A Powerful Approach or the Power of Horses: Is Equine-Assisted Psychotherapy an Effective Technique or the Natural Effect of Horses?

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A POWERFUL APPROACH OR THE POWER OF HORSES: IS EQUINE-ASSISTED PSYCHOTHERAPY AN EFFECTIVE TECHNIQUE OR THE NATURAL EFFECT OF HORSES?

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Abstract

The lives of humans and animals have been intertwined through time immemorial, and in many instances the relationship between humans and animals has been thought to be good for human well-being. As such, it is not surprising that treatments for a wide range of ailments, from physical to psychological, have developed that capitalize upon the relationship between humans and animals. While animal-assisted interventions have become popular in practice, the research-base of evidence to demonstrate the effectiveness of these approaches is limited. Research is needed to clarify the effectiveness of animal-assisted approaches using well-controlled and randomized samples, and to help shed light on the mechanisms of effectiveness for these techniques. While a variety of animals are used for psychotherapeutic intervention, horses are of particular interest because of the qualities that distinguish them from traditional household companion animals. The size, power, and sensitive nature of horses are thought by many to serve as a foundation for personal growth and psychological healing for humans. The current study evaluated the impact of equine-assisted psychotherapy (EAP) versus traditional contact with horses on the depressive symptoms of five at-risk adolescents. Results suggest that structured contact with horses in either a horsemanship or EAP context may be both enjoyable, engaging, and beneficial for at-risk youth within the areas of depressive symptoms, social skills, and coping skills. Additional skills, such as persistence and problem-solving, may be uniquely impacted by EAP.

Chapter 1: Introduction

Animals have historically been thought to impact the well-being of humans. That historic tradition is alive today, and modern times are seeing the incorporation of animals into mental health treatment through the medium of animal-assisted psychotherapies. Although this use of animals is growing in popularity (Thompson, Iacobucci, & Varney, 2012), little is known about how animals may be beneficial to human well-being. While some believe that it is the use of the animal within a psychotherapeutic treatment plan that is beneficial, others believe that there is something intrinsically healing about animals. Growing scientific interest in the human-animal bond over the past decades has begun to seek to answer the question of animals' impact on humans, often from the perspective of inherent unique qualities that animals possess.

Horses, in particular, have been characterized as able to provide partnership and authentic feedback, to support self-awareness, and to help humans to see alternative perspectives and communicate more clearly (Keaveney, 2008). Research on the impact of horses on their owners and riders in nontherapeutic contexts suggests that there is something inherent about goal-oriented interactions with horses that contribute to these perceived benefits (Keaveney, 2008). These seemingly inherent benefits of horses have contributed to their incorporation into psychotherapeutic treatment, as many of the touted benefits of equines align with social-emotional wellness objectives toward which mental health treatment often works.

This equine-assisted approach to psychotherapy (EAP) is now widely popular, despite a lack of solid research evidence to support its effectiveness (Bachi, 2012*;* Thompson et al., 2012). Specifically, there is insufficient research to understand for whom, for what problems, and why EAP is effective. Given this growing clinical interest and dearth of well-controlled research evidence to answer these questions, the current study sought to contribute to this domain in two

ways: by examining whether simple engagement with horses in a structured, but non-therapeutic setting (analogous to recreational equine activities) has significant mental health benefits compared to those receiving no equine exposure; and by providing evidence about the psychotherapeutic benefit of EAP.

Background

With historic traditions joining animals and psychological wellness, in conjunction with the current attention being given to animal-assisted psychotherapies, it is of interest to understand what specific wellness benefits can be derived from adding animals into therapeutic settings. Two widely-established theoretical foundations have been established to explain the beneficial effects of animals in the therapeutic process. Kruger and Serpell (2010) made a distinction between those who believe that the qualities that are intrinsic to animals (e.g., sensitivity, responsiveness, and unconditional love) assist in the facilitation of therapy, and those who view the animals as a therapeutic tool to help clients see new perspectives, learn new skills, and discover new ways of responding to challenges. From this latter perspective, the animal does not simply serve as a means of facilitating some other end, such as rapport. Rather, the focus is on the working relationship between the client and the animal, and the animal's capacity to provide honest feedback (Kruger & Serpell, 2010). Essentially, this theoretical divide boils down to whether there is something therapeutic about the animal itself that is delivered simply through interaction with it, or whether it is the use of the animal within the context of a specific therapeutic intervention that is beneficial.

Qualitative research has examined the benefits that participants feel are provided by horses when interacting with them, such as social, informational, and emotional support; honest feedback; and lessons in emotional awareness, authenticity, communication, confidence, and

leadership (Keaveney, 2008; Yorke, Adams, & Coady, 2008). Based upon this information, horses appear to be perceived as a particularly useful medium for the psychological growth and healing of the humans who work with them, even outside of a psychotherapeutic context. This perception seems to provide the foundation for EAP, where horses are used in therapeutic settings to facilitate client outcomes related to psychological wellness and personal development. In fact, including equines in psychotherapeutic treatments has been noted by researchers to be rapidly gaining popularity over the past decade (Selby & Smith-Osborne, 2013).

The qualities of horses reported within qualitative studies of individuals involved with nonpsychotherapeutic horsemanship (e.g., Keaveney, 2008; Yorke et al., 2008) also leave one to wonder whether working with horses may be psychotherapeutic even outside of an intentionally psychotherapeutic setting. Is there something naturally healing about working with horses? Based upon the perceptions of individuals who own and otherwise work with them (Keaveney, 2008; Yorke et al., 2008), it seems as if even nonpsychotherapeutic goal-oriented equine interaction may be a promising avenue for enhancing communication skills, self-awareness, and emotional regulation, among other important social-emotional skills, at least in nonclinical samples.

Currently, animals are used in both informal, unstructured ways as well as in formal psychotherapeutic techniques to benefit the emotional and psychological wellness of humans (Pet Partners, 2015). Less structured animal-assisted activities may include activities such as bringing a therapy dog into a hospital to casually visit with patients, with the intention of providing comfort or happiness. These unstructured activities do not include specific goal-directed interactions between the patient and the animal. In contrast, more formal psychotherapeutic uses of animals are administered by a qualified mental health professional,

include specific plans for the use of the animal within the psychotherapy, and work toward specific, individualized treatment goals. These formal animal-assisted psychotherapies are gaining in popularity, but are also quite variable with regard to types of animals used, theoretical orientation of providers, and specific procedures for use of animals in treatment protocols.

One meta-analysis highlighted the psychological benefit that interventions using animals can have in the lives of humans, particularly with regard to depressive symptomology (Souter & Miller, 2007). This meta-analysis focused on studies that used animal-assisted interventions with outcome variables related to depressed mood or depression. Rigorous inclusion criteria led to only five studies being included in the meta-analysis, none of which were published in peer-reviewed sources. Each of these studies measured the construct of depression using self-report measures that have been validated in their measurement of depressive symptomology. Four of the included studies involved nontherapeutic contact with animals, while one study involved animal-assisted therapy, specifically. Overall, Souter and Miller (2007) found a statistically significant, medium-sized effect for the impact of animal-assisted interventions on symptoms of depression, as measured by these well-accepted psychometric instruments. These are promising early results in support of the positive effects that exposure to animals can have on symptoms of depression. It should, however, be noted that across the five studies included in their analysis, all participants were adults and all animals were dogs. This limits the generalizability of these results to other age-groups as well as contact with other types of animals.

Equine-Assisted Psychotherapy (EAP) Research

Studies with an experimental design that address EAP interventions specifically, rather than interventions including other animals, are also few in number (Selby & Smith-Osborne, 2013). One specific population that has been shown to benefit from EAP within the context of

an experimental design is *at-risk youth* (Trotter, Chandler, Goodwin-Bond, & Casey, 2008). Generally, at-risk youth are thought to be more likely to experience negative outcomes in a variety of important areas, such as school, and mental and physical well-being (Kominski, Jamieson, & Martinez, 2001; National Center for School Engagement, n.d.; Robbins, Stagman, & Smith, 2012). Further, at-risk youth are often subject to significant stressors. As such, their strategies for managing stress and problem-solving play an important role in their future mental health outcomes (Boxer, Sloan-Power, Mercado, & Schappell, 2012). EAP provides a unique opportunity for experiential skill-building in areas like stress management and problem-solving, and as such, may be particularly useful for addressing the needs of this population.

Trotter and colleagues (2008) found that at-risk youth benefitted from EAP above and beyond a more traditional classroom-based counseling intervention. Significant effects in 17 social-emotional areas were found for the EAP group, as measured by the Behavior Assessment Scale for Children, Second Edition (BASC-2). Areas of improvement included a significant reduction in overall youth-reported emotional symptoms, which included sense of inadequacy, as well as reductions in parent-reported behavioral symptoms, which included symptoms of depression. These preliminary findings suggest that EAP might be useful for intervening with and decreasing problem behaviors, including symptoms of depression, for youth at-risk for negative outcomes.

Studies with non-experimental or quasi-experimental designs have also found positive outcomes for EAP with regard to symptoms of depression, anxiety, and trauma in youth who have been victims of sexual abuse (e.g., Kemp et al., 2013). In one study, improvements in clinician ratings of global functioning for a group of children with heterogeneous behavioral and mental health problems who had experienced abuse was found after EAP (Schultz, Remick-

Barlow, & Robbins, 2007). However, mixed results have been found in terms of the usefulness of EAP for youth with intensive social-emotional needs, such as youth with emotional disorders in day treatment or residential settings. Some have found significant improvements in social skills and communication skills for youth with intensive social-emotional needs receiving EAP (Tetreault, n.d.). Others have found no significant differences between pretest and posttest with trends in the expected direction for outcomes such as self-esteem, expectations for the future, and communication, with no significant differences from pre- to posttest (Wilson & Schuster, n.d.).

Several limitations of previously completed quantitative studies within the area of EAP have caused gaps in the literature to continue. Most studies in this area contain design issues, contributing to an overall low quality of evidence, and many are unpublished (Selby & Smith-Osborne, 2013). Further, the variety of populations and outcomes that have been targeted across studies prevent a meaningful accumulation of evidence to answer questions about for whom and for what problems EAP may be effective (Cody, Steiker, & Holleran Szymandera, 2011). This lack of focus on particular populations and particular outcomes has made it difficult to build a meaningful body of evidence surrounding the effectiveness of EAP.

Popular Claims Outpace Research Evidence

It is not difficult to understand why animal-assisted therapies utilizing horses have become a widely-used modality for social-emotional intervention, given popular beliefs about the therapeutic value of horses held by those who are involved with them (Bachi, 2012). In fact, the EAP industry has outpaced the research literature, with many practitioners' claims regarding treatment effectiveness going beyond the conclusions reasonably able to be drawn from the limited, well-controlled research studies available.

To examine practitioners' claims, Thompson, Iacobucci, and Varney (2012) created lists of websites found using the most popular search engines advertising programs related to the search terms *therapeutic riding, adapted riding, equine therapy, equine facilitated therapy, equine assisted therapy,* and *hippotherapy*. They located 115 different programs, which families in the United States would be likely to come across if searching the internet, that advertised their services as beneficial to children with special needs: 63% for the treatment of physical disabilities, 56% for autism spectrum disorders, 50% for intellectual disabilities, 46% for behavioral disorders, 38% for traumatic brain injury, 32% for learning disabilities, 25% for attention-deficit/hyperactivity disorder, 20% for deaf/hard of hearing, 19% for low vision and blindness, 14% for general mental illness, 10% for cancer or terminal illness, and 9% for chronic health conditions. While popular claims such as these run the gamut, and EAPs are clearly being widely touted as beneficial for a host of populations and needs, an evidence-base has only begun to form answers to the question of whether EAP is an effective treatment modality, and if so, with which populations.

While the current body of research in this area is sparse, what exists on the relationship between humans and horses in a nontherapeutic context indicates that many people view horses as sources of personal growth, support, and healing (e.g., Keaveney, 2008). Such findings support the idea that interacting with horses in a goal-oriented but nontherapeutic manner may be beneficial to emotional and behavioral symptoms. To date, however, most efforts have targeted program development and fund-raising to support equine-assisted programming, rather than outcome research to validate and better understand the mechanisms of action of this approach (Cody et al., 2011). Further, what little research has been done on the therapeutic effects of horses has primarily concentrated on physical, rather than psychological, benefits (Selby &

Smith-Osborne, 2013). Nonetheless, equine-assisted therapies are observed by many researchers to be growing wildly in popularity. EAP is becoming widely advertised and practiced to treat a variety of mental health issues, recognized and covered by insurance companies, and taught at institutions of higher learning (Bachi, 2012; Bachi, Terkel, & Teichman, 2012). As such, it is important that gaps in the research determining the effectiveness and efficacy of these approaches are filled with well-designed experimental studies. This work must be done in order to support EAP as an evidence-based treatment (Selby & Smith-Osborne, 2013). Further, it is essential for program planning and resource allocation to establish whether EAP provides social-emotional benefits above and beyond that of work with horses that is not psychotherapeutically aimed. It is essential to address the gap in the research related to whether there is a measurable benefit derived from nontherapeutic interactions with horses, in order to best guide their incorporation into human wellness.

Purpose of the Study

The current study sought to expand upon previous work within the area of EAP in several ways. For one, it was intended to examine specific populations and more narrow outcomes than have been used to measure social-emotional symptoms in previous EAP studies. This would help to further specify both the benefits that may be derived from EAP, and the populations that might benefit. Further, potentially confounding variables including exposure time, setting, developmental stage, and natural change across time were addressed.

Overall, the current study explored the impact of contact with horses on mental health outcomes, specifically targeting youth at-risk for depression. The following research hypotheses were posited:

1. The EAP and horsemanship groups will show greater decreases in depressive symptomology than the control group.
2. The EAP group will show greater decreases in depressive symptomology than the horsemanship group.

Chapter 2: Literature Review

The History of the Relationship between Humans and Animals

Across human history, animals have played important, albeit varied roles in the lives of humans, often contributing to the well-being of people in various ways. Serpell (2010) provided an in-depth exploration of the historic relationship between humans and animals, summarized within this section. One example of the role of animals relates to the indigenous idea of *animism*, which attributes an essence or soul to all living creatures and natural objects. Historically, hunting and foraging societies have commonly held animist beliefs. These included the idea that misfortune is due to the spiritual influence of the offended spirits of animals. Many hunting and foraging societies revered animals due to this view of the role of animals in nature.

The power of animals in the lives of humans is also reflected in ancient shamanism, which grew out of the belief that animals act as spiritual guardians for humans. It was believed that magical acts, such as predicting the future, upcoming disasters, and the locations of good hunting, or even controlling the natural elements, were facilitated by shamans. Shamans were humans who were very deeply connected with, and aided by, the animal spirits that were thought to guard all people. These shamans were thought to be able to develop friendships with animals, to learn to communicate with them, and to even transform into an animal *familiar* as needed through intense trance. These familiars are described as being able to travel as needed to collect information and execute acts of magic, independent of the shaman's human body. Shamans were also viewed as the primary means of treating mental illness, as mental illness was thought to be caused by spirits (similar to animist beliefs). Shamans' special connections with animal spirits also allowed them access to the spirit world, where answers about the cause and remedy of ailments lay.

Evidence of the unity and symbiotic relationship between humans and animals can also be seen in the example of ancient Egypt, where many gods and goddesses were part human, part animal. Further, in Greek history, local dogs provided curative licks to ailing humans at the temple of Epidaurus, which housed the shrine to the God of Medicine. Clearly, from early human history through the time of early Greek civilization, animals were honored and credited with possessing significant influence with regard to human wellness.

Even in the Christian era, several saints were commonly associated with dogs, and the Elizabethan period saw the prescription of lap dogs as a cure for a range of maladies. However, this questionable medical treatment was associated with heresy during the Inquisition, and propaganda associating animals with possession by the devil completed the transition of the popular view of animals from highly revered to a symbol of the supernatural and evil. This supernatural association of animals persisted through the Middle Ages and Renaissance, contributing to a rigid physical, emotional, and typological separation of human and nonhuman animals during that time.

