?

- No (9 respondees).
- Feel happier (4 respondees).
- I'm actually helping.
- Nicer, more kind (2 respondees).
- More relaxed.

- Better attitude at home.
- Feel better than when I'm in my social studies classes even though that's my favorite teacher.
- Frustrated sometimes when my dog won't listen.
- Feel loved.
- Feel someone is depending on me.
- Makes me think I can change and do better.
- I feel more in control.

3. (A) Have you noticed any difference in the way you act around the other students since you started the AAT program? In what way(s)?

   - No (10 respondees).
   - I talk more to people (2 respondees).
   - Maybe more patient (5 respondees).
   - This school has basically changed me. I don't know whether it's the dog or the school or both.
   - Better eye contact.
   - A little bit sillier.
   - I can use metaphors in talking (e.g., They're 'like' my dog in HABIC).
   - Kinder.
   - My language has improved.

4. (B) Do the other students treat you differently since you began AAT? In what way(s)?

   - No (18 respondees).
   - Nicer to me—greet me and say, "Hi."
   - I started getting along with kids I normally don't talk to.

5. Have you noticed any difference in the way you act around the staff since you started the AAT program? In what way(s)?

   - No (11 respondees).
   - More patient and haven't cussed
   - Now I don't get mad at them so easily when I get a negative response. It takes a lot more to yell at them now.
   - I listen to their directions and do work.
   - I have a better sense of humor.
   - Giving them more eye contact and accepting their feedback.(e.g., do my work right, tuck in my shirt)
   - I'm more respectful (2 respondees).
   - I haven't been getting in as much trouble.
   - I'm in a better mood mostly.
   - I talk to staff more.

6. Do you feel differently toward animals in general now?

   - No (6 respondees).
   - Now I know how to talk to a dog.
   - More interested in dogs and cats (3 respondees).
   - Would like to get a dog (2 respondees)
   - Learned they have feelings too and need to respect that (3 respondees).
   - I try to teach my dog tricks.
   - I used to really hate dogs.
   - They're capable of learning, but it just takes awhile.
   - I can now adapt to them and cope with them.
   - I know that not all dogs are hyper, just some of them.
   - I spend more time with my own dog (2 respondees).
   - I've learned to train other dogs.
   - I'm not as scared of dogs any more. A few Saturdays ago when I got the mail, a big, strange dog came toward me. I wanted to run, but HABIC taught me to tell the dog—No, Stop. The dog sat right away, and the owners came out of their house and called him.

7. Is there anything else you'd like to share with me about your experiences with AAT?

   - No comment (10 respondees).
   - It was just fine (2 respondees).
   - The trainer always talked to me about my fear of dogs.
   - The dog helps improve people's self-esteem.
   - Taught me to be more patient.
   - Taught me extra dog tricks.
   - I was just happy to do something for someone else.
   - I made a new friend in the dog.
   - I would recommend it to other kids my age.
   - A lot of fun with it (2 respondees).
   - The dog's owner feels the lessons have worked for his dog.
   - Really going to miss my dog.
   - Didn't think I'd get that close to a dog, but I did.
   - I would want to do it again.

APPENDIX E

Student and Staff Consent Forms

COLORADO STATE UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT
FOR STUDENTS

Title of Project: A Human-Animal Bond Project in an Alternative High School: The Human-Animal Intervention Team Model
Name of Principal Investigator: Ben P. Granger, Ph.D.
Name of Co-Investigator: Judith D. Wicker, Ed.S., NCSP
Contact Names and Phone Numbers for Questions/Problems: Georgia V. Granger, Director of the Human -Animal Bond in Colorado, at (970) 491-2776 or Judith D. Wicker at (970) 256-0555
Sponsor of Project: The CLASS Foundation

Purpose of the Research: We are trying to find out if working with dogs (animal-assisted therapy or AAT) makes a difference in the way teenagers act with their classmates and school staff at Village School.

Procedures/Methods to Be Used: Beginning fall semester, 2002, if you agree to participate, you will be assigned to one of three groups on the campus of Village School in Fort Collins, Colorado. The first group will do their regular daily routine over a ten week period. Students in this first group will be placed on a waiting list for future AAT training. A second group will receive individual AAT using companion dogs once a week for an hour over the same ten week period and may have an opportunity to continue even beyond these ten weeks. The third group will receive small group AAT using dogs twice a week for an hour each over a ten week period as well. Students in this third group will change every 10 weeks. Both individual and small group AAT members will be under the supervision of a skilled animal trainer and a Village School staff person. You will be asked, no matter which of the three groups you have been assigned, to answer some true/false questions taking about 15 minutes of your time at the beginning and at the end of the ten week period. Individual AAT members who continue on past the first ten week period will be asked to answer these same questions two more times. AAT students will also be asked to briefly answer six questions about their AAT activities once during the project. Your answers will be audiotaped, with your permission; this audiotape will be permanently erased at the end of the project. With your permission, some of the AAT sessions may be videotaped; again the videotape will be permanently erased at the end of the project. Staff members will be asked to share their observations of your behavior during classroom and/or animal activities. You will not receive any reward or award for volunteering to participate in this project.

