A SYSTEMATIC REVIEW OF THE EFFECTS OF PSYCHOTHERAPY INVOLVING EQUINES

by

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Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF SCIENCE IN SOCIAL WORK

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2009

ACKNOWLEDGEMENTS

Some time ago I came to the realization that if I have one overarching talent, it's in surrounding myself with extraordinary individuals; this continues to be the case, as is reflected in the esteemed members of my Thesis Committee. When they weren't directly encouraging me, they were inspiring me with their knowledge, their enthusiasm, and their important contributions to the field of Social Work, the academic community, and to the individuals and families to whom they are dedicated. Each of my committee members is an outstanding representative of the profession of Social Work; they are my role models and heroes. It has been my privilege to have been able to observe their integrity and compassion in action. I am grateful to Dr. Smith-Osborne for her mentorship throughout my graduate career. Words cannot express the magnitude of my gratitude to them all.

This work would not have been possible without the extraordinary efforts of the Interlibrary Loan Team at the University of Texas at Arlington. They do so much behind the scenes, but I would like them to know that it felt like Christmas every time I received an obscure article. Barbara Saenz and Roshanda Marks in the School of Social Work provided invaluable assistance. Thanks go also to Ginger Dickens in the Graduate School.

I am forever grateful to my family who supported me and encouraged me in ways they could never imagine. I am blessed with incomparable friends, human and otherwise, who provided, and continue to offer, inspiration and invaluable learning. I have been guided in my journey, seeking but never seeming to find, burning bushes, but every time I look back, there are burnt bushes. And to the thousands of horses I am privileged to have known, the great equalizers: it's ironic that in performing my duties in a job in which my life was at risk, my life was saved.

Lastly, and most importantly, I would like to acknowledge and extend my eternal gratitude to my Mom, the greatest teacher of all.

April 22, 2009

ABSTRACT

A SYSTEMATIC REVIEW OF THE EFFECTS OF PSYCHOTHERAPY INVOLVING EQUINES

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This systematic review examines the empirical literature in an emerging body of evidence for the effectiveness of psychosocial interventions involving equines across populations. Fourteen full reports in English were extracted from 103 studies accessed through sixteen electronic databases and a hand search. Selected quantitative studies were published in peer-reviewed journals; the gray literature and white papers were also explored. Population, Intervention, Comparison, and Outcome (PICO) and Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) criteria were applied to all studies. Data were synthesized in relation to four research questions informing evidence-based practice. No randomized clinical trials were located. Two studies provided a moderate level of evidence for effectiveness. Nine studies demonstrated statistically significant positive effects. In the aggregate, the evidence is promising in support of the effectiveness of psychotherapy employing equines. Future studies are needed that utilize rigorous and creative designs, especially longitudinal studies and comparisons with established effective treatments.

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CHAPTER 1

INTRODUCTION

Horses are powerful, and therapeutic interventions involving horses for people with various disabilities and difficulties are not recent phenomena: History is rich with accounts of the extraordinary curative effects associated with interaction with equines. However, significant scholarly attention was not directed toward animal-assisted therapeutic interventions in general until the 1960's (Christian, 2005; Eggiman, 2006; Fine, 2000; Levinson, 1962), and only relatively recently has the literature regarding specific equine-facilitated therapeutic techniques begun to emerge.

Since the 1950's, worldwide attention to the potential therapeutic effects of interactions with horses has increased exponentially, with an attendant increase in the number of therapeutic horsemanship facilities available to the public. In the decades since then, the literature on the beneficial effects of horsemanship has grown substantially, particularly regarding the positive physical results of therapeutic interventions utilizing horses. In the past ten years, building upon this accumulating body of anecdotal and other evidence, interest in this therapeutic modality has virtually exploded. Sentimental public campaigns and widespread media attention invoke awareness of the favorable outcomes reported from involving horses in the therapeutic process; however, there is a dearth of rigorous evidence to support such claims. Despite a call for research dating back at least to the 1970's (Mayberry, 1978; Potter, Evans & Nolt, 1994), only a handful of studies on the positive physical effects of horsemanship as therapy exist that are considered methodologically sound, and even fewer that demonstrate empirical support for psychosocial improvements.

The purpose of this systematic review is to examine the evidence for the psychosocial benefits resulting from involving horses in the therapeutic process. This inquiry attempts to provoke thoughtfulness in answering questions raised in the application of evidence-based practice and in conforming to principles of best practice: Does it work? For whom? And why? Specifically, the following questions will be examined:

1. Does involving horses in the therapeutic process result in psychosocial benefits for participants?
2. What is the strength of the research that has examined the above question?
3. Does the research support recommendations for equine-assisted activities integrated into the course of psychotherapy?
4. What are future research needs and recommendations?

Further, horsemanship as a therapeutic intervention is discussed in historical context, and the theoretical underpinnings are examined. A framework upon which to base an understanding of this treatment approach is constructed, with the overarching aim of enhancing the credibility of this unique intervention, and thereby to increase consideration and scholarly attention to this treatment strategy, leading to sorely needed research funding and, consequently, a recognition of whether the methods described herein are a viable approach to treatment for mental health difficulties, ultimately leading to third-party reimbursement. Most importantly, this review is intended as a critical appraisal of the evidence for the effectiveness of this treatment approach in order to protect the consumer's right to informed consent and to encourage further development of the field.

1.1 Historical Context

Seemingly embedded within our genetic code, the sound of hoofbeats across the landscape is immediately recognizable and unmistakable to the human ear. According to a recent exhibition mounted by the American Museum of Natural History, horses have been evolving for an estimated 50 million years—a far longer time than humans have inhabited the earth. Perhaps more than any other animal, images of horses appear in prehistoric European cave art. At least

16,000 years ago, Ice Age artists painted a pair of horses in France's Peche Merle cave, which continues to captivate the modern imagination. Although controversy surrounds when and where horses were first used to aid in transporting humans, it is well established that by 2000 BCE, horses were pulling chariots in eastern Russia and Kazakhstan, and between 2000 and 1500 BCE, horseback riding had become common in Afghanistan and Iran (Kohanov, 2001; Morris, 1988; Scanlan, 1998). It is indisputable that since horses were first domesticated, perhaps 6000 years ago, they have become inextricably linked with humans, and they have played a powerful role in shaping our history. The contributions that horses have made to human civilization are unequaled by any other animal.

Sometime between 440 and 360 BCE, the Greek Xenophon, a student of Socrates, wrote what is now one of the oldest existing works on the care and training of horses; his approach is still salient today (Morgan, 1894/1962). The origins of horsemanship in a therapeutic context can also be traced back to the Classical era when Greek and Roman texts described the beneficial relationship between horses and people (Bracher, 2000; Butt, 1981/1998; Fosdick, 2003; Hallberg, 2008; MacKinnon, Noh, Laliberte, Lariviere, & Allen, 1995). Ancient treatises on medicine by Galen and Orebasius allude to the therapeutic effects of riding (Butt; DePauw, 1986; Fosdick; Haskin, Erdman, Bream & MacAvoy, 1974). Between 460-377 BC, Hippocrates included riding in a chapter on "natural exercise", and in 1569, Huronymus Merkurialis of Italy wrote "The Art of Gymnastics," which discussed riding and its beneficial effects on the restoration and maintenance of health (American Hippotherapy Association, 2007; Fosdick; Hallberg).

A more modern reference to the physical and emotional benefits of horseback riding can be found in the seventeenth century when Lord Thomas Sydenham, an early English physician, wrote in 1670, "There is no better treatment for the body and the soul than many tours each week in the saddle, riding the horse." (Butt, 1981/1998, p.1; see also Hayden, 2005, p. 60); Sydenham was a strong proponent of the benefits of riding for ailments ranging from hysteria and hypochondria to gout (Sloan, 1987). In his 1875 thesis, the French physician Chassaigne recommended riding as a treatment for the improvement of deficits in posture, balance and joint

movement manifested in some neurological disorders, and also noted the attendant psychological benefits of horsemanship (Acampora, 2008; Bain, 1965; Biery, 1985; Mayberry, 1978). As a result of injuries sustained in World War I, soldiers returning to England were treated with riding therapy at the Oxford Hospital (Fosdick, 2003; Scott, 2005). However, the therapeutic possibilities inherent in horse activities came to the fore emphatically in 1952 when Lis Hartel of Denmark, disabled by the effects of polio, won a silver medal in the Helsinki Olympics (Biery, 1985; Engel, 1998; Gatty; Harpøth, 1970; Henricksen, 1971), the first Olympics in which women were allowed to compete in equestrian sports. Lis Hartel subsequently repeated her accomplishment in the 1956 Stockholm Olympics (Database Olympics, 2008; Politiken.DK, 2009). Madame Hartel's success prompted recognition from both medical and equine professionals that an exciting form of rehabilitative therapy deserved greater attention. Soon after, therapeutic riding increasingly began to be used for physical rehabilitation, predominantly in England, Germany and Scandinavia, and subsequently in North America (Butt; Bieber, 1998; Fitzpatrick & Tebay, 1998; Hallberg, 2008; Mayberry; West, 1970; Wingate, 1982).

1.1.1 North America

Although therapeutic horsemanship as a means of physical rehabilitation had been recognized in Europe for some time, the concept didn't arrive on the North American continent until 1960 (Butt, 1981/1998; Bieber, 1998); at that time the foundation for the Community Association of Riding for the Disabled (CARD) was laid in Toronto, Canada, and in 1963 Dr. Elmer Butt initiated a riding for the handicapped program in Windsor, Ontario (Butt). Maudie Hunter-Warfel established the first organized association for therapeutic riding in the United States upon her return from England, where she had been introduced to the beneficial possibilities inherent in riding for people with disabilities (Bieber, Griffith, 1993). Ms. Hunter-Warfel established the National Foundation for Happy Horsemanship in Malvern, PA, and was instrumental in disseminating knowledge and safety practices to other interested parties. Concurrently, the Cheff Foundation in Augusta, Michigan, was establishing the groundwork to begin construction of the first purposefully built facility devoted to horseback riding for the

handicapped in North America, which was completed in 1967 (Butt). Also notable for her early work with amputees returning from Viet Nam was Mary Woolverton, a social worker and visionary who not only offered returning veterans disabled in war new opportunities for freedom of movement astride a horse, but pioneered carriage driving for people with disabilities (Bieber, 1985).

1.1.1.1 NARHA

In 1969 the North American Riding for the Handicapped Association (NARHA) was formed in Middleburg, Virginia, to promote equine-assisted activities for individuals with disabilities (Butt, 1981/1998; Bieber, 1998). Reflecting a more modern "people-first philosophy", and to encompass the wide variety of equine-assisted activities engaged in by its many members, in November, 2008, NARHA dispensed with the acronym and officially adopted NARHA as the name of the organization. NARHA's mission is to "…promote safe, professional, ethical and therapeutic equine activities for people with and without disabilities, through education, communication, standards and research" (NARHA, n.d.). NARHA continues as the governing body for professionals in the field of therapeutic horsemanship activities, offering certification for individuals and facilities and publishing the journal *Strides* to disseminate information pertinent to the practice of therapies involving horses.

1.1.2 Animal-Assisted Therapy

Throughout most of human history, animals have served humankind in numerous ways. Some, like the horse, increased human mobility and military powers and some, dogs and cats for example, gained the advantage of being served by, rather than serving, men (Levinson, 1962). While comparatively little quantitative research has been published in peer-reviewed journals documenting the effectiveness of therapeutic interventions utilizing horses and other equines, there is a wealth of information available concerning the healing effects of therapy involving companion animals, particularly noteworthy being the work of Levinson in the 1960's and the Corsons in the 1970's (1979; see also Taylor, 2001).

Animals have been used for therapeutic purposes in a variety of settings (Beck & Katcher, 1996; Chandler, 2005; Levinson, 1962; 1965; 1969a; 1969b; 1971); they embody qualities and characteristics that inspire and motivate people to participate in constructive activities in which they might not typically engage. In 1944, sociologist James Bossard wrote about the mental health benefits of dog ownership in the journal *Mental Hygiene*. After receiving over a thousand letters in response to the article, Bossard (1950) revealed in a follow-up article that even though he had contributed over 100 scholarly articles to a variety of journals, none had garnered as much attention, the closest being an article on family table talk that attracted some twenty-five letters. In 1962, Boris Levinson described the benefits of having an animal present during therapy sessions with some patients (see also Chandler; Netting, Wilson & New, 1987; Serpell, 2000a), which he reported to have discovered accidentally when his dog Jingles enthusiastically greeted an allegedly treatment refractory nine-year-old boy, eliciting a positive response from the child (Eggiman, 2006; *see also* Fine, 2000; Taylor, 2001). Interestingly, it is reported that Sigmund Freud believed that dogs have a special ability to judge a person's character (Serpell; Eggiman), and that his Chow dog, Jo Fi, was present at all of his therapy sessions, signaling the end of the treatment session by pawing at the door.