At the start of the 1700s, however, the tides turned once again as people began to move to cities and towns and pet ownership became popular with the upper and middle classes. Animals began to be incorporated into treatment settings for mental health problems toward the end of the 1700s, aimed at reviving social interest and goodwill toward others in patients. At this time in history, animals were also thought to help people with mental illness navigate the socialization process by teaching individuals how to care for another being and, in the process, how to control themselves. This practice continued to grow into the 1800s, as hospitals more and more frequently featured pets because of the belief that they were healing for humans. By the early 1900s, advances in medical care made it so that animals were no longer common in hospital

settings, and the therapeutic use of animals was largely shelved and ignored for the intervening years. That lasted until the publishing of a pioneering 1980 study by Friedmann, Katcher, Lynch, and Thomas. This groundbreaking study reported significantly improved survival rates for pet owners following a serious medical event. From this study, research interest and theory development surrounding the positive impact of animals on humans began to grow.

Present-day animals are relied on for leisure, entertainment, service, and company, among other ends. From pet ownership to service animals to competitive sports, animals can certainly be said to play a significant role in humans' modern lives. The American Veterinary Medical Association stated that in 2012, 36.5% of households owned dogs, 30.4% owned cats, 3.1% owned birds, and 1.5% owned horses. Clearly, substantial portions of the population share their lives with animals. This marks a return to the positive valuation of the human-animal bond.

Companion animals. Companion animals have been defined by Chur-Hansen, Stern, and Winefield (2010) as "any non-human animal that shares its life with a human caregiver" (p. 140). This arrangement provides a common opportunity for relationships between humans and animals to form. The American Society for the Prevention of Cruelty to Animals (ASPCA) states that, "species suitable to be companion animals include dogs, cats, horses, rabbits, ferrets, birds, guinea pigs and select other small mammals, small reptiles, and fish. Where they may be kept legally and responsibly, domestic-bred farm animals can also be maintained as companions" (ASPCA, 2015). This definition from the ASPCA shows the diversity of animals that can serve the purpose of companionship; however, traditional definitions also require the aspect of a shared life, which may be less true for some animals on this list. For example, horses are often kept at facilities outside one's own home, while animals such as dogs, cats, and rabbits are traditionally

kept in the human's home. As such, it seems likely that the experiences of having a companion animal may vary, particularly with regard to the type of companion animal in question.

As would be expected from the name, companion animals often serve the purpose of human companionship. With traditional household companion animals, humans expect to be greeted when they return home, to have company as they go through their daily routine, and to have a companion with whom to spend their down time. Additionally, people often view their cats and dogs as friends, protectors, and providers of emotional support (Keaveney, 2008; Siegel, 2011). In fact, the American Veterinary Medical Association (2012) found that 62.3% of pet owners considered their pet to be a part of the family.

People display their affection for their companion animals physically through pats, strokes, hugs and kisses, and often associate dogs and cats with unconditional love (Keaveney, 2008). Further, companion animals are thought to provide emotional security, physical closeness, and an emotional bond for their owners (Crawford, Worsham, & Swinehart, 2006). Most research within the area of human-animal relationships has primarily focused on traditional household companion animals and pet ownership. As such, much of what we know about the benefits of these relationships is most directly applicable to relationships between humans and their pets, rather than human interactions with animals in other contexts.

Benefits derived from traditional companion animals. It is clear to see that companion animals, or pets, play important roles in the lives of many people. Researchers have proposed a variety of benefits derived from companion animals, including the provision of social support and relationships, improvements to physiological and psychological wellness, and a sense of engagement. Each will be discussed in more detail, below.

Social support and relationships. To many, animals are not just warm and fuzzy creatures that people allow to live alongside them. Instead, people often consider their pets to be akin to family. In this vein, it has been proposed that animals provide social support to people who invest in human-animal relationships by providing emotional support to them (Beck & Katcher, 2003; Melson, 2003; Siegel, 2011). Researchers have found that people rate their pets as providing as much social support as siblings or parents, and that thinking of one's pet is able to counteract feelings of rejection as effectively as would thinking of one's best friend (McConnell et al., 2011).

Further supporting the idea of a social support function in human-animal relationships, animals that become domesticated are generally species that display social behaviors, like bonding (Fine & Beck, 2010). Some researchers have also suggested that attachment, such as is found in human relationships, is also present in human-animal relationships (Crawford et al., 2006). All in all, the literature suggests that companion animals may well provide important relationship and support functions for the humans with whom they share their lives.

Physiological and psychological well-being. In addition to relational and support aspects of human relationships with animals, research has addressed potential physiological and psychological benefits presented by contact with animals. Research interest in the impact that animals may have on human wellness was re-ignited by a study conducted by Friedmann and colleagues in 1980. These researchers found that while looking at survival rates among men recovering from myocardial infarction or angina pectoris, only 6% of those who had pets died within one year. Comparatively, 28% of those who did not own pets died within the same timeframe (Friedmann et al., 1980). This study called attention to the idea that our interactions with pets may be beneficial for health and wellness in a measurable way.

While interest in researching the human-animal bond was beginning to grow in the 1980s, bringing pets to visit nursing homes also became popular (Hart, 2010). Since then, researchers have worked to clarify the effects that pet ownership or companionship has on an individual's well-being. Extensive research has suggested that these animals can have a positive physiological effect on their human companions in terms of general health, survival rate, physiological indicators of relaxation, and physiological responses to stress (Crawford et al., 2006). Psychological benefits of pet ownership have been found to include reductions in stress, anxiety, and subjective feelings of loneliness, as well as increases in morale (Crawford et al., 2006) and decreases in feelings of depression (Beder, Sullivan-Sakaeda, & Martin, 2012; Hart, 2010). Overall, these findings suggest that the companionship of animals can facilitate measurable improvements in the physiological and psychological wellness of humans.

Engagement. In addition to the social support, physiological benefits, and psychological benefits that pets are thought to provide for owners of all ages, researchers have posited that animals are engaging for children in particular, acting to hold attention and engage their curiosity (Melson, 2003). Animals' ability to engage children in this manner may have important implications for learning. Melson (2003) applied Lev Vygotsky's principles to the strength of learning that is associated with animals. Melson (2003) argued that the context of meaningful relationships that exists between children and animals, and the emotional investment involved in this relationship, provides for optimal learning and increased retention. Additionally, one of the underlying assumptions in the literature surrounding interactions between children and animals is that children also perceive animals as nonjudgmental, allowing children to obtain emotional and social support in a nonthreatening manner (Friesen, 2010). As such, youth populations may benefit in particular from the engagement provided by animals.

Research limitations. The body of literature on human-animal relationships and the impact that animals have on humans is enthusiastic and ever-expanding. It is important, however, to keep in mind the limitations of this body of research as it applies to animal-assisted approaches to human wellness, where animals are specifically and intentionally incorporated into treatment settings for the benefit of humans. While historical evidence indicates that animals have been long believed to be beneficial to the wellness of humans, current research in this area has yet to demonstrate a clear and comprehensive answer regarding the impact of human-animal relationships on humans.

Limitations of the current body of literature on the impact of human-animal relationships on humans include a primary reliance upon convenience samples and data that is descriptive in nature, particularly for research that examines psychological impact. Additionally, the emphasis in research surrounding the benefits of animals on humans has traditionally been placed upon individuals who own pets of their own accord. While this is not problematic in and of itself, it significantly limits the generalizability of results by failing to address whether these findings would hold true for those who are not self-selected pet owners (Wilson & Barker, 2003). Rather than focusing on animal ownership, some researchers propose that attachment should be a primary variable (Peacock, Chur-Hansen, & Winefield, 2012). An obstacle to this recommendation, however, is the lack of adequate and sound scales to measure attachment in human-animal relationships (Chur-Hansen et al., 2010). In addition, the body of research on the human-animal bond and health has generally lacked control for outside influences on outcome (Chur-Hansen et al., 2010).

Due to limited research surrounding the unique qualities of animals, the relationship between humans and animals, the effectiveness of incorporating animals into treatment,

mechanisms to explain observed effects, and other treatment variables, much of the current theory in the field is based upon individual perceptions, participant reports, qualitative data, researcher hypotheses, and very preliminary experimental studies. Nonetheless, this information is important in constructing an accurate picture of the current state of animal-human interaction and its use toward the goal of human wellness. Overall, the benefit to humans derived from relationships with animals seems to be one of the foundational elements reflected in much of the research on companion animals, and also appears to be capitalized upon in animal-assisted approaches to human wellness.

Applying Animal Relationships to Wellness Outcomes

Animals have been incorporated into physiological and psychological wellness outcomes with much diversity, from casual to formal methods. Despite the variety of techniques that are currently in practice, there has not yet been standardization across terminology used to talk about animal-assisted approaches to human wellness (Kruger & Serpell, 2010). As such, a description of the major categories of animal-assisted approaches and their delivery is warranted.

Animal-assisted approaches, activities, and therapies for human wellness. Animal-assisted approaches to human wellness can be divided into two general categories, including animal-assisted activities (AAA) and animal-assisted therapy (AAT). While similar in name, differences with regard to the purpose of the contact with the animal and the structure of the exposure exist. Each will be described in more detail, below.

Animal-assisted activities (AAA). AAA has been defined as an introduction to an animal for short-term benefits (Friedmann, Son, & Tsai, 2010). According to Pet Partners (previously the Delta Society), the core features of AAA include a lack of planned treatment goals, no requirements surrounding documentation of the interaction, and unplanned content and duration

of the interaction (Pet Partners, 2015). Essentially, AAA involves casual visitation between animals and humans that is intended to have general positive benefits for the human's quality of life. AAA can be facilitated by volunteers with training, and does not require any specific therapeutic licensure. In this approach, the animal is used in a *mere contact* manner without any particular therapeutic agenda. An example of an animal-assisted activity might include therapy dogs briefly visiting individuals in a hospital or nursing home with the hopes of providing some happiness and calm to the residents in that moment. Overall, AAA is an informal and relatively unstructured form of incorporating animals into human wellness. Benefits derived from AAA seem likely to be related to benefits of companion animals, discussed earlier, as they are derived outside of the context of a specific therapeutic intervention. As such, physiological impacts, such as those on physiological indicators of stress and relaxation, as well as elements related to the relationship between humans and animals, such as social support and engagement, may play a critical role in the effectiveness of AAA.

Animal-assisted therapies (AAT). In contrast, AAT is generally defined as interventions that deliberately integrate animals into the setting or the process of physical and/or psychological healing or treatment (Chur-Hansen et al., 2010; Kruger & Serpell, 2010; Nimer & Lundahl, 2007). Therapeutic interventions that use animals do so in a more structured manner (i.e., the animal serves as a *therapeutic tool* and is incorporated into a planned treatment process), and have a specific purpose for the animal's role than in AAA. Further, AAT services are provided by trained and appropriately licensed professionals in the field of health or human services (Pet Partners, 2015). Examples of AAT might consist of a therapist specifically incorporating a dog into therapy sessions in order to facilitate rapport, or incorporating horsemanship into the treatment plan of a child with a physical disability in order to build muscle strength and

coordination. AAT, then, is much more highly structured and intentional than AAA, and more stringent in terms of whom is qualified to provide the service.

To examine research outcomes measuring the effectiveness of AAT, Souter and Miller (2008) completed a meta-analysis on the effects of AAT on symptoms of depression. They found a statistically significant effect for the impact of AAT on symptoms of depression, with a medium effect size. Only five studies met the rigorous inclusionary criteria, however. Further, as all studies analyzed included adult participants, and all animals utilized were dogs, these findings are limited in terms of generalizability.

Nimer and Lundahl (2007) also conducted a meta-analysis that reviewed a much larger sample of 49 peer-reviewed studies and dissertations on AAT. To analyze the collective outcome variables of these studies, Nimer and Lundahl (2007) created four classes of outcome variables, which they defined as: (1) autism spectrum disorders (which included outcomes such as social skills and communication); (2) well-being indicators (which included anxiety, depression, and fear); (3) behavioral actions (e.g., aggression, rule compliance, violence, and verbal resistance); and (4) medical symptoms (e.g., heart rate, blood pressure, motor skills, and coordination). When evaluating the overall effectiveness of AAT, the researchers found large effect sizes for outcomes categorized as autism spectrum disorders, low to moderate effects for outcomes categorized as indicators of well-being, and moderate effects for outcomes within the categories of behavioral actions and medical symptoms. When the effect sizes of studies with control groups were compared to studies without control groups, outcomes did not differ significantly. This led the researchers to conclude that these effect sizes are likely to be a good representation of the true effect of AAT, not skewed by the large number of studies without control groups included in the overall estimate of effect. While the findings of these meta-

analyses reveal a promising start, the diversity of this field and the potential treatment populations require substantially more attention in the way of well-controlled and randomized research studies.

Currently, we are cautioned that "animal-assisted interventions…are currently best described as a category of promising complementary practices that are still struggling to demonstrate their efficacy and validity" (Kruger & Serpell, 2010, p. 33). Cody et al. (2011) similarly noted that the benefits of animals within the therapeutic context lack rigorous research support. Hopefully, time will see growing numbers of researchers rising to this occasion.

Animal-assisted psychotherapy (AAP). AAT can be used in a variety of fields, such as mental health, physical therapy, and speech therapy. Within the field of mental health, AAT is more narrowly termed animal-assisted psychotherapy (AAP). AAP is specifically targeted at improving functioning in cognitive, social, emotional, and/or physiological domains. Like more general AATs, AAP involves specific, preplanned treatment goals as well as the monitoring and documentation of progress across time (Pet Partners, 2015). AAPs can differ in terms of the type of animal used, the setting in which treatment is conducted, the duration of the treatment, and whether a group or individual format is used (Nimer & Lundahl, 2007).

Results of meta-analyses on the effects of animal-assisted interventions for mental health outcomes, described above, indicate that current estimates of effect are in the low to moderate range for combined effects of studies measuring anxiety, depression, and/or fear (Nimer & Lundahl, 2007), and in the moderate range for studies measuring depression, specifically (Souter & Miller, 2007). These results suggest that AAP impacts social-emotional symptoms related to anxiety and depression.

Human Connections to Horses

While animals, generally, are thought to be beneficial to human health, horses seem to have a unique combination of traits that present a valuable medium for both physical and psychological healing. However, much of the research on the benefits of animals focuses on more common household companion animals, such as dogs and cats. As such, the applicability of much of the human-animal interaction research to interactions between humans and horses is questionable. There may, in fact, be substantial differences between horses and other traditional household companions, which may contribute to differences in effectiveness in interventions using horses versus those using animals such as dogs.

Characteristics of horses compared to traditional companion animals. Horses have historically been viewed in the West as animals used for work. However, this view has shifted across time to see horses as a possible pet or companion rather than as a functional object (Birke, Hockenhull, & Creighton, 2010). There are many ways that horses are similar to companion animals - for example, they try to please people, they respond to people's voices, and they interact with people. Many people view their horses, just like cats and dogs, as friends, protectors, and providers of emotional support (Keaveney, 2008).

Despite these commonalities, fundamental differences between horses and other traditional household companion animals do exist (Brandt, 2004). With horses, unlike traditional household companion animals, separation is expected (Siporin, 2012). Specifically, horses are located in barns and stables rather than in people's homes, and are left behind after the rider is done with his or her equine activities. Further, unlike dogs, horses do not snuggle up in people's beds, and they do not accompany people on car rides and neighborhood walks (Keaveney, 2008). As such, the relationship between human and horse seems to be distinctly different than the

traditional household companion animal relationship that has been a focus of study in the human-animal interaction literature.

In addition to these functional differences in typical relationships between horses and people compared to household companion animals and people, there may also be differences in terms of what different types of animals elicit from the humans with whom they engage. Researchers propose that human-animal interactions may promote empathy in individuals who interact with and care for animals (e.g., Daly & Morton, 2006; Dizon, Butler, & Koopman, 2007), but little research has been done in this domain. Although the findings require further investigation, one study found that children who prefer horses had higher empathy ratings than children who preferred dogs, cats, fish, reptiles, and rodents (Dizon et al., 2007). The implications of this finding are still unclear, but it suggests that there may be something unique about horses that promotes empathy in those who interact with them.

Qualitative research has also found differences in individuals' descriptions of the emotional qualities of relationships with horses versus those with traditional household companion animals. Horses, like traditional household companion animals (e.g., cats, dogs), are often credited with being nonjudgmental (Bachi et al., 2012; Freund, Brown & Buff, 2011). However, Keaveney (2008) found that individuals involved with horses often described them as providing conditional love, earned through respect and trust. In contrast to providing unconditional love, Keaveney (2008) argued that horses received the unconditional love themselves from the human. This suggests that horses push humans to be their best, most forgiving selves. Parelli and Parelli (2012) echoed this sentiment, noting that people bring out the best in a horse when they tap into the best of themselves. As such, it seems that by fostering the earning of trust, forgiveness and unconditional love in humans, horses may help people to

grow into their potential. Similar to this idea, Keaveney (2008) also found that rather than projecting their identity upon the animal as may happen with traditional household companion animals, people associated horses with honesty and authenticity. As traits that are widely valued in the world at large, as well as within the world of psychotherapy, this seemingly uniquely equine ability to promote authenticity and unconditional positive regard in humans is one that is particularly relevant to the personal growth and well-being of the humans who work with them.

