

*Can Animals Help Humans Heal?
Animal-Assisted Interventions in Adolescent Mental Health*



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About the Center for the Interaction of Animals and Society, University of Pennsylvania School of Veterinary Medicine

The Center for the Interaction of Animals and Society (CIAS) is a research center within the University of Pennsylvania School of Veterinary Medicine. Founded in 1979, and re-established in 1997, CIAS provides a forum for addressing the many practical and moral issues arising from the interactions of animals and society. The CIAS strives for a multidisciplinary approach and the involvement of scholars and researchers from a wide variety of different backgrounds and interests. Its goal is to promote understanding of human-animal interactions and relationships involving companion animals, farm animals, laboratory animals, zoo animals, and free-living wild animals. The CIAS conducts research, sponsors conferences, and provides community outreach and educational programs. For further information visit the CIAS website at <http://www.vet.upenn.edu/research/centers/cias/index.html>, or contact the Center at cias@lists.vet.upenn.edu.

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Introduction

Between July 2003 and June 2004, the Center for the Interaction of Animals and Society (CIAS) conducted a fact-finding assessment of the value of animal-assisted interventions (AAIs) in the treatment of adolescent mental health disorders.¹ This assessment included a thorough review of existing literature which was prepared and distributed as a companion document to a public conference and invitational workshop on the same topic organized by CIAS at the University of Pennsylvania on March 28th & 29th, 2004, respectively. The conference and workshop brought together invited experts from the field of animal-assisted interventions,² and a panel of scholars and researchers with expertise in the field of child and adolescent mental health.³ In addition, a small number of guest panelists were invited on the basis of their unique perspective on AAIs and/or adolescent mental health.⁴ The goal in bringing these groups together was to identify the strengths and weaknesses of the AAI field, and to develop a research agenda for the future.

This report summarizes the main conclusions of the literature review, the information presented at the conference, and the major themes and recommendations that emerged from the invitational workshop. More detailed conference and workshop programs are provided as appendices.

Key Findings

- The practice of using the companionship of domestic animals to assist in the socialization of patients with mental disorders dates back to the late eighteenth century.
- Animal-assisted interventions (AAIs) are currently poorly defined. The lack of a unifying set of practice guidelines or a shared terminology is hampering efforts to evaluate and gain acceptance for the field.

¹ The CIAS is grateful to the Annenberg Foundation Trust at Sunnylands for generously supporting this project.

² Invited experts from the field of AAIs included: Gail F. Melson, PhD, Purdue University; Aaron H. Katcher, MD & Sue Teumer, MA, Our Farm, TX; Ben Granger, PhD & Mrs. Georgia V. Granger, Colorado State University; Aubrey H. Fine, EdD, California State Polytechnic University; Pamelyn M. MacDonald, PhD, Washburn University; Maureen Fredrickson, MSW & Molly DePrekel, MA, LP, Minnesota Linking Youth, Nature, and Critters, Inc.; and Ms. Tamara H. Ward, Youth Diagnostic and Development Center, NM.

³ The panel of scholars from The Children's Hospital of Philadelphia^a, the University of Pennsylvania^b, and Drexel University^c included: Madeline Gladis-Alexander, PhD^a; Guy Diamond, PhD^a; Evan Forman, PhD^c; Martin Franklin, PhD^b; Jane Gillham, PhD^b; Naomi Goldstein, PhD^c; Michael Lowe, PhD^c; Tom Power, PhD^a; Phyllis Solomon, PhD^b; and Annie Steinberg, MD^a.

⁴ Guest panelists included: Susan Brooks, PsyD, Green Chimneys, NY; Kathleen Gerbasi, PhD, Psychologists for the Ethical Treatment of Animals, MD; Samuel B. Ross, PhD, Green Chimneys; and David Wohlsifer, MSW, University of Pennsylvania, Department of Psychiatry.

- The field lacks a coherent theoretical foundation, although a variety of plausible mechanisms of action have been proposed. These include the idea that a therapy animal can serve as a social facilitator; as a symbolic vehicle for the expression of emotionally-laden topics; as a focus of attention and as agents of de-arousal; as an object of attachment; as a source of social support; and as a living instrument for learning new skills and ways of thinking and behaving. Few of these hypothesized mechanisms have been tested empirically.
- Most previous efforts to establish the efficacy of AAIs have suffered from poor research design. Study samples have tended to be small, heterogeneous and unrepresentative, and adequate control groups have only rarely been employed.
- Despite these shortcomings, AAIs have been widely implemented in a variety of mental health settings for adolescents, and preliminary evidence indicates a range of potential benefits including anxiety reduction; improved rapport and communication between patients and therapists; enhanced attendance at, compliance with, and retention in therapy; and improved behavior outside the context of therapy. Animals also appear to serve as catalysts for learning, as sources of contact comfort, as outlets for nurturance, as models of positive social behavior, and as bolsterers of staff morale.
- Although not technically therapeutic, improved facilitation, engagement, retention and compliance could have a considerable impact on the financial burden imposed by mental health care, and would alone render AAIs worthy of detailed clinical investigation. Similarly, improvements in therapist and staff morale resulting from AAIs could have important impacts on the quality and continuity of patient care.
- High quality efficacy and effectiveness studies are urgently needed to move the field of AAIs forward. These should focus on carefully defined clinical samples, use randomized controlled designs, and have stated outcomes that are relatively impervious to expectancy and demand effects, as well as self-report or personal interest biases.
- Most previous studies that have reported benefits of AAIs have focused on the therapeutic context itself. Future studies need also to examine whether these effects carry over into other contexts, and if they are retained over time.
- Cultural and individual differences in responses to animals have tended to be ignored in the literature. Future studies must take into account differences in animal-related attitudes and preferences, since it is unlikely that AAIs will be equally acceptable, appropriate, and beneficial in all contexts, and for all individuals, populations, and diagnoses.

What Are Animal-Assisted Interventions?

Although no standard definition of animal-based interventions exists, the following definitions of Animal-Assisted Therapy and Animal-Assisted Activity have been proposed by the Delta

Society (one of the major organizations responsible for certifying therapy animals in the United States) and currently appear to be the most widely-accepted:

Animal-Assisted Therapy (AAT): AAT is a goal-directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. AAT is directed and/or delivered by a health/human service professional with specialized expertise, and within the scope of practice of his/her profession. Key features include: specified goals and objectives for each individual; and measured progress.

Animal-Assisted Activity (AAA): AAA provides opportunities for motivational, educational, recreational, and/or therapeutic benefits to enhance quality of life. AAAs are delivered in a variety of environments by specially trained professionals, paraprofessionals, and/or volunteers, in association with animals that meet specific criteria. Key features include: absence of specific treatment goals; volunteers and treatment providers are not required to take detailed notes; visit content is spontaneous.⁵

Interventions involving the use of horses typically fall under the jurisdiction of a separate group of agencies; particularly the North American Riding for the Handicapped Association (NARHA) and its sub-section, the Equine Facilitated Mental Health Association (EFMHA), who provide a separate definition for the term “equine facilitated psychotherapy” (EFP):

EFP is an experiential psychotherapy that includes equine(s). It may include, but is not limited to, a number of mutually respectful equine activities such as handling, grooming, longeing (or lunging), riding, driving, and vaulting. EFP is facilitated by a licensed, credentialed mental health professional working with an appropriately credentialed equine professional. EFP may be facilitated by a mental health professional that is dually credentialed as an equine professional.⁶

For the purposes of this report, animal-assisted therapy, animal-assisted activities, and equine-facilitated psychotherapy are grouped together under the more general term, *animal-assisted interventions*, defined here as “any therapeutic intervention that intentionally includes or incorporates animals as part of the therapeutic process or milieu.”

⁵ Delta Society. (n.d.). About Animal-Assisted Activities & Animal-Assisted Therapy [On-line]. Available: <http://www.deltasociety.org/aboutaaat.htm>

⁶ Equine Facilitated Mental Health Association [EFMHA]. (2003). *What is Equine Facilitated Psychotherapy (EFP)?* [On-line]. Available: http://www.narha.org/sec_efmha/default.asp

History and Background

Belief in the socializing and psychotherapeutic properties of animal companionship stretches back to at least the eighteenth century when philanthropic groups in Europe began advocating the introduction of “tame animals” to some of the more progressive mental institutions of the day.⁷ The advent of scientific medicine toward the end of the nineteenth century tended to displace companion animals from the therapeutic milieu until the 1960s when the concept was revived in the writings of the American child psychotherapist, Boris M. Levinson, who is often regarded as the father of animal-assisted interventions. In his book, *Pet-Oriented Child Psychotherapy*,⁸ Levinson described the benefits that his dog brought to his counseling sessions with children and youth, and provided numerous examples of ways in which animals could enhance therapy. Based largely on case studies and anecdotes, Levinson intended for this material to inform and encourage future research into the various beneficial effects that he had documented. While this has occurred to some degree, more often Levinson’s writings have been used to justify the implementation of animal-assisted interventions in the absence of valid efficacy studies.

Despite the unequivocally positive media attention they typically receive, animal-assisted interventions are now best described as a category of promising complementary therapies that are still struggling to demonstrate their efficacy and validity. While most practitioners in the field are convinced of the benefits of AAIs, few are trained in research methods, and even fewer possess adequate funding to conduct the kinds of studies needed to establish animal-assisted interventions as empirically-supported treatments for mental disorders that occur in adolescence (for an in-depth examination of empirically-supported treatments, see Nathan & Gorman (1998);⁹ and Kazdin & Weisz (2003)¹⁰). Consequently, the majority of studies conducted in this field are characterized by small, heterogeneous samples of subjects, and the absence of suitable control groups and conditions. Thus, even when positive effects are reported, weaknesses in the methodologies used to obtain them raise doubts concerning their validity. Additionally, some of the more promising clinical observations that recur consistently throughout the AAI literature—

⁷ Serpell, J.A. (2000). Animal companions and human well-being: An historical exploration of the value of human-animal relationships. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 3-19). New York: Academic Press; Tuke, S. (1813). *Description of the Retreat*. Reprinted with an introduction by R. Hunter & I. Macalpine (1964). London: Dawsons.