Bonding with companion animals has been shown to be a useful treatment alternative for people experiencing distress associated with loss, alienation, trauma and other forms of disequilibrium (Christian, 2005; Folse, Minder, Aycock & Santana, 1994; Granger & Granger, 2004; Hansen, Messinger, Baun & Megel, 1999; Haynes, 1991; Hines, 1983; Levinson, 1962; *see also* Fine, 2000; Eggiman, 2006; Kruger, Trachtenber & Serpell, 2004; Reichert, 1998; Yorke, 1997, 2008). In addition, several studies, have suggested the physiological benefits of bonding with companion animals (Barker & Wolen, 2008; Batson, McCabe, Baun & Wilson, 1998; Beck & Katcher, 1996; Delta Society, 1996; Garrity & Stallones, 1998), most notably Friedmann, Thomas and Eddy's (2000) often-cited research on the cardiovascular effects of pets. Therapy with companion animals has been employed in schools (Katcher, 2002; Katcher & Wilkins, 1998; Kruger, Trachtenberg & Serpell, 2004); in institutions and prisons (Barker & Dawson, 1998;

Katcher, Beck & Levine, 1989; McVarish, 1995; Moneymaker & Strimple, 1991; Ormerod, 1998); with children (Grier, 1999; Reichert, 1998: Robin & ten Bensel, 1985), and adults (Holcomb, Jendro, Weber & Nahan, 1997).

1.2 Involving Horses as Therapeutic Activity

Involving horses is different from the typical companion animal-human interaction in that horses are not predatory by nature as are dogs and cats, but are rather themselves animals that are preyed upon (Blake, 1975; Fredrickson, 2008; Irwin, 2005; Morris, 1988; Rashid, 2000; Scanlan, 1998); consequently, equines offer unique opportunities in the therapeutic process. Some of the attributes that horses, as highly social animals, bring to the therapeutic environment are generally those of cooperation, patience, willingness, receptiveness, and, after millennia of domestication, an orientation toward people (Ewing, MacDonald, Taylor & Bowers, 2007; Hayden, 2005; Karol, 2007; McDaniel, 1998; Morris; Vidrine, Owen-Smith, & Faulkner, 2002).

1.2.1 Hippotherapy and Therapeutic Horsemanship

Frequently, the terms hippotherapy and therapeutic riding have been used interchangeably; however, there are critical conceptual differences between therapeutic riding and hippotherapy (HPOT). While it can be argued that all riding may be therapeutic, not all riding is therapy. Therapeutic riding is similar to any horseback riding in that it is a strenuous sport that involves risk; it is a physical activity that increases general health by stimulating the cardiovascular system and strengthening muscles in the same way as other sports, with the added benefit of the soothing mental and social effects of bonding with an animal (Engel, 1998); However, the key word to consider is *therapy*.

It has been suggested that the movement of the horse closely simulates human ambulation (Benda, McGibbon & Grant, 2003; Bertoti, 1988; Biery, 1985; Engel, 1998; McPhail, 2006; Silkwood-Sherer & Warmbier, 2007; Snider, Korner-Bitensky, Kammann, Warner & Saleh, 2007). The goal of treatments using hippotherapy is the habilitation or rehabilitation of persons with specific medical deficits or dysfunction (Biery; Engel; Maregillano, 2004); for example, cerebral palsy, multiple sclerosis, cardiovascular accident, Down syndrome, spinal cord injury,

traumatic brain injury, attention deficits and autism (Biery; MacKay-Lyons, Conway & Roberts, 1988; Snider et al.; Sterba, 2007; Sterba, Rogers, France & Vokes, 2002; Zanin, 1997). Hippotherapy is used to address specific problems using a defined treatment protocol provided under a physician's prescription; in the controlled environment, the therapist modifies the horse's movement and carefully grades sensory input, thereby establishing a foundation for improved neurologic function and sensory processing (Benjamin, 2000; Meregillano; Sterba et al.). Postural and motor responses are often the primary focus of a physical therapy session utilizing hippotherapy; positive effects have been noted in motor coordination, muscle tone, postural alignment, stiffness/flexibility and strength (Benjamin, 2000). Changes have also been reported in respiratory, cognitive, sensory processing, balance, affective, arousal and speech/language systems as a consequence of postural and motor improvements (Benjamin).

Unlike therapeutic riding, hippotherapy refers to a passive form of riding in which the client benefits from, but does not control, the movement of the horse (Silkwood-Sherer & Warmbier). Riding skills are not taught, and often bareback pads are used instead of saddles so that the client can not only benefit from the movement, but also from the warmth, of the horse (Snider et al., 2007). Clients may be positioned astride facing forward or backward, sit sideways, or lie prone or supine (Benjamin, 2000; Snider et al.). Ideally horses are long-lined, (or ground driven), rather than simply being led, to ensure as much straightness and correct movement as possible. Hippotherapy is not a distinct treatment strategy that is mutually exclusive; rather, it utilizes the movement of the horse with a variety of treatments such as the neurodevelopmental approach, sensory integration, motor learning, motor control, and psycholinguistics to address neuromusculoskeletal dysfunction.

As the horse began to be viewed as a valuable adjunct to physical therapy, first and most notably in the Scandinavian countries following Lis Hartel's success, and then in Germany, Switzerland, and Austria, physical therapists in the United States began to develop treatment plans incorporating the movement of the horse (AHA, 2003). In 1987, a group of eighteen American and Canadian therapists traveled to Germany to study the dynamics and applications

of hippotherapy, with the goal of developing a standardized curriculum; this led to the development of the American Hippotherapy Association (AHA) in 1992 and, in 1993, AHA was approved as the first subsection of NARHA. Shortly thereafter, AHA established therapist registration and standards of practice and, in 1999, subsequent to the establishment of the American Hippotherapy Certification Board, the premier Hippotherapy Clinical Specialist examination was administered (AHA). In 2004, AHA seceded from NARHA and was installed as an independent governing body for the accreditation of therapists endeavoring to employ this treatment approach.

For many years the body of research on the efficacy and effectiveness of hippotherapy consisted of anecdotal reports and case studies, albeit valuable precursors and adjuncts to quantitative methods of assessment. Measurement was complicated by the lack of sensitive instruments to assess physiological improvements (Sterba, 2007). Until recently, most of the supporting evidence for the beneficial physical effects of activities involving horses consisted of single-subject designs which lacked comparison groups, studies which lacked standardized measures, and results that were frequently reported in non-peer-reviewed publications (Silkwood-Sherer & Warmbier, 2007; Snider et al., 2007). However, more rigorous research evidence has begun to accumulate, as illustrated by two systematic reviews (Snider er al.; Sterba, 2007) which demonstrated clinically significant beneficial effects of hippotherapy for children with cerebral palsy, and concluded that hippotherapy is a promising intervention.

In a breakthrough study recently completed by a team of researchers at Washington University (Shurtleff, Engsberg & Standeven, in press), researchers showed large effect sizes for dynamic trunk/head stability and functional reach in children with spastic diplegia cerebral palsy, which continued at twelve weeks follow-up. These results are encouraging given that in its Clinical Policy Bulletin (2008), policy-writers for the insurance giant Aetna recommended that hippotherapy sessions not be reimbursed pending further research. Typically, hippotherapy sessions are reimbursable by third-party payers such as Harvard Pilgrim Health Care when they are part of a supervised physical or occupational therapy program provided by a contracted

vendor (Borzo, 2002). Interestingly, in an Administrative Hearing in California, in the Matter of *Matheson W. v. North Los Angeles County Regional Center* (2004/2005), it was determined that the claimant, a twelve-year-old boy with autism, should be reinstated and funded for weekly horseback riding lessons which had been discontinued by a state agency.

As Glasow (2007) points out in writing for the American Hippotherapy Association (AHA), the matter of semantics in this field is very delicate. The term “hippotherapy” was derived by the Germans from the Greek word for horse, “hippos”, compounded with the word “therapy”, to mean “treatment with the help of a horse” (Glasow; Debuse, Chandler & Gibb, 2005). The use of the *movement* of the horse is the therapeutic tool, not the horse itself, and members of AHA are careful to denote the distinction (see Appendix B). Hippotherapy sessions are conducted by licensed physical therapists, occupational therapists, or speech and language pathologists specially trained in the principles of this treatment approach, and facilitated with a carefully trained team consisting of a horse specialist, horse leader, and sidewalkers in addition to the client and the horse (AHA; Meregillano, 2004).

Therapeutic horsemanship involves any of a number of active physiotherapeutic exercises on and around the horse (Biery, 1985; Engel, 1998), which may include unmounted activities with the horse and/or in the horse environment, such as grooming and stable management experiences. In therapeutic riding, traditional riding skills are taught by a NARHA certified therapeutic riding instructor. With improvements made during the course of hippotherapy, clients can sometimes progress to therapeutic riding, where they take an active role in the control of the horse’s movement and direction. Therapeutic carriage driving is an exciting aspect of the equine tradition which offers participants who may not be able to ride the opportunity to take part in alternative mounted activities (Griffith, 1992). Interactive vaulting engages participants in horsemanship activities and movements around, on, and off the horse or barrel and ultimately in performing gymnastic exercises on the moving horse (Biery, 1985; Bracher, 2000; Frewin & Gardiner, 2005; Kroeger, 1992; Schultz, Remick-Barlow & Robbins, 2007; Vidrine, Owen-Smith &

Faulkner, 2002). Vaulting is most often carried out in a group format, and consequently the opportunities for social engagement and interaction are multiplied exponentially.

1.3 Equines and Mental Health

1.3.1 Equine-Facilitated Mental Health Association (EFMHA)

It is becoming increasingly apparent that horsemanship is not only beneficial for those manifesting developmental or physical disabilities: Empirical literature is beginning to emerge in support of the psychosocial benefits of the horse-human relationship. In response to the growing awareness of the mental health benefits of specific targeted equine-assisted activities, mental health professionals interested in utilizing horses as a therapeutic modality formed the Equine Facilitated Mental Health Association (EFMHA) in 1997, under the NARHA umbrella (Moreau & McDaniel, 2000). In 2005 there were 692 NARHA member centers in the United States (NARHA, 2006); There were 277 mental health professionals employed at NARHA member centers, with social workers representing by far the largest group of providers at 135 (NARHA).

1.3.2 Equine-Assisted Growth and Learning Association (EAGALA)

In July, 1999, parallel to and completely separate from the EFMHA arm of NARHA, a group of professionals in the mental health field joined to create the Equine Assisted Growth and Learning Association (EAGALA), which aims to boost acceptance of EFP as a valid and effective experiential approach for utilization by professionals in the clinical mental health and human development fields (EAGALA). EAGALA's mission is to provide "…education, standards, innovation, and support to professionals providing services in Equine Assisted Psychotherapy" (2005). Apart from those involved with NARHA, the professionals who comprise EAGALA have developed the "EAGALA model", which utilizes the horse as "…a treatment modality to foster emotional growth and learning through groundwork and structured activities with horses" (EAGALA, n.d.). Targeted specifically to practice in mental health settings, the EAGALA model is not based on teaching riding or horsemanship; instead, it has been developed as a set of brief, experiential psychotherapeutic techniques, and has been compared to the familiar ropes courses used extensively by many therapists and treatment facilities. Using the EAGALA model,

therapists address a variety of mental health and development needs which may include issues surrounding depression, anxiety, trauma associated with childhood and domestic abuse, behavior problems, eating disorders and substance abuse.

1.3.3 Other Organizations

Capitalizing on the widespread and intuitive appeal of activities involving horses, other organizations have begun to emerge which incorporate horses in various experiential activities designed to promote education, leadership skills, and general well-being. Two of the most well-known organizations are Epona Equestrian Services and the Equine Guided Education Association. Epona Equestrian Services offers leadership training and organizational development programs (Kahonov, 2003). The Equine Guided Education Association (EGEA) provides experiential education and "…supports and promotes human growth, learning and development through horse as healer/teacher interactions" (EGEA, n.d.).

1.3.4 Lack of Standardized Terminology

In order to ensure agreement among professionals, it is essential to understand the definitions of key terms. Improper usage and lack of agreement of the terms used to describe different aspects of therapeutic activities involving horses has led to general confusion and is a major contributor to the difficulty in measuring outcomes (Silkwood-Sherer & Warmbier, 2007). In addition, the rapid growth of a wide array of activities involving horses has contributed to the general misunderstanding and misapplication of terminology. Although major efforts are underway by the leading professional membership organizations to standardize terminology, the lack of a single unifying body makes this a difficult task.