A final difference between horses and traditional companion animals is related to the amount of contact time with the animal for people who work with horses versus the traditional household companion animal (e.g., a few hours a week at the stable compared to the entirety of the time one spends at home). While one might think that greater benefit is derived from greater time exposure, at least one study has concluded that people do not need to have the intensity of exposure time to animals that owning a pet entails in order to obtain benefits from being in their presence. Both explicitly observing animals and simply being in their presence can directly affect physiological indicators of stress (Friedmann et al., 2010). As such, individuals may benefit from other activities with animals that are less intensive with regard to time investment and responsibility than pet ownership, such as participating in horseback riding or horsemanship activities.

The unique characteristics of horses. Some qualitative research addresses the unique social-emotional lessons and skills that can be elicited by interactions with horses. These studies reveal that many horse owners, riders, and individuals involved in other forms of goal-oriented work with equines perceive themselves as receiving a variety of social-emotional benefits, which are not seen in the traditional household companion animal literature, simply from their interaction with horses. In Keaveney's (2008) qualitative study of owners of horses, participants

reported that horses provided them with a means of engaging in physical goal-directed communication (e.g., nonverbal communication aimed at accomplishing an end); a partnership based on mutual trust and respect; bonding enhanced by the experience of adversity; a source of spirituality and awe; an experience of being fully present in the now; and a means of discovering new perspectives on the self and others. Underscoring the idea that horses may teach humans important social-emotional lessons, Keaveney (2008) observed that:

> The truism, 'you can't make someone do something he doesn't want to do,' becomes absurdly obvious with horses. On the one hand, the independence of horses teaches their owners patience, empathy, trust, respect, confidence, attentiveness to others, and control over one's own emotions of frustration or anger. But at the same time, owners learn creative arts of persuasion, better communication skills, an awareness of how and when to bestow rewards or remove pressure – skills that may transfer to persuading humans. (p. 453)

In addition to these skills, horses are described as being able to provide authentic feedback to a human about their emotions and behaviors in the moment. This information can increase one's self-awareness and assist in personal growth (Siegel, 2011). Due to this provision of feedback about the self, it has been hypothesized that horses provide emotional and informational support for people whether or not the human's contact with horses is within the context of a psychotherapeutic intervention (Siegel, 2011).

Yorke and colleagues (2008) also conducted a qualitative study of individuals involved with horses. They found that these participants believed that relationships between horses and humans can be therapeutic in recovering from traumatic events, even when psychotherapy was not the intent of the relationship. Specifically, these participants felt that both physical and

emotional intimacy was derived from their relationship with horses, which helped them to cope. In line with this idea of emotional support, Cooper and Jobe (2007) believe that relationships with horses can meet a variety of critical human needs. They proposed that needs met through horses include feelings of safety and predictability in relationships; feelings of unconditional positive regard and belonging; a means of experiencing achievement and seeing one's progress; learning about self-control as a means of controlling the environment around them; and providing the opportunity to experience adventure and the rewards that can come from self-motivated, goal-oriented behavior.

Researchers have hypothesized that several unique traits of the horse, lacking in most traditional household companion animals, elicit these social-emotional lessons and skills. These include the paradox of intimidation and vulnerability presented by horses, their social hierarchy structure, nonverbal communication, and responsiveness to humans. Each will be discussed in more detail, below.

The paradox of vulnerability and intimidation. The size differences between horse and human is highlighted by authors across the equine therapy literature as one factor that contributes to horses' ability to teach humans. The large stature and physical power of horses are said to elicit both attention and respect from the human (Freund et al., 2011), and to bring an element of danger that is typically not perceived in traditional household companion animal interactions (Brandt, 2004). However, the horse is wary of us, as well. This wariness is related to a second proposed core underpinning of the impact of horses on humans: the concepts of predator and prey animals.

Humans are typically conceptualized as perceiving the world from a predator or hunter perspective, in which we look directly at what we want, move confidently toward our goals, look

forward with eyes at the front of our head, et cetera. Horses, on the other hand, are conceptualized as perceiving the world from a prey perspective, in which one is hunted and must be wary of surroundings. Prey species flee quickly, and are wary of predators. To illustrate this point, think of the differences in the dynamic between an antelope and a lion. The antelope, as a prey species, lives in a herd for safety, has a body made for fleeing, and must be ever wary of the surroundings to ensure its survival. The lion, on the other hand, as a predator, roams confidently around his territory with few dangers and attends to the surroundings as needed to meet goals such as hunting an antelope. In the current context, horses come from the perspective of the antelope, and humans come from the perspective of the lion. Successfully interacting with horses requires the human to appreciate these contrasting perspectives, despite the intimidating size of horses. As such, horses are commonly thought of as representing a paradox for humans: while they are intimidating in size and potentially dangerous, they are also vulnerable animals of prey able to be controlled by humans (e.g., Bachi et al., 2012; Weiss, 2009). This is the paradox of vulnerability and intimidation.

Within the conceptualization of horses as prey animals, one of the first things a horse needs to know about an approaching human is whether or not it is a predator. Horses have eye placement on the side of the head, typical of prey animals, which allows for near 360-degree range of vision (Keaveney, 2008) and the ability to take in almost all of its surroundings. If a human is in their pasture, the horse can see them. If the human is frustrated, rushed, or demanding, the horse may perceive potential predation and respond with wariness or fear (Skeen, 2011). In order to effectively approach and interact with a horse, it is theorized that one must be aware of one's own behaviors that communicate a predator approach, such as direct eye contact, quick movement, and direct approaches. Weiss (2009) proposed that horses might be

sensitive to the adrenaline that predator animals (such as humans) release when nervous or fearful, and might use that information to inform their behavior (e.g., flee from the emotionally aroused human). A predator with high levels of adrenaline would pose a risk for the horse's safety in the wild, and as such, this is thought to be a signal of danger to the horse. Weiss (2009) further expanded upon this hypothesis, and noted that when our behavior is incongruent with our emotions, our adrenaline is likely to be high. This may then mark us as a danger to the wary and perceptive horse. Although further research is needed, hypotheses such as these seek to discern the foundations of the sensitivity to human emotion and skill in perceiving human mood that is observed in horses (e.g., Freund et al., 2011). Despite the need for further investigation, these aspects of vulnerability and intimidation are thought to be a foundational element of equines' unique impact on psychological wellness.

Social hierarchy. In addition to being a prey species, horses are herd animals with a strict social hierarchy, or order, of members (Keaveney, 2008). Their survival is largely based upon their ability to successfully navigate this hierarchy and to communicate power clearly (Mann, 2011). Cooperation is important for horses living in a herd, and members of the herd demonstrate strong bonding and trust (Bachi et al., 2012).

In order to gain the trust of horses, humans must demonstrate leadership and understand this hierarchy (Parelli & Parelli, 2012). In asking a human to be a leader for the horse, the human has the opportunity to develop leadership skills and clear communication of their intentions (Bachi et al., 2012). As such, the social hierarchy in which equines function is thought to contribute another valuable and unique component to positive social-emotional outcomes.

Nonverbal communication skills. Prey animals such as horses are described as having highly developed systems of communication based upon body language (Burgon, 2011). Since

horses use their bodies to communicate, they are thought to have a strong ability to read the body language of others (Brandt, 2004). People, too, communicate their feelings and thoughts through body language, whether or not we are aware of doing so (Brandt, 2004). Horses are said to utilize their body language to *mirror*, or match, the emotional or mental states of the people around them (Garcia, 2010), and in this way they provide immediate feedback to us about our emotions and behavior (Pendry & Roeter, 2013). As horses are unable to understand the complex verbal discourse that we typically engage in with other humans, one must engage in horse-friendly nonverbal communication in order to communicate effectively and work toward desired goals with a horse (Brandt, 2004; Parelli & Parelli, 2012). In fact, in studying two specific approaches to horsemanship (i.e., natural horsemanship and dressage), researchers have explicitly identified effective communication between horse and human as fundamental to success in either of these two forms of horsemanship (Savvides, 2012).

In a qualitative study of 25 women and their horses, themes indicated that horses increased participants' awareness of their nonverbal communication and the fact that they are constantly communicating this way through their bodies (Brandt, 2004). Researchers have argued that the horse's sensitivity to mood and emotion requires individuals to learn to be aware of their own emotions and body language, and to move toward congruence between the two, in order to interact successfully with horses and complete challenges in a structured, goal-oriented setting (Pendry & Roeter, 2013; Weiss, 2009). Horses' reactions to the body language of a client in psychotherapy provides an opportunity for the client and clinician to discuss important issues during sessions (Bachi et al., 2012), as well as opportunities to practice interpreting and providing nonverbal cues (Pendry & Roeter, 2013). As such, horses have been noted to provide excellent metaphors for learning about and practicing communication skills (Skeen, 2011). Even

for those who simply engage in riding, rather than a formal therapy process with horses, developing effective communication with horses seems to be linked to individual's success in resolving interpersonal conflict (Savvides, 2012). Clearly, working with horses provides ample opportunities to learn and hone nonverbal communication skills, further contributing to potential social-emotional and psychotherapeutic value.

Equine responsiveness to humans. A body of literature on equine behavior has further studied the ways in which horses respond to humans, particularly with regard to nonverbal communication. This research helps to lend some scientific support to observations about the unique qualities horses are claimed to possess. One relevant area of equine behavior research examines the ways in which horses can respond to and utilize human nonverbal cues to gain information about their environment. The results of a study that tested horses' ability to use a variety of human cues to find food demonstrated that horses more frequently chose the bucket with food over the empty bucket when given cues, such as the human's gaze alternating from the horse to a bucket of food, compared to no cue (Krueger, Flauger, Farmer, & Maros, 2011). The horses were also found to show overall decreased performance in finding the food bucket when the person's body orientation was turned away from the food, compared to when the body was oriented toward it. Further, the horses in this study were found to often walk in the direction of a human's gaze when the human was turned looking in another direction, particularly when the human was familiar rather than unfamiliar. Proops and McComb (2010) describe similar results, having found that horses would more frequently choose an attentive person (i.e., standing forward and looking at the horse) for a treat over an inattentive person (i.e., varying conditions of body position, all lacking eye contact with animal).

Other research on the ability of horses to use human nonverbal communication (e.g., pointing, staring at) to complete tasks (e.g., finding food in one of two buckets) was able to find evidence for equine use of stimulus enhancement cues such as pointing and use of markers when using human attention to find a food source, but not for use of subtler clues such as gaze or body direction (Proops, Walton, & McComb, 2010). Maros, Gácsi, and Miklósi (2008) found that while horses were able to use a variety of pointing gestures to find food as a group, on the individual level they did not perform above chance levels. These findings suggest that, at the very least, horses are able to clue into some attentional cues that are given by humans. While the complexity of their ability to work with human nonverbal information has yet to be clearly delineated, it is clear that horses are able to differentiate between and respond to certain nonverbal human cues under specific conditions.

In addition to their ability to read, to some extent, human nonverbal cues, some research has also supported the idea that horses respond differently to people depending on how the human interacts with the horse in the moment. As Parelli and Parelli (2013) note, when the human's behavior changes, the horse's behavior also changes. In a study where 40 pre-vet students walked the same horse around a course, the investigators found that little to no tension on the lead rope was associated with little resistance from the horse, as well as physical signs of relaxation such as a low head-set and less ear movement (Chamove, Crawley-Hartrick, & Stafford, 2002). In contrast, high tension on the lead was associated with more resistance from the horse. These authors draw from the findings that the horse in this study was able to detect how confident and experienced a given participant was with horses. This supports the idea that the way that the human interacts with the equine, and the human's mind-set while trying to accomplish a task, is important to the horse's cooperation.

Parallel to this idea of how one interacts with the horse being linked to the horse's behavior, equine behavior research has also examined how horses react to different variations of human approach. Consistent with the wariness of prey animals, research finds that horses appear to be distrustful of direct and demanding approaches. Birke et al. (2011) found that both wild ponies and well-handled equines have stronger fleeing responses when humans make hard approaches (e.g., facing the animal directly with eye contact, a tense posture, fast approach, swinging a lead-rope) rather than less aggressive, indirect approaches. As such, successfully approaching a horse seems to require the human to perceive the horse's prey state, and to approach with body language that communicates a non-predatory approach (Skeen, 2011).

Horses seem to read our behavior and respond based upon these cues. Fureix, Jego, Sankey, and Hausberger (2009) found that 58% of horses were willing to investigate a human who was motionless in the containment area, facing the equine with no eye-contact (a passive and minimally invasive approach). In contrast, when the human slowly approached without eye contact and then reached out to touch the horse, only 20% of horses were investigative. In a sudden approach situation, which is an active approach and most invasive to the horse, such responses dropped even further to 12%. A reversed pattern of aggressive responses was also found, with aggressive responses increasing as the directness of the approach increased. Specifically, threatening behavior was demonstrated by 51% of horses when an unfamiliar human approached suddenly, decreasing to 32% when the human approached slowly without eye contact, and finally down to 15% when the human stood passively in the enclosure. Fureix et al. (2009) concluded that horses seemed to distinguish between invasive and noninvasive scenarios, thus differentiating between passive and active humans. This suggests that how humans

approach horses matters in terms of the horse's reaction, with more direct approaches eliciting less investigatory and more aggressive responses.

Even with familiar caretakers, horses are wary of a suddenly approaching human. In another study consisting of 1120 trials, horses approached the human only 4% of the time, and 1% approached with signs of aggression (Hausberger & Muller, 2002). It should be noted, however, that horses sharing a caretaker tended to have similar responses to other horses cared for by the same individual. This suggests that characteristics of the regular handler play an important role in accounting for individual responses to a suddenly approaching human (Hausberger & Muller, 2002). Perhaps, then, horses give significance to the approach of humans based upon the experiences they have had with humans across time. This very preliminary body of research on equine behavior is the beginning of a foundation for understanding the equine's responsiveness to humans, in terms of understanding nonverbal communication and reacting to human behavior. As such, it may provide important avenues for exploration with regard to understanding the mechanisms by which horses contribute to human social-emotional growth and wellness, as well to understanding the potential mechanisms of EAP treatment.

Harnessing Horsepower

Perhaps due to these unique traits that horses possess, they are one species that is commonly used as facilitators of both physiological and mental health in animal-assisted approaches. Horses are involved with human well-being in a variety of forms, from less structured equine-assisted activities like therapeutic riding to more structured and therapeutically oriented EAPs. An understanding of the various methods by which horses may be incorporated into wellness is critical, and as such, an in-depth discussion of each of the major forms will follow.

Animal-assisted activities and interventions with horses. Within the domain of AAA, a variety of activities combine therapeutic exercises with interactions with horses. These activities can be collapsed into a broad category of therapeutic horsemanship (Selby & Smith-Osborne, 2013). Therapeutic horsemanship involves activities with horses that are planned and facilitated by individuals who are specifically trained to work with persons with disabilities (Horse & Human Research Foundation, 2015).

Therapeutic riding is a form of therapeutic horsemanship that involves activities while mounted on the horse, facilitated by an instructor certified in the field (Horse & Human Research Foundation, 2015). Both therapeutic horsemanship and therapeutic riding are categorized by PATH Intl. (2015) as an equine-assisted activity. This is parallel to the idea of an AAA, discussed above, but specific to the use of equines. Although the title of these activities includes the term *therapeutic*, it should be noted that this type of intervention is actually an AAA because it is provided by an individual who is not a trained therapist and does not work toward specific treatment goals.

Another form of equine intervention, called hippotherapy, exclusively addresses physical, occupational, and/or speech-language concerns. Hippotherapy capitalizes on the physical movement of the horse as a treatment modality (PATH Intl., 2015). It can be used to address issues including mobility, balance, coordination, motor dysfunction, and sensory impairment. Additionally, like more general AAT, hippotherapy is facilitated by a licensed professional in the field (American Hippotherapy Association, 2015). Although a separate body of research exists surrounding the effectiveness and potential uses of therapeutic riding and hippotherapy within the realm of physiological health, a discussion of this literature is beyond the scope of this paper. Rather, the focus of this current review will be on the mental health-related uses of equines.