⁸ Levinson, B.M. (1969). *Pet-Oriented Child Psychotherapy*. Springfield, IL: Charles C. Thomas.

⁹ Nathan, P.E., & Gorman, J. M. (1998). *A Guide to Treatments that Work*. New York: Oxford University Press.

¹⁰ Kazdin, A.E., & Weisz, J.R. (2003). *Evidence-Based Psychotherapies for Children and Adolescents*. New York: The Guilford Press.

e.g., the ability of animals to expedite the rapport-building process, enhance engagement, and facilitate retention in treatment—have not been investigated empirically.

From a professional standpoint, the practice of animal-assisted interventions is still at an early stage of development. Recent attempts have been made to standardize terminology and procedures, and various certificate programs are now being offered in association with colleges and universities. While these efforts have not yet had an obvious impact on research, they are likely to have a positive influence in the future.

Why Adolescents?

According to a report produced by the National Advisory Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment, one in 10 children and adolescents in the United States today “suffers from mental illness severe enough to result in significant functional impairment.”¹¹ Evidence compiled by the World Health Organization (as cited in NIMH, 2001) suggests that by the year 2020, “childhood neuropsychiatric disorders will rise by over 50 per cent internationally to become one of the five most common causes of morbidity, mortality, and disability among children.”¹² These numbers are particularly sobering when coupled with the reality that “most of the treatments and services that children and adolescents typically receive have not been evaluated to determine their efficacy across developmental periods, and that even when clinical trials have included children and adolescents, the treatments have rarely been studied for their effectiveness in the diverse populations and treatment settings that exist in this country.”¹³

Adolescents, rather than children, were chosen as the focus of this report due to the increase in many psychological difficulties, such as depression, conduct problems, and substance abuse that are observed in adolescence. Adolescents are also viewed as a challenging population to work with for mental health practitioners. Establishing a therapeutic connection or rapport between the adolescent patient and his or her therapist is often a difficult process, and problems with

¹¹ National Institutes of Mental Health [NIMH]. (2001). *Blueprint for Change: Research on Child and Adolescent Mental Health. Executive Summary and Recommendations.* (p. 1) [On-line]. Available:

http://www.nimh.nih.gov/childhp/ExecSumm8_20B.pdf

¹² NIMH (2001), op. cit., p. 1.

¹³ NIMH (2001), op. cit., p. 1.

compliance and retention in treatment are significant issues.¹⁴ The general observation that animals hold a special appeal for children and youth, and specific findings indicating their potential role as sources of comfort and security, and as catalysts for interpersonal interaction and communication, suggest that AAIs may be particularly useful as adjuncts to conventional psychotherapies with adolescent populations.

About the Literature Review

The review process began with an exhaustive search for available literature on the topic of animal-assisted interventions in adolescent mental health. The literature on this topic is widely-dispersed across a broad range of disciplines¹⁵ and articles focusing on adolescent mental health make up a relatively small subset of the literature available on animal-assisted interventions in general. This necessitated the use of multiple scientific databases,¹⁶ numerous general searches of the internet using the Google search engine, and manual searches of the reference lists of all articles obtained as a means of identifying additional citations. This methodology yielded 260 potential articles of which fewer than 20 percent (approximately 45 articles) focused on pairing animals with adolescents with the goal of improving some aspect of mental health.

The purpose of the review was to highlight the most common or promising theoretical frameworks underlying AAIs; to describe the types of interventions that are currently being practiced including outcomes data where available; and to propose a set of recommendations regarding the future of the field. What follows is a summary of the main findings.

Theoretical Foundations

The field of animal-assisted interventions currently lacks a unified or widely-accepted theoretical framework for explaining how and why interventions involving animals are potentially therapeutic.¹⁷ A considerable variety of possible mechanisms of action have been proposed or alluded to in the literature, most of which focus on the supposedly unique intrinsic attributes of

¹⁴ Garcia, J.A., & Weisz, J.R. (2002). When youth mental health care stops: Therapeutic relationship problems and other reasons for ending youth outpatient treatment. *Journal of Consulting and Clinical Psychology*, 70, 439-443.

¹⁵ Disciplines included: psychology, psychiatry, social work, pastoral care, child welfare, family therapy, pediatrics, nursing, medicine, alternative medicine, education, social science, addictions, corrections/criminology, human-animal interactions, animal welfare, veterinary medicine, and zoology.

¹⁶ Databases included: Social Sciences Abstracts, Sociological Abstracts, Social Work Abstracts, ERIC, PsycINFO, ISI Citation Indexes, Dissertation Abstracts, MEDLINE, and CINAHL/Nursing.

¹⁷ LaJoie, K.R. (2003). *An Evaluation of the Effectiveness of Using Animals in Therapy*. Unpublished doctoral dissertation, Spalding University, Louisville, KY. (University Microfilms No. 3077675).

animals that appear to contribute to therapy. Others emphasize the value of animals as living instruments that can be used to effect positive changes in patients' self-concept and behavior through the acquisition of various skills, and the acceptance of personal agency and responsibility. Briefly summarized, the different mechanisms by which AAIs are thought to work include the following ideas and concepts:

Animals as social facilitators: Numerous authors have drawn attention to animals' apparent ability to catalyze or facilitate communication and interaction between patients and their therapists,¹⁸ and at least one study has documented such effects empirically.¹⁹ Why animals seem to be able to elicit positive social responses where other approaches often fail is far from clear, although Gene Myers' concept of animals as "optimally discrepant social others" may be relevant.²⁰ By being sufficiently similar to humans to elicit prosocial behavior and positive affect, and sufficiently dissimilar to avoid posing a threat, animals may possess a unique capacity to mediate interactions in otherwise awkward or uncomfortable therapeutic contexts.²¹

Animals as symbols and metaphors: Psychoanalysts and social anthropologists have long recognized that animals are laden with symbolic meaning, and that they are commonly used by people to represent strong emotions or feelings that are both hard to articulate and prone to repression.²² This observation has encouraged a number of therapists to employ animals as vehicles for the projection of their patients' unconscious worries or fears, and for eliciting discussions of emotionally-charged topics and issues. The reasons why animals are apparently so effective at fulfilling these symbolic roles are not entirely clear but, again, may relate to their inherently ambiguous, quasi-human status.

¹⁸ Tuke (1813), op. cit.; Levinson (1969), op. cit.; Rochberg-Halton, E. (1985). Life in the Treehouse: Pet therapy as family metaphor and self-dialogue. *Marriage & Family Review*, 8 (3-4), 175-189.

¹⁹ Corson, S.A., Corson, E.O'L., & Gwynne, P.H. (1975). Pet-facilitated psychotherapy. In: R.S. Anderson (Ed.), *Pet Animals and Society* (pp. 19-36). Baltimore, MD: Williams and Wilkins

²⁰ Myers, O.E. (1998). *Children and Animals*. Boulder, CO: Westview Press.

²¹ Serpell, J.A. (1996). *In the Company of Animals: A Study of Human-Animal Relationships* (Canto Ed.). Cambridge, England: Cambridge University Press.

²² Freud, S. (1959). *The Interpretation of Dreams*, trans. J. Strachey. New York: Basic Books; Doniger, W. (1995). The mythology of masquerading animals, or, bestiality. In: A. Mack (Ed.), *Humans and Other Animals* (pp. 343-364). Columbus, OH: Ohio State University Press; Rycroft, C. (1979). *The Innocence of Dreams*. New York: Pantheon Books.

Animals as a focus of attention and as agents of de-arousal: Prompted by E.O. Wilson's original concept of 'biophilia,'²³ several recent authors have proposed that humans possess an innate predisposition to attend to, and be attracted by, the activities of other animals. This tendency is supposedly stronger in children and youth, and is thought to represent a legacy of our hunting and foraging past when attention to the behavior of other animals was critical to human survival.²⁴ According to one version of the theory, attention to animals alone is sufficient to explain some of the benefits of AAIs since things that tend to focus and absorb people's attention in non-threatening ways are also known to exert a calming or de-arousing influence.²⁵ According to another, it is the relaxed behavior of the animals themselves that is calming, because humans have evolved a specific capacity to use animals and their behavior as sentinels of environmental safety or danger.²⁶

Despite abundant references in the literature suggesting that the presence of animals can sometimes produce calming or de-arousing effects, there are, as yet, no convincing data demonstrating that this is due to any genetically-based attraction to animals. Even proponents of biophilia acknowledge that individual experience, gender, and culture play major roles in determining people's responses to animals.²⁷ Nonetheless, biophilia provides one plausible explanation for the apparent 'uniqueness' of animal-assisted interventions, particularly with regard to facilitating therapeutic engagement and retention, and decreasing anxiety in some patients.

Animals as objects of attachment: The AAI literature abounds with anecdotal statements and qualitative findings concerning the loving bonds that are forged between children and therapy animals, with the implication that these attachments are part of what helps

²³ Wilson, E.O. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.

²⁴ Kahn, P.H. (1997). Developmental psychology and the biophilia hypothesis: Children's affiliation with nature. *Developmental Review*, 17, 1-61; Kellert, S.R. (1993). The biological basis for human values of nature. In S.R. Kellert & E.O. Wilson (Eds.), *The Biophilia Hypothesis* (pp. 42-69). Washington, DC: Island Press.

²⁵ Katcher, A.H., Friedmann, E., Beck, A.M., & Lynch, J.J. (1983). Looking, talking and blood pressure: The physiological consequences of interaction with the living environment. In: A.H. Katcher & A.M. Beck (Eds.), *New Perspectives on Our Lives with Companion Animals*, (pp. 351-359). Philadelphia, PA: University of Pennsylvania Press; McCaul, K.D., & Malott, J.M. (1984). Distraction and coping with pain. *Psychological Bulletin*, 95, 516-533.