Risks Inherent in the Procedures: The only possible physical risk to students working with the companion dogs might be accidental scratching or playful nipping. All dogs have been tested beforehand for any biting problem and the likelihood of a dog biting someone is very, very small. Some students may also feel some sadness when they must say goodbye to their companion dog. If assigned to the AAT group, you will receive complete instructions in dog handling, and you will be supervised at all times. It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

Benefits: The following may apply to students involved in the AAT activities. You will have "hands-on" experience in working with dogs. You may also have an opportunity in the future to participate in additional training sessions with companion animals.

Confidentiality: To keep your real name confidential, your student ID number will be used. All the information that we get from you or from school staff about you will be kept secret. Only certain people from Colorado State University may see this information. It will be kept in a safe location separate from your school records. This study will become Mrs. Wicker's doctoral project and may, in the future, be presented to a journal for publication. No one reading the study will ever know your name or that you even attended Village School.

Liability: The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

Questions about participants' rights may be directed to Celia S. Walker at (970) 491-1563.

Participation: Your participation in this project is voluntary. If you decide to participate, you may change your mind and may stop at any time without losing your student privileges.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing 3 pages.

_____

Participant name (printed)

_____ _____

Participant signature Date

_____ _____

Witness to signature (project staff) Date

PARENTAL SIGNATURE FOR MINOR

As parent or guardian you authorize _____ (print name of minor) to become a participant for the described research. The nature and general purpose of the project have been satisfactorily explained to you by Mrs. Judith Wicker and you are satisfied that proper precautions will be observed.

_____ _____

Minor's date of birth Parent/Guardian name (printed)

_____ _____

Date Parent/Guardian signature

COLORADO STATE UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT
FOR STAFF

Title of Project: A Human-Animal Bond Project in an Alternative High School: The Human-Animal Intervention Team Model
Name of Principal Investigator: Ben P. Granger, Ph.D.
Name of Co-Investigator: Judith D. Wicker, Ed.S., NCSP
Contact Names and Phone Numbers for Questions/Problems: Georgia V. Granger, Director of the Human-Animal Bond in Colorado, at (970) 491-2776 or Judith D. Wicker at (970) 256-0555.
Sponsor of Project: The CLASS Foundation

Purpose of the Research: The Project's goal is to determine the effectiveness of individual and group animal-assisted therapy (AAT) as interventions directed toward social and educational improvement of students within an alternative secondary school environment.

Procedures/Methods to Be Used: Beginning fall semester, 2002, through spring semester, 2003, if you agree to participate, you will be asked to complete a brief rating scale regarding the social skills and any aggressive actions of individual students participating in any one of three research groups on the campus of Village School in Fort Collins, Colorado. The first group will proceed with their regular daily routine over a ten week period. Students in this first group will be placed on a waiting list for future AAT training. A second group will receive individual AAT using companion dogs once weekly for an hour over the same ten week period and may have an opportunity to continue even beyond these ten weeks. The third group will receive small group AAT using dogs twice weekly for an hour each over a ten week period as well. Participants in this third group will change every 10 weeks. Both individual and small group AAT members will be under the supervision of a skilled animal trainer and a Village School staff person. You will be asked, no matter to which of the three groups your students have been assigned, to complete a short behavior rating scale taking about 15 minutes or less of your time on a pre/post test basis. Individual AAT members who continue on past the initial ten week period will be rated a second and possibly a third time depending upon their stay at Village School. You will also be asked to briefly answer six questions about the project's AAT activities once during the school year. Your answers will be audiotaped, with your permission; this audiotape will be permanently erased at the end of the project. You will not receive any reward or award for volunteering to participate in this project.

Risks Inherent in the Procedures: There are no known risks to you as a participant in this project. It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable safeguards to minimize any known and potential, but unknown risks.

Benefits: As a result of this project, you will have had the opportunity to observe a unique therapeutic intervention which may have positive benefits for at-risk youth.

Confidentiality: Your real identity will be kept confidential, and students will not be told of their individual staff ratings. Other staff members will not have access to your individual interview responses. Only designated Colorado State University staff and the doctoral student assigned to this project will have access to data collected. All research information will be kept in a safe and secure location separate from school records. The results of this study will be submitted within Mrs. Wicker's doctoral dissertation and may have publication opportunities. Future readers will not be aware of your identity nor Village School's.

Liability: The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

Questions about participants' rights may be directed to Celia S. Walker at (970) 491-1563.

Participation: Your participation in this research is voluntary. If you decide to participate, you may change your mind and stop participating at any time without loss of privileges as an employee of the Poudre School District.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing 2 pages.

_____

Participant name (printed)

_____ _____

Participant signature Date

_____ _____

Witness to signature (project staff) Date

Page 2 of 2 Participant's Initials _____ Date _____