A variety of different ways to incorporate horses into human well-being have been studied, ranging from implementations that can be categorized as AAAs, such as therapeutic riding or therapeutic horsemanship, to those which are clearly psychotherapeutic and under the umbrella of AAP. Generally, it seems that the non-psychotherapeutic AAA approaches involving horses, in implementation, are quite similar to typical horseback riding lessons and traditional recreational use of horses. Perhaps, then, what has accumulated in the research literature on therapeutic riding and horsemanship is actually evidence of the natural effects of horses on humans, rather than the effects of horses used as a psychotherapeutic tool toward client outcomes. As such, the results of these efforts may then be thought of as evidence not just for therapeutic riding, but also potentially for that of simply interacting with horses in a goal-oriented manner. When working with horses in the context of horseback riding, training, driving, et cetera, the work is structured. This is because there is goal or objective that is being worked toward in the interaction with the horse. As such, it seems possible that the variety of structured, goal-oriented ways to interact with horses that are available recreationally may also have potential as ways of improving human well-being. The question of whether there is something psychotherapeutic about merely having structured contact with animals, such as horses, is one that must be answered to bridge the gap between the literature on benefits of companion animals on humans and that of using animals in psychotherapeutic modalities.

Looking at therapeutic riding through the lens that it may parallel structured non-psychotherapeutic contact with horses, several studies suggest that therapeutic riding can have social-emotional benefits for specific populations and concerns. As such, these studies might be taken to indicate that structured contact with equines, even outside of an intentionally psychotherapeutic context, may have social-emotional benefits for the individual. Specifically,

Gabriels and colleagues (2012) conducted a pilot study of 10 weeks of therapeutic riding for youth ages 6 to 16 with autism spectrum disorders (ASD), a population of increasing research interest with regard to therapeutic riding. A total of 42 participants were involved in the study, with 16 participants involved in a 10-week waitlist control group prior to commencing the intervention. Compared to the waitlist condition, participants receiving therapeutic riding showed significant improvements on measures of irritability, lethargy, hyperactivity, and stereotypic behavior on the Aberrant Behavior Checklist.

Similarly, Bass, Duchowny, and Llabre (2009) provided a 12-week therapeutic riding intervention to 34 children diagnosed with ASD, who were assigned to either the treatment group or the wait-list control group. Children in the treatment group were found to make gains in terms of directed attention and social motivation, and showed decreases in distractibility and inattention. Both Gabriels et al. (2012) and Bass et al. (2009) note that it is possible that the natural qualities inherent in interaction with equines produced their results, rather than an effect of a specific therapeutic intention, per se. While many therapeutic riding studies focus on children with ASD, positive preliminary findings such as these pique interest surrounding whether equines may have some measurable positive impact on human social-emotional functioning, even without the presence of specific psychotherapeutic goals.

Equine-assisted psychotherapies. While the physical benefits derived from equine approaches such as hippotherapy have been recognized since the 1950s, it is only in the past couple of decades that the incorporation of horses in the psychotherapeutic milieu has begun to be explored more formally (Pointon, 2005). A variety of terms describe equine approaches that address psychological concerns specifically (e.g., equine-assisted psychotherapy, equine-facilitated psychotherapy, equine-assisted counseling), but for the purposes of this paper the term

equine-assisted psychotherapy (EAP) will be used. While each of these approaches has in common the fact that they are used to target mental health and well-being outcomes, they often vary with regard to implementation and oversight (e.g., which organization's model is being followed, the specific area of mental health practice in which the practitioner is licensed).

Since the early 1990s, there has been rapid growth in the practice of EAP in both the United States and Europe (Bachi et al., 2012), prompting the development of organizations which recognize and regulate the use of horses for psychotherapeutic ends. Two major organizations currently exist in order to regulate the field of EAP: (1) The Professional Association of Therapeutic Horsemanship International (PATH Intl.), previously known as the North American Handicapped Riding Association (NAHRA); and (2) the Equine Assisted Growth and Learning Association (EAGALA). In the following sections, each organization and their models will be described.

PATH Intl. NARHA was first formed in 1969, effectively bringing the concept of therapeutic riding, an AAA, to the United States (PATH Intl., 2015). In 1996, NAHRA established the Equine-Facilitated Mental Health Association (EFMHA; Freund et al., 2011), which promoted the therapeutic use of horses and riding to target mental health needs, specifically. In 2009, NAHRA and EFMHA integrated into one organization with a shared mission, focusing on helping practitioners to utilize equine-facilitated learning when it was occurring during equine activities (PATH Intl., 2015). In 2011, NAHRA announced that the organization's name would be changed to the Professional Association of Therapeutic Horsemanship International (PATH Intl., 2015).

PATH Intl. endorses a variety of techniques, including both mounted and unmounted work, and both AAA and AAT approaches. These include interactive vaulting, therapeutic

driving, therapeutic riding, equine-facilitated learning (EFL), and equine-facilitated psychotherapy (EFP). PATH Intl. offers certifications for therapeutic riding instructors at various levels of ability (from simply being able to provide safe riding lessons to individuals with disabilities, to providing therapeutic and directed interventions during horseback riding lessons), as well as specialty certifications for interactive vaulting and driving. Equine Specialist for Mental Health and Learning certifications are also available, and required for organizations that use the EFP model delineated by PATH Intl.

EFP specifically combines psychotherapy with horsemanship skills, and can be conducted either on the ground or on the horse. Either way, this model requires a licensed mental health professional (PATH Intl., 2015). Additionally, EFP must be supervised by a therapeutic riding instructor and an equine specialist (or one person certified in both) when mounted, and by a certified equine specialist at minimum when EFP is entirely on the ground (PATH Intl., 2015).

EAGALA. In 1999, three years after the establishment of EFMHA, EAGALA was established and began to develop its own approach to incorporating horses into mental health treatment (Freund et al., 2011). EAGALA endorses models known as equine-assisted learning (EAL) and equine-assisted psychotherapy (EAP). Both of these activities, as espoused by EAGALA, are exclusively ground-based and unmounted. The EAGALA model involves a solution-focused team approach that is nondirective, with an emphasis on metaphoric content within human-horse interactions (EAGALA, 2012).

In the EAGALA model, EAP is provided by an EAGALA-certified *treatment team*, or *therapeutic triad*, including a mental health professional (MH), an equine specialist (ES), and the horse(s) (Bachi et al., 2012). The MH professional is typically responsible for overseeing

treatment, attending to client responses to equines and situations that arise, and helping to create metaphors for client change. Qualified MH providers can include Licensed Clinical Social Workers, Licensed Mental Health Counselors, Licensed Professional Counselors, Marriage and Family Therapists, Psychologists, Certified or Licensed Addictions Counselors, and Licensed Pastoral Counselors (EAGALA, 2012). On the other hand, the ES has extensive equine experience and a strong understanding of equine behavior and psychology. They are responsible for the horses and their interactions with clients, and observe the nonverbal behavior of horses and clients throughout the session to ensure safety and collect content for metaphors. Careful observation of client and horse nonverbal communication by both the MH provider and the ES throughout all aspects of this process is important to quality facilitation within this model; the nonverbal aspects not only serve as the foundation for metaphor, but are also essential for safety (EAGALA, 2012). The equine is viewed as a fellow professional on the treatment team, and is allowed to respond naturally to events within a session (EAGALA, 2012).

Embodying a solution-focused orientation, the EAGALA approach to EAP posits that individuals possess the best solutions to their problems, and just need to be given the opportunity to unearth them (EAGALA, 2012). From this tenet, several core characteristics of EAGALA sessions can be gleaned. For one, EAGALA sessions do not teach horsemanship skills. This is an important distinction from PATH Intl.'s EFL and EFP, which incorporate horsemanship instruction, as previously discussed. EAGALA notes that the focus of EAP is on skills related to humans, rather than skills related to horses and horsemanship (EAGALA, 2012). As such, riding is also excluded; EAGALA activities are entirely unmounted, or conducted on the ground. EAGALA (2012) delineates a variety of benefits related to a groundwork-only approach, including less instruction, distinction from recreational riding in the perception of the public,

reduced safety risks, and a more natural role for the horses involved. Second, the EAGALA (2012) model emphasizes processing skills on the part of the facilitators. Facilitation in this model typically occurs in the form of questions, observations, and reflective listening, which serve to guide the client toward their own self-discovery and solutions. EAGALA describes its approach as one that uses the Socratic Method of questioning, in which the focus is on asking rather than answering questions.

Third, EAGALA sessions focus on the process at work and how clients work toward their goal, rather than the activity or achievement of the goal itself (EAGALA, 2012). They recognize that the process of working toward the challenge given is the primary source of growth. Fourth, the approach promotes the idea that clients should not be given instruction or be rescued by the facilitators to make the client feel better in the short-term. They believe in long-term solutions that are generated from authentic client insight, rather than direct guidance provided from the facilitators. Along these lines, EAGALA sessions should pick up where they last left off, both in terms of activity and metaphor, essentially acting as one long session across time. This expectation of moving at the speed of the clients and not rushing the process requires significant flexibility from facilitators in terms of willingness to follow the lead of the client and to let go of the pressures of the agenda (EAGALA, 2012).

The EAGALA model of EAL and EAP also draws heavily from experiential approaches, which use specific activities and challenges to teach individuals about themselves and others (EAGALA, 2012). Metaphor, or allowing one thing to be representative of another, is a foundational component of the experiential nature of the EAGALA (2012) model. As such, sessions are designed to elicit symbols and metaphors applicable to the client's real-world life. EAGALA (2012) promotes the idea of allowing clients to assign their own symbols and

metaphors to the horse(s) and situations in the moment while processing the session's activities, using the horses and events as representations for the humans and conflicts in their own lives. Metaphors in EAL and EAP sessions can be nondirective, in which they are generated by the client naturally, or they can be directive, in which the facilitators intentionally design a metaphor to address the client's specific treatment goals.

Equine experiences within the EAGALA model can be broken down into four categories: *observation*, *relationship*, *movement/no movement*, and *create* (EAGALA, 2012). Observation, which includes watching and reflecting on specific questions related to the horses, allows for the projection of the client's thoughts, facilitating their exploration and generating metaphoric content. Relationship involves anything that promotes approach and interaction between clients and horses, and provides a foundation for parallels between relationships with others. Movement/no movement reflects the idea that movement has a variety of metaphoric uses, including movement in time, space, relationships, goal progress, and conflict. Activities thoughtfully utilizing movement/no movement can provide a means of designing valuable metaphors for such concepts. For example, a family who is having difficulty communicating with each other may be guided through an activity where the family must work together to get a horse through an obstacle course with a variety of food distractors placed throughout. When processing the activity, the food distractors could serve as metaphors for things that interfere with the family's ability to work through problems and communicate effectively in their daily lives. The family could name each of the distractors in the activity accordingly, identifying them with labels relevant to their situation (e.g., anger, not enough time spent together, wanting to avoid conflict, bringing up unrelated issues). Lastly, create refers to activities that encourage the client to create meaning within its context, such as asking clients to create representations of

personalized things such as their life challenges, moments, conflicts, hopes, dreams, or wishes. For example, a youth dealing with suicidal thoughts might be asked to create by naming buckets of food distractors along a path with the things that trigger that particular youth's suicidal thoughts. Then, as the youth leads the horse down this path past these food distractors and has to work to avoid their progress being thwarted by them, the experience becomes a powerful metaphor for their struggles with suicidality triggers and how these triggers threaten the youth's progress in important personal goals or outcomes.

Activities may at times include rules (e.g., no talking, no using your hands, no touching the horses), as rules increase the challenge of activities and often replicate constraints placed upon us in the real world. In the EAGALA model, rules should be given in terms of what clients should not do, as this requires more independent and creative thinking than telling clients what they should do. Consequences for breaking the rules (typically generated by the clients), as well as time-limits for activities, may also be incorporated into EAGALA sessions toward these same ends (EAGALA, 2012).

When structuring the physical environment of an EAGALA session, facilitators are encouraged to utilize items that are abstract and can mean anything, such as cones, tires, buckets, or balls, as well as items that are direct symbols relevant to the participants (e.g., a group of students might be provided with books, a school desk, a lunch tray). Facilitators are also encouraged to have clients create written labels for objects in the physical environment, indicating the symbolic meaning of that object for the client (EAGALA, 2012).

Proposed change mechanisms and benefits of EAP. A variety of possibilities exist with regard to determining what components might make EAP an effective technique. These include its ability to align with numerous theoretical orientations, its experiential nature, the change

metaphors elicited, the insight and authenticity brought forth, and the natural setting in which it takes place.

Theoretical alignment. One of the benefits of both AAP generally (Katcher & Beck, 2010; Kruger & Serpell, 2010), and EAP specifically (Masini, 2010; Selby & Smith-Osborne, 2013), is that they seem to be best characterized as an adjunct approach. This means that they are able to be used within the context of a variety of theoretical orientations within psychotherapy. While EAGALA, as previously discussed, promotes a model of EAP that has its roots in solution-focused therapy, EAP can be practiced within the context of a variety of other theoretical frameworks. Specifically, EAP has been discussed within the context of brief therapy, Gestalt therapy, reality therapy, rational-emotive therapy (Schultz, 2005), family therapy, dialectical-behavioral therapy, group therapy (Masini, 2010), person-centered therapy (Chardonnens, 2009), Adlerian therapy (Trotter, 2011), cognitive-behavioral therapy (Burgon, 2011), psychodynamic theory, and experiential therapy (Pointon, 2005). EAP is an additional tool for achieving psychotherapeutic ends, rather than a comprehensive system for understanding the roots and manifestation of psychological distress. As such, EAP is flexible in that it can be incorporated into a clinician's understanding of behavior and change, regardless of that clinician's particular theoretical orientation.

Experiential nature. One proposed mechanism of EAP is the experiential nature of the experience. The Association of Experiential Education (AEE) defines experiential education as "*challenge and experience* followed by *reflection* leading to *learning and growth"* (AEE, 2015). They note that this philosophy is used in a variety of disciplines and settings, including by teachers in education, and by mental health practitioners in intervention. Primary principles of this approach include carefully chosen and structured experiences that are authentic for

participants. These activities engage participants in "posing questions, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning," and should require them to "take initiative, make decisions, and be accountable for results" (AEE, 2015). These experiences are paired with personalized analysis and self-exploration, and generally serve to increase self-awareness and teach problem-solving, communication, and social skills.

When used in a therapeutic context, experiential activities allow clients to improve their ability to control themselves and their environment through taking controlled risks in a safe setting (Trotter, 2011). These approaches are interactive, in that the client learns through action rather than passive education (Eller, 2011). In an EAP activity, a group of clients might be asked to collectively work to get a horse over a jump without touching or bribing it. Similarly, in an experiential ropes course activity, a group of clients might be asked to figure out how to get their team from one end of a course to the other without falling or using any props. The participants must communicate and problem-solve to work through the presented challenge, learning about themselves as they experience this event. In both the equine activity and the ropes course examples, the group must effectively communicate and problem-solve to have success in the task. Such experiential activities allow for typical behavior patterns to become highlighted for participants, as parallels between their actions in the activity and their actions in real life emerge. Due to these similarities, EAPs have been likened to the challenge of ropes courses (Mann, 2011) and can be conceptualized as an experiential therapy (Freund et al., 2011). Tentative support for the impact of the experiential nature of EAP comes from qualitative descriptions of the mechanisms of change, as perceived by case managers of participants, in one study (Maujean, Kendall, Roquet, Sharp, & Pringle, 2013). They "…believed a significant mechanism

of change was the nature of the program itself in that it was structured with clear tasks but involved unstructured time for reflection" (Maujean et al., 2013: p. 521).

Metaphors for change. Another potential mechanism contributing to EAP involves the use of change metaphors in this setting. Specifically, the ability of horses to mirror the underlying emotions experienced by humans allows for consistent and immediate responses to our nonverbal cues and emotions, helping to facilitate authentic behavior patterns (Cohen, 2008; Mann, 2011). It is thought by some that this quality of the horse is critical in making horses helpful for the growth of people (Parelli & Parelli, 2012). The combination of this quality of horses, plus the structured problem-solving activities that are used in this experiential form of psychotherapy, presents an opportunity for change metaphors to develop. Through the use of the metaphors that arise from the interactions of horse and client, therapists are able to help clients process the significance of these patterns in their personal lives (Mann, 2011). These metaphors are thought by some to be one of the primary agents of change in EAP (Kakacek, 2007), allowing clients to access ideas about which they had previously been unaware, and to define and make sense of issues of which they are aware (EAGALA, 2012).