²⁶ Melson, G.F. (2000). Companion animals and the development of children: Implications of the biophilia hypothesis. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 375-383). New York: Academic Press.

²⁷ Kahn (1997), op. cit.; Serpell, J.A. (2004). Factors influencing human attitudes to animals and their welfare. *Animal Welfare*, 13 (Supplement), 145-152.

patients to achieve therapeutic gains.²⁸ Similarly, the notion that animals can function as transitional objects (*sensu* Winnicott, 1953)²⁹ in the therapeutic context by serving as an emotional bridge to a higher or more socially acceptable level of functioning is frequently alluded to in the literature.³⁰ Certainly, as animate, sentient, and social beings capable of responding affectionately to human attentions, it would seem intuitively likely that animals could play a more effective role in comforting and reassuring anxious patients than any inanimate object or ‘security blanket.’

Animals as sources of social support: While the provision of social support is now widely viewed as one of the primary benefits of pet ownership,³¹ the concept appears less often in the literature on animal-assisted interventions, perhaps because relationships between patients and therapy animals are thought of as being too transient. Nevertheless, some animals—most notably dogs—by virtue of their unique ability to offer nonjudgmental and unconditional positive regard even to unfamiliar persons, may be able to provide certain components of social support within the context of AAIs. In particular, ‘emotional support’—the sense of being able to turn to others for comfort in times of stress and the feeling of being cared for by others³²—may be enhanced by even relatively brief interactions with animals. The unconditionally ‘loving’ or affectionate nature of most

²⁸ Bardill, N., & Hutchinson, S. (1997). Animal-assisted therapy with hospitalized adolescents. *Journal of Child and Adolescent Psychiatric Nursing*, 10 (1), 17-24; Harbolt, T., & Ward, T.H. (2001). Teaming incarcerated youth with shelter dogs for a second chance. *Society & Animals*, 9 (2), 177-182; Kale, M. (1992). At risk: Working with animals to create a new self-image. *InterActions*, 10 (4), 6-9; Mallon, G.P. (1994b). Some of our best therapists are dogs. *Child and Youth Care Forum*, 23 (2), 89-101.

²⁹ Winnicott, D.W. (1953). Transitional objects and transitional phenomena. *International Journal of Psychoanalysis*, 24, 88-97.

³⁰ Katcher, A.H. (2000). The future of education and research on the animal-human bond and animal-assisted therapy. Part B: Animal-assisted therapy and the study of human-animal relationships: Discipline or bondage? Context or transitional object? In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 461-473). New York: Academic Press; Levinson, B. (1970). Pets, child development, and mental illness. *Journal of the American Veterinary Medical Association*, 157 (11), 1759-1766; Levinson, B.M. (1978). Pets and personality development. *Psychological Reports*, 42, 1031-1038; Levinson, B.M. (1984). Human/companion animal therapy. *Journal of Contemporary Psychotherapy*, 14, 131-144; Mallon (1994b), op. cit.; Reichert, E. (1998). Individual counseling for sexually abused children: A role for animals and storytelling. *Child and Adolescent Social Work Journal*, 15 (3), 177-185; Triebenbacher, S.L. (1998). Pets as transitional objects: Their role in children’s emotional development. *Psychological Reports*, 82, 191-200.

³¹ Bonas, S., McNicholas, J., & Collis, G.M. (2000). Pets in the network of family relationships: An empirical study. In: A.L. Podberscek, E.S. Paul, & J.A. Serpell (Eds.), *Companion Animals and Us: Exploring the Relationships Between People and Pets* (pp. 209-236). Cambridge: Cambridge University Press; Collis, G.M., & McNicholas, J. (1998). A theoretical basis for health benefits of pet ownership: Attachment versus psychological support. In: C.C. Wilson & D.C. Turner (Eds.), *Companion Animals in Human Health* (pp. 105-122). Thousand Oaks, CA: Sage; Serpell (1996), op. cit.

³² Collis & McNicholas (1998), op. cit.

therapy dogs, and their widespread use as ‘confidantes’ by troubled children and adolescents, lends credence to their value as potential providers of social support.

Animals as instruments of learning: A basic premise of many AAI programs is that animals have an invaluable role to play as instructional tools for promoting positive cognitive and behavioral changes in young patients. Such changes include the acquisition of nurturing and social skills, a sense of personal agency and responsibility, the ability to regulate impulsive and/or disruptive behavior, and the development of improved feelings of self-esteem and self-efficacy through performance accomplishment and positive role play. Several different attributes of animals are thought to contribute to these effects. Because of their dependent status, animals naturally elicit caring or nurturing responses, and their immediate and unambiguous responses to pleasurable and aversive stimuli provide instant feedback regarding acceptable and unacceptable styles of conduct and behavior. Animals can also be trained, allowing patients to assume an empowering role as instructors, and they can facilitate the acquisition of novel and difficult skills, such as horseback riding. While other, more conventional kinds of instrumental interventions could probably produce similar beneficial effects, AAI practitioners argue that animals do so with greater facility, as well as providing a strong motivational incentive to remain in therapy.

To some degree, the lack of theoretical coherence that characterizes animal-assisted interventions is unsurprising given that none of these proposed mechanisms of action has been properly tested empirically, and all of them could be contributing in different ways to improved mental health outcomes. One of the challenges for the future will be to determine which mechanisms truly mediate change, and which are most effective with specific populations and diagnoses.

Clinical Models

Despite the current dearth of convincing efficacy studies, animal-assisted interventions are being implemented in a wide range of therapeutic contexts including outpatient group- and individual therapy, residential treatment facilities, group homes, juvenile justice facilities, and schools. AAIs are also applied to populations displaying a wide array of mental health concerns. Population descriptions and diagnoses identified in the review of the literature included anxiety;

eating disorders; mood disorders; suicidality; obsessive-compulsive disorder; post-traumatic stress disorder; attention deficit hyperactivity disorder; conduct disorder; oppositional defiant disorder; substance abuse; recovery from physical-, sexual-, or emotional abuse; and interpersonal/relationship deficits.

The manner in which AAIs are applied in therapy also varies widely. In some cases, animal interactions are largely undirected. In these cases, the animals may simply be present and available to provide reassurance or tactile comfort;³³ as a stimulus for discussion and rapport-building between patient and therapist; and sometimes as a motivational incentive to attend and continue with treatment. At the other end of the spectrum, a number of programs exist in which caring for and learning about animals forms the foundation on which the therapeutic intervention is based.³⁴ In between, there exist a variety of programs that actively integrate animals into the therapeutic process using a range of different techniques.³⁵ Although far from an exhaustive list, these methods include using stories about an animal's life experiences (real or fictional) as analogues to difficulties present in the life of the patient; by asking patients to create or finish a story about an animal; by allowing youth to disclose their fears and circumstances directly to the animal as a first step toward discussing it with the therapist; and by helping children to learn about the cause-and-effect of human interactions by utilizing the animal's immediate and unambiguous responses to loud, erratic, aggressive, or unpredictable behaviors as a means of drawing attention to this phenomenon, and then practicing alternative modes of behavior. In some cases, the value of the animal's presence is almost incidental to the therapeutic process, while in others the interactions between patient, therapist, and animal are used purposefully toward achieving treatment goals.

Conclusions

Notwithstanding the limitations of existing studies, the available evidence points to some important potential benefits of animal-assisted interventions in the treatment of adolescent

³³ Mallon (1994b), op. cit.

³⁴ Harbolt & Ward (2001), op. cit.; Katcher, A.H., & Wilkins, G.G. (2000). The Centaur's lessons: Therapeutic education through care of animals and nature study. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 153-177). New York: Academic Press.

³⁵ Fine, A.H. (2000). Animals and therapists: Incorporating animals in outpatient psychotherapy. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 179-211). New York: Academic Press.

mental disorders. These include: anxiety reduction in the therapeutic situation;³⁶ expedited rapport between patients and therapists;³⁷ improved attendance at, compliance with, and retention in therapy;³⁸ improved interactions between patients and therapists,³⁹ and improved behavior outside the context of therapy.⁴⁰ Within the therapeutic milieu, animals also appear to serve as catalysts for learning,⁴¹ as sources of contact comfort,⁴² as outlets for nurturance,⁴³ and as models of positive interpersonal behavior.⁴⁴ In addition to contributing to improvements in therapeutic outcomes, some of these benefits, if valid, may also result in potentially significant reductions in the length and cost of treatments. Further research is needed to confirm the efficacy of these interventions, however, the evidence to date suggests that using animals as therapeutic adjuncts may provide a variety of beneficial effects, not only for adolescents and their families, but also for therapists and third-party payers.

About the Conference

The goal of the CIAS conference: “*Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health*,” on March 28, 2004, was to bring together leading practitioners and scholars in the field of animal-assisted interventions to present recent, unpublished research findings to a mixed audience of fellow practitioners and therapists, mental health researchers, and interested lay persons. After an extensive search and interview process of potentially relevant presenters, seven speakers representing a broad range of clinical models and treatment populations were invited based on the relevance and timeliness of their research as

³⁶ Bardill & Hutchinson (1997), op. cit.; Mason, M.S., & Hagan, C.B. (1999). Pet-assisted psychotherapy. *Psychological Reports*, 84, 1235-1245; Reimer, D.F. (1999). Pet-facilitated therapy: An initial exploration of the thinking and theory behind an innovative intervention for children in psychotherapy. Unpublished doctoral dissertation, Massachusetts School of Professional Psychology, Boston, MA.

³⁷ Draper, R.J., Gerber, G.J., & Layng, E.M. (1990). Defining the role of pet animals in psychotherapy. *Psychiatric Journal of the University of Ottawa*, 15 (3), 169-172; Fine (2000), op. cit.; Levinson, B.M. (1965). Pet psychotherapy: Use of household pets in the treatment of behavior disorder in childhood. *Psychological Reports*, 17, 695-698; Mallon (1994b), op. cit; Mason & Hagan (1999), op. cit.; Rice, S.S., Brown, L.T., & Caldwell, H.S. (1973). Animals and psychotherapy: A survey. *Journal of Community Psychology*, 1, 323-326.