Equine-facilitated mental health (EFMH) describes the alliance between a licensed mental health professional and a professional horseperson, "…in which the experience and knowledge of both are used to foster mental health in their students and clients" (Moreau & McDaniel, 2000, p. 2; see also Kersten, 1997). Equine experiential learning (EEL) involves unmounted and mounted lessons conducted by a licensed horsemanship instructor (Moreau & McDaniel; NARHA, n.d). Equine-facilitated, (sometimes referred to as equine-assisted)

psychotherapy (EFP or EAP) utilizes mounted and unmounted sessions "…provided by a trained and licensed mental health professional, holding a current degree such as Master of Social Work, Master in Counseling, or Doctor of Psychology or M.D. This professional is also a trained, licensed riding instructor" (Moreau & McDaniel, p. 2).

1.4 Theoretical Underpinnings

Because EFP is just emerging as a viable adjunct to traditional psychotherapeutic techniques, the theoretical foundation of why and how it works are still in the early stages of formulation (Roberts, Bradberry & Williams, 2004). In addition to the lack of a standardized terminology in the broad field of equine-assisted activities, the lack of a clear theoretical framework is problematic and contributes to a continuing sense of disorganization, although conceptualizations for a theoretical basis for the effectiveness of therapy involving equines in beginning to emerge. Equine-facilitated psychotherapy has been gathering attention in the therapeutic community, and questions about the effectiveness of this approach to therapy are mounting.

1.4.1 Biophilia

As early as 700 BCE, the Greek Hesiod recommended in his *Works and Days* the serene and structured life at the farm as an antidote to the stress of life in the city (Katcher & Wilkins,1998). Frederick Law Olmstead, the designer of Central Park in New York, wrote about his intuitive conviction that natural settings could promote recovery from stress and increase mental functioning (Ulrich, 1993). Recommendations of a retreat to the country remained a common suggestion to remedy the ill effects of the stress inherent in living in urban environments until the 1970's (Biery, 1985; Netting, Wilson & New, 1987); Unfortunately, the formerly common prescription of a retreat to the farm and work with farm animals faded from fashion before it could be rigorously evaluated as a treatment for stress.

Because clinical problems generally are conceptualized as involving difficulties in the social and not the natural environment, clinicians have not typically addressed clients' relationships to the natural environment (Besthorn & Saleeby, 2003). However, a resurgence of

interest in nature-based therapies and a resultant accumulating body of research shows that exposure to pleasant nature stimuli promotes positive emotional states and respite from stress (White & Heerwagen, 1998). Despite this increasing evidence, investigators have devoted surprisingly little attention to the incorporation of natural environments into the psychosocial treatment of difficulties in living.

It seems that throughout history, people have gone to considerable lengths to maintain contact with nature, part of the justification for planning urban parks and natural areas and preserving wilderness for public use. According to Ulrich (1993), Darwin himself may have advanced this hypothesis. However, in 1984, Harvard researcher E. O. Wilson offered the term "biophilia", which he developed/conceived to describe "[T]he innately emotional affiliation of human beings to other living organisms" (Wilson, 2007, p. 249; see also Kellert, 1997), as well as a converse construct which he termed "biophobia": "[T]he tendency to avoid potentially dangerous elements of nature" (White & Heerwagen, 1998, p. 205). Wilson suggested that as humans moved through the evolutionary process, a biologically-based attraction for nature and its life forms developed (Kellert). The implication is that positive responses to natural landscapes had adaptive significance during the evolutionary process. It is hypothesized that people respond positively to environments which contain an abundance of resources, access to shelter, an absence of hazards, and ease of movement, all of which increase chances for survival and, it is suggested, arise from a desire to fulfill basic survival needs rather than notions of abstract, ideal beauty (White & Heerwagen).

Numerous studies have demonstrated that inhabitants of industrialized societies prefer specific landscapes (Ulrich, 1993; White & Heerwagen, 1998), namely open spaces and grassy meadows, of the type commonly found in typical equine-friendly environments. Besthorn and Saleeby (2003) argue for a nature-based therapy as an antidote to the stress of modern life, and in the popular book *Last Child in the Woods*, Richared Louv (2006) describes what he terms "nature-deficit disorder" to account for many of the ills noted in modern-day American culture, particularly among children and youths.

Wilson (2007) comments on his belief that it's strange indeed that psychologists have been so slow in addressing the mental health consequences of humanity's alienation from nature, given that our relationship to the environment is as much a part of our deep history as social behavior itself. White and Heerwagen (1998) echo his sentiments. "Our ignorance could be regarded as just one more blank space on the map of academic science awaiting genius and initiative, except for one important circumstance: the natural environment is disappearing" (Wilson, p. 13). His conservative estimate is that if the current rate of habitat alteration continues unabated, 20% or more of the earth's species will disappear or be consigned to early extinction during the next thirty years. Nature-based therapies and therapies that occur in nature, such as therapies involving equines, are a means of gaining an appreciation for, and a way to halt the destruction of, the natural element that appears to be biologically-based.

1.4.2 Myth and Metaphor

The peculiarly human quest for meaning finds natural expression in the embodiment of animals. "We buy love at the pet store, we kill deer and hunt pheasant in an attempt to connect … to our origins in the animal realm" (Root, 2000, p. 35). The development of language, myth, and thought appears to be greatly dependent on the use of nature symbols, particularly animals (Kellert, 1996). The life force of animals, which in ancient times manifested as the supernatural or divine in anthropomorphic form, is the same power that is tapped into today in animal- and equine-assisted therapies (Root). Animals, particularly horses, awaken a primal sense of freedom which seems to be missing from much of harried life in modern times. As language and culture expand, humans look to animals as a principle source of myth and metaphor.

Literature is rich with the role of animals in myths, fairy tales, dreams and nightmares (Robin & ten Bensel, 1985). Horses, and even the equipment used in therapeutic sessions with horses, often provide compelling metaphors for the difficulties clients may be experiencing and the recovery process (Christian, 2005); they provide immediate opportunities to construct or rewrite narratives which enhance well-being. Humans are prone to story-telling; cultures have evolved through people sitting around campfires telling stories, constructing and reconstructing

their perceptions of the world. Many continue to find in the horse a source of physical, psychological and spiritual inspiration (Root, 2000); by creating new structures in mind and spirit through physical exploration in partnership with a horse, clients may build stronger bridges between their inner and outer worlds.

1.4.3 Further Theoretical Contributions

The dynamic interchange which occurs between clients and horses offers a dimension to clinical work which is not possible within the traditional confines of the office setting.Because horses are prey animals, their survival depends on their extreme sensitivity to the environment (Rashid, 2000; Scanlan, 1998). They are essentially living biofeedback providers because of their ability to respond to the emotions and internal states of those around them. Regardless of how much a person tries to disguise emotional states, horses ignore outward form and instead respond to inner substance (McDaniel, 1998; Roberts, Bradberry & Williams, 2004). The horse's demands are relatively simple and uncomplicated, and conflicts are brief and few (Morris, 1988; Scanlan). Psychosocial interventions involving equines concentrate on the social dynamics of equine behavior to help individuals recognize and solve their own problems while focusing on an external, sentient being, which helps to develop awareness of internal motivations and issues.

Horses are direct and honest in exchanges, whereas humans confuse and change the rules of social interactions through verbal communication (Russell-Martin, 2006). Horses have often been described as a "mirror" for human emotions and processes (Kersten, 1997; Thomas, 2001; 2002). Without self-constructed barriers, they help individuals learn to be congruent in their words and actions (Moreau & McDaniel, 2000; Schultz, Remick-Barlow & Robbins, 2007).If a client is struggling with boundary issues and moves too close to a horse, the horse will take care to protect its space. Because horses are social animals, they have the capacity to teach social and relational skills because that is their basic mode of survival. They are also capable of communicating effectively and nonverbally the explicit message that "It might not be as bad as it must seem" (Fine, 2000). Establishing communication with a species other than our own helps to

develop skills that can be applied to cross-cultural communication, so important in an ever-increasing global economy.

Theories of attachment (Bowers & McDonald, 2001; Sable, 1995) and neurodevelopment (Perry, 2002; Perry & Hambrick, 2008) have been suggested as applicable to the theoretical framework of equine-assisted psychotherapy. It is an established principle in psychotherapy that the strength of attachment in the helping relationship, characterized by warmth, empathy, trust, acceptance and collaboration is the most powerful predictor of positive client outcome (Lambert & Bergin, 1994; see also Fine, 2000; Schultz, Remick-Barlow & Robbins, 2007;Yorke, 1997). A successful alliance requires a connection and the mobilization of hope, and is facilitated by encouraging a client's sense of well-being and offering insights in a nurturing environment while encouraging the development of mastery. Horses involved in the therapeutic process can be a useful adjunct in the establishment of the therapeutic relationship and to enhance the development of the alliance.

Horses provide warm and accepting companionship, which provides essential comfort and an unconditional support system to individuals in turmoil (Fine, 2000). Psychotherapy involving horses has the singular advantage of therapeutic touch in a manner not possible with smaller companion animals, or for obvious ethical reasons, with the therapist. Because the horse can be ridden it is possible that neural circuits can be re-wired in an adaptive manner, although care must be exercised with certain populations, for example, clients with a history of trauma or abuse (see Appendix C).

Recent research on the therapeutic effects of exercise, particularly with depressed clients is intriguing in its applicability to the theoretical base of this treatment strategy (Brosse, Sheets, Lett & Blumenthal, 2002; Cripps, 2008; Johnson, 2009; Penedo & Dahn, 2005; Tsang, Chan & Cheung, 2008). The barn as milieu (Hallberg, 2008; Pressly & Heesacker, 2001) has also been put forth as an avenue for investigation, as has risk behavior application (Bailey, 2007; see also Biery, 1985; Mayberry, 1978; Roberts, 1994) All of these areas hold promise as the theoretical underpinnings of equine-facilitated psychotherapy continue to be constructed.

CHAPTER 2

METHODS

2.1 Literature Search

2.1.1 Data Sources

Studies used in this review were obtained from electronic searches of the following databases beginning in October, 2006: Academic Search Complete, Alt HealthWatch, CINAHL Plus with Full Text, EBSCO Animals, E-Journals, ERIC, Health Source: Nursing/Academic Edition, MasterFILE Premier, MEDLINE, Professional Development Collection, PsycARTICLES, Psychology and Behavioral Sciences Collection, PsycINFO, PubMed, Social Work Abstracts, and TOPICsearch. Keywords entered were: “equine and psychotherapy”, “equine and therapy”, “equine facilitated therapy”, “equine assisted therapy”, “equine and psychosocial”, “horse and therapy”, “horse and psychotherapy”, “therapeutic riding” and “therapeutic horsemanship”. In addition, a hand search of the journal *Anthrozoös*, the leading professional journal for publication of studies relevant to the field, was performed for years between 1997 and 2004 not available electronically. The gray literature was also searched for relevant papers, with no limits on publication date, using Dissertation Abstracts International and ProQuest Dissertations & Theses, as were white papers pertaining to the broad subject topic. The accumulated articles were scanned for references through March, 2009. Finally, requests for relevant papers were made to professionals involved in the practice of equine-facilitated mental health, including the listserves of the Equine Facilitated Mental Health Association and the Equine-Assisted Growth and Learning Association.

2.1.2 Inclusion and Exclusion Criteria

Following the initial search, 103 papers were retrieved. Studies eligible for inclusion in this review included interventions which incorporated equines in the psychotherapeutic treatment of able-bodied individuals with no limits on ages of participants. Evidence considered for inclusion was

published in peer-reviewed journals or disseminated through theses and dissertations databases and published white papers. Some articles not in English could not be obtained or translated, such as proceedings from international conferences held in countries outside the United States; e.g. Congresses of the Federation of Riding for the Disabled. Consequently, most articles not in English were excluded except those that could be translated using computer translation software. Articles pertaining to physical disabilities were excluded from this review. From this preliminary search, forty articles were retrieved for consideration for inclusion in this systematic review; Reports which could not be read in full were excluded. Papers that were published in professional membership journals were excluded because of the possibility of lack of objective peer review resulting in publication bias. Anecdotal reports and case studies were excluded in an effort to isolate the quantitative research that has been done to date in an attempt to begin to fill the gap in the literature. In a narrowing of focus, and because several of the studies have been discussed elsewhere, it was determined to include only studies published since 2000 that quantified the benefits of psychotherapy involving equines across age groups. Qualitative studies were excluded. Five studies could not be retrieved in full for review (Appendix A). See Figure 2.1 for a summary of the retrieval process.