Insight and authenticity. Insight and authentic behavior are also widely believed to be elicited from EAP. Cody and colleagues (2011) posited that horses respond positively to authentic behavior from humans, rather than inauthentic or inconsistent behavior. Similarly, it has been hypothesized that when a human's thoughts, emotions, and behaviors are discrepant from one another, the horse will likely react to this confusion and turmoil (Eller, 2011). Further, others posit that horses provide this reactive feedback in an immediate manner, reflecting the human's current functioning and emotion management in real time (DePrekel & Neznik, 2011). Thus, this representation of the internal state is thought to improve one's understanding of the

mind-body connection and to provide insight into one's self. Eller (2011) posited that this insight then provides a platform for learning how to align thoughts with behaviors, allowing for authenticity.

EAPs also use problem-solving tasks in an unfamiliar environment, allowing both client and therapist to view problems through a novel lens and obtain new insights (Selby & Smith-Osborne, 2013). Additionally, the in-vivo nature of EAP allow for providers' assessments to be based upon real-world observation, rather than client report. This can allow for additional insights into client functioning and needs, and can inform treatment goals. Weiss (2009) claims that people also find that in working with horses, changing what you do results in changes to the horse's response. In equine therapies, clients are challenged with noticing the horse's behavior in response to their own in order to gain insight into their behaviors and emotions (Weston-Thompson, 2011). This seems to capitalize on the relationship between human behavior and equine response. It is also proposed that when given challenging feedback about themselves, clients will have a difficult time blaming transference responses on the faults of the horse. This allows for these issues to be dealt with more directly and with less resistance (Klontz, Bivens, Leinart, & Klontz, 2007). Additionally, the positive experience that comes with success in this context is thought by many researchers to be particularly powerful, confidence-inspiring, and rewarding for participants (Bachi et al., 2012; Kemp et al., 2013; Trotter, 2011). Once having learned these lessons about relationships from horses, Parelli and Parelli (2012) have observed in their practice that many people seem to be able to then translate them to their relationships with other people. Such generalization of insights gained in an EAP session is certainly the long-term objective of any psychotherapeutic endeavor.

Natural setting. Another potential mechanism contributing to EAP involves the novel setting in which it takes place. EAP, like adventure-based experiential approaches, occurs in a unique, natural setting (Bachi et al., 2012). Rather than sitting inside of an office within a building, EAP clients are outdoors in an open farm setting surrounded by nature and animals. It has been posited that nature requires higher levels of involvement and engagement from clients, leading to a more intense experience difficult to attain in traditional therapy (Trotter, 2011). The increased risk, hands-on learning, and novel setting of EAPs seem to coalesce into a powerful medium in which to facilitate psychological change (Trotter, 2011). Others posit that the natural setting of EAP might facilitate rapport and ease of sharing information because it is perceived as nonthreating (Bachi, 2013).

Researchers have also called for attention to how individuals have been removed from nature and contact with animals through the growth of industrialization (Katcher & Beck, 2010). In such a place in time, nature-based interventions may be especially germane. Indeed, Maujean and colleagues (2013) found in a qualitative study of EAP with at-risk youth that the peaceful rural environment was identified as one of the significant mechanisms of change for those involved in the program. As such, it seems that the outdoor barn environment in and of itself may contribute to the effects of EAP, as well.

In sum, EAP is able to be used within the context of a variety of theoretical approaches to understanding psychological wellness. While research is needed to identify the exact mechanisms that contribute to positive findings using EAP, several proposed mechanisms have been set forth. Specifically, aspects such as the experiential nature of EAP, the change metaphors created, the insight and authenticity elicited, and the natural setting have all been posited to play a role in EAP outcomes.

Using horses to improve mental health with youth. EAP has been studied most frequently through qualitative and case study research, but there has been a steady increase in quantitative studies that address the effectiveness of equine-assisted therapies in treating a variety of disorders and conditions. People who work with horses have noted their ability to provide psychological benefits to humans long before any quantitative evidence existed to support this notion, however. As such, this is a field that has developed out of practical application and a practical sense of what works. Stories of the success of EAPs, or even simply equine encounters, abound, and describe the horse's ability to elicit the sort of insight that motivates real change in a person. Particularly of interest to this review is research that focuses on the impact of EAPs on youth, as this population is one that is widely targeted by such equine programs (Thompson et al., 2012), and one of particular relevance to the fields of child and school psychology.

Research using PATH Intl. models. As discussed previously, PATH Intl. models include equine-facilitated learning (EFL) and equine-facilitated psychotherapy (EFP). Elements that make this model distinctive are oversight by PATH Intl., the incorporation of mounted elements, and instruction in proper horsemanship techniques. Qualitative research with youth has found several themes that are consistent with the positive impact described in anecdotal evidence. Burgon (2011) used interview and observation techniques to examine the use of EFP with seven at-risk youth. These participants were recruited from an established EFP program servicing youth in foster care. Burgon (2011) found several themes related to resiliency in youth, including improved confidence and self-esteem, sense of mastery and self-efficacy, development of empathy, and the presentation of positive opportunities for the future through new skills. These skills, in addition to the ability to self-reflect, a sense of purpose or future,

autonomy, and social competence, are consistent with the core elements of resiliency in the risk and resilience literature (Burgon, 2011). In addition, the researcher noted that horses seemed to serve a motivational element, encouraging children to return to therapy.

Another study looking at PATH Intl's EFL focused on students with emotional disturbances in middle and high school, placed in an alternative day school setting (Ewing, MacDonald, Taylor, & Bowers, 2007). A total of 28 students, 10 to 13 years of age, were provided with nine weeks of the PATH Intl. model of EFL for two hours per week. Each session had four to five students participating. Although statistical support for this intervention was not found on any of the outcome measures, Ewing and colleagues (2007) provide four case studies to support their conclusion that positive changes occurred as reported by special education teachers, therapeutic riding instructors, and volunteers. Their results included a 10-year old girl who was able to open up about her fears and anxieties stemming from a history of abuse and sexual assault, and an 11-year old girl who improved upon personal hygiene, eye contact, and behavioral regulation sufficiently to transition from a day school back to a typical middle school. They also described positive changes in a 13-year old boy who learned that he could trust others and did not have to run away when faced with a problem, as well as a 10-year old boy who learned to be direct about problems and seemed to experience a boost in self-confidence and self-esteem. Due to the changes seen in these cases, the researchers felt that while statistical significance was not found, EFL did have a meaningful positive social-emotional impact for some participants.

Pendry and Roeter (2013) found that the PATH Intl. model of EFP was effective in improving social competence for a group of 54 fifth to eighth grade students, recruited across one specific geographical region. Once recruited, participants were randomly assigned to

experimental and wait-list control groups. The Devereux Student Strength Assessment was used to gather pre- and posttest ratings for the experimental and wait-list control group, with the wait-list group completing the measure a third time after they participated in EFP. Treatment consisted of 90 minutes per week of group and individual activities, including horsemanship skills, driving, riding, and ground-work, across 11 weeks. Treatment goals included objectives such as building respect, communication, leadership, trust, boundaries, confidence, and self-regulation. The treatment was facilitated by mental health professionals and equine specialists. Results indicated significant differences between the experimental and control groups on composite social competence measures, with particular impact on self-awareness and self-management. Further, increases in self-awareness, self-management, decision-making, goal-directed behavior, relationship skills, and personal responsibility only occurred after completing the equine intervention for youth in the wait-listed group.

Another study using the PATH Intl. model of EFP investigated a convenience sample of 29 adolescents, 14 to 18 years old, in a residential treatment facility in Israel (Bachi et al., 2012). Participants were randomly assigned to either the treatment or the control group. In the treatment group, participants were provided with weekly 50-minute EFP sessions over the course of seven months. Between 14 and 26 sessions were attended by each participant. Results revealed trends in the expected direction for trust as measured by the Children's Interpersonal Trust Scale, life satisfaction as per the Student's Life Satisfaction Scale, and self-control as measured by Rosenbaum's Schedule for Assessing Self-Control Behaviors of Adolescents. However, the trends did not attain statistical significance.

Overall, of the three quantitative studies evaluating the PATH Intl. model of EFP, only one produced statistically significant results. Nonetheless, researchers indicated that the trends

found moved in the expected directions for a variety of outcome areas. These included self-esteem, self-efficacy, empathy, self-awareness, self-management, decision-making, goal-directed behavior, relationships skills, personal responsibility, trust, life satisfaction, and self-control. A variety of case studies and qualitative information support these results, as well as the general effectiveness of the EFP approach.

Research using the EAGALA model. In addition to studies using the PATH Intl. model of EFP, researchers have also examined the effectiveness of EAGALA's EAP model. As was previously discussed, EAGALA's EAP approach is most notably distinguished from PATH Intl.'s EFP by its groundwork-only model, as well as the fact that horsemanship skills are not explicitly taught. One study bridges these two models of equine psychotherapy, however.

Kemp and colleagues (2013) modeled their approach after the EAGALA framework, but incorporated horsemanship elements of PATH Intl.'s approach. This study included 30 children and adolescents who were referred as victims of sexual abuse. Child participants included nine girls and six boys from 8 to 11 years old, and adolescent participants included 15 girls from 12 to 17 years old. These youths were given a treatment including horsemanship skills, combined with a psychotherapeutic approach. Participants in this study engaged in ground-based activities only, including both metaphor-based activities and basic horsemanship skills, for 90 minutes per week over the course of nine to 10 weeks. While no control group was employed, within-subject comparisons were made across two pretreatment data points and one posttreatment point. Data were collected using the Childhood Depression Inventory (CDI), the Child Behavior Checklist (CBCL), the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI), and the Trauma Symptom Checklist. For child participants, significantly improved CDI scores, CBCL scores, and parent-rated externalizing behaviors on the CBCL were found posttreatment. Effect

sizes for these findings ranged from .583 to .880. For adolescent participants, significant decreases for all components of the Trauma Symptom Checklist and improvements on the BDI and the BAI were found. For these findings, the size of effect ranged from .702 to .905, indicating substantial effects on trauma, anxiety, and depressive symptomology. In this instance, this combined EAP model appeared to be moderately to strongly effective in reducing mental health symptoms in youth.

Global functioning. Other studies have exclusively utilized the EAGALA model in their design. In an exploratory study of the EAGALA model utilizing a convenience sample of 49 children ages 4 to 16 with various behavior and mental health problems, EAP was found to be positively related to children's Global Assessment of Functioning (GAF) scores as rated by their clinician (Schultz et al., 2007). This was particularly true for children with a history of abuse. Overall, female participants were found to have larger increases in GAF than males, and children under the age of eight years seemed to receive the most benefit from treatment. All youth included in this study completed a minimum of six sessions, with a mean of 19. A relationship between number of sessions attended and improvement in GAF was found, with higher numbers of sessions associated with higher GAF scores. The results of this study suggest that EAP has the ability to impact overall global functioning for youth who have experienced abuse. Further, they support the findings of Kemp and colleagues (2013), which suggest that youth who have had traumatic experiences may benefit from EAP.

Comparative studies. EAP has also been compared to other psychotherapeutic treatments in at least one study. Trotter and colleagues (2008) compared EAGALA-model EAP to classroom-based counseling for a nonrandom convenience sample of 164 at-risk students. Students in the EAP group received two hours of intervention per week for 12 weeks, with six to

eight students per session. Students in the classroom-based counseling group received one hour of treatment per week for the same duration. Pre- and posttest measures on the BASC-2 were utilized to compare growth across groups. Trotter and colleagues (2008) found that EAP was effective in both reducing negative behaviors and increasing positive outcomes in 17 areas, as measured by the BASC-2. With regard to emotional and behavioral problem composite scores, youth in the EAP group self-reported significant improvement in the Emotional Symptoms Index and the Clinical Maladjustment Composite, while parents reported significant improvement in the Behavioral Symptoms Index, and the Externalizing Problems and Internalizing Problems Composites. In terms of individual emotional and behavioral problem scales, youth receiving EAP self-reported improvement in two scales related to negative behaviors: Atypicality and Sense of Inadequacy. Parents noted several areas of improvement in scales related to behavioral problems, including Aggression, Conduct Problems, Hyperactivity, Attention Problems, Depression, Anxiety, and Somatization. In terms of adaptive behaviors, youth receiving EAP self-reported growth in one scale related to positive behaviors, namely, Relationship with Parents. Parent raters noted growth in two positive areas, the Social Skills scale and the overall Adaptive Skills Composite.

In contrast, students who received classroom-based counseling showed improvement in a total of five areas. Specifically, at-risk youth receiving the classroom counseling intervention self-reported improvements on the domain score that reflects overall emotional problems, the Emotional Symptoms Index. Parents reported significant improvement on a scale measuring Depression. With regard to adaptive behaviors, participating youth self-reported improvements on a scale of overall positive relationships with the self and others, the Personal Adjustment

Composite. Significant improvement on scales reflecting Social Stress and Self Esteem were also self-reported by youth in the classroom-based counseling intervention.

While EAP was found to be superior in this study, the researchers noted that the two treatment modalities affected different behavioral outcomes. Specifically, the results of this study indicate that while EAGALA's EAP model did significantly increase some unique positive behavior scales for at-risk youth (i.e., self-reported Relationship with Parents, and parent-reported Social Skills and overall Adaptive Composite), those in the classroom-based counseling intervention showed increases in more and different scales related to positive behavior (i.e., self-reported Personal Adjustment Composite, Social Stress, and Self-Esteem) when compared to EAP. The results also showed that EAP was significantly more effective in reducing a number of scales measuring negative behaviors, while the classroom intervention impacted few negative behavior scales. Lastly, it should be noted that the EAP intervention resulted in more robust findings than the classroom counseling intervention, with 17 areas of significant growth for EAP and only five for the classroom-based intervention.

Youth with intensive mental health needs. In terms of youth with more intensive needs, another study found that a small sample of youth with emotional disorders significantly improved on teacher-rated communication skills and social skills in a day treatment setting after receiving EAP (Tetreault, n.d.). Ten children with emotional disturbances between the ages of 10 and 12 were drawn from two randomly selected therapeutic day schools. Participants were provided with five sessions of EAGALA-model EAP, with each session lasting two hours. Pre- and posttest measures, using a symptom survey that was created by the researcher, were employed to assess the impact of the intervention. Eight of the 10 participants significantly improved their communication skills by an average of 16%, and nine of the participants

significant improved their ability to identify and manage behavior by an average of 18.4%, as rated by the symptom survey.

In contrast to studies of EAP that yielded significant positive results, Wilson and Schuster (n.d.) reported no significant differences from pre- to posttest for a group of 15 adolescent males, 12 to 17 years old, from a residential treatment center who received EAGALA-model EAP once per week for eight weeks. These youths were evaluated before and after treatment in terms of self-esteem using the Rosenberg Self-Esteem Scale, expectations for the future as measured by the Beck Hopelessness Scale, and communication as rated on a researcher-generated measure. While no significant results were found for any of these outcome measures, the researchers reported finding substantial differences for particular individuals, as well as overall trends toward improvement. In particular, a strong positive correlation between week in treatment and improvement in communication was found, suggesting that EAP was related to the development of better communication skills for these youth. An additional finding of practical, although not statistical, significance was the shift in the rating of average hopelessness; starting out in the *mild hopelessness* range, the average hopelessness score at the end of this study moved into the range of *absence of hopelessness*.

Overall, the literature on the EAGALA model of EAP provides a starting point to continue to explore the potential effectiveness of EAP with youth, targeting constructs such as general functioning, externalizing behavior, depression, anxiety, and communication. Four out of the five studies reviewed looking at EAP specifically found significant positive results for youth receiving the intervention; such results suggest that this model in particular is promising, and warrants further research attention.

Limitations in the EAP research. Thompson et al. (2012) note that there are many reasons to believe that horses may be positive for youth, such as the benefits that come from engaging in a popular recreational activity, the exercise involved, and the interpersonal interactions that are inherent in riding experiences. However, without research support, one cannot know definitively whether EAP is beneficial for ameliorating the impact of various disorders and disabilities. In order for evidence-based practice to include EAP, sufficient research evidence must be accumulated (Selby & Smith-Osborne, 2013). In addition to a mental health professional's obligation to provide clients with evidence-based intervention, human-animal contact in the therapeutic milieu should also be considered in light of ethical obligations to clients. Beck and Katcher (2003, p. 85) note that, "to justify any risk associated with animal contact, we must demonstrate a value to the patients." For these reasons, it is important that researchers build upon this empirical foundation, laid by the studies described above, in order to fully evaluate the effectiveness of EAP.