³⁸ Katcher, A., & Wilkins, G.G. (1998). Animal-assisted therapy in the treatment of disruptive behavior disorders in children. In: A. Lundberg (Ed.), *The Environment and Mental Health* (pp. 193-204). Mahwah, NJ: Lawrence Erlbaum Associates, Inc; Mason & Hagan (1999), op. cit.; Reimer (1999), op. cit.

³⁹ Corson, Corson, & Gwynne (1975), op., cit.

⁴⁰ Katcher & Wilkins (1998), op. cit.

⁴¹ Bardill & Hutchinson (1997), op. cit.

⁴² Bardill & Hutchinson (1997), op. cit.; Mallon, G.P. (1994a). Cow as co-therapist: Utilization of farm animals as therapeutic aides with children in residential treatment. *Child and Adolescent Social Work Journal*, 11 (6), 455-474; Mallon (1994b), op. cit.

⁴³ Mallon (1994a), op. cit.; Mallon (1994b), op. cit.

⁴⁴ Rice, Brown, & Caldwell (1973), op. cit.

well as the availability of outcomes data for their programs. What follows is a summary of the highlights of the conference, as well as key research findings presented by the speakers.

Summaries of Presentations

Animals in the lives of adolescents: Dr. Gail F. Melson, Professor of Developmental Studies at Purdue University, provided an overview of some of the beneficial roles that animals can play in the lives of adolescents by serving as attachment figures, providers of social support, and outlets for nurturance. The impact of these animal-child relationships are largely ignored by the fields of developmental psychology, child clinical psychology, and developmental psychopathology. Melson refers to this omission as viewing child development from a “humanocentric” perspective (i.e., one that focuses exclusively on human-human interactions), and argues that given the ubiquity of animals in children’s lives, a “biocentric” perspective (i.e., one that includes children’s interactions with all life forms, including non-human ones) may provide a richer understanding of human development.⁴⁵

With regard to the notions of attachment and nurturance, results of a 1996 study conducted by Melson and Fogel indicated that by ages 11-12, according to parent report, children spend more time regularly caring for pets than caring for younger siblings (when both are available).⁴⁶ While girls have been shown to engage in more nurturing behaviors than boys as early as the preschool years, boys and girls do not appear to differ with respect to caring for pets. The implications of these findings with regard to AAIs remains uncertain, but asking children to perform animal care and training activities is a frequent intervention model, and because animal care does not appear to be culturally gendered, these programs may prove to be more accessible and acceptable to boys than other methods aimed at enhancing nurturance.

Research exists to support the notion that children turn to their pets for support when they feel upset, sad, or need to share secrets, but our understanding of the support that can be obtained from therapy animals is less clear. However, Melson, et al. demonstrated that after five minutes alone with an unfamiliar dog, 76% of children 7-15 years of age felt that the dog knew how they

⁴⁵ Melson, G.F. (2004). *Animals in the lives of adolescents: A biocentric perspective on development*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health Conference, Philadelphia, March. [On-line]. Available:

<http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>

⁴⁶ Melson, G.F., & Fogel, A. (1996). Parental perceptions of their children’s involvement with household pets: A test of a specificity model of nurturance. *Anthrozoos*, 9, 95-106.

were feeling and 84% said they would confide secrets to the dog. These findings may be helpful in understanding the role that animals, even unfamiliar ones, play in therapeutic contexts by providing a supportive, confidential, and empathic presence.

Incorporating animals into clinical practice: Dr. Aubrey H. Fine, a licensed psychologist and Professor at California State Polytechnic University, presented a brief and broad overview of some of the ways that animals may contribute to human well-being, while acknowledging that there remains limited empirical support for the effectiveness of AAIs and encouraging better research and program evaluation efforts. Dr. Fine also provided some practical guidelines for those wishing to incorporate animals into their clinical practice, and suggested three basic and interrelated realms in which animals may be useful: 1.) as facilitators of social interaction; 2.) as catalysts for emotion; and 3.) as adjuncts to clinicians.⁴⁷

Results of a recent patient survey conducted by Fine suggest that the presence of animals made the therapeutic environment seem more friendly and the therapy itself less threatening. Respondents also reported that the animals made them feel more relaxed and open, and made them feel more comfortable in general. These findings suggest that animals can ease the stress inherent in the initial phase of therapy, and may help to expedite the trust- and rapport-building process between therapist and patient.

AAIs and the neurobiology of emotional and behavioral disorders: Maureen Fredrickson, MSW and Molly DePrekel, MA, LP, of Minnesota Linking Youth, Nature and Critters (MN LYNC), hypothesize that growing up in an environment perceived as unsafe, unpredictable, and unreliable can result in disorganized and dysregulated brain function. This damage to regulatory circuits, they argue, creates a situation in which limbic system responses (fight, flight, freeze, faint, and fidget) are the norm, resulting in aggression, hyperactivity, dissociation, and a host of other behaviors demonstrated by adolescents diagnosed with what they describe as severe emotional or behavioral disorders.⁴⁸

⁴⁷ Fine, A.H. (2004). *The AAT Rx for youth: Bridging research with clinical insight*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health Conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>

⁴⁸ Fredrickson, M., & DePrekel, M. (2004). *Animal-assisted therapy for at-risk youth and families*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health Conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>

Fredrickson and DePrekel suggest that AAIs may be the “treatment of choice” for adolescents with these types of disorders because companion animals and livestock “respond to human arousal or emotional states in much the same way that children respond to parental emotional states.” This, they assert, provides patients with a chance to observe the effects of their arousal state on another, and opportunities to practice regulating their own affect (tone of voice, body posture, and eye contact). Moreover, successfully working with animals requires that the youth develop some capacity to see things through the eyes of another, and to respond to the animal as a unique individual, which is often a challenge for children diagnosed with severe emotional and behavioral disorders.

*The Our Farm “zoo” program:*⁴⁹ *Our Farm* is situated on 12 acres of working cattle farm, and includes an extensive collection of small and large animals. In addition to animals, there are nature trails, a raised bed garden, and two ponds. The program serves two school districts, and 90 percent of the children are diagnosed with attention deficit hyperactivity disorder (ADHD), learning disorder (LD), severe emotional disorders, autism, or other developmental disorders. The children at *Our Farm* learn skills and acquire knowledge relating to the needs of a particular animal, and once proficiency is demonstrated, they are rewarded by being permitted to care for the animal independently. Children are also expected to help with the training of other children and to cooperate in animal care. Through all of this, there is an “overarching moral injunction placing the animal’s welfare first.”

Outcomes from this program were reported by Aaron H. Katcher, MD and Sue P. Teumer, MA, and were measured primarily using the Achenbach Teacher’s Report Form for Ages 6-18 (TRF) and the Behavior Assessment System for Children (BASC). The TRF is designed to obtain teachers’ reports of children’s academic performance, adaptive functioning, and behavioral/emotional problems, and the BASC is designed to measure behavior and emotions. Statistically significant results reported that students displayed fewer symptoms in the context of the “zoo” than in their regular classrooms.

⁴⁹ Katcher, A.H., & Teumer, S.P. (2004). *Conducting an AAT program for children and adolescents in special education in public schools: Reality and expectancy*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health Conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>

*Dog training program in an alternative high school for expelled youth:*⁵⁰ Human Animal Bond in Colorado (HABIC), under the co-Directorship of Ben Granger, Ph.D., Emeritus Professor and Director of the School of Social Work at Colorado State University, and Mrs. Georgia V. Granger, has created a program at an alternative high school for expelled youth that centers on having students train dogs to be more dependable and well-disciplined companion animals. The focus for the students is on learning specific dog handling techniques, social skills related to caring and nurturing, and development of self control.

Quantitative data was collected using the BASC (N=20), and results showed a statistically significant improvement in teacher ratings of students' social skills, with a moderate effect size of $d=.49$. Non-significant changes were found in the areas of attitude to school, aggressive behavior, interpersonal relations, and classroom absences. While somewhat counter-intuitive, students participating in this intervention also displayed statistically significant increases in instances of ignoring or not following directions, with a strong effect size of $d=.90$. In light of the positive findings related to improvements in social skills, the reported increases in defiant behavior are particularly confusing.

*Shelter dog training program at a youth correctional facility:*⁵¹ Project Second Chance, under the leadership of Ms. Tamara H. Ward, utilizes dog training as a framework for working with troubled adolescents. In this program, adjudicated youth housed at a corrections facility are paired with untrained shelter dogs with the goal of helping the dogs to become more well-behaved, and therefore, adoptable. The youth are responsible for the day-to-day care of the animals; learn to train the dogs using positive reinforcement; and complete lesson plans relating to responsible pet ownership, pet overpopulation, and the connection between interpersonal violence and animal abuse.

⁵⁰ Granger, B., & Granger, G.V. (2004). *Evaluating the effectiveness of animal-assisted therapy approaches in an alternative high school for expelled youth: A qualitative/quantitative analysis*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health Conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>

⁵¹ Ward, T.H. (2004). *Project Second Chance: Using shelter dogs to facilitate change in juvenile delinquents*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health Conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>

Conduct disorder is the most common diagnosis for male participants, and dysthymia and other mood disorders are the most common diagnoses for females. Goals for the program include the development of empathy and the enhancement of compassion, respect, responsibility, and kindness.

Youth are assessed using the *Boat Inventory on Animal-Related Experiences* which deals with subjects such as animal abuse that has been witnessed, and whether the youth have ever abused an animal themselves. The inventory explores whether pets are perceived as a source of comfort, or if they have been used as a form of punishment or leverage for coercion. The results of this assessment suggested that development of empathy was of primary importance for this population.