2.1.3 Data Extraction

Fourteen studies that met inclusion criteria were extracted from the literature. All of the studies that met inclusion criteria were observational in nature, quasi-experimental or descriptive pre-post designs, with one experimental study of efficacy, and were evaluated using Grading of Recommendations, Assessment, Development, Evaluation (GRADE) criteria developed by the GRADE working group in association with the World Health Organization (WHO) (Table 2.1) (Oxman, Schünemann, & Fretheim 2006), adapted for use in this review. Population, Intervention, Comparison, and Outcome (PICO) criteria, as recommended by Gambrill (2006), were applied to all studies. The answers to PICO questions define the population under study, the specified intervention, the comparison or lack thereof, and desired outcomes, all with an element of time; e.g. how old are the participants? How long is the treatment protocol? When is the outcome measured? Finally, evidence-based and –informed practice levels of evidence were considered during the data synthesis phase of this review, as recommended by Bandolier, Gambrill and the Centre for Evidence-based medicine.

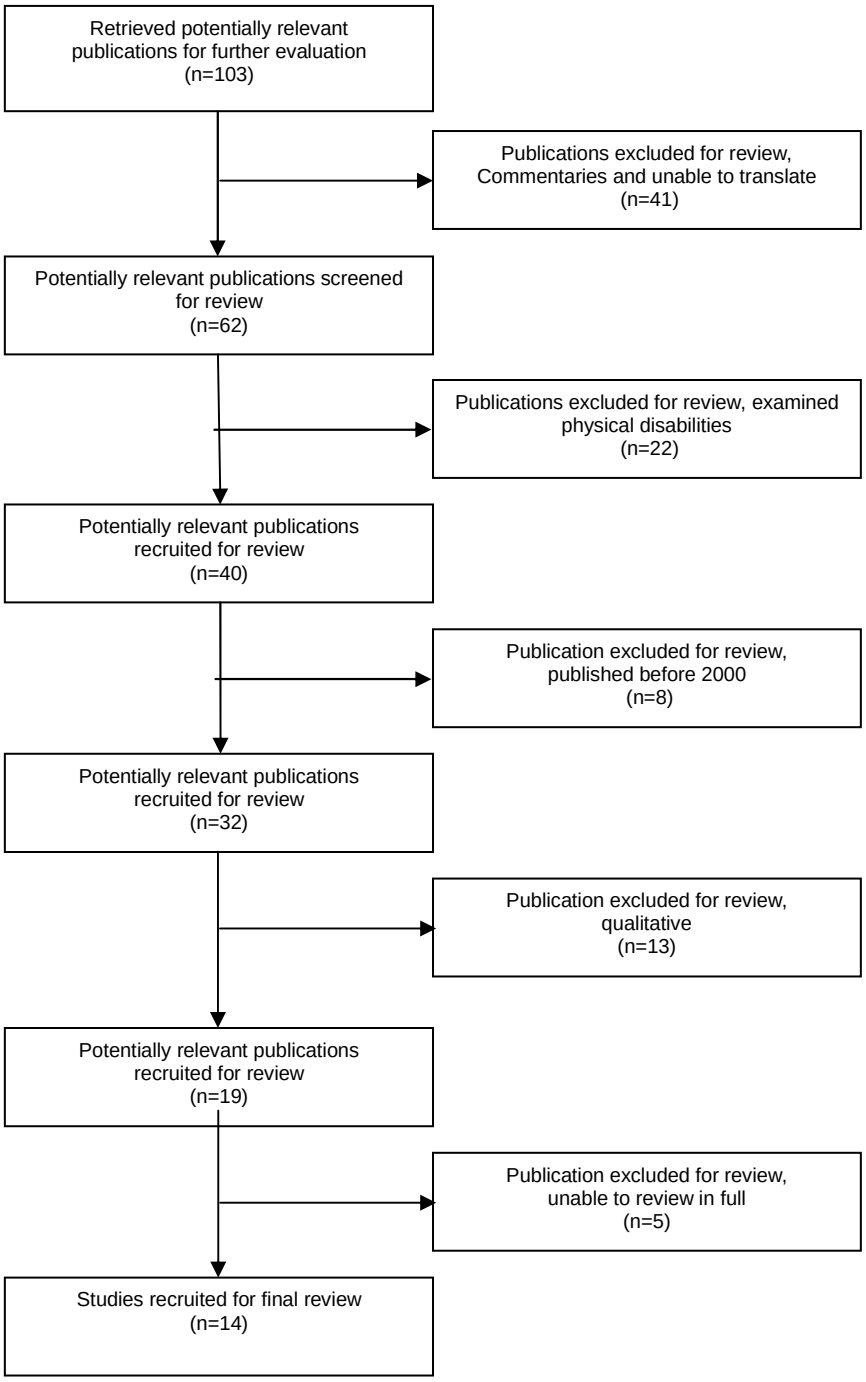

Figure 2.1 Flow chart of the literature retrieval process

Table 2.1 GRADE System for Evaluating Evidence

Criteria for GRADE*
Type of evidence:
High (randomized, controlled trial) Low (observational study) Very low (any other evidence)
Decrease grade if:
Serious (-1) or very serious (-2) limitation to study quality Important inconsistency (-1) Some (-1) or major (-2) uncertainty about directness Imprecise or sparse data (-1) High probability of reporting bias (-1)
Increase grade if:
Strong evidence of association-significant relative risk of >2 (p < .5) based on consistent evidence From $\geq$ observational studies, with no plausible confounders (+1) Very strong evidence of association-significant relative risk of >2 (p < .2) based on direct evidence with no major threats to validity (+2) Evidence of dose response gradient (+1) All plausible confounders would have reduced effect (+1)
Ratings:
High Moderate Low Very low

*GRADE indicates Grading of Recommendations, Assessment, Development, Evaluation

(GRADE WORKING GROUP, 2006)

2.1.4 Data Synthesis

Only in the past few years has methodologically rigorous evidence begun to emerge in the field of equine-facilitated/assisted psychotherapy and to date no randomized clinical trials, considered the gold standard in research methodology, have been conducted. Due to the heterogeneity of the study populations, psychometric instruments, and interventions included in this review, quantitative analyses could not be performed. However, qualitative methods were employed to classify interventions as having positive, negative, or no effect as determined by whether significant differences

were achieved in regard to desired outcomes. Relevant data are summarized in Tables 2.2-2.6. Discussion of the results is organized in relation to the research questions.

Table 2.2 Pilot Studies
Details of Selected Studies of EF/AP

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Bowers & MacDonald (2004) Observational Pilot Study Pre-posttest Effectiveness	n=10. At-risk adolescents 14-18. M, F, various ethnicities, many with histories of abuse. Volunteer participants, previously or currently in psychotherapy. *Referred by Project Director of school at-risk program (Serenata Farms). *Lack stat power	H1: Sense of self-worth, empathy, internal LOC will ↑; depression, loneliness ↓.	Weekly for 7 weeks @ 90"= 7 sessions (approximately*) (originally scheduled for 9*) Administered by certified instructors and trained volunteers. Natural Horsemanship Approach: round pen + riding. *Description of treatment/comparison groups unclear.	Pre-Posttest 1. Self-Perception Profile for Adolescents 2. Empathy Questionnaire 3. Locus of Control Scale 4. Children's Depression Inventory 5. Children's Loneliness Questionnaire* Administered by trained experimenter. *not age appropriate?	No effect on feelings of self-worth. Anecdotal evidence contrary. Empathy was unaffected. LOC unaffected Depression reported sig↓+ anecdotally. No sig change in loneliness.* *attrition=4 *School closing
Kaiser, Spence, Lavergne, & VandenBosch (2004) Observational Pilot Study Pre-Posttest	n=16 able-bodied 7-17 year olds. F=12, M=4, without mh diagnosis & no known history of meds.	Anger, quality of life, perceived self-confidence.	5-day therapeutic riding day camp. Therapeutic riding taught by NARHA instructors & horse-related classroom activities, taught by staff & volunteers.	Pre-Post Test. 1. Children's Inventory of Anger 2. Peds QL 4.0 3. Self-Perception Profile for Children Administered by trained data collectors. Conservative stats. Reported reliability & validity.	1. Total scores on anger ↓ sig, + all subscales except frustration. 2,3 no sig differences. ↑ Trend noted in Global Self-Worth subscale.

*confound/limitation

Table 2.2--*Continued*

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Graham (2007) Experimental Pilot Study Pre-Posttest Comparison	n=32 F, age 30-65, white.* 1st to present meeting inclusion criteria: exp'd defined catastrophic loss past 24 mos, attending grief support group, not ↑28 BDI-II(severely depressed). Random assignment to experimental or control. Control only received nutritional lit. *E=16, C=16.	Depression →catastrophic loss. Depression, wellness, and physiological measures. H1: ↑ wellness after trt. H2: ↓ depression after trt. H3: Posttest scores on depression & wellness inversely correlated. H4: Psysiological measure ↓ baseline→trt	60 days. 3 Facilities. 5 60-90" sessions over 5 weeks. Manualized. Administered by 4 trained facilitators.	Pre-Post: 1. Beck Depression Inventory-II 2. SF-36 Each session: 3. Physiological measures 4. How's Is It Going Self Report. Reported reliability/validity. Attrition: no sig diff	H1: Physical wellness not supported.Supported ↑mental wellness, SF-36, p<0.001. H2: Supported. P<0.001. H3: Supported; p<0.002. Graphic eval of physiological measures showed no sig ↓ trend, except systolic bp until T5. Respiration ↓ trend except T1. H4: Not supported. SR's rated all sessions ↑.
Schultz, Remick-Barlow, & Robbins (2007) Observational Cross-sectional Pilot Study	Convenience sample*, n=63, from all EAP referrals over 18 mos.. M=37, F=26, age 4-16, multi-ethnic, various behavioral & mh conditions.	↑ Global Assessment of Functioning-Children Scale.	EAGALA model. 6-116 sessions of EAP to evaluate. Administered by Licensed Independent Social Worker and Equine Specialist. Family participation encouraged. No further description provided.	GAF-Children, at 3-mo. Intervals until treatment complete. Pre-Posttest Reported reliability/validity. Attrition mentioned, not reported.*	Stat sig ↑in % improvement & # of sessions; p<0,001. F sig ↑ than M, p<0.02. Greatest ↑ in youngest; p<0.01. No diff by ethnicity. ↑ w/ history of abuse & neglect. ↑trend sexual abuse.

*confound/limitation

Table 2.3 Pre-Posttest Studies
Details of Selected Studies of EF/AP

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Tetreault (2006) Observational one group pre-post test	n=10 age 10-12 (5th and 6th graders). M=4, F=6, diagnosed with emotional disturbance. All taking meds.	1. Self-identification and management of behaviors. 2. Use skills to interact with others.	5 sessions @ 2 hours x 5 weeks. EAGALA Model. No further details Reported.	Self-created survey:	Claims statistical significance. Used non-statistical methods to compute statistical outcomes.
Shultz (2005) Observational Pre-Posttest Comparison	n= 29 adolescents, age 12-18, in residential care or outpatient treatment. Reported moderate ethnic diversity. Treatment group n=15, M=8, F=7 Comparison group n=14., M=9, F=5, (Aware they were not chosen for intervention).* Both groups received outside therapy* Convenience sample.	H1: At-risk adolescents who participate in EAP will experience greater positive therapeutic progress in psychosocial functioning than those who do not. Intrapersonal distress, Somatic, Interpersonal relations, Critical items, social problems, & behavioral dysfunction.	Group or individual EAP compared to no treatment. EAP conducted by therapy teams (therapists and horse specialists). EAGALA model. No further details reported.	Youth Outcome Questionnaire Self-Report. Youth Outcome Questionnaire-Parent/Caregiver	Claims statistically significant positive results; Scores differences reported, no statistics reported. Reports clinical significance. Mentioned reliability and validity, but did not report. Reported no statistically significant change for Ci's, BD's, or SP's. No change for comparison.