Quantitative studies conducted on EAP have been in response to such calls for research supporting the effectiveness of equine interventions in mental health. Despite this growing body of research, the widely varied populations targeted across studies have prevented an accumulation of evidence that builds meaningfully upon previous studies (Cody et al., 2011). Additionally, much of the literature addressing equine interventions for children with disabilities is unpublished literature (e.g., dissertations, conference presentations), rather than literature that is published in traditional venues (Thompson et al., 2012). Selby and Smith-Osborne (2013) note design issues throughout the body of literature, such as small convenience samples, and only two studies with a random sample and comparison group. These researchers compared the 14 selected studies to the Grading of Recommendations Assessment, Development and

Evaluation (GRADE) standards, which rates the quality of evidence provided by research articles. They noted that the overall rating of the body of evidence on EAP is low to very low. Only two studies of the 14 were sufficiently well-designed and controlled to attain moderate quality ratings.

Another limitation of the equine intervention literature is the diversity of populations studied in research to-date. Within the youth population, studies have looked at all children (Pendry & Roeter, 2013), youth at risk (Trotter et al., 2008), children who have experienced trauma (Kemp et al., 2013), youth with emotional disturbances (Ewing et al., 2007; Tetreault, n.d.), and children who are in residential treatment (Bachi et al., 2012; Wilson & Schuster, n.d.). Additionally, a whole host of dependent variables have been considered, with little overlap across methods of measuring outcomes. Outcomes that have been reported range from improved externalizing and internalizing scores on varying measures, to increased functioning and communication.

Overall, the body of evidence for EAP with youth populations seems promising, but leaves many questions to be answered. The current state of evidence presents EAP as an avenue of potential intervention for large groups of children who are at-risk for negative outcomes. While much optimistic evidence has accumulated, future research is needed in order to give definitive support to EAP as an evidence-based treatment. Future research in EAP should include comparison or control groups, larger sample sizes, and standardization of the psychotherapeutic approach to allow for research comparisons to be made (Freund et al., 2011). Further, it has been recommended that research seeks to identify the mechanisms by which EAP is effective (Selby & Smith-Osborne, 2013), including whether mere exposure to equines is beneficial, and whether EAP has benefit beyond that of contact. Such distinctions are important

in order to guide the incorporation of horses into treatment. Lastly, the body of research would be well-served to work toward identifying specific populations for whom EAP may be effective. Such an extensive list of areas to be investigated leaves much work to be done, and much opportunity for researchers to bring clarity to our understanding of the relationship between horses and humans.

At-Risk Youth

One specific population that has been shown to benefit from EAP in a previous study is that of at-risk youth (Trotter et al., 2008). While the term at-risk with regard to youth can be defined differently depending on the source, generally these youths are thought to be at risk of less than ideal outcomes in terms of school performance, mental health, physical health, future success, and/or other unspecified outcomes (Kominski, Jamieson, & Martinez, 2001; National Center for School Engagement, n.d.; Robbins, Stagman, & Smith, 2012). These outcomes may include school drop-out, unwanted pregnancy, social failure, drug and alcohol abuse, delinquency, antisocial behavior, mental health difficulties, and school failure, to name a few. Others define risk more broadly with regard to the support and education that a child has experienced across his or her development, incorporating previous definitions of risk that included cultural deprivation, the failure of social institutions, and academic failure (Pallas, 1989). Specifically, "young people are at risk, or educationally disadvantaged, if they have been exposed to inadequate or inappropriate educational experiences in the family, school, or community" (Pallas, 1989, p. 1).

Through this lens, youth who are at-risk can be defined as those who have been deprived of sufficient preparatory opportunities in their lives to support their future success. Since youth who are at-risk are often subject to significant stressors, the means by which youth cope with

stress and solve problems play a role in determining whether significant mental health concerns will be developed or suppressed (Boxer et al., 2012). As risk involves having insufficient opportunity to develop necessary skills related to successfully managing stress and attaining goals, we can view students who are demonstrating warning signs of having difficulty coping with stressors as good candidates for additional support and skill development.

With regard to identifying those at-risk in previous studies on EAP, Trotter and colleagues (2008) focused on students at-risk for academic or social failure. Specifically, they collected referrals from school counselors for students who were having learning difficulties, social adjustment concerns, or serious behavioral problems. Although this is still a relatively heterogeneous group, Trotter and colleagues' (2008) positive results indicate that the at-risk youth population may be one that can obtain significant benefit from EAP. This warrants further exploration into the use of EAP with at-risk youth.

Overall, students who are at-risk for negative outcomes are of particular interest for preventative and early intervention work, as they provide an opportunity to potentially mitigate the risk with which some youths present. The at-risk stage is an excellent opportunity to proactively provide additional supports to build lagging skills for these students. Intervening with students at-risk and helping them to develop healthy solutions for common issues such as interpersonal conflict, emotion management, and problem-solving could help to modify a potentially negative trajectory for these youth. EAP presents unique attributes that may make it particularly useful for addressing such common issues. As such, at-risk youth appear to be a group particularly well-suited for further investigation into the effectiveness of EAP. Further, at-risk youth are likely to be engaged by the experiential and nontraditional nature of this approach, and are likely to bring moderate (rather than severe) concerns to their sessions. The research on

psychotherapeutic interventions for youth involving equines, reviewed above, suggests that EAP may be less effective for youth with significant emotional disturbances (Bachi et al., 2012; Ewing et al., 2007; Wilson & Schuster, n.d.). As such, less intensive youth populations such as this one may be desirable for studies seeking to answer foundational questions about the effectiveness of EAP.

Summary

Animals play a significant role in the lives of humans, with large portions of the population owning pets. Proposed benefits from these relationships include social support, improvements to physiological and psychological well-being, and engagement. However, a variety of limitations to the research in this area have been identified. Despite these limitations, the perceived power of the relationship between humans and animals has been capitalized upon toward the end of human wellness. Animals, including dogs and horses, are being used in treatment settings to improve a variety of concerns, including mental health problems. While much of the early research evidence supports the use of AAPs (e.g., Nimer & Lundahl, 2007; Souter & Miller, 2007), substantial research in this area is still needed.

Horses in particular are thought to be unique for human wellness, and are described as possessing many qualities that make them especially well-suited to supporting human emotional growth. The differences in perspective between predator and prey, the need for authentic and clear nonverbal communication, the herd dynamics, their responsiveness and sensitivity to humans – each seems to contribute uniquely to the horse's ability to help humans grow. Beliefs that horses are particularly well-equipped toward this end have supported the growth of AAPs utilizing horses, such as EAGALA's EAP. This particular model, although examined in only a handful of studies, has shown promising results with significant findings in youth populations in

five out of the six studies reviewed. EAP's natural setting, experiential nature, use of metaphor, and focus on insight and authenticity are all elements that may contribute to its' effectiveness.

Given the historic and current relationship between humans and horses, the current study sought to further examine the role of horses in the wellness of humans. Specifically, EAP and horsemanship lessons were provided as interventions to at-risk middle school students with depressive symptoms, and were compared to a wait-list control. The proposed hypotheses were:

1. The EAP and horsemanship groups will show greater decreases in depressive symptomology than the control group.
2. The EAP group will show greater decreases in depressive symptomology than the horsemanship group.

Chapter 3: Method

The current study assigned at-risk youth recruited from local school districts to an EAP group, horsemanship group, or wait-list control group. Participants and their parents completed pretest and posttest surveys to measure symptoms of depression before and after the intervention. Data collection methods included intervention session observations, focus groups, and a measure of treatment acceptability for equine participants. The data generated from these methods were then analyzed individually and as a group using small n experimental analysis. Data analysis techniques included visual analysis, an index of reliable change, and thematic analysis. While 45 participants were originally planned for, a total of five participants actually participated. This smaller number of participants than anticipated required a shift from the originally planned group experimental design. Originally, it was planned to compare the group means of each of the three experimental groups using a Mixed 3 (Treatment) X 2 (Time) Analysis of Variance (ANOVA) procedure.

Participants

A total of five participants, drawn from a rural area in Western New York State, were included in this study. The mean age was 11.4 years old (SD = .548, range = 1), and all participants were either 11 or 12 years old. All participants had just completed sixth grade and were transitioning to seventh grade at one of three different central school districts in the area. As shown in Table 1, 60% of the sample were male (n = 3), and 40% were female (n = 2). In terms of racial and ethnic composition, 100% of participants were Caucasian, non-Hispanic or Latino. While 60% of the sample were not enrolled in special education at the time of the study (n = 3), 40% of the sample were receiving special education services (n = 2). Disability categories included Learning Disability and ADHD.

Design and Procedures

Selection and recruitment of participants, inclusionary and exclusionary criteria, screening procedures, informed consent and liability, group assignment, measurement, number of sessions, EAP and horsemanship session structures, and safety precautions taken are described below.

Participant selection. In this study, students who experienced depressive symptomology, and as such were at risk for development of further mental health problems, were targeted. Participants included at-risk youth in sixth grade, identified by mental health professionals within their schools. For the purposes of this study, school professionals were asked to refer students who met one or more of the following criteria: (1) observed to cry sometimes or often at school (not due to fear of school); (2) at times seems sad, and reports or alludes to (in writing, verbally, etc.) feelings of hopelessness and/or worthlessness; (3) known or suspected to have engaged in self-harm behavior, now or in the past; or (4) has reported or alluded to thoughts of death or suicide, and/or peers and adults have been concerned about the student's safety in the past. These criteria were drawn from the diagnostic criteria for mood disorders as listed by the DSM-5 (APA, 2013), and reviewed by a panel of experts in the field of school psychology. Specific criteria were selected for observability or commonness of being reported to school officials, as well as for their ability to be uniquely related to mood disorders (rather than being common across several categories of diagnostic criteria).

Exclusionary criteria consisted of experience with horses lasting more than two weeks in the past three years; phobia or significant fear of horses; allergy to horses, hay, or dust; history of cruelty toward animals; suspected or identified intellectual disability; or identified emotional disturbance. Participants were excluded if they had any previous experience with horses lasting

more than two weeks over the past three years. This was done so that all participants would have similar levels of experience with horses going into the study. Participants who experienced a phobia or significant fear of horses were also excluded, due to the intensive interaction with horses that this study entailed. Additionally, as participants spent time in a barn-type setting with exposure to equines, dust, hay, and other such potential allergens, potential participants who experienced significant reactions to any of these allergens were excluded. Participants were also excluded if they were reported to have a history of cruelty toward animals. As the intervention included significant contact with animals, this criterion served as a protection for the equines involved.

Participants with intellectual disabilities were excluded due to the metaphoric components of EAP, which seems a contraindicated approach for individuals with limited intellectual ability. Youth with significant emotional disabilities identified within the school setting were also excluded. This decision was made because previous research (reviewed above) suggests that EAP is most effective with at-risk youth, but also that it seems to be less effective for youth with significant emotional and behavioral disabilities.

Participants who demonstrated signs of depression were included whether or not they had a clinical diagnosis. Youth in sixth and seventh grades were targeted for this study, as they are generally cognitively able to provide fairly reliable self-report ratings at this age. Further, they may be particularly susceptible to depression symptoms. Additionally, this range corresponds with age ranges on the Children's Depression Inventory, 2nd Edition (CDI-2; Kovacs, 2011) rating forms, which allowed for all participants to be rated using the same set of forms.

Participant recruitment. To recruit participants, 16 local school districts within 30 to 40 minutes travelling time of the equine facility were selected. The researcher made contact with

either the school psychologist or school counselor at each school, and the research program was explained. These contacts were made by phone, but e-mails were sent prior to the phone calls in order to establish a time for the phone appointment that worked well for the school professional. The individual contacted then served as or identified a liaison at the school to facilitate referrals. Once information was shared about the study and all questions had been answered, professionals interested in referring students were sent a packet of brochures and forms. These included the School Professionals Referral Packet and Forms (Appendix A), the Parent/Guardian Informational Brochure (Appendix B), and the Consent for Release of Confidential Information form (Appendix C). Referring professionals were also emailed each of these documents immediately following contact for their review.

Eleven total school professionals expressed interest in making referrals. Printed materials, including brochures and referral forms, were desired by and mailed to seven of these 11 professionals; the remaining four wished to print their own forms and brochures from e-mail attachments. After the initial contacts were made, follow-up e-mails asking for questions, concerns, and whether further referral materials were needed were sent on several occasions. Two such e-mails were sent from the primary investigator, with a final follow-up e-mail sent by the faculty supervisor of the research study. Referring professionals were asked to send home the brochure detailing the study as well as the release of information form, and to complete the referral form and submit it to the primary investigator upon receiving consent to release information to agents of the study.

Once the researcher was able to establish dates for the initial informational open house and the study, the researcher contacted each of the parents and completed the Demographic Survey with them via phone (see Appendix D). When parents were not able to be reached

through the initial contact attempt, repeated attempts were made every three to four days until all but one referred family was reached. For two families, the researcher had to go back to the referring school professional in order to get additional contact information. Schedules were made based upon the availability of the facility, staff members, and participants. These schedules were communicated to parents and guardians at an informational open house held at the equestrian center.

Screening procedures. Completed school professional referral forms (see Appendix A) were reviewed for exclusionary criteria surrounding significant intellectual, emotional, or behavioral disabilities. Participants were also screened using the demographic survey (see Appendix D), which was completed with information provided by a parent or guardian during the initial phone interview with the researcher. This survey inquired about past experience with horses, cruelty toward animals, fear of horses, and allergies. The parents or guardians of any youth referred to the study that had been deemed inappropriate for participation would have been provided with referrals to local mental health professionals. However, no such referrals were made to the current study.

Informed consent and liability. Parents were informed of the risks as well as the potential benefits of participation, both in writing and orally at first contact. This occurred when forms were completed at the informational open house just prior to the start of the first session. At this informational open house, parents were provided with information about the study itself, the potential benefits and risks, the amount of expected time and participation, and their rights as research participants. They were given the opportunity to ask any questions they had. All parents who elected to have their child participate in the study filled out traditional Informed Consent Forms (Appendix E), plus an additional Hold-Harmless Agreement (Appendix F) and

an Emergency Contact and Permission to Obtain Emergency Medical Treatment form (Appendix G) at the informational open house. All participating youth were also asked to sign a Participant Assent Form at this time (Appendix H). Upon completion of the study, participants were provided the Participant and Family Debriefing Statement (Appendix I) in order to debrief them on the purpose of the study.

Group assignment. Eleven total students were referred to the study despite intensive recruitment procedures, described above. Of these 11 referrals, 10 parents or guardians were able to be contacted and agreed to attend the informational open house. One participant's parent was unable to be reached to discuss participation, despite multiple efforts. Of the 10 referrals whose parent or guardian was reached and who expressed interest in participation, five attended the open house. At the informational open house, consent for participation was obtained and all forms and pretest measures were completed. Once consent was given, each participant was given a participant number. Participants were then randomly assigned, using a random number generator, to one of three conditions: EAP, horsemanship, or wait-list control. After participants were assigned to their respective groups, they were given their specific group assignment and schedule.

Due to the uncertainty of who would show up and the small numbers of students attending each introductory session, this assignment was done in waves (e.g., first two participants randomly assigned, then next two randomly assigned). Further, due to one participant's schedule conflict, they were placed in the control group without random assignment. This participant would have missed 50% of the sessions in either of the other two conditions. Overall, the EAP and horsemanship groups were assigned two participants each, and the control group, one.

Measurement. Participants and their parent or guardian competed the Children's Depression Inventory, Second Edition Self-Report (CDI-2: SR) and the Children's Depression Inventory, Second Edition Parent-Report (CDI-2: P) forms at the introductory session (pretest), and again at the end of the last session (posttest). Additional measures were added to collect further information once the design of the study shifted from a group experimental design to a case study and small n experimental design. Specifically, participants in the two equine treatment groups completed a brief, four question Treatment Acceptability Survey (see Appendix J) at posttest. Additionally, sessions were observed for additional qualitative data, and participants (EAP group and horsemanship group, separately), parents (all together), and program staff (all together) engaged in brief (20-30 minute) semi-structured focus groups about their experiences in the study. Questions for each group focused on program strengths and weaknesses, ways in which participants were perceived to have grown and learned across the intervention period, and changes that had been observed in participants throughout the intervention process (Debrief Focus Group Questions are found in Appendix K). Each of the measures used are described in more detail below.