Project Second Chance has struggled with methods of evaluation and, more specifically, finding a measurement tool that will work for this population. This program's experience highlights just some of the difficulties that are encountered in the field, and include: 1.) participants having difficulty understanding survey questions; 2.) attention span deficits impacting participants' ability to complete assessments; 3.) difficulty in getting staff to follow through on administration of assessment tools; 4.) contamination of data via communication among participants; and finally 5.) having the "mood of the day" impact the content of the survey.

Although quantitative data were not presented, progress was tracked via examination of journals and letters created by the participants; interviews with participants and staff; program satisfaction surveys; and follow-up at 6 months and one-year. Information collected from these sources suggests that the program is having a positive impact, and a new assessment and intervention tool is currently under development.

*Multi-center evaluation of equine-facilitated therapy/learning programs for "at risk" youth:*⁵² Pamelyn M. MacDonald, Ph.D., an Assistant Professor at Washburn University, presented pre- and post-evaluation data from five equine-facilitated therapy/learning programs scattered across the United States. In each of these programs, participants were paired with both a horse and a

⁵² MacDonald, P.M. (2004). *The effectiveness of equine-facilitated therapy with at-risk adolescents: A summary of empirical research across multiple centers and programs*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health Conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>

trained volunteer. Goals included learning skills such as cooperation, trust, and responsibility with the hope that these would generalize to other areas of the child's life. Measured constructs included self-esteem, depression, locus of control, loneliness, empathy, and aggression.

When all five programs were grouped together for data analysis (N=126), no statistically significant differences were found for any of the constructs measured. However, when the programs were analyzed individually, two programs reported statistically significant positive results, and one reported statistically significant negative results. With regard to the positive outcomes, one program demonstrated significant improvements in self-esteem and internal locus of control (N=13), and the second reported a significant decrease in self-reports of hostility and global decreases in aggression scores (N=20). Although inconsistent with these latter findings, a single program reported significant negative changes on scores in the areas of hostility and aggression (N=33).

General Summary

The conference provided a glimpse into a wide range of AAI programs aimed at ameliorating a variety of mental health concerns in children and adolescents. Statistically significant positive results were demonstrated related to behavior and affect,⁵³ social skills,⁵⁴ self-esteem, locus of control, and decreases in aggression and hostility.⁵⁵ Populations and diagnoses under observation included children and adolescents with ADHD, LD, conduct disorder, autism, dysthymia and other mood disorders, as well as a cluster of circumstances and/or severe emotional/behavioral issues resulting in a categorization of "at-risk" youth.

This wide applicability of AAIs is a strength of the field, as it suggests that these programs may be beneficial to a broad range of populations. However, it can be a challenge from the perspective of research and evaluation, since heterogeneous samples make it difficult to assess a program's efficacy for the treatment of specific disorders. In addition, 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.

⁵³ Katcher & Teumer (2004), op. cit.

⁵⁴ Granger & Granger (2004), op. cit.

⁵⁵ MacDonald (2004), op. cit.

About the Workshop

On the day following the conference, the invited speakers, a panel of scholars and researchers from The Children's Hospital of Philadelphia, the University of Pennsylvania, and Drexel University, as well as a number of guest panelists, were brought together for a one-day invitational workshop. The goal of this workshop was to identify the strengths and weaknesses of the AAI field, and to develop a research agenda for the future.

Following general introductions, the panel of researchers was initially invited to give its impressions of the previous day's conference and the literature review. The overriding theme of this discussion was that the trajectory of the development of AAIs as a science is similar to the way in which the fields of psychotherapy, family therapy, and mental health services for persons with severe mental illness have developed, and that there is tremendous promise in this area. Accordingly, the challenges facing the field are the same as those seen in the development of any new psychotherapy model. Fortunately, there is now a science to developing new models of intervention, and the consensus was that in order to become an empirically-supported treatment, AAIs must begin to employ this scientific model. Toward that end, the panelists concluded that the construction of efficacy and effectiveness studies and the collection of solid data are of the utmost importance.

Although, in practice, the conversation covered a much broader range of topics, workshop participants were invited to focus on the following questions and issues during the remainder of the morning session:

- What are the most promising theoretical frameworks for understanding the value of animal-assisted interventions? Can a set of testable hypotheses be developed for this field?
- Is it possible to identify and prioritize particular adolescent/child populations most likely to benefit from AA interventions? How would one operationalize AA interventions in mental health settings involving these populations?
- Which populations/contexts offer the best opportunities for empirical evaluation of AA interventions based on these theoretical and practical considerations? Is it possible to identify particular therapeutic settings ripe for empirical investigation?

Potential Therapeutic Value

Panelists agreed unanimously that animals have the potential to serve a wide variety of purposes in therapeutic situations, and suggested that it may be helpful to divide these possible uses into at least four overlapping categories: 1.) as tools to facilitate therapy; 2.) as vehicles for acquiring new knowledge and skills; 3.) as therapeutic interventions; and 4.) as a means of improving or maintaining morale among staff and patients.

Panelists discussed the widely-held belief that the presence of animals may help to facilitate the therapeutic process, and speculated that this might be accomplished in a number of ways: By making the therapist and the therapeutic setting appear less threatening, thereby expediting and assisting in the building of a relationship between therapist and client; by acting as a transitional object, with attention gradually shifting from the animal to the therapist; by serving as a source of contact comfort, and by supplying resistant (and non-resistant) populations with a motivation to stay in therapy longer or to become more compliant with therapy. Because the cost of mental health care can be a substantial burden to patients, families, and third-party payers, the panelists concluded that if facilitation, engagement, retention, and compliance can be positively impacted by the presence of animals, the benefits to these groups, as well as to therapists, would be considerable, and that this possibility alone makes these interventions worthy of further investigation.

One of the many benefits that animals can be counted on to provide is clear feedback and constant reinforcement for behavior. The panelists noted that animals may be able to supply clients with a frequency and consistency of responses that would be difficult to obtain from people. It was suggested that this immediate and unambiguous feedback could help children to learn about the cause-and-effect of behavior; could assist with perspective-taking, learning to read non-verbal cues, empathy, and social intelligence; and could provide opportunities to practice attention and focus, staying still, and impulse control. While further study is certainly necessary, it is possible that in these ways, animals may not only facilitate therapy and provide a means of acquiring new knowledge and skills, but can also become the therapeutic intervention.

Beyond the benefits that animals can provide to clients, the panel also addressed the positive impact that interactions with animals could have on the morale of the therapist, colleagues, and other staff members. The literature suggests that animals frequently have these effects in

residential treatment facilities, and benefits to both staff and patients have been noted.⁵⁶ Some have suggested that animals may provide a fiscal benefit to therapists by decreasing missed and cancelled appointments,⁵⁷ and it seems plausible to propose that improvements in staff morale may decrease absences and employee turnover, thereby improving continuity and quality of patient care. Although speculative, the far-reaching implications of these benefits would alone seem to justify further investigation of the value of animal-assisted interventions.

In a final note on the potential therapeutic value of animals, the panel stressed that the non-specific effects (e.g., expectancy, helping relationships, novelty) and specific effects (i.e., the direct effect of the therapy) of AAIs must be considered in the design of interventions and evaluation instruments. It was suggested that AAIs may be stronger in terms of non-specific effects, although this remains to be established. Additionally, the panel concluded that the potentially significant value of animals as facilitators of the therapeutic process (by promoting engagement, retention, and compliance) should be a research priority. While these effects would not technically be considered therapy, they hold the potential to have a considerable positive impact on the provision of mental health services.

Populations that May Benefit from AAIs

The panel recommended that AAIs be investigated with a variety of potentially overlapping disorders - including internalizing disorders (e.g., depression, anxiety); externalizing disorders (e.g., conduct disorder, oppositional defiant disorder, substance abuse); and developmental disorders that produce impairments in the areas of interpersonal relationships and attachment (e.g., autism spectrum disorders; disorders of communicating and relating; certain learning disabilities; and disorders of affect regulation). Because children with internalizing disorders and disorders of relationship have a tendency to withdraw, and are often reluctant to engage with the therapist, they frequently fail to respond to initial treatment sessions. In these cases, the presence of animals may assist with engagement. While the panel acknowledged that interpersonal deficits are more of a symptom than a syndrome, exploring whether AAIs have a positive impact on interpersonal deficits across various diagnoses was seen as one viable and valuable avenue of inquiry.

⁵⁶ Bardill & Hutchinson (1997), op. cit.; Corson, Corson, & Gwynne (1975), op. cit.; Mallon (1994a & b), op. cit.

⁵⁷ Mason & Hagan (1999), op. cit.

Children and youth who have experienced abuse, neglect, and/or trauma were also suggested by the panel as potentially benefiting from AAIs. For example, it was noted that treatment for post-traumatic stress disorder (PTSD) in children and youth is not highly developed, and there is a need for new interventions and innovation. AAIs may be particularly useful for children and adolescents who need to learn what enhances or hinders socialization, and who must work toward building self-esteem and an internal sense of self. The panel also expressed a great need for interventions that target anxiety reduction, and the literature suggests that animals may be useful in this regard.⁵⁸ According to the panel, anxiety and relationship problems and disorders are key areas that are in need of new and innovative interventions, and because some AAIs may be particularly helpful to these populations, further investigation is warranted.

AAIs were also considered as potentially useful for children and youth with attention-deficit hyperactivity disorder (ADHD). Individuals with ADHD often have relationship difficulties and issues surrounding trust. Animals may be useful in helping these clients to engage, and to reinforce certain behaviors—key goals when working with this disorder. Furthermore, while children and adolescents with ADHD often have difficulty in situations that do not offer immediate, frequent, and salient feedback for behavior, they are able to stay on task and maintain attention when this feedback is provided. Animals are particularly well-suited to provide this level and intensity of feedback, where humans often have difficulty maintaining the necessary frequency and saliency. It was also suggested that animals could be used to promote engagement in learning and skill building with this population. The panel also noted that one caveat in working with ADHD is that current interventions do not seem to generalize, and only show results during the context of the therapy. Therefore, any evaluation of an AAI with this and other populations must take this into consideration when interpreting data on long-term effects or generalization beyond the context of the therapy.