*confound/limitation

Table 2.3--*Continued*

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Ewing, MacDonald, Taylor, & Bowers (2007) Observational Quantitative & Qualitative Pre-Posttest Comparison.	n=28 (36 voluntary participants, 28 tested) youths from alternative school w/ SED, age 10-13. M, F, varying ethnicity, low SES. Teacher-referred. 4-5 youths per 9 wk session, Groups selected for similar age & IQ. Wait List comparison.	Predict ↑ in sense of self-worth, self-esteem (H1), inter-personal empathy (H2), and internal LOC (H3). ↓ in depression (H4) and loneliness (H5).	2 hrs, 2 x wk @ 9 wks=36 h + classroom incorporation. Some riding. Each youth partnered w/a horse for the duration, hypothesized to form connection & address focus and attention deficits. Participation in all aspects of care & handling (except turn-out in pen). Supervised by teachers and *sometimes school psychologist, with participation of volunteer helpers.	Pre and post Self-Perception Profile for Children (SR). Empathy Questionnaire. LOC Scale (mod. Nowicki-Strickland Internal-External Control Scale for Children. (SR). Children's Depression Inventory (SR). Children's Loneliness Questionnaire. Valid & Reliable.	H1-H5 not supported statistically. Qualitative observational data from teacher, instructor, and volunteers did support positive effects.
Kaiser, Smith, Heleski, & Spence (2006) Observational Pre-Posttest Comparison	n=17 at-risk 8-13 yr old, M=6, F=11, 15 W, 1 H, 1 NA + 14 SpEd, 10-18 yr old, M=7, F=7 (ethnicity not reported).	At-risk: Anger, anxiety, perceived self-competence, gross and fine motor coordination. SpEd: anger, cheerfulness, and behavior	At-risk: 1 hour riding 1x week, for 8 weeks=8 riding sessions. SpEd: 1 hour riding 2x week for 4 weeks=8 riding sessions. * 3-5 riders in each group, each session. No further description given.	Pre-and post At-risk: Children's Inventory of Anger, State-Trait Anxiety Inventory for Children, Self-Perception Profile for Children, Bruininks-Oseretsky test for motor coordination. SpEd: Children's Inventory of Anger, STCI-S, revised Conners-Wells SRS, Conners' Parent Rating Scale, long version.	At risk: No statistically significant differences, but found ↑ 3-16 in measure of motor coordination. SpEd: Total anger sig ↓; p< 0,05. Scores for cheerfulness not significantly different. Sig. ↑ in children's perceptions. Boys' Mom's perceptions ↑

*confound/limitation

Table 2.3 --*Continued*

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Russell-Martin (2006) Observational Pre-Posttest Comparison	n=20 dyads (40 individuals), age 21-45.Treatment group: n=10 dyads receiving EFT. Comparison group: n=10 dyads receiving SFT. Heterosexual couples defined as "committed" (determined during intake). Recruited from researcher's private practice.* Stated random assignment to groups; groups similar in descriptive measure. * (researcher bias)	Levels of dyadic adjustment. Focused on couple relationship Hypothesis: Couples receiving EFT will report greater increase in relational adjustment than couples receiving SFT.	All received 6 @ 1 hour Tx sessions over 6 weeks. EAGALA model.	DAS (self-report) both groups after sessions 1, 3, & 6, administered by researcher (LMFT). Scores compared and contrasted using statistical analysis. Also, a researcher-constructed descriptive instrument was used, which included a measure for prior horse experience and tx experience, as well as demographic data. Reliability and validity reported.	EFT group statistically significant relational improvement after week 6; p=0.01.

*confound/limitation

Table 2.4 Pre-Posttest Studies with Follow-Up
Details of Selected Studies of EF/AP

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Klontz, Bivens, Leinart, & Klontz (2007) Observational One Group Pre-posttest with follow-up	n=31 adults, age 23-70. 90% white. M=9, F=22.	Resolution of unfinished business (unexpressed feelings carried into the present that interfere with effective functioning). H1: diminished general symptom severity. H2: enhanced psychological well-being.	Equine-assisted Experiential Therapy (based on Psycho-Drama). Manualized. 2 M and 3 F psychotherapists led, assisted by equine specialist. Adherence closely monitored. Time??	Brief Symptom Inventory (Self-Report); BSI Summary Scale, Global Severity Index. Personal Orientation Inventory (Self-Report). Pre-posttest, 6 mo. follow-up. Discussed limitations and attrition. No reliability and validity report.	H1:Statistically significant decrease in GSI scores from pre-post; $p<0.05$, with no statistical significance from post to follow-up. H2: statistically significant increase from pre-post test; $p<0.05$; no significant change from post to follow-up.
Shambo, Seely, & Vonderfecht (2007) Observational One Group Pre-posttest with follow-up	n=6 F with complex PTSD with previous "refusal of or failure to benefit from traditional group therapy". No further details.	Depression, dissociative symptoms, anxiety, overall treatment effectiveness.	10 sessions @ 2 hours, 1x week for 10 weeks. EFP + psychoeducation + group process and support. ½ session in classroom, ½ with horses. EPONA model: non-riding, insight-oriented.	Hamilton Depression Scale, pre-post-4 mo. Follow-up. Beck Anxiety Inventory, mid-post-4 mo. Follow-up. Dissociative Experience Scale, pre-mid-post-4 mo. Follow-up. Outcome Questionnaire, pre-mid, post, 4 mo. Follow-up.	Statistically significant ↓ in depression, pre-post; $p=0.03$. Post-follow-up, $p=0.02$. No pre BAI*. Mid-post-follow-up showed trend.DES pre-post not statistically significant. Pre-follow-up, $p=0.023$, significant. OQ: pre-post significant, $p=0.017$, pre-follow-up, $p=0.011$.

*confound/limitation

Table 2.5 Program Evaluation
Details of Selected Studies of EF/AP

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Greenwald (2001)	n=81 Urban pop of all male students in residential treatment at Green Chimneys, 6-16 year olds, of various ethnicities, mostly Af-Am, diagnosed w/severe ED, behavioral difficulties, and/or neglect. Multiple mh diagnoses represented.	*Horse-human bond→ levels of frustration tolerance, self-esteem, and anxiety and depression. H1: Bonding will predict ↑ self-esteem, frustration tolerance, ↓ depression, anxiety. H2: Involvement in th will predict ↑ self-esteem, frustration tolerance, ↓ depression, anxiety. H3: Conduct in th predicts ↑ self-esteem, frustration tolerance, ↓ depression, anxiety.	2x week, instruction on horse care and approx 30" riding in small groups of 3-4. No further information.*	8 Instruments: 1. History 2. Demo 3. Rosenberg Self-Esteem Scale 4. Brief Measure of Frustration Tolerance 5. Achenbach Youth SR 6. Youth-Equine Bonding Scale 7. 2 Green Chimneys Longitudinal Assessment Scales.	H1: partly confirmed. No stat sig influence on self-esteem or frustration tolerance. ↑attacment=↑anxiety & depression. H2: Parly confirmed. Did not contribute to self-esteem or frustration tolerance. ↑depression & anxiety ↓likely to be involved. H3: Not supported. Behavior & overall conduct not affected.
Observational Program Evaluation				Reported reliability and validity.	

*confound/limitation

Table 2.5--*Continued*

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Iannone (2003)	Eval of existing vocational & tr program for ED adolescents. At-risk adolescents. n=19, M=13, F=6, age 12-16, ethnically & diagnostically diverse in residential trtmt, with severe ED & limited/no success w/previous tx. Selected by school.trtmt team Comparison: n=8 M=4, F=4, 12-15; Wait Listed.	H1: Self-perceptions ↑as result of time in program.P1: self-esteem ↑T1, ↑T2 P2:↑internal LOC H2: Psychiatric sx & behav probs ↓as result of time P3: ↓T1, ↓T2 P4: Staff ratings↑P5: ↓violent outburst, behav probs x T H3:vocational skills P6: scores ↑xT P7: scores in passing range	2 days week @ 2 hours. 3 phases @ 6 weeks. ↑dep on successful completion of each phase. 1. Basics of horse care & barn mgt. + basic riding skills. 2. Peer mentorship of incoming phase 1. 3. Work-study con't training Participants responsible for all aspects of horse care during time at site.	6 week intervals 1. Rosenberg Self-Esteem Scale 2. Nowicki-Strickland LOC Scale 3. Symptom Checklist-90 SR 4. Behavior Rating Index for Children 4. Self-developed knowledge test 5. Proficiency skill tests + Retrospective Chart Review. Brief survey by prospective employers + # that went to work. Admin by investigator. Reported reliability/ validity	86% completers Phase 1. 78% → Phase 2. 25% → Phase 3.* Phase 1:Stat sig ↑ s.e. No other sig changes. Phase 2: con't sig ↑ s.e., + ↑ shift toward external LOC. No other sig changes. WLC: No sig changes. P1: strongly supported. P <0.01.P2,3,4,5 not supported. P6, P7: strongly supported. *data gaps + reduced sample size *slight diff in WL
Observational Program Evaluation/Impact Assessment	*attrition. Refused to participate=1, Discharged=2.				

*confound/limitation

Table 2.6 Experimental Design Studies
Details of Selected Studies of EF/AP

Study	Sample Characteristics, Sample Size	Targeted Behaviors	Intervention/Comparison	Assessment	Outcome
Trotter, Chandler, Goodwin-Bond, & Casey (2008) Observational Pre- post Experimental Comparison (Efficacy)	N=164. M=102, F=62. Various ethnicities, mostly white,3rd-8th graders w/similar demographics identified at-risk by school counselors who accepted an invitation to participate in group counseling. Treatment n=126 Comparison n=38. EAC assigned to individual groups by school.* * (participant bias)	Prevention and resolution of emotional and behavioral concerns.Enhance self-awareness, recognition of dysfunctional behavior patterns, & foster health relationships.	EAC: 12 weeks @ 2 hours each, 6-8 group participants. Traditional talk, group processing, EAGALA model + complementary adventure-based tx activities. Provided by 1 experienced & certified mh counselor + equine specialist. Manualized. RD (Exemplary SA Prevention Award: SAMHSA, 1999): indoor, school-based group counseling, 6-8 participants, 12 weeks @ 1 hour.* Provided by trained school counselor. Manualized. * (dosage)	BASC SRS and PRS Pre and post.+ PSF (Chandler, 2005; not standardized) to track ct progress between sessions. Control Grp data not begun until 2nd semester→ data for only 1 semester.* Experimental Grp data for 2 semesters.* Reliability and validity reported.	EAC: statistically sig ↓ -behaviors & statistically sig ↑ +behaviors, BASC SRS in 5 areas: 1. ESI 2. CMC 3. AS 4. SIS 5. RPS + 12 PRS: 1.BSI 2, EPC3. IPC 4. ASS 5. HS 6. AS 7. CPS 8. AS 9. DS 10. SS 11. APS 12. SSS RD: stat sig ↓ 1 –behavior & stat sig ↑ 4 + behaviors, BASC SRS: ↑ 1. ESI 2. PAC 3. SSS 4. S-ES + 1 PRS: ↓ DS. Both effective, EAC superior.

*confound/limitation

CHAPTER 3

RESULTS

3.1 Description of Studies

One hundred and three studies were screened for eligibility to be included in this review; eventually, 88 studies were excluded based on the above criteria. Of those that were excluded, forty were commentaries or were in foreign languages and unable to be translated using free computer translation software; twenty-two studies were excluded because they reported on psychosocial benefits among people with physical disabilities; eight studies were excluded because they were published before 2000; thirteen qualitative studies were excluded; and six studies could not be accessed in full for review. The remaining fourteen studies met the criteria for inclusion in this review.

Of the fourteen studies selected for review, four were pilot studies (Bowers & MacDonald, 2004; Kaiser, Spence, Lavergne, & VandenBosch, 2004; Graham, 2007; Schultz, Remick-Barlow & Robbins, 2007; see Table 2.2). Table 2.3 contains one observational study employing a one-group pre- and posttest design (Tetreault, 2006), and four observational comparison studies utilizing pre- and posttest measures (Ewing, MacDonald, Taylor & Bowers, 2007; Kaiser, Smith, Heleski & Spence, 2006; Russell-Martin, 2006; Shultz, 2005).. Observational studies utilizing one-group pre- and posttest designs with follow-up are shown in Table 2.4 (Klontz, Bivens, Leinart, & Klontz, 2007; Shambo, Seely, & Vonderfecht, 2007). Two program evaluations are summarized in Table 2.5 (Greenwald, 2001; Iannone, 2003). One experimental efficacy study employing a pre-posttest comparison design is depicted in Table 2.6 (Trotter, Chandler, Goodwin-Bond & Casey, 2008).

3.1.1 Pilot Studies

Table 2.2 reports details of four pilot studies. Of the four, two (Bowers & MacDonald, 2004; Graham, 2007) included measurements of levels of depression among other effects, and the remaining two measured anger, quality of life and perceived self-confidence (Kaiser et al, 2004), and global assessment of functioning (Schultz et al, 2007). Bowers and MacDonald found no statistically significant effects on any measure except depression, for which they reported a statistically significant decrease, and which was strengthened by participant self-report. Kaiser et al. reported that total scores on anger decreased significantly on all subscales except frustration, but noted no significant differences in quality of life or perceived self-confidence; they did, however, note a positive trend in the Global Self Worth subscale.