Number of sessions. Both the EAP group and the horsemanship group participated in six 90-minute sessions, for a total of nine hours of exposure across the course of three weeks. Each session was run with two participants and two staff members.

EAP session structure. Sessions were held at the equine facility associated with the university. The Mental Health Professional and Equine Specialist team providing EAP services in the current study had completed their EAGALA Level 1 training, and the Mental Health Professional possessed a New York State psychology license. The Equine Specialist was the current instructor and trainer for the university's western riding team, and had a wealth of

experience and knowledge involving horses, including forty years of experience with horses and an Associate's degree in Equestrian Studies. The same mental health professional and equine specialist were used for each session, as were the same three horses and the same turn-out arena.

The overarching therapeutic goal of the EAP sessions was to improve communication and problem-solving skills. Each session had a targeted skill and objectives that were associated with this overarching therapeutic aim (see Session Agenda Overview – EAP in Appendix L). To work toward this goal, sessions for the EAP group targeted nonverbal communication, herd dynamics and the parallel to human groups and relationships, group functioning, goal-setting, managing stress and negative pressure, and coping with adversity.

For each session, the group checked in, had an activity introduced, engaged in the activity, and then spent time processing the activity with the facilitators. Throughout the EAP activities, the physical safety of the participants and horses was monitored by the equine specialist. Participants in this condition were not given direct instruction or guidance in horsemanship skills, described below. Rather, they were encouraged to project their own thoughts, feelings, and ideas upon the equines and activities. Throughout the intervention, facilitators adjusted the activities laid out for the group based upon variables such as task success, participant and horse reactions, number of participants present, and amount of time remaining. The full Expanded and Modified EAP Manual used in this study, including changes made to the original activities, can be found in Appendix M.

Horsemanship session structure. Horsemanship lessons were taught by two experienced horse-persons, with one primary instructor and one support instructor per intervention session. Four different instructors worked with the group across the six sessions, with two out of the four instructors present for each of the horsemanship lessons. Lessons were

led by one of two individuals with 15 or more years of equine experience, and supported by individuals with between four and 10 years of experience. Both support instructors were employed by the university's equine facility as barn assistants at the time of the study.

Horsemanship sessions were held on the same schedule as the EAP sessions, and in various locations at the equine facility (e.g., indoor ring, outdoor ring, barn aisle). These sessions were goal-oriented, in that students were taught basic horsemanship skills as delineated by 4H's Level 1 handling activities (Penn State College of Agricultural Science, 2009). These skills included: approaching and catching a horse, haltering, leading, turning, and backing a horse, simple grooming, picking up and cleaning feet, bridling and saddling, and generally demonstrating safety around the horse while handling (see Session Agenda Overview – Horsemanship in Appendix N). Horsemanship sessions were structured so that the lesson for the day was reviewed, instruction was provided, and practice opportunities were given. Skills from previous lessons were incorporated as relevant and appropriate. As with the EAP group, modifications were made to the curriculum by instructors as needed in order to respond to participant needs, skill levels, and time. The Expanded Horsemanship Intervention Manual used for this group, including these modifications, can be found in Appendix O.

Wait-list control group structure. The participant assigned to the wait-list control group received no special work with equines during the course of the study. He was, however, invited to a follow-up open house of equine activities, which provided the opportunity to receive up to three hours of equine interaction. This included horsemanship instruction and EAP demonstrations, including activities that the respective groups participated in throughout the intervention period. This open house, heretofore referred to as "horse camp," offered a total of four hours of time spent enjoying the farm setting at the end of the study, and included lunch.

The participant in the wait-list control group arrived one hour before the start of horse camp in order to complete posttest measures and be debriefed.

Horse camp occurred on a day following the final sessions of the EAP and horsemanship groups, immediately after posttest measures were administered to the control group participant. Horse camp was held approximately three weeks from the day of the initial data collection. In order to maintain the interest and participation of the wait-list control group participant and combat attrition, he received a free horse camp shirt at the time of consent. The shirt's design reflected the day of horse camp that the participant could attend at the completion of the study.

Due to the low number of participants that this study yielded, only one individual was assigned to the wait-list control group. As such, the control participant's parents, as well as the participants and parents from the other two conditions, were invited to participate in the horse camp as well. This was done in order to create a livelier and group-oriented setting during the camp experience. During horse camp, attending participants who had participated in the EAP group previously, engaged in horsemanship lessons. Those who had participated in the horsemanship group engaged in EAP demonstration sessions. The participant in the control group received one each of the EAP and horsemanship activities. Specific content for each of the one-hour lessons or demonstrations was selected from the EAP and horsemanship intervention manuals created for this project, and is compiled in the Camp Manual found in Appendix P.

Horse camp culminated with an hour-long "Skills Showcase" activity, in which participants rotated through five different stations that tested the knowledge they had acquired throughout the program. Each of these stations was noted on their "Equine Passport," a document that was handed out at the start of the activity and that tracked their progress through

the stations (see Appendix Q). At the end of a given station, the passport was stamped by the facilitator to indicate its completion. The stations included: Understanding the Language of Horses, Basic Horsemanship Knowledge, Approaching and Haltering, Leading, and Obstacles. While the first two stations required participants to answer trivia questions about horse behavior and horsemanship skills, the final three stations required demonstrations of learned skills. Specifically, students were asked to successfully approach and halter a horse, to lead a horse in a particular pattern at the walk, and lastly to lead the horse through obstacles such as over poles and around cones. As participants worked through each station, their performance was recorded on "skills score cards" by the station's facilitator (see Appendix R).

Safety precautions. Parelli and Parelli (2012) note that the horse selection process must be designed thoughtfully. Assessing and cataloguing the temperament of potential therapy horses is an important part of this process. In order to address this need, horses used for activities in this study were assessed by the program staff for safety and appropriateness prior to use in both EAP and horsemanship sessions. An assessment of each horse occurred prior to each EAP and horsemanship session. Horses were checked for lameness, aggression in response to a nonthreatening human, and atypical reactions to threat (see Equine Assessment Protocol in Appendix S).

As this study involved youth with depressive symptoms, which can include suicidal ideation, a protocol to address any concerns surrounding harm to self that arose during the course of the study was developed. While this was not needed during the intervention period, any concerns regarding suicidal thoughts or behaviors would have been assessed by a NYS-licensed psychologist. After the assessment, parents would have been informed of levels of risk and provided with a referral to a clinician in their area with whom to follow up. If hospitalization

had appeared necessary based upon the assessment, 911 would only have been called if transportation by parents was deemed unfeasible or unsafe. Notably, one participant did indicate suicidal ideation on the posttest measure. As the student was no longer in the physical presence of program staff when the protocol was scored, the parent was notified by phone and a referral to a local mental health professional was made. Referrals were also made for three participants with elevated depression scores on either the parent-rated or self-report CDI-2 at posttest.

Treatment of data. The raw quantitative data was kept in a password-protected file in a secure location under lock and key. Qualitative data, consent forms, and other participant paperwork was also maintained under double lock and key for three years before it was destroyed. Only the primary investigator had access to the raw data, and only the primary investigator input the data into SPSS. Lastly, participants were assigned letters to be used in their case study descriptions in order to protect their identities.

Measures

Demographic survey. Demographics such as age, gender, grade, race and ethnicity, and special education enrollment were collected via survey (see Appendix D). This survey was completed by phone with the parent or guardian of participants. The data from this survey was used to describe the composition of the sample.

Children's Depression Inventory, 2nd edition. The Children's Depression Inventory 2nd Edition (CDI-2), developed by Kovacs (2011), is a norm-referenced rating system that can be used to evaluate depressive symptomology in youth 7 to 17 years old. The CDI-2 does not diagnose specific depressive disorders; however, high CDI-2 scores indicate a sufficient number and severity of depressive symptoms to be of clinical concern. While a variety of tools are

available within the CDI-2, for the purposes of this study, the CDI-2 full length Self-Report scale (CDI-2: SR) and Parent scale (CDI-2: P) were utilized.

CDI-2: SR. The CDI-2: SR contains 28 items and has a reading grade-level equivalent of 1.7 (Kovacs, 2011). Each question consists of three statements, from which the youth is asked to choose the one that best describes him or her over the past two weeks. For scoring purposes, each of the three response choices for each item is assigned a score value of 0, 1, or 2, depending on the level of depressive symptomology that particular statement represents within the set. Scores are combined to create scale and subscale Total raw scores, which are then converted to *T*-scores using age-based norms. Additionally, the CDI-2 provides classifications, or descriptors, to further aid in the interpretation of results. In terms of depressive symptoms, *T*-scores of 59 or lower are classified as *Average or Lower*, from 60 to 64 as *High Average*, from 65 to 69 as *Elevated*, and at or above 70 as *Very Elevated*.

The CDI-2: SR produces a Total score, as well as two primary scale scores: Emotional Problems and Functional Problems. "The Emotional Problem scale score mirrors item endorsements that tap dysphoric affect including sadness and guilt, as well as the neurovegetative symptoms of depression. The Functional Problem scale score taps symptoms that have evident functional consequences with regard to peers, school, and family life (e.g., declining school grades, difficulty getting along with others due to irritability)" (Kovacs, 2011, p. 7). Four subscales make up these two primary scales. Specifically, the Negative Mood/Physical Symptoms and Negative Self-Esteem subscales contribute to the Emotional Problem scale. The Negative Mood/Physical Symptoms subscale score represents the severity of mood and neurovegetative symptoms, and the Negative Self-Esteem subscale represents the severity of negative self-perception symptoms. The Ineffectiveness and Interpersonal Problems

subscales contribute to the Functional Problems scale. The Ineffectiveness subscale signifies functional difficulties caused by depressive symptoms, and the Interpersonal Problems subscale represents the extent to which depressive symptoms are expressed interpersonally.

On the CDI-2: SR, the Emotional Problems scale has a maximum raw score of 30, contains 15 items, and allows for up to two missing items. In terms of subscales that make up this scale, the Negative Mood/Physical Symptoms subscale consists of nine items and allows for up to one missing item with a maximum raw score of 18, while the subscale of Negative Self-Esteem consists of six items with up to one missing response and a maximum raw score of 12. The CDI-2: SR Functional Problems scale has a maximum raw score of 26, contains 13 items, and allows for one missing item. With regard to subscales that make up this scale, the Ineffectiveness subscale consists of eight items with up to one missing item and a maximum raw score of 16, while the subscale of Interpersonal Problems consists of five items, allows for one missing response, and has a maximum raw score of 10.

CDI-2: P. The CDI-2: P contains 17 items, and has a 2nd grade reading level equivalent (Kovacs, 2011). It produces a Total score, like the CDI-2: SR, as well as the two primary scale scores of Emotional Problems and Functional Problems. The meaning of these scores produced by the CDI-2: P parallel the meanings of scores of the same names described above, produced by the CDI-2: SR. Namely, the Emotional Problems scale measures mood and neurovegetative symptoms, while the Functional Problems scale measures symptoms with functional consequences in varying areas of the individual's life (Kovacs, 2011). The CDI-2: P, unlike the CDI-2: SR, does not produce subscale scores. Each form requires 10-15 minutes to complete. On this form, the parent is asked to rate whether certain statements were true *not at all*, *some of the time*, *often*, or *much or most of the time* in the parent's observation of the child over the past

two weeks. For scoring purposes, the rating selected for each item is assigned a score value of 0, 1, 2, or 3, depending on the level of depressive symptomology that particular statement represents within the set.

For the CDI-2: P, the Emotional Problems scale has a maximum raw score of 27, consists of nine items, and allows for one missing item. The CDI-2: P Functional Problems scale has a maximum raw score of 24, consists of eight items, and allows for one missing response. Item scores are added to the appropriate scales and/or subscales to obtain a raw score for each scale and subscale. Then, age-based norms tables are used to convert raw scores to *T*-scores. The same classifications used with the CDI-2: SR are used to further aid in the interpretation of results on the CDI-2: P.

Reliability. The CDI-2 was normed between October of 2005 and September of 2009. A standardization sample of 1,100 youth ages 7 to 17 from the United States was matched to current U.S. demographics on key variables such as sex, race, age, and geographic location. An additional 800 parents were sampled to construct the normative data for the CDI-2: P.

The reliability of the CDI-2: SR and the CDI-2: P is demonstrated through measures of internal consistency and test-retest reliability. Internal consistency looks at how well the items comprising a scale measure a unified dimension, and was measured on the CDI-2 using Chronbach's alpha. A coefficient alpha of .70 or higher is noted to be acceptable in most research in the area of social sciences (Institute for Digital Research and Education, 2014). The CDI-2: SR Total score coefficient alpha ranges from .91 to .92 across ages 13 to 17 (Kovacs, 2011). Specific coefficient alphas were reported across gender for the 13 to 17 age group to range from .84 to .87 for the Emotional Problems scale, including subscales ranging from .73 to .80 for Negative Mood/Physical Symptoms, and from .75 to .80 for Negative Self Esteem.

Cronbach's alpha for the Functional Problems scale ranged from .82 to .85, with subscales ranging from .74 to .79 for Ineffectiveness, and from .72 to .76 for Interpersonal Problems. The internal consistency of the CDI-2: P Total score ranged from .85 to .88, with the Emotional Problems scale at .83 across genders and the Functional Problems scale ranging from .69 to .79.

Test-retest reliability involves administering the same measure to individuals on two separate occasions and determining the strength of correlation across the two administrations (Furlong, Lovelace & Lovelace, 2000). Kovacs (2011) notes that as the CDI-2 is intended to measure a short-term state rather than a long-term trait, short-term test-retest reliability is most relevant to the reliability of this measure as it is intended to be used. Correlations indicate how consistently changes in one variable will predict specific changes in a second variable, and range from 0.0 for variables with no relationship to +/- 1.0 for variables with perfect correlation. Values from 0.0 to .29 are considered weak correlations, from .30 to .69 are considered moderate, and correlations above .70 are considered strong (Furlong et al., 2000). Test-retest reliability correlations for the CDI-2: SR were calculated for 79 youth from the standardization sample, who completed two CDI-2: SR ratings within a two- to four-week window of time. The correlation was found to be .89 for the corrected Total score. The Emotional Problems scale had a corrected correlation coefficient of .92, with corrected subscales correlated at .89 each. The scale of Functional Problems had a corrected correlation coefficient of .81, with subscales correlated at .76 for Ineffectiveness and .92 for Interpersonal Problems. Kovacs (2011) notes that no new test-retest reliability for the CDI-2: P was collected during the norming of the CDI-2, and refers the reader to previous evidence of strong short-term (one-week) and adequate long-term (three months) temporal stability in the original version of the CDI parent form.

Validity. Considerable evidence suggests that the CDI-2 is a valid measure of depressive symptomology in youth. Kovacs (2011) examines two types of validity in depth in the manual, including discriminant and convergent validity. Discriminant validity refers to a measure's ability to differentiate between groups, such as those with clinical depression diagnoses and those without. Results of several planned comparisons found that youth in the Major Depressive Disorder (MDD) group had significantly higher scores than groups of youth with Generalized Anxiety Disorder (GAD), Conduct/Oppositional Defiant Disorder (ODD), and Attention-Deficit Hyperactivity Disorder (ADHD) on the Total score, the Emotional Problems scale, the Negative Mood/Physical Symptoms subscale, and the Negative Self-Esteem subscale (Kovacs, 2011). With regard to the Functional Problems scale, it was found that the MDD group scored significantly higher than most other groups, with the exception of the GAD group. Kovacs (2011) noted that these findings make sense because functional impairments in significant depression and in significant anxiety can be similar.

With regard to predictive validity of the CDI-2, its ability to accurately determine whether a youth is best placed in an MDD group, a matched control group, or an *other diagnosis* group was calculated using discriminant function analysis. When comparing the MDD group to the control, 78.3% of cases were correctly classified by the CDI-2: SR. In comparing the MDD group to the other diagnosis group, 72.6% of cases was accurately classified. The positive predictive power, or percentage of individuals with MDD who were identified by the measure as having MDD when pooled with the control group, was 76.1%. The negative predictive power, or the percentage of individuals identified as not having MDD who truly do not have this disorder, was 81.1%. Kovacs (2011) noted that updated validity data was not collected for the

CDI-2: P, and again referred the reader to data generated from the original CDI parent rating form, which demonstrated good discriminative and predictive validity.