The panel further suggested that populations that have been labeled as “hard to reach” may also benefit from AAIs. It has been observed by some panelists that a family will often contact an animal-assisted program after everything else has failed. Thus, AAIs often serve difficult clients for whom other interventions have proven unsuccessful. These populations have a great need for effective interventions. For example, youth with conduct disorder or substance abuse issues are

⁵⁸ Bardill & Hutchinson (1997), op. cit.; Katcher, Friedmann, Beck, & Lynch (1983), op. cit.; Mason & Hagen (1999); Reimer (1999).

two populations that are considered difficult to engage and hard to retain, and the panel suggested that looking at retention and engagement as an outcome of AAIs with these populations may be beneficial.

Finally, the panel stressed that it is important to be cognizant of the fact that socialization and culture play an important role in determining the efficacy of any intervention. Not all people have warm associations with animals, and may indeed find their presence to be stress inducing. In light of this, patients must not only be matched to appropriate interventions, but to appropriate animals. Just as there are individual differences in people, so too are there individual differences in animals. It is unlikely that there exists an intervention that is considered beneficial for all mental health populations all of the time. Similarly, the panel noted that it should not be expected or implied that AAIs will be appropriate, beneficial, or recommended for all patient populations, individuals, or all facets of any particular disorder.

Recommendations for Future Research

To move the field of AAIs forward, the panel concluded that studies examining these programs must begin to focus on and answer some of the most basic research questions. With very few exceptions, the research that has been conducted to date has not been designed or controlled in ways that bring the field closer to becoming an empirically-supported treatment for adolescent mental health disorders. Study samples have tended to be small, unrepresentative, and heterogeneous, and without adequate control groups. Going forward, of utmost importance is the careful definition of the population under examination and what is to be measured, as well as a need for controlled designs and stated outcomes that are relatively impervious to expectancy and demand effects, as well as self-report or personal interest biases. Additionally, most studies that have examined AAIs have reported on the positive benefits that are observed while in the context of the therapeutic milieu, but have not examined whether these effects carry over into other contexts, or if they are retained over time. The panel therefore concluded that it will also be important to show that the effects of AAIs generalize beyond the therapeutic context.

A research agenda must be developed that investigates quality interventions, focuses on a range of different milieus and populations, and evaluates existing programs. The panel proposed that AAIs be broken down into three levels of therapeutic action: skill building, client engagement/retention, and the therapeutic relationship itself. In order to construct effective

studies and interventions, decisions must be made about what behaviors are being targeted, and then pair the appropriate intervention with the targeted behaviors. Historically, there has been a tendency to combine subjects with vastly different diagnoses and behavioral profiles into one sample and then to test them using a wide array of standardized measures in the hopes of identifying some statistically significant benefits. The panel stressed that this approach needs to be revised, with interventions being developed and implemented with specific outcomes and target behaviors in mind.

Three potentially overlapping ways of approaching the evaluation of AAIs were discussed by the panel at length, and these included augmentation, comparison, and prospective longitudinal designs, with each design being appropriate for use alone or in combination. An augmentation design would consist of adding an animal to a therapeutic situation and comparing the results to what would be expected from treatment as usual. If this design were chosen, incorporating animals into a therapy that is already empirically-supported may help to demonstrate that animals can provide benefits beyond what would be expected from participating in the standard therapy alone. If undertaking a comparison design, one would compare the effects of an animal-centered therapy to another comparable activity such as gardening, or an outdoor skills program. Finally, prospective longitudinal designs may lend themselves to the investigation of AAIs, because a relationship may need to be built with both an animal and a therapist over time. Indeed, it is possible that there are major differences between the short-term, acute effects of animals and their long-term effects.

Development of Model Research Protocols

During the course of the workshop, panelists generated a large number of specific suggestions for future research that could empirically evaluate AAIs by utilizing control groups, randomized selection and allocation of subjects, solid measurement techniques and instruments, adequate sample sizes, and clearly-defined diagnostic populations. However, due to obvious time limits, panelists were asked to prioritize just four adolescent diagnostic populations that they considered most likely to benefit from AAIs. These four identified populations included adolescents diagnosed with depression; conduct disorder; Asperger's syndrome; and substance and/or alcohol abuse.

During the afternoon session, each of the workshop participants assigned themselves to one of these four diagnostic categories, and each of the resulting groups then worked together to develop a clinical research protocol to assess the efficacy and effectiveness of an AAI for that particular diagnostic population. The resulting summary protocols (see below) were the product of a brief afternoon brainstorming session and would obviously need further refinement prior to any attempt at implementation. However, in outline form, they succeed in providing instructive examples of the kinds of studies that need to be developed and conducted in order to move the field of animal-assisted interventions forward.

PROTOCOL #1: DEPRESSION

Setting: Outpatient ambulatory care setting using an individual treatment model.

Subjects: Males and females between the ages of 10 and 17 with depression being the diagnosis of primary attention. Participants must possess a willingness to be randomized to the animal-assisted condition.

Criteria for Excluding Subjects:

- Currently taking psychotropic medication(s)
- Allergies to dogs/animals
- Trauma or phobias related to dogs/animals
- History of animal abuse
- Prior history of cognitive behavioral therapy (CBT)
- Prior history of animal-assisted interventions
- Require immediate treatment for another diagnosis (e.g., panic attacks)
- Other significant medical issues

Design and Implementation: This will be an efficacy study with rolling enrollment. Subjects will be on a 6-week wait list, which will constitute the control group. Once admitted to treatment, subjects will be divided into two groups: 1) those who will have a dog present in treatment; and 2) those who will not have a dog present in treatment. One hundred (100) subjects will be enrolled in each condition, for a total of 200 participants. Histories of experiences with animals will be completed with each participant.

A cognitive behavioral therapy (CBT) model will be employed because it is an empirically-supported treatment for depression that reports moderate to strong effects. The expected effect size for CBT alone will be used as a gauge of efficacy.

The goal for utilizing the presence of an animal as an adjunct to therapy would be to increase retention, increase the rate of patient disclosure by lowering affect, reduction in length of treatment, and remission of symptoms.

Independent evaluators will be used both pre- and post-study.

Therapist/Staff: The therapists participating in this study will be trained in CBT and have experience using dogs in treatment. A training program will be provided for the therapists and they must be able to score at least an 80% on a cognitive therapy rating scale. The therapist will be a minimum of a Master's level licensed clinician with at least 2 years clinical experience.

Animals: Only dogs will be used as therapy animals in this study. Participating dogs will belong to the therapists, and must have health certificates and be screened for appropriate behavioral attributes. They must also be able to initiate contact, respond to another without the direction of the therapist, and have an interest in strangers.

PROTOCOL #2: CONDUCT DISORDERS

Setting: A secure residential treatment facility/juvenile detention facility for adjudicated youth. Only facilities that have a point system in which individuals earn points and privileges, rather than those that focus on losing them will be eligible.

Subjects: Males between the ages of 12 and 16 with a diagnosis of oppositional defiant disorder (ODD) or conduct disorder (CD).

Design and Implementation: This will be 3-year, multi-site pilot efficacy study, with the hypothesis that through a model of positive reinforcement with untrained dogs from local animal shelters, and utilizing a group treatment approach, participants will show improved ability to comply with rules both within the context of the intervention and without.

A treatment and control group condition will be utilized, and 45 subjects will be randomly assigned to each group condition, for a total of 90 subjects. To avoid contamination, the treatment and control groups will be selected from halls/cottages/units that do not have contact with one another. The control group will receive the standard treatment that is offered to all residents, and the treatment group will participate in the standard treatment plus the dog training intervention. A pre/post design will be used, with follow-up at three months post-intervention.

Subjects will participate in an 8-week dog training program that utilizes positive reinforcement methods. The program will meet three days/week, for a total of 1 hour of training per week. Subjects will have two weeks of instruction prior to the introduction of the dogs, and then six weeks with the dogs. In total, the program will have approximately 36 treatment hours. The ratio of subjects to dogs will be 1:1. The 8-week program will run three times per year, at three different sites, for a combined N=90. Thus, at a given site, only 10 youth will participate in the study at a time (five in the intervention and five in the control condition).

Compliance will be measured using incident reports and existing point/token systems within the facility. While compliance with rules is the target behavior under observation, the study will also look for changes in social skills, empathy, cooperation, aggression, hygiene, self-esteem, depression, locus of control, and listening skills. These will be measured using self-report measures, teacher/staff ratings, and program records.

Therapist/Staff: The parallels that can be drawn between the lives/behavior of untrained/unwanted shelter dogs and poorly socialized/unwanted adjudicated youth are the foundation on which this intervention has been constructed. The goal is for the delinquent youth to be able to identify with the dogs that they are training, and to apply the lessons they are trying to teach the dogs to their own lives, e.g., develop an understanding of how impulsive, uncontrolled behavior impacts social relationships. Additionally, the youth will learn how positive reinforcement can be used as an alternative to force and violence. Ensuring that these lessons are learned will require a highly skilled therapist, with the ability to help the participants to make the connections between the dogs and themselves. In addition, the termination of the relationship between child and dog must be incorporated into the therapeutic process.

Animals: Only adoptable shelter dogs will be used in this study. Dogs require 16 hours of sleep per day, and will need to be protected from being overworked. Because of this, and because dogs will do better if they are not living at the facility, alternate housing arrangements will be necessary. Logistics of travel for the dogs and the cost of upkeep are potential challenges, in addition to finding placements for the dogs both during and after the intervention. Animal welfare issues will be a high priority.

PROTOCOL #3: ASPERGER'S SYNDROME

Setting: A general educational setting or special school. An outpatient or community-based center could also be utilized.