In Graham's (2007) study of depression resulting from catastrophic loss, measures of mental wellness showed a statistically significant increase ($p=0.001$), although physical wellness did not appear to increase. Graham also reported a statistically significant decrease in levels of depression ($p=0.001$); Graham's hypothesis that posttest scores of depression and wellness would be inversely correlated was supported, adding strength to the study, but the hypothesis that physiological measures would decrease in an optimal direction was not supported statistically; All participants rated the sessions positively in self-report.

Finally, among the pilot studies, Schultz et al. (2007) reported a statistically significant increase in the percentage of improvement in global functioning in relation to the number of sessions of EAP ($p=0.001$), with females showing greater improvements than males in the convenience sample, and the greatest improvement demonstrated in the youngest participants; they also reported a positive trend in those participants who had been sexually abused.

3.1.2. Observational Pre-Posttest Studies

Observational studies with a pre-posttest design are summarized in Table 2.3. All of the studies utilized a comparison group except one (Tetreault, 2006); in this study, the author used a self-designed survey to measure the effects of EAP on vaguely defined behavior management and transfer of skills. Statistical significance was claimed; however, non-statistical methods were

used to compute outcomes. In the remaining four studies, comparison groups were included. Shultz (2005) assessed the outcome of EAP on nonequivalent groups and reported positive, clinically significant scores on the Youth Outcome Questionnaire Self-Report, but notes that scores on the Critical Items, Social Problems, and Behavioral Dysfunction subscales were not significantly affected.

Ewing et al. (2007) predicted that there would be a positive increase in sense of self-worth, levels of self-esteem, empathy, and internal locus of control, and a decrease in levels of depression and loneliness following a non-model-specific equine-assisted intervention. Quantitative analysis did not support any of the predictions; however, self-reports and observational data from teachers, program instructors, and volunteers did support the positive effects of the equine-assisted intervention.

Kaiser et al. (2006) compared an equine-facilitated intervention for seventeen at-risk youths and fourteen special education students. They found no statistically significant results for any measures among the at-risk youths except motor coordination, which increased. Among the comparison group of special education students, however, they found a statistically significant decrease in levels of anger ($p=0.05$), even though it was reported that previous levels of anger for the comparison group were not in the elevated range. Scores for measures of cheerfulness in the comparison group were not significantly different at posttest. Overall, children's perceptions were reported to have increased on the Conners-Wells Self-Report Scale, as did boys' mothers' perceptions as measured on the Conners' Parent Rating Scale-Long Version.

In a comparison of equine-facilitated psychotherapy and solution focused therapy with twenty couples, Russell-Martin (2006) measured dyadic adjustment and found that while both groups showed greater relational adjustment, the EFT treatment group showed statistically significant greater improvement after six weeks ($p=0.01$) over the solution-focused comparison group.

3.1.3. Observational Pre-Posttest Studies with Follow-up

Table 2.4 depicts studies which utilized a one group pre- and posttest with follow-up design to measure the effects of equine-assisted interventions. Klontz et al (2007) examined the effects of a manualized equine-assisted experiential therapy model based on psychodrama techniques on thirty-one adults. The investigators hypothesized that general symptom severity would diminish and psychological well-being would be enhanced as a result of the intervention. They found that there was a statistically significant decrease in scores on the Global Severity Index of the Brief Symptom Inventory from pre- to posttest ($p=0.05$), with no statistically significant change from posttest to follow-up. There was also a statistically significant increase in psychological well-being ($p=0.05$) from pre- to posttest, but no significant change from posttest to follow-up.

In examining the results of an intervention for women with complex posttraumatic stress disorder who had a history of refusal of, or failure to benefit from, traditional group therapy, Shambo, Seely, and Vonderfecht (2007) found statistically significant decreases in levels of depression ($p=0.03$) from pre- to posttest, and from posttest to follow-up ($p=0.02$). Pre- and posttest scores on the Dissociative Experience Scale were not statistically significant from pre- to posttest, but demonstrated statistical significance from pre-test to follow-up ($p=0.023$). Pre- and posttest scores on the Outcome Questionnaire were statistically significant ($p=0.017$), as well as from pre-test to follow-up ($p=0.011$).

3.1.4. Program Evaluation

Table 2.5 contains studies which evaluated existing programs. Greenwald (2001) measured the effects of an equine program in a residential school for children and adolescents with severe emotional disturbances and multiple mental health difficulties, and predicted that participation in the program would be correlated with increases in levels of frustration tolerance and self-esteem, and decreases in levels of anxiety, and depression, Results indicated that levels of self-esteem and frustration tolerance were not affected. Outcome measures did indicate a correlation between bonding with horses and increases in anxiety and depression levels, and also

that participants with increased levels of depression and anxiety were less likely to be involved in the horsemanship program. In addition, the final hypothesis that behavior and overall conduct would show positive effects was not supported.

Iannone (2003) also investigated a program for adolescents with emotional difficulties, who had limited or no success with previous therapy, and predicted that positive changes in levels of self-esteem, internal locus of control, psychiatric symptoms and behavioral problems would be noted in relation to time in the program compared with a wait-listed group. In addition, scores on a vocational skills test were reported as a measure of work-readiness. Statistically significant increases in self-esteem levels were reported during phase 1 of the three phase program, with no other significant changes. During phase 2, levels of self-esteem were reported to continue to increase, and an increasing shift toward *external* locus of control was noted. No other significant changes were reported for phase 2. Overall, positive effects on levels of self-esteem were the only statistically significant results obtained, with no positive results on psychiatric symptoms and behavior problems noted, and a change in the opposite direction than was predicted for locus of control. Scores on the vocational skills test did improve, as predicted, and were in the passing range as defined by the author.

3.1.5. Experimental Study of Efficacy

In a comparison study of the efficacy of an equine-assisted counseling intervention compared to an award-winning school-based group counseling program (Table 2.6), Trotter, Chandler, Goodwin-Bond, & Casey (2008) demonstrated statistically significant decreases in negative behaviors and increases in positive behaviors on five subscales of the BASC Self-Report Scale, and twelve subscales of the BASC Parent Self-Report for the equine-assisted counseling experimental group. In contrast, the control group demonstrated statistically significant decreases in one negative behavior and increases in four positive behaviors on subscales of the BASC Self-Report Scale, and one item on the BASC Parent Self-Report. Both interventions were shown to be efficacious, but the experimental equine-assisted counseling group demonstrated more positive gains and was judged to be superior to the control school-based intervention.

3.1.6 Long-term Effects

Two studies reported follow-up data on the long-term effects of equine-involved interventions (Klontz et al, 2007; Shambo et al, 2007). Klontz et al. found no significant changes in any of the measures from posttest to six-month follow-up. Shambo et al. found a statistically significant decrease in levels of depression from posttest to four-month follow-up, and also noted a statistically significant improvement in symptoms as measured on the Dissociative Experience Scale from pre-test to follow-up.

3.1.7 Study Quality

The studies included in this review utilized a broad range of equine-facilitated/assisted therapeutic techniques and measurement instruments to address a wide variety of psychosocial outcomes in vastly different clinical populations, making comparison difficult. Two studies used the Rosenberg Self-Esteem Scale (Greenwald, 2001; Iannone, 2003). Three studies used the Nowicki-Strickland Locus of Control Scale (Bowers & MacDonald, 2004; Ewing et al, 2007; Iannone, 2003). Three studies used the Self-Perception Profile for Children (Ewing et al, 2007; Kaiser et al, 2006; Kaiser et al, 2004) and one used the Self-Perception Profile for Adolescents (Bowers & MacDonald). The Children's Depression Inventory and the Children's Loneliness Questionnaire were both used in two studies (Bowers & MacDonald; Ewing et al). Ten of the studies reported reliability and validity for the instruments used (Bowers & MacDonald; Ewing et al; Graham, 2007; Greenwald; Iannone; Kaiser et al, 2006; Kaiser et al, 2004; Russell-Martin, 2006; Schultz et al, 2007; Trotter et al, 2008).

3.1.7.1 Sample

The majority of the studies in this review were conducted with small convenience samples, ranging from n=6 (Shambo et al, 2007) to the largest of n=63 (Schultz et al, 2007). However, two studies employed random sample comparison design (Graham, 2007; Trotter et al, 2008). Three of the studies employed non-equivalent comparison groups (Iannone, 2003; Shultz, 2005; Trotter). Attrition was not addressed in several studies (Kaiser et al, 2006; Kaiser et al, 2004; Shultz; Tetreault, 2006; Trotter, 2008).

3.1.7.2 GRADE

The results of the application of GRADE criteria to the studies included for review are summarized in Table 3.1. The application of GRADE criteria to the aggregate of selected studies yielded a mostly low to very low level of quality, with two exceptions: Graham's (2007) study achieved a moderate result according to GRADE criteria, as did Trotter et al.'s (2008) study. Attaining a moderate level of quality is significant, since this is the highest level that can be achieved for observational studies using GRADE criteria. An appreciation for the stringency of GRADE requirements explains how the results of this review can be considered promising, despite the seemingly inconsistent level of evidence in the aggregate.

Table 3.1 Results of Articles Reviewed: GRADE Criteria

Study	Study Design	Quality of Evidence	Directness*	Higher if Strong Association†	GRADE
Bowers & MacDonald (2004)	Pilot	Low	b=-2	--	Very low
Kaiser et al (2004)	Pilot	Low	a=-1	d=+1	Low
Graham (2007)	Pilot	Low	a=-1	d=+1	Moderate
Schultz et al (2007)	Pilot	Low	a=-1	d=+1	Low
Tetreault (2006)	Pre-Posttest	Low	b=-2	--	Very low
Shultz (2005)	Pre-Posttest Comparison	Low	a=-1	--	Very low
Ewing et al (2007)	Pre-Posttest Comparison	Low	a=-1	d=+1	Low
Kaiser et al (2006)	Pre-Posttest Comparison	Low	b=-2	d=+1	Low
Russell-Martin (2006)	Pre-Posttest Comparison	Low	d=-1	d=+1	Low
Klontz et al (2007)	Pre-Posttest w/Follow-up	Low	c=-1	d=+1	Low
Shambo et al (2007)	Pre-Posttest w/Follow-up	Low	b=-2	d=+1	Very low
Greenwald (2001)	Program Evaluation	Low	a=-1	d=+1	Low
Iannone (2003)	Program Evaluation	Low	a=-1	d=+1	Low
Trotter et al (2008)	Efficacy Pre-Posttest	Low	b=-2	d=+1	Moderate

GRADE indicates Grading of recommendations, Assessment, Development, Evaluation (GRADE Working Group, 2006).

* (a = -1 [some uncertainty]; b = -2 [major uncertainty]; c = -1 [sparse data]; d = -1 [high probability of reporting bias].

† (a = +1 [strong, no plausible confounders, consistent and direct evidence; $p<.05$; ≥ 2 observational studies]; b = +2 [very strong, no major threats to validity and direct evidence; $p<.02$]; c = +1 [evidence of a dose gradient]; d = +1 [all possible confounds would have reduced effect].

CHAPTER 4

DISCUSSION

To date, there have been no systematic reviews undertaken to examine the psychosocial effects of equine-assisted/facilitated interventions on participants without physical disabilities. Best practice dictates that the decision-making process and data synthesis be designed to reduce the gaps between clinical practice and the empirical evidence base (Gambrill, 2006). There is a fine line between the honest brokering of knowledge and adherence to ethical principles and what is practical and realistic. Interventions involving equines in the therapeutic process are widely appealing and have captured the imaginations of the public at large and in particular members of the professional community, but the empirical evidence supporting the use of this treatment approach remains scant. This purpose of this review is to address the knowledge gap and to instill a level of confidence in the consideration of the practicality and feasibility of the application of this approach.

4.1 Effectiveness: Does it work?

This systematic review is an effort to answer several fundamental questions, not the least of which is whether interventions involving equines are effective. Of the studies reviewed, six provide relatively strong support for the effectiveness of this approach (Graham, 2007; Kaiser et al, 2004; Klontz et al, 2007; Russell-Martin, 2006; Schultz et al, 2007; Trotter et al, 2008); of these six, two (Graham; Trotter) were the most methodologically rigorous of all the studies reviewed, and were determined to fit the criteria for a moderate level of evidence according to GRADE recommended guidelines (GRADE Working Group, 2007), which is the highest rating that an observational study can receive according to this system. The remaining four studies (Kaiser et al; Klontz et al; Russel-Martin; Schultz et al) met GRADE criteria for a low level of

evidence due to methodological flaws and limitations, but demonstrated statistically significant results in predicted outcome areas.