Subjects: Males and females between the ages of 10 and 20 (although the majority will be male simply because this disorder is more common in males) with Asperger's syndrome being the diagnosis of primary attention. Higher functioning subjects will be targeted, with verbal skills and average or above average intelligence being required for admission to the study.

Design and Implementation: This study will evaluate a school-based social skills intervention for teens diagnosed with Asperger's syndrome, and the hypothesis is that incorporating an animal into the intervention will produce a greater effect on social skills, perspective taking, theory of mind, and/or loneliness/isolation/depression than can be obtained from conventional social skills training.

This will be a 2-year study utilizing a 30-week (time-limited) randomized case control with a cross-over design. It will employ an in-class animal-assisted social skills/communication group. The control group will receive traditional social skills training, and recruitment will be conducted through the center where the study will be implemented.

The animal-assisted group will meet for one-hour each week for 30 weeks (the length of the school year). The groups will consist of four students and two animal/human teams, and will meet under the direction of a therapist and a teacher. The sessions will emphasize perspective taking, as well as caring for and interacting with the animal. In addition, there will be a parent-training component. Parents will be asked to meet on one evening per month for both groups. There will also be seasonal activities in which the parents will participate, for a total of 10 meetings per school year.

Outcomes will be evaluated using standard measures of depression, theory of mind, communication, and those specifically for Asperger's symptomatology. An instrument will also be developed for this study, and will measure perceptions of change, satisfaction with the program, and quality of life (for the parent, teacher, and adolescent).

Observational measures utilizing videotaped sessions will also be employed. Subjects will be videotaped once per month for later coding and analysis of the data to include: eye contact, initiating and sustaining conversation, spontaneous meaningful conversation, number of words per communication, spontaneous action, and focus of attention. Parents will be provided with a workbook to augment the animal-assisted intervention. In addition, subjects will be asked to use journaling to elicit projective content regarding perspective taking, and to write letters to the therapist and/or animal. Long-term outcomes will also be examined, e.g., school attendance, general social adaptive functioning, and academic progress.

Therapist/Staff: Of primary importance will be finding the right staff to implement this program. The staff will need to be hand-picked and the program may need to be modified when the right people are found.

Animals: Only dogs will be used as therapy animals in this study. Participating dogs will have health certificates and be screened with their handlers for appropriate behavioral attributes. Training for both dogs and handlers will be provided.

PROTOCOL #4: SUBSTANCE AND ALCOHOL ABUSE

Setting: An inpatient facility that treats adolescents for substance and alcohol abuse. To increase feasibility, this study will be conducted at a facility that already has an off-site equine component incorporated into treatment.

Subjects: Males and females between the ages of 12 and 18 years. Criteria for inclusion are a diagnosis of alcohol and/or substance abuse, and a stabilized mood (on or off medication).

Criteria for Excluding Subjects:

- Flight-risk
- History of fire-starting
- History of animal abuse

Design and Implementation: Twelve subjects (at a time) will be randomized to one of three groups: horseback riding and grooming; rock-climbing; or a wait-list control group. This study will use a pre/post design with follow-up at 3, 6, 9, and 12 months. The subjects will participate in the intervention for two 90-minute sessions/week, for at least 4 weeks.

Rock-climbing was chosen as the control-group activity because, like working with horses, it combines physical activity with skill building, and potentially increases sense of achievement, self-confidence, etc. This will help to isolate what the animal contributes to the therapy, and will help to determine if animal-assisted therapy is superior to other outdoor skill-building type programs.

Self-report and interviewer-administered measures will be utilized. These will measure: self-confidence, self-esteem, self-efficacy, depression and/or anxiety, anger, impulsivity, behavior problems (inpatient and after release), and substance use (relapse rate).

Therapist/Staff: There would be an added benefit to having a therapist present during sessions, although it may not be necessary, and thus, the decision should be left to the discretion of the researchers.

Animals: Only horses will be utilized in this study.

Conclusions

If current trends are any indication, animal-assisted intervention programs are likely to continue to proliferate in the absence of convincing efficacy data. The field appears to be driven forward by the ardent faith of its numerous practitioners who believe that these interventions work, and are happy to grasp at any evidence, however weak, to support their own convictions. In this respect, the development of AAIs resembles the early careers of many other now-respected treatments for disorders of adolescent mental health; treatments that have since been validated by large numbers of high-quality, clinical trials. If AAIs are going to succeed in moving away from the fringes of clinical practice and into the mainstream, they will need to follow a similar path. For the field to progress as an empirically-supported treatment for many of the populations that it is currently attempting to serve, rigorous efficacy and effectiveness research conducted by individuals trained in clinical research and program evaluation is needed. In the absence of such research, the scientific and medical communities will continue to assume little or no long-term beneficial impact of these interventions.

The results of existing studies of animal-assisted interventions undoubtedly offer sufficient promise to warrant further empirical evaluation, and the researchers and practitioners who participated in the current project expressed a strong interest in collaborating in future studies of this type. Hopefully, the results of such collaborations will help to establish the true efficacy and effectiveness of these interventions in a wide range of therapeutic contexts. To facilitate similar interactions and collaborations elsewhere, professional conferences, listservs, and the development of additional graduate study opportunities in AAI implementation and evaluation would also be of benefit.

Regarding the current project itself, we conclude that the overall format—e.g., literature review, public conference, and invitational workshop—was an extremely effective method of assimilating and synthesizing disparate factual material, and for generating new ideas and constructive proposals for the future. Although the primary topic of interest was restricted to adolescent mental health, we believe that the key findings of this report are equally relevant to the application of animal-assisted interventions to mental health concerns in child, adult, and geriatric populations.

**CONFERENCE PROGRAM
CAN ANIMALS HELP HUMANS HEAL?
ANIMAL-ASSISTED INTERVENTIONS IN ADOLESCENT MENTAL HEALTH
SUNDAY, MARCH 28TH, 2004**

8:00am	Continental breakfast	Jon M. Huntsman Hall, Baker Forum
8:45am	Welcoming remarks	James A. Serpell, PhD <i>Center for the Interaction of Animals & Society, University of Pennsylvania</i>
		Alan M. Kelly, BVSc, MRCVS, PhD <i>University of Pennsylvania School of Veterinary Medicine</i>
		Dan Romer, PhD <i>Annenberg Public Policy Center, University of Pennsylvania</i>
Session 1. Chair: James A. Serpell, PhD		
9:00am	"Animals in the lives of adolescents: A biocentric perspective on development"	Gail F. Melson, PhD <i>Purdue University, West Lafayette, IN</i>
9:45am	"Conducting an AAT program for children and adolescents in special education in public schools: Reality and expectancy"	Aaron H. Katcher, MD & Sue Teumer, MA <i>Our Farm, Taylor, TX</i>
10:30am – 11:00am	Refreshment break	Jon M. Huntsman Hall, Baker Forum
11:00am	"Evaluating the effectiveness of animal-assisted therapy approaches in an alternative high school for expelled youth: A qualitative/quantitative analysis"	Ben Granger, PhD & Mrs. Georgia V. Granger <i>School of Social Work, Colorado State University, Fort Collins, CO</i>
11:45am	"The AAT Rx for youth: Bridging research with clinical insight"	Aubrey H. Fine, EdD <i>California State Polytechnic University, Pomona, CA</i>
12:30pm – 2:00pm	Lunch	Jon M. Huntsman Hall, 8th Floor
Session 2. Chair: Symme Trachtenberg, MSW, LSW		
2:00pm	"The effectiveness of equine-facilitated therapy with at-risk adolescents: A summary of empirical research across multiple centers and programs"	Pamelyn M. MacDonald, PhD <i>Washburn University, Topeka, KS</i>
2:45pm	"Animal-assisted therapy for at-risk youth and families"	Maureen Fredrickson, MSW & Molly DePrekel, MA, LP <i>Minnesota Linking Youth, Nature and Critters, Inc. (MN LYNC), St. Paul, MN</i>

CONFERENCE PROGRAM – PAGE 2
CAN ANIMALS HELP HUMANS HEAL?
ANIMAL-ASSISTED INTERVENTIONS IN ADOLESCENT MENTAL HEALTH
SUNDAY, MARCH 28TH, 2004

3:30pm - 4:00pm	Refreshment break	Jon M. Huntsman Hall, Baker Forum
4:00pm	“Project Second Chance: Using shelter dogs to facilitate change in juvenile delinquents”	Ms. Tamara H. Ward <i>Youth Diagnostic and Development Center, Albuquerque, NM</i>
4:40pm	“Dogz in the Hood” (Film)	
5:00pm	Discussion period	
5:20pm	Concluding remarks	Symme Trachtenberg, MSW, LSW <i>The Children’s Hospital of Philadelphia, Philadelphia, PA</i>
5:30pm	Conference closes	
5:40pm	“Johnny & Dillon” (Optional Film)	

CAN ANIMALS HELP HUMANS HEAL?
ANIMAL-ASSISTED INTERVENTIONS IN ADOLESCENT MENTAL HEALTH
WORKSHOP AGENDA – DAY 2
MONDAY, MARCH 29, 2004

7:30am	Continental Breakfast	St. Marks Foyer
8:00am	Welcome remarks and charge to the panel	James A. Serpell, PhD St. Marks Ballroom
8:15am	Discussion topic: What are the different theoretical frameworks for understanding the value of animal-assisted interventions? Can a set of testable hypotheses be developed for this field?	Group Discussion
9:15am	Discussion topic: Can we identify and prioritize particular adolescent/child populations most likely to benefit from AA interventions? How would one operationalize AA interventions in mental health settings involving these populations?	Group Discussion
10:30am	Morning Refreshment Break	St. Marks Foyer
11:00am	Discussion topic: Which populations/contexts offer the best opportunities for empirical evaluation of AA interventions based on these theoretical and practical considerations? Can we identify particular therapeutic settings ripe for empirical investigation?	Group Discussion
12:15pm	Identify four priority research opportunities. Assign to break-out groups.	
12:30pm – 1:30pm	Lunch	Regent Ballroom
1:30pm	Afternoon assignment: Can each break-out group come up with a draft research design for a study of an AA intervention in a particular adolescent/child mental health setting.	Lynn Alexander, PhD Break-out group projects
3:00pm	Working Refreshment Break	St. Marks Foyer
3:30pm	Afternoon wrap-up: 5-10 minute presentations from each of the working groups + discussion.	St. Marks Ballroom
4:15pm	Closing Remarks	James A. Serpell, Ph.D.