Six studies were determined to be of low (Ewing et al, 2007; Greenwald, 2001; Kaiser et al, 2006), or very low (Bowers & MacDonald, 2004; Shultz, 2005; Tetreault, 2006), quality, according to GRADE criteria. Ewing et al reported no statistically significant results; however, the qualitative data that they collected showed promise for future research. Kaiser et al did not realize statistically significant outcomes in the population of interest, but did report statistically significant improvements in the comparison group of children and adolescents enrolled in special education. In an evaluation of an existing program, Greenwald reported no statistically significant results for the targeted outcomes, but did note a statistically significant shift from internal to external locus of control in the study population.

Shultz (2005) reported clinically significant, although not statistically significant, results in a study of adolescents in treatment, but there were significant limitations and confounds. Likewise, Tetreault's (2006) study of ten children with emotional disturbances was affected by significant limitations and confounding factors. It is not surprising that Bowers and MacDonald were unable to demonstrate statistically significant effects on targeted outcomes when it is considered that a major confound to the study outcome occurred as a result of the sudden, unexpected, and imminent threat of the closure of the facility where the study was being conducted, an example of the type of difficulty that may be encountered when endeavoring to conduct in vivo studies with human participants and administrators. It is worth noting that another study conducted by MacDonald (2004), (not reviewed here because of the lack of access to the full report) showed promising quantitative results and statistically significant effects on targeted behaviors with a sample size of 126 in a multiple program evaluation.

Two studies achieved statistically significant results in the targeted areas (Iannone, 2003; Schultz et al, 2007; Shambo et al, 2007); however, either the methodology employed lacked the rigor required to be able to make confident judgments; e.g. small sample size with limited

generalizability (Shambo et al), or the reported results precluded making confident judgment about the effectiveness of the intervention (Iannone).

4.2 Strength of the Research

In the aggregate, the quality of the evidence reviewed falls in the moderate to low range of the criteria established for the GRADE system (EBM Guidelines Editorial Team, 2006). To be considered moderate evidence, "Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate", while low levels of evidence are "… *very likely* to have an important impact on our confidence in the estimate of effect and *is likely* to change the estimate' [italics not in original] (p. 6).

4.3 Confidence Level for Recommendation

Only in the past few years has methodologically rigorous evidence begun to emerge in the field of equine-facilitated/assisted psychotherapy and to date no randomized clinical trials, considered the gold standard in research methodology, have been conducted. Taken as a whole, this selection of studies illustrates the difficulties involved in assessing and isolating the effects of psychotherapy employing equines; however, the promising levels of quantitative research summarized in this review lend credibility to the employment of equine-assisted techniques as an adjunct to traditional psychotherapy.

4.4 Limitations

This review examines the effectiveness of involving equines in the psychotherapeutic process in an attempt to begin to answer the questions of most interest to clinicians. However, because of the nature of this study, the results should be considered in light of several limitations.

One of the strengths of the systematic review is the effort to review the extant literature objectively and with the same rigor that is the ideal in primary research. According to Gambrill (2006), "Rigorous reviews are designed to minimize the likelihood that the effects of interventions will be confused with the effects of biases and chance" (p. 292). If strong prior beliefs are held, then a purely objective review will be difficult to achieve. For these reasons, it is recommended that more than one individual be involved in the selection and evaluation of studies, and that the

selection and evaluation processes are blinded (Gambrill); these recommended guidelines were not feasible for this review.

Five studies could not be retrieved, or could not be retrieved in their entirety for full review. A listing of the excluded studies is provided in Appendix A.

Another limitation frequently encountered in any type of literature review is publication bias, in which only studies reporting positive outcomes are published in peer-reviewed English journals; for this reason, articles in professional membership journals, such as NARHA *Strides,* were excluded from this review. A further attempt was made to circumvent this limitation by purposefully and thoroughly examining the gray literature and published white papers pertaining to this treatment approach.

Oxman and fellow members of the GRADE Working Group of the World Health Organization (2006) caution that if a systematic review contains quasi-experimental studies, it should be recognized that there are weaknesses inherent in this type of design, and prudence should be exercised in order to avoid over-interpretation of the results. Because of the paucity of studies and the lack of randomized controlled trials to date, the current review is limited by the methodological weaknesses of the studies included. In addition, the heterogeneity of the included studies and instruments make comparison difficult. It should be noted, however, that even flawed studies reveal important information.

Ann Alden and Marilyn Sokoloff, respected innovators and leaders in the Equine Facilitated Mental Health Association, characterize the field as having “taken flight without a flight plan” (cited in Hallberg, 2008, p. 69), and call for investigation to support the effectiveness of a treatment to which they have devoted their respective careers. This review, despite its limitations, is a preliminary attempt to answer the call for research.

CHAPTER 5

IMPLICATIONS FOR SOCIAL WORK PRACTICE

Ethical considerations dictate that social workers conform to principles of best practice while continually searching for ways to improve the quality of life of persons who sometimes have overwhelming obstacles to overcome. In adherence to the ethical principles inherent in responsible social work, practitioners should remain current on, and critically examine, emerging knowledge relevant to the field. Practice should be based "… on recognized knowledge, including empirically based knowledge…", and "[Social] workers should contribute to the knowledge base of social work and share with colleagues their knowledge…" (NASW, 1997). While research on the effectiveness of mental health interventions involving horses is emerging, practice appears to be thriving (Taylor, 2001), a reflection of the common finding that participant and staff perceptions sometimes exceed statistical evidence. The results of this review demonstrate promise and should inform policy that adjunct and complementary therapies should be expanded to include equine-assisted interventions in the psychosocial arena for certain populations. Moreover, the inclusion of psychotherapy involving equines should be reimbursable by third-party payers.

There are more social workers utilizing equine-facilitated techniques in direct practice than any other group of helping professionals (NARHA, 2006): This has significant implications for social work education. There are schools of social work that offer courses and certificates in animal-assisted therapy (see University of North Texas, n. d.); Denver University's School of Social Work offers a Master of Social Work certificate program in Animal-Assisted Social Work, (Denver University, n.d), the "first of its kind in the nation" (p. 1). Increasingly, schools of social work are joining with schools of veterinary medicine to form useful collaboratives for practice and research; for example, Colorado State University's Human-Animal Bond in Colorado program is

allied with its School of Social Work, and the University of Tennessee's College of Veterinary Medicine has a program in Veterinary Social Work. An internet search revealed that currently Prescott College (n. d.) offers a Master of Arts degree in Equine Assisted Mental Health, and Texas A & M University (n. d.) offers a continuing education certificate with an equine-facilitated psychotherapy track. Credibility and expertise would be greatly enhanced if more advanced-degree-granting institutions directed attention toward educating practitioners in psychotherapy involving equines.

Horses influence people in powerful ways. Because of their sheer size and inherent power, they provide natural opportunities for addressing issues surrounding fear and confidence which are at the core of many mental health disturbances. Since horses are social animals and communicate through body language, they provide unequalled opportunities for people experiencing difficulties to reassess personal approaches and motivations regardless of ability, gender, race, ethnicity, social class, or sexual orientation. Horses provide a subtle yet powerful metaphor: that only if clients can be helped to consider alternative approaches can they ultimately realize different, optimal results.

5.1 Treatment Applications

Because of the unique nature of this treatment approach, therapists with widely different philosophies and from diverse theoretical backgrounds find that the incorporation of horses into clinical practice can have beneficial effects. It should be noted, however, that while interventions involving horses may be therapeutic, the mere presence of equines in the therapy session does not fit the clinical definition of therapy (Fredrickson, 1992; see also Taylor, 2001). In the therapeutic setting, horses are engaged as change agents to facilitate the process of enhanced psychosocial development, growth, and education. Clarification of the elements of a therapeutic relationship as opposed to the benefits of recreational activities is critical if this approach is to achieve credible status in the professional community (Beck & Katcher, 1984).

5.1.1 Adjunctive Uses

Interventions employing equines have been applied across age groups and cultures (Dell et al, 2008) to a wide array of clinical difficulties and challenges; it has been applied in work with children and adults, individuals, families (Kersten, 1997; Thomas, 2002) and groups (Trotter, 2008; Vidrine et al, 2002), and is not gender-specific. This treatment approach has been used to address mental health and human development issues including emotional disorders (Ewing et al, 2007; Greenwald, 2001; Iannone, 2003), behavioral issues (Antoon & Basile, 1996; Bowers, 2001; Tetreault, 2006), attentional difficulties (Beckman-Devik & Ansin, 2008; Gamache, 2004; Zanin, 1997), substance abuse and addiction disorders (Dell; Hazelden, 2007), eating disorders (Christian, 2005; Colclasure, 2004; Cumelia, ; Lutter, 2008), depression (Bray, 2002; Frame, 2006), anxiety (Moreau & McDaniel, 2000), relationship problems (Russell-Martin, 2006), and difficulties related to abuse and trauma (Yorke, 1997; 2008; Yorke et al 2008). It has been applied to populations ranging from at-risk youths (Chandler, 2005; Cole, 2005; Hayden, 2005; Kaiser et al, 2006; Sapir, 2007; Washburn, 2004) to the terminally ill (Haylock & Cantril, 2006). Horse-assisted interventions have been used in residential settings with children and the elderly (All, Loving & Crane, 1999), hospices and hospitals (Boysen, 1985), and prisons (Cushing & Williams, 1995).

While typically interventions which include horses are brief and experiential in nature (Klontz et al, 2007), theoretical and clinical orientations that have successfully incorporated equines include cognitive behavior therapy (Eggiman, 2006; Frame, 2006), humanistic and transpersonal psychology (Tramutt, 2003), and psychodynamic therapy (Karol, 2007). Psychotherapy which employs horses in the treatment plan is a non-traditional form of therapy that, by its very nature, may be appealing and relevant to client populations not otherwise amenable to traditional office-based forms of therapy. Pending further research, it may be that this form of therapy is particularly useful for certain clinical populations.

The quality of the therapeutic relationship has been described as the most significant factor in successful outcomes (Lambert& Bergin, 1994); It may be that horses facilitate the

establishment of this relationship. The exercises employed in equine-facilitated psychotherapy are problem-solving tasks which occur in novel surroundings, and which enable not only the client, but also the therapist, to view situations in a different light than may be possible in traditional psychotherapeutic settings; it is based primarily on observations rather than solely on what is said. Sometimes hidden emotions emerge in this setting while the client is actively engaged in solving the problems at hand (Christian, 2005). Each activity is followed by processing time in which the client is encouraged to make connections between what occurred in the session and his/her internal state. Eggiman (2006) describes observing behaviors before and after the introduction of the horse, and noting significant improvements in maladaptive behaviors in children with histories of abuse.

5.2 Precautions and Contraindications

In addition to ethical considerations, the element of safety should be given paramount status when considering the implementation of therapeutic activities involving horses. To date, the two leading professional membership organizations claim to have impressive safety records (Mullins, 2005; Thomas, 2006), but only through the maintenance of high standards and accreditation can the risks inherent in this type of activity continue to be minimized. It should be emphasized that despite its widespread application to a variety of clinical issues, this treatment approach is not suitable for all clients, and that some clinical populations may not respond to this form of therapy. Precautions and contraindications established and field tested by the Equine-Facilitated Mental Health Association (NARHA EFMHA, 2008) are listed in Appendix C.

CHAPTER 6

FUTURE DIRECTIONS

Despite the long tradition and intuitive appeal of therapy involving equines the majority of the evidence that exists is exploratory in nature rather than empirical. This review is a tentative first step toward considering the evidence in the aggregate. The final aim of this systematic examination of the data is to highlight future research needs and recommendations that have become apparent as a result of this study. Although the literature is replete with qualitative studies—the standard for exploratory research in new areas-- of the benefits of equine-assisted/facilitated psychosocial interventions, much work remains to be done in the quantitative realm if this treatment approach is to gain credibility; Well-designed, controlled, replicable research on the effectiveness and efficacy of equine-assisted/facilitated interventions is lacking. Preliminary studies such as those reviewed here are promising, but they underscore the need for more rigorous investigation of this treatment approach. Perhaps the greatest value in a study such as this is that it illuminates not only the gaps, but also the difficulties involved in conducting investigations of this nature and in so doing, uncovers specific directions for the next phase of research. These specific directions are described in the remainder of this chapter.

6.1 Studies of Specific Populations

Researchers would be wise to investigate the psychosocial effects of equine-involved interventions on consumers with specific diagnoses. For example, this investigation uncovered two systematic reviews that have already been done on populations with cerebral palsy (Snider et al., 2007; Sterba, 2007). One of the chief utilitarian values of a systematic review is comprehensive coverage of the extant literature according to pre-established criteria, which establishes the groundwork for subsequent periodic updating. Consequently, an updated

systematic review should be done on any studies not included in those two prior reviews, and another review of studies on the population investigated here should be done using the focus of the current study on psychosocial benefits. To this end, a listing of the studies on this population which were excluded in the present review has been included in Appendix A.