References

- Bardill, N., & Hutchinson, S. (1997). Animal-assisted therapy with hospitalized adolescents. *Journal of Child and Adolescent Psychiatric Nursing, 10* (1), 17-24.
- Bonas, S., McNicholas, J., & Collis, G.M. (2000). Pets in the network of family relationships: An empirical study. In: A.L. Podberscek, E.S. Paul, & J.A. Serpell (Eds.), *Companion Animals and Us: Exploring the Relationships Between People and Pets* (pp. 209-236). Cambridge: Cambridge University Press.
- Collis, G.M., & McNicholas, J. (1998). A theoretical basis for health benefits of pet ownership: Attachment versus psychological support. In: C.C. Wilson, & D.C. Turner (Eds.), *Companion Animals in Human Health* (pp. 105-122). Thousand Oaks, CA: Sage.
- Corson, S.A., Corson, E.O'L., & Gwynne, P.H. (1975). Pet-facilitated psychotherapy. In: R.S. Anderson (Ed.), *Pet Animals and Society*. (pp. 19-36). Baltimore, MD: Williams and Wilkins.
- Delta Society. (n.d.). About Animal-Assisted Activities & Animal-Assisted Therapy [On-line]. Available: <http://www.deltasociety.org/aboutaaat.htm>
- Doniger, W. (1995). The mythology of masquerading animals, or, bestiality. In: A. Mack (Ed.), *Humans and Other Animals* (pp. 343-364). Columbus, OH: Ohio State University Press.
- Draper, R.J., Gerber, G.J., & Layng, E.M. (1990). Defining the role of pet animals in psychotherapy. *Psychiatric Journal of the University of Ottawa, 15* (3), 169-172.
- Equine Facilitated Mental Health Association [EFMHA]. (2003). What is Equine Facilitated Psychotherapy (EFP)? [On-line]. Available: http://www.narha.org/sec_efmha/default.asp
- Fine, A.H. (2000). Animals and therapists: Incorporating animals in outpatient psychotherapy. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 179-211). New York: Academic Press.
- Fine, A.H. (2004). *The AAT Rx for youth: Bridging research with clinical insight*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>
- Fredrickson, M., & DePrekel, M. (2004). *Animal-assisted therapy for at-risk youth and families*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>
- Freud, S. (1959). *The Interpretation of Dreams*, trans. J. Strachey. New York: Basic Books.
- Garcia, J.A., & Weisz, J.R. (2002). When youth mental health care stops: Therapeutic relationship problems and other reasons for ending youth outpatient treatment. *Journal of Consulting and Clinical Psychology, 70*, 439-443.
- Granger, B., & Granger, G.V. (2004). *Evaluating the effectiveness of animal-assisted therapy approaches in an alternative high school for expelled youth: A qualitative/quantitative analysis*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>
- Harbolt, T., & Ward, T.H. (2001). Teaming incarcerated youth with shelter dogs for a second chance. *Society & Animals, 9* (2), 177-182.
- Kahn, P.H. (1997). Developmental psychology and the biophilia hypothesis: Children's affiliation with nature. *Developmental Review, 17*, 1-61.
- Kale, M. (1992). At risk: Working with animals to create a new self-image. *InterActions, 10* (4), 6-9.

- Katcher, A.H. (2000). The future of education and research on the animal-human bond and animal-assisted therapy. Part B: Animal-assisted therapy and the study of human-animal relationships: Discipline or bondage? Context or transitional object? In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 461-473). New York: Academic Press.
- Katcher, A.H., Friedmann, E., Beck, A.M., & Lynch, J.J. (1983). Looking, talking and blood pressure: The physiological consequences of interaction with the living environment. In: A.H. Katcher, & A.M. Beck (Eds.), *New Perspectives on Our Lives with Companion Animals*, (pp. 351-359). Philadelphia, PA: University of Pennsylvania Press.
- Katcher, A.H., & Teumer, S.P. (2004). *Conducting an AAT program for children and adolescents in special education in public schools: Reality and expectancy*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>
- Katcher, A., & Wilkins, G.G. (1998). Animal-assisted therapy in the treatment of disruptive behavior disorders in children. In: A. Lundberg (Ed.), *The Environment and Mental Health*, (pp. 193-204). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Katcher, A.H., & Wilkins, G.G. (2000). The centaur's lessons: Therapeutic education through care of animals and nature study. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 153-177). New York: Academic Press.
- Kazdin, A.E., & Weisz, J.R. (2003). *Evidence-Based Psychotherapies for Children and Adolescents*. New York: The Guilford Press.
- Kellert, S.R. (1993). The biological basis for human values of nature. In S.R. Kellert, & E.O. Wilson (Eds.), *The Biophilia Hypothesis*, (pp. 42-69). Washington, DC: Island Press.
- LaJoie, K.R. (2003). *An Evaluation of the Effectiveness of Using Animals in Therapy*. Unpublished doctoral dissertation, Spalding University, Louisville, KY. (University Microfilms No. 3077675).
- Levinson, B.M. (1965). Pet psychotherapy: Use of household pets in the treatment of behavior disorder in childhood. *Psychological Reports*, 17, 695-698.
- Levinson, B.M. (1969). *Pet-Oriented Child Psychotherapy*. Springfield, IL: Charles C. Thomas.
- Levinson, B. (1970). Pets, child development, and mental illness. *Journal of the American Veterinary Medical Association*, 157 (11), 1759-1766.
- Levinson, B.M. (1978). Pets and personality development. *Psychological Reports*, 42, 1031-1038.
- Levinson, B.M. (1984). Human/companion animal therapy. *Journal of Contemporary Psychotherapy*, 14, 131-144.
- MacDonald, P.M. (2004). *The effectiveness of equine-facilitated therapy with at-risk adolescents: A summary of empirical research across multiple centers and programs*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>
- Mallon, G.P. (1994a). Cow as co-therapist: Utilization of farm animals as therapeutic aides with children in residential treatment. *Child and Adolescent Social Work Journal*, 11 (6), 455-474.
- Mallon, G.P. (1994b). Some of our best therapists are dogs. *Child and Youth Care Forum*, 23 (2), 89-101.
- Mason, M.S., & Hagan, C.B. (1999). Pet-assisted psychotherapy. *Psychological Reports*, 84, 1235-1245.
- McCauley, K.D., & Malott, J.M. (1984). Distraction and coping with pain. *Psychological Bulletin*, 95, 516-533.

- Melson, G.F. (2000). Companion animals and the development of children: Implications of the biophilia hypothesis. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 375-383). New York: Academic Press.
- Melson, G.F. (2004). *Animals in the lives of adolescents: A biocentric perspective on development*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>
- Melson, G.F., & Fogel, A. (1996). Parental perceptions of their children's involvement with household pets: A test of a specificity model of nurturance. *Anthrozoos*, 9, 95-106.
- Myers, O.E. (1998). *Children and Animals*. Boulder, CO: Westview Press.
- Nathan, P.E., & Gorman, J. M. (1998). *A Guide to Treatments that Work*. New York: Oxford University Press.
- National Institutes of Mental Health [NIMH]. (2001). *Blueprint for Change: Research on Child and Adolescent Mental Health* [On-line]. Available: <http://www.nimh.nih.gov/child/blueprin.pdf>
- Reichert, E. (1998). Individual counseling for sexually abused children: A role for animals and storytelling. *Child and Adolescent Social Work Journal*, 15 (3), 177-185.
- Reimer, D.F. (1999). *Pet-facilitated therapy: An initial exploration of the thinking and theory behind an innovative intervention for children in psychotherapy*. Unpublished doctoral dissertation, Massachusetts School of Professional Psychology, Boston, MA.
- Rice, S.S., Brown, L.T., & Caldwell, H.S. (1973). Animals and psychotherapy: A survey. *Journal of Community Psychology*, 1, 323-326.
- Rochberg-Halton, E. (1985). Life in the Treehouse: Pet therapy as family metaphor and self-dialogue. *Marriage & Family Review*, 8 (3-4), 175-189.
- Rycroft, C. (1979). *The Innocence of Dreams*. New York: Pantheon Books.
- Serpell, J.A. (1996). *In the Company of Animals: A Study of Human-Animal Relationships* (Canto Ed.). Cambridge, England: Cambridge University Press.
- Serpell, J.A. (2000). Animal companions and human well-being: An historical exploration of the value of human-animal relationships. In: A.H. Fine (Ed.), *Handbook on Animal-Assisted Therapy* (pp. 3-19). New York: Academic Press.
- Serpell, J.A. (2004). Factors influencing human attitudes to animals and their welfare. *Animal Welfare*, 13 (Supplement), 145-152.
- Triebenbacher, S.L. (1998). Pets as transitional objects: Their role in children's emotional development. *Psychological Reports*, 82, 191-200.
- Tuke, S. (1813). *Description of the Retreat*. Reprinted with an introduction by R. Hunter & I. Macalpine (1964). London: Dawsons.
- Ward, T.H. (2004). *Project Second Chance: Using shelter dogs to facilitate change in juvenile delinquents*. Paper presented at the Can Animals Help Humans Heal? Animal-Assisted Interventions in Adolescent Mental Health conference, Philadelphia, March. [On-line]. Available: <http://www.vet.upenn.edu/research/centers/cias/pdf/Proceedings.pdf>
- Wilson, E.O. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.
- Winnicott, D.W. (1953). Transitional objects and transitional phenomena. *International Journal of Psychoanalysis*, 24, 88-97.