6.2 Use of Consistent Definitions of Components of Equine-Assisted Psychotherapy

Currently, some equine-assisted/facilitated therapeutic approaches utilize un-mounted activities, while others integrate riding into the treatment plan; It would be helpful to investigate which aspects of which approach are helpful for which client populations. Some studies investigate equine-facilitated psychotherapy (EFP), as defined by NARHA, while others investigate a combination of therapeutic horseback riding and EFP. Dismantling studies that excavate the underlying mechanisms of action that contribute to the overall appeal and effectiveness of this form of therapy are indicated.

6.3 Use of Comparison Groups Receiving Established Interventions and Receiving EAP as an Adjunct or Complementary Therapy

There is a dearth of information comparing this treatment approach to other psychotherapeutic techniques that have been shown to be effective both statistically and clinically. Future studies should include the use of comparison groups receiving established interventions, such as cognitive behavioral therapy and systematic desensitization. Urgently needed are studies examining EAP used as an adjunct or complementary therapy to established treatments. These studies should seek to establish the dosages, diagnoses, and outcomes for which adjunctive use is effective.

6.4 Longitudinal Designs Investigating Effects of EAP on Humans and Horses

Longitudinal studies that investigate the protracted psychosocial effects of interventions that use horses in service of healing are, to date, scarce in existence and limited in scope; there is a conspicuous gap in the literature that remains to be filled with more longitudinal studies. In addition, it would be useful to explore the physiological responses that occur when clients interact with horses in a therapeutic setting. Even fewer studies exist on the physiological and behavioral

effects of this application on the horses that are integral to this approach-- three studies were identified during the course of this review (Kaiser et al, 2006; Pyle, 2006; Suthers-McCabe & Albano, 2004).

6.5 Conclusion

Although research into the psychosocial effects of therapeutic techniques employing horses can be considered to be in its infancy, this initial review illustrates that there are a sufficient number of preliminary and pilot studies that demonstrate the promise of this approach. The next logical step indicated in the progression is for the design and implementation of high quality studies with sufficiently large sample sizes based on statistical power analyses. While it may be practically impossible in investigations of this nature to reach the level of rigor that is the gold standard in medical research, and upon which the principles of evidence-based practice are based, investigators should strive with all due diligence to increase the methodological quality of future studies.

Because this review only examines the effectiveness of this treatment alternative, due to the absence of randomized controlled trials, it is impossible to ascertain whether any beneficial effects noted were caused by the intervention or other factors. Evidence of effectiveness can be conceptualized as practice-based evidence; efficacy studies are necessary to inform evidence-based practice. Only one study was found that examined the efficacy of this approach (Trotter et al, 2008); despite the limitations of the study noted by the author, the results were very promising, and more research into the efficacy of this treatment approach should be undertaken.

More systematic reviews that are conducted transparently and thoroughly of high-quality research studies of the psychosocial effects of interacting with equines are necessary to inform practice and to assist consumers in making enlightened and practical determinations in seeking effective and relevant treatment options. Creatively and carefully designed and conducted research and the subsequent promotion of interventions involving equines as a credible form of treatment will be critical to its further implementation and ultimate success.

APPENDIX A

EXCLUDED STUDIES

Beckman-Devik, L. & Ansin, C, (Winter, 2008). Evaluation of the effects of a therapeutic horsemanship program for children with attention deficit characteristics: A study at Perkins School's Rein in a Dream. *The Latham Letter*, 12-17.

Cornelius, S. (2002). *An exploratory study of theoretical concepts used by practitioners of equine-assisted psychotherapy in treating eating disordered patients in residential treatment settings: A project based upon an independent investigation.* Unpublished master's thesis, Smith College School of Social Work.

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APPENDIX B

SELECTED RESEARCH TERMINOLOGY AS DEFINED BY
THE HORSES AND HUMANS RESEARCH FOUNDATION

(http://www.horsesandhumans.org/Research_Terminology.html, p.1)

- Equine-assisted Activities/Therapies (EAA/T): An umbrella term inclusive of all the various offerings of NARHA centers and all of the equine activities and therapies designed for people with disabilities or diverse needs. This term is accurately used for making global statements about NARHA center activities involving participants. For example, a NARHA center that offers therapeutic riding, vaulting and hippotherapy can say that they offer equine-assisted activities.
- Therapeutic Horsemanship: Equine activities organized and taught by knowledgeable and skilled instructors to people with disabilities or diverse needs. Students progress in equestrian skills while improving their cognitive, emotional, social and behavioral skills.
- Therapeutic riding: Mounted activities including traditional riding disciplines or adaptive riding activities conducted by a NARHA certified instructor
- Interactive Vaulting: Horsemanship activities, movements around, on and off the horse or barrel, and gymnastic positions on the back of the horse at the walk, trot or canter. Interactive vaulting offers educational, social, creative and movement opportunities for a varied population.
- Therapeutic Driving: Activities related to carriage driving. Following NARHA standards for driving conducted by a NARHA certified instructor. May be considered equine-assisted therapy if driving activities are incorporated by a therapist into a treatment plan. May also be done in competition.
- Equine-facilitated Learning (EFL) (also Equine-assisted Learning): Includes equine activities incorporating the experience of equine-human interaction in an environment of learning or self-discovery. EFL/A promotes personal exploration of feelings and behaviors in an educational format. It is conducted by a NARHA certified instructor, an educator or a therapist. Goals may be related to self-improvement, social interaction and/or education.

- Horse handler, horse expert, equine professional, horse leader, equine specialist: Terms which may be used to indicate the person handling the equine during a session and/or training and conditioning the equine for participation in equine-assisted activities. Usage may vary by discipline. The HPOT session where a horse is long-lined might have a horse handler, whereas the person leading the horse in a therapeutic riding lesson may be the horse leader.
- Equine: A general description inclusive of horses, ponies, mules, donkeys, or miniatures. Of special note: the equine is not inanimate, therefore we refrain from phrases such as “using the horse” or “a pony is used”. We might “use” the movement of the horse, or we may “use” examples of equine behaviors, we do not “use” the animal. Consider phrases such as work with the horse, equine partner, incorporating the equine, the horse assisting the therapist, or the pony facilitating the therapy.
- Use of terminology related to persons with disabilities will follow the common usage by the World Health Organization (WHO) that is “people first, disability or diagnosis second.” Preferred statement: “rider with cerebral palsy”; Incorrect: CP Rider.
- Hippotherapy (HPOT): Hippotherapy is a physical, occupational or speech therapy treatment strategy that utilizes equine movement. This strategy is used as part of an integrated treatment program to achieve functional outcomes. (More information at the American Hippotherapy website).
- Equine-assisted Therapy (EAT): Treatment that incorporates equine activities and/or the equine environment. Rehabilitative goals are related to the patient’s needs and the medical professional’s standards of practice.
- Equine-facilitated Mental Health (EFMH): inclusive of equine-assisted activities and therapies with a focus on mental health issues.
- Equine-facilitated Psychotherapy: 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, riding, driving, and vaulting. EFP is facilitated by a licensed/credentialed mental health professional working with and/or as an appropriately credentialed equine professional.

- Mental Health Professional: A licensed and/or credentialed medical professional who specializes in the treatment of individuals with psychiatric, psychological, emotional or behavioral diagnoses.
- Therapeutic: An activity is therapeutic if a participant derives benefit, shows improvement or feels better once engaged. An activity can be therapeutic without being considered as therapy. In general, EAA's may be described as therapeutic, but they are not therapy or are not considered treatment without fulfilling specific requirements. (See therapy).
- Therapy: Claims of providing therapy or treatment, or billing for services with a third party may be done only by a licensed/credentialed professional such as a PT, OT, psychologist, social worker, MD, among others. Laws differ by state. If non-licensed/credentialed personnel claim to be doing therapy or providing treatment, this is often considered fraudulent.
- Treatment: Services in which therapy is provided. Generally thought of in a medical model. (See therapy).

  TERMS TO AVOID:

  - Hippotherapist/Equine Therapist/Equine-assisted Psychotherapist: these terms (and other similar terms) are never to be used, as there are no such professions, professional education or licensing in North America. An appropriate description would be the therapist first (recognized profession) with the equine-assisted therapy following (i.e. PT using HPOT, clinical psychologist doing EFP).
  - Modality: Within HPOT, the use of the movement of the horse is defined as a tool rather than a modality. Legally, hippotherapy or the use of the movement of the horse is not a modality, and the term modality should not be used. Additionally, the equine is not the tool; the movement and/or the behavior of the horse is the therapeutic tool. (See Equine).

- Using the horse/the horse is used: The equine is a sentient being, and participates in EAA by facilitating or assisting in the provision of services. Humane treatment during NARHA activities is quintessential, including respectful verbage in discussing the equine's participation.

APPENDIX C

PRECAUTIONS AND CONTRAINDICATIONS AS DEFINED BY THE EQUINE-FACILITATED MENTAL HEALTH ASSOCIATION

PRECAUTIONS FOR EQUINE-FACILITATED MENTAL HEALTH ACTIVITES

(NARHA EFMHA, 2008, p. 1-2).

Client has:

- History of animal abuse
- History of fire setting
- Suspected current or past history of physical, sexual and/or emotional abuse
- History of seizure disorder
- Gross obesity
- Medication side effects
- Stress-induced reactive airway disease (asthma)

NARRATIVE FOR PRECAUTIONS:

“Animal abuse” concerns are included in the interest of the horse’s welfare. If the horse is not safe, then the session cannot be safe.

“Fire setting” histories should be carefully assessed to ensure the promotion of a safe physical environment.

“Active abuse” suspicions should always be reported to the appropriate authorities. Such reporting does not always result in cessation of the abuse. Clients are unlikely to be able to safely explore deep psychic issues in the context of a pervasively unsafe environment.

“Gross obesity” is associated with eating disorders and various other medical conditions. Obesity is a safety concern. Guidelines on weight limits for equines are included in the NARHA Standards.

“Medication side effects” can lead to severe alterations in balance, arousal level, coordination, and strength as well as difficulties with speaking and breathing. Programs develop and implement procedures and processes for remaining familiar with clients’ medication regimens and clients’ potential for and history of side effects.

An acute episode of “reactive airway disease” can be triggered by stress and anxiety. Although all medical conditions have a psychosocial component, RAD is singled out because of its prevalence and potential for sudden, severe onset of symptoms.

If “migraine” is in process, riding is not advised.

CONTRAINDICATIONS FOR EQUINE-FACILITATED MENTAL HEALTH ACTIVITES

(NARHA EFMHA, 2008, p. 1)

Client is currently:

- Actively dangerous to self or others (suicidal, homicidal, aggressive)
- Actively delirious, demented, dissociative, psychotic, severely confused (including severe delusion involving horses)
- Medically unstable
- Actively substance abusing

NARRATIVE FOR CONTRAINDICATIONS:

“Dangerous to self or others” is the clinically accepted term to describe those clients experiencing a psychiatric emergency. Equine experiences cannot be safely facilitated for clients exhibiting these behaviors.

“Actively delirious, demented, dissociative, psychotic, or severely confused”, as well as “actively substance abusing” reflects the committee’s agreement that equine experiences cannot be safely facilitated when clients are exhibiting serious alterations in mental status.

“Medical instability” can be associated with a variety of psychosocial challenges. The committee seeks to enhance awareness that physical/medical issues must always be considered as part of a thorough clinical assessment.

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BIOGRAPHICAL INFORMATION

Alison Selby has spent a lifetime learning from horses. She showed hunters and jumpers as a teenager, was a rodeo queen, and managed an Appaloosa breeding farm as a young adult. She also worked for a time with gaited horses. During a break from attending college at Northeast Missouri State University, where she was studying art education, she became a working student for a member of the United States Three-Day Event Olympic team while pursuing her Horsemaster's certification; It was at that point that her life's course took a drastic turn: Having always been interested in Thoroughbreds, she took a position at a leading breeding and racing stable based in Virginia, and from there went on to an eighteen-year career as an exercise rider at Belmont Park in New York for some of the world's most talented and best known trainers, including Woody Stephens and H. Allen Jerkens, where she galloped over 30,000 horses. After completing her undergraduate degree in Psychology at New York University, she earned her Advanced Therapeutic Horsemanship certification in Wylie, Texas, and taught riders with physical, cognitive, and emotional disabilities for several years. She became interested in the benefits of horsemanship for at-risk youths after realizing that all of us have abilities and disabilities, some are just more apparent than others, and completed her MSSW with a goal of working with this population. She is currently involved with building a practice employing horses in therapeutic work with mental health clients. Alison discovered the excitement of carriage driving and is competitive in North Texas combined driving events. She continues to ride, school, and learn from horses.