Evidence for the convergent validity of the CDI-2 came from its relationship to performance on other accepted measures of depressive symptoms. Specifically, for 266 youth from the standardization sample, CDI-2 scores were compared to scores on the Beck Depression Inventory – Youth (BDI-Y) and scores on the Major Depressive Episode scale of the Conners Comprehensive Behavior Rating Scales (Conners CBRS). Overall correlations between the CDI 2:SR and the BDI-Y were modest but significant, with correlation coefficients for scales ranging from .28 to .37, and a correlation coefficient of .37 for the Total score. Kovacs (2011) notes that these modest correlations are likely due to less extensive coverage of major depression and dysthymia symptoms on the BDI-Y. Correlations between scores on the CDI-2: SR and the Conners CBRS, which does have comprehensive coverage of major depression symptoms, were stronger, ranging from .38 to .59 with a correlation of .58 for the Total score.

Relationship between behavior ratings and self-reports. As both the CDI-2: SR and the CDI-2: P were used in this study, concerns surrounding consistency across self-reports of behavior and the reports of others should be addressed. Research has demonstrated that low concordance between parent- and self-report ratings of depression is common, with parent-reports often underreporting symptoms and their severity (Achenbach, McConaughy, & Howell, 1987; Lewis et al., 2014). When compared to results of clinical interviews, adolescent self-reports have been found to be better predictors of mental state than parent-reports (Lewis et al., 2014). Achenbach and colleagues (1987) note that different informants provide different types of data, and that it is important to collect and consider data from various informants in assessment. Taken as a whole, the literature suggests that youth themselves may be the most

accurate reporters of their depressive symptoms, generally, but that parent-report is important as well.

Consistency across raters for the CDI-2 was evaluated using a sample of 328 youth (Kovacs, 2011). When comparing youth self-reports on the CDI-2: SR to parent reports on the CDI-2: P, the adjusted correlation coefficient was .36 for the Total score, .26 for the Emotional Problems scale, and .53 for the Functional Problems scale. These correlations indicate that while self and parent perspectives on the behavior of the same individual may not be identical, both reports provide useful information and perspectives in terms of understanding the depressive symptoms of youth. Further, these findings suggest that the Functional Problems scale may be the most consistent scale across youth self-reports and parent reports.

Reliable change across time. *Reliable change* is defined as change that is due to treatment rather than change brought about by measurement error (Kovacs, 2011). The CDI-2 manual reports critical differences in *T*-scores from the same rater that must be met or exceeded to demonstrate reliable change in ratings across time. The reliable change metric was used in the current study to compare pretest and posttest ratings for significant changes in levels of depressive symptoms. For the the self-report measure, the CDI-2 manual reported *T*-score differences of at least 9 for the Total score, 12 for the Emotional Problems scale, and 13 for the Functional Problems across ratings for statistically significant reliable change using combined-sex norms at the probability level of $p = .10$ (Kovacs, 2011). For the parent-report measure, *T*-score differences of 9 for the Total score, 11 for the Emotional Problems scale, and 12 for the Functional Problems scale were reported to demonstrate a reliable change in scores, not due to random error in measurement. In the current study, the presence of reliable change was reported for each individual rater as well as for each treatment group.

In addition to the reliable change metric, CDI-2 outcomes can be looked at through the lens of clinical meaningfulness. The clinical meaningfulness of a statistically significant change is defined by Kovacs (2011) as a reliable change accompanied by a final score in the Average or Lower range. This is considered to be clinically meaningful as it indicates that the child being rated is no longer experiencing elevated symptoms. For the current study, the clinical meaningfulness of reliable change scores was determined and reported for each individual rater and scale.

Reliable difference across raters. *Reliable difference* is defined as the difference between raters needed to be considered a statistically reliable difference in ratings, rather than a result of error in measurement (Kovacs, 2011). In order to facilitate the identification of discrepancies across raters, the CDI-2 manual reports critical differences in *T*-scores needed to demonstrate a reliable difference in reported symptoms between raters. This reliable differences metric was used in the current study to compare ratings of participants' depressive symptoms across participants and their parents to determine consistency. For the combined sex norms relevant to the age group in this study, the CDI-2 manual reported differences of 9 *T*-score points for the Total score, 11 *T*-score points for the Emotional Problems scale, and 13 *T*-score points for the Functional Problems scale across self-report and parent-report scores as constituting a statistically significant reliable difference in ratings at the probability level of $p = .10$ (Kovacs, 2011). For the current study, the reliable differences between participant and parent CDI-2 scale scores at pretest and posttest, respectively, were calculated and reported for each set of raters and each point in time.

Observational techniques. Field observational techniques were included as a means of collecting qualitative data about the sessions. Three EAP sessions (1, 4, and 6) and three

horsemanship sessions (2, 3, and 5) each were observed by the researcher. For observed sessions, data was recorded in the form of running records of participant verbalizations, activities, and observed actions. In addition, feedback about main events, participant quotes, and other things of note occurring in nonobserved sessions were provided to the researcher verbally by the respective facilitators immediately following their completion.

Rouse and Harrison (2016) posited that participants' awareness of audience affects the data in observations. As the researcher served as both the program coordinator and the observer, she was considered to have 'insider' status; she was seen as a part of the equine program rather than as an outside researcher observing sessions. As the presence of the researcher was a typical part of the sessions, these observations were expected to have limited observer effects.

Focus groups. Two semi-structured interview procedures were used in order to collect further information about participants and processes. A set of questions for debriefing focus groups were designed for participating youth, their parents, and for the facilitators (see Appendix K). Across interviews, the specific interview questions were posed one at a time, in order. An opportunity to respond was given to each group member following each question. Questions for these interviews were designed by the researcher in order to gather further information about variables related to recruitment of participants; program strengths and weaknesses; what participants obtained from their participation in the program; if and how participants thoughts, feelings, and behaviors changed from the beginning to the end of the intervention; and whether participants felt that they had learned generalizable skills. These questions were reviewed by a research advisor for face validity.

For participants, interviews were conducted by group (i.e., the two horsemanship participants together, and the two EAP participants together). The horsemanship group interview

was facilitated by the horsemanship instructors, and the EAP group interview was facilitated by the EAP instructors. All participants' parents were interviewed together in one session by the researcher. All facilitators were also interviewed by the researcher together in one session. Facilitation of participant interviews by the instructors themselves, rather than by the researcher, was done due to feasibility with schedule and limited time.

Treatment acceptability survey. A researcher-developed measure was also utilized to collect further data on participants' opinions of treatment acceptability. Toward this end, each of the four participants who worked with horses in either EAP or horsemanship sessions completed a brief, four-question survey about the acceptability of the intervention they received. These questions were answered on a six-point Likert scale where 1 meant *strongly disagree* and 6 meant *strongly agree*. Questions included: (1) working with horses is a good way to help kids who are feeling sad or depressed, (2) working with horses helped me, (3) I would tell a friend that was feeling sad or depressed to try the kind of work I did with horses, and (4) I liked working with horses. Each item was analyzed independently for the current study. The survey questions were determined in collaboration with a research advisor. The reliability and validity of this measure were not established for this study.

Variables

One independent variable, group assignment, was considered. Participants were randomly assigned to one of three groups: EAP, horsemanship, and wait-list control. Since each participant was assigned to only one of these groups throughout the duration of the study, this independent variable was between-subjects.

For the dependent variables, the CDI-2 (discussed above) was used to measure symptoms of depression. Specifically, the pretest and posttest scores from the CDI-2: SR Total score,

Functional Problems scale, and Emotional Problems scale, as well as the three parallel CDI-2: P scales, were used. Additionally, reliable change scores were utilized to measure this dependent variable.

Analyses

Data were analyzed through case studies, small n experimental analysis, and qualitative techniques.

Case study analysis. In order to analyze the individual data yielded from this project, a combination of approaches was used to determine the degree to which change occurred in reported symptoms of depression after the implementation of the intervention for each participant. First, results for each participant were visually examined with regard to descriptive statistics. For each participant and parent rater, individual pretest and posttest *T*-scores from each of the three major scales of the CDI-2 were graphed (i.e., Total score, Emotional Problems scale, and Functional Problems scale). Additionally, the range of pretest and posttest *T*-scores across these scales of the CDI-2 was calculated, and the qualitative descriptor (i.e., Average or Lower, High Average, Elevated, or Very Elevated) was identified for each scale.

Next, ratings of depressive symptoms from pretest to posttest for individual participant and parent raters were evaluated for reliable change across time, which reflects a true shift in symptoms rather than the variation that comes from random error in measurement. Reliable changes in *T*-score from pretest to posttest for individual raters were calculated by subtracting posttest *T*-scores from pretest *T*-scores on each of the three CDI-2 scales. These observed differences were then compared with reliable change metrics for each scale, provided in the CDI-2 manual (Kovacs, 2011). This was done in order to determine whether or not observed

differences in individual ratings across time were large enough to constitute a reliable change in depressive symptoms from pretest to posttest.

Lastly, participant ratings were compared to those of their respective parent or guardian in order to identify reliable differences between raters in reports of the participant's level of depressive symptomology at either pretest or posttest. Reliable differences reflect true differences in ratings provided by two different raters, rather than differences caused by error in measurement. This was done in order to determine whether or not parents and participants reported different levels of depressive symptomology from each other at either pretest or posttest. To do so, parent *T*-scores on each of the three CDI-2 scales were subtracted from participant *T*-scores for each scale at pre- and posttest. The resulting differences were then compared to reliable difference metrics provided in the CDI-2 manual (Kovacs, 2011).

Small n experimental analysis. Visual analysis of descriptive statistics and calculations of reliable change, as described for the case study analyses, were conducted on group mean data as well. Specifically, the mean Total symptom *T*-score from the CDI-2: SR and the CDI-2: P was calculated for each group at pretest and posttest. This was also done for the EAP and horsemanship groups combined, to create an *equine contact group*. The qualitative descriptors for pretest and posttest mean *T*-scores were identified for each group. Then, reliable changes in mean *T*-scores for each group from pretest to posttest were calculated. To do this, the posttest mean *T*-score was subtracted from the pretest mean *T*-score. The resulting differences were then compared with reliable change metrics for the combined-sex norms for each scale, reported in the CDI-2 manual (Kovacs, 2011). This information was used to determine whether or not meaningful changes in depressive symptoms from pre- to posttest were found for each group.

Qualitative analysis. Qualitative data was analyzed using the method of thematic analysis, in which reported and observed experiences are analyzed in order to discern a broader understanding of a given issue (Crowe, Inder, & Porter, 2015). Specifically, thematic analysis is a technique that can be used to identify, analyze, and report themes found in qualitative data (Braun & Clarke, 2006). This method is noted to be flexible with regard to theory and epistemology, able to be applied to a variety of perspectives. Further, it is a widely-used and accessible approach (Braun & Clarke, 2006). Steps in this method include becoming familiar with the data; generating initial codes; searching for and identifying themes; reviewing themes; refining, defining, and naming themes; illustrating the themes using examples from the data; and synthesizing the results (Braun & Clarke, 2006; Crowe et al., 2015).

Data triangulation is the process of using data from multiple sources and perspectives to inform the results of a qualitative analysis. This process helps researchers to verify statements made by participants, and to provide a more accurate description of the phenomenon under study (Rouse & Harrison, 2016). In the current study, data was triangulated across observations, focus groups, and as relevant, the treatment acceptability survey. These data sources range from low to high in researcher influence, and provide both real-time and retrospective accounts of the relevant phenomena (Rouse & Harrison, 2016).

The current thematic analysis was grounded in a realist perspective, such that the data were approached as representing the reality and experiences of the participants (Braun & Clarke, 2006). The realist perspective allows for motivation, experience, and meaning to be directly theorized. Additionally, an inductive approach to the data was taken in this study. This means that the data corpus was coded without a preconceived notion of what patterns it should contain, allowing the data derived from the coding process to drive the development of themes.

In the current study, the data corpus, consisting of field notes and interview notes, were first transcribed for analysis. Then, the researcher read through the data several times in order to become familiar with the data corpus. Once familiarized, the researcher began to code individual units of data from each of the data-sets by synthesizing the main idea(s) into just a few words that capture the unit's essence. Once codes were created, the data corpus was reread for any additional codes of note. Then, the data was separated out into the EAP and horsemanship data-sets in order to identify themes related to each intervention group independently. Codes were organized into related data-sets visually using a highlighting system, then collated by theme. Themes typically included several related codes, which were collapsed into subthemes where unable to be further synthesized. Themes were then checked against each other, and against the data corpus. Themes and subthemes were developed only for groups of codes that were consistent and distinctive, well-represented throughout the data-set, and well-represented across participants and/or groups.

Codes that did not fit with enough other codes to form a theme were grouped into a miscellaneous category, and eventually discarded. Once themes and subthemes were defined, examples were drawn from the original transcripts and collated by theme. The data-set related to a given theme was reviewed as a whole, and used to develop the name and definition of the theme itself. The data-sets were also rereviewed as they related to the subthemes, identifying examples, and refining concepts. The number of specific instances of each theme throughout the data corpus was counted, and used to determine *keyness* in selection of themes (Braun & Clarke, 2006). Finally, these results were synthesized into a visual model representing the themes and subthemes, and their relationship to the EAP and horsemanship interventions. Lastly, the themes and corresponding thematic map that was developed by the researcher was reviewed by a mental

health professional who was a master's level social worker. In order to check these themes, the reviewer compared individual codes to the data they represented, codes to the subthemes and themes they were grouped into, subthemes to each other, transcripts to subthemes and themes, and finally, themes to each other. In the case of a disagreement between the researcher's coding and the review, the researcher and reviewer would have discussed the code, subtheme, or theme in question, reviewed the related transcript and codes, and collaborated to determine the best fit for the data. No such disagreements arose in the review of the coding.

In the current study, the primary investigator held the role of researcher, transcriber of data, and primary analyzer of qualitative data. This level of involvement with the research has both benefits and drawbacks. The most substantial benefit is that the primary investigator became very familiar with the study, participants, events, and the data itself during the course of the study. Familiarity with the data allowed for a rich understanding of it, and facilitated the process of thematic analysis. The major drawback of this level of involvement is that it reduces the objectivity with which data is approached. Since all of the data in the current study was primarily filtered through one researcher across this study, it is possible that researcher blind spots or biases, such as personal experience with horses, could have influenced the interpretation of events, themes, et cetera. Safeguards such as the use of a reviewer for the qualitative analysis process, and triangulation of data across sources, were used to bolster the reliability of the current study's results.

Chapter 4: Results

This study assigned at-risk youth into an EAP group, a horsemanship group, and a wait-list control group, in order to look at the effects that work with horses had on participating youth and their symptoms of depression. Individual changes were analyzed using visual analysis of *T*-scores and their descriptive labels, and by comparing differences between pretest and posttest to reliable change criterion. Further, reliable differences between participant- and parent-raters were examined using reliable difference criterion. Treatment acceptability was also measured, using a researcher-developed questionnaire, in order to allow for quantification of this construct. Lastly, qualitative data from session observations and focus groups were analyzed using thematic analysis. Overall, this study evaluated results in order to address the following research hypotheses:

1. The participants in the EAP and horsemanship groups will show greater decreases in depressive symptomology than the control group.
2. The participants in the EAP group will show greater decreases in depressive symptomology than the participants in the horsemanship group.

Case Analysis: EAP

The EAP group consisted of two participants, both of whom were male. Both participants in the EAP group also received Special Education services at school.

Participant A. Participant A was referred for participation by school professionals due to having been observed to cry at school, and having engaged in self-harm behaviors in the past. At the time of the referral, the referral source noted that this participant struggled with emotional sensitivity and self-regulation, appropriate frustration management, and managing confrontational social settings.

Visual analysis and reliable change. Complete CDI-2: SR and CDI-2: P raw scores, *T*-scores, and the corresponding descriptive labels for Participant A can be found in Table 2. Additionally, Table 2 denotes scales with reliable change, clinical meaningfulness, and/or reliable differences between raters. Self-reported *T*-scores for the three major scales of the CDI-2 are shown in graph form in Figure 1, and parent-rated scores in Figure 2. Participant A's self-reported *T*-scores for each of the three major scales were in the Very Elevated range at pretest (range = 70-73), but in the Average range at posttest (range = 48-59). In comparing self-ratings between pre- and posttest, a reliable change in *T*-score was found for the self-reported Total score with a decrease of 20 *T*-score points, the Emotional Problems scale with a decrease of 22 points, and the Functional Problems scale with a decrease of 14 points. Each of these changes is clinically important, as reliable change was accompanied by posttest scores within the Average range.

In contrast, Participant A's parent-reported *T*-scores for each of the three major CDI-2 scales were in the Average range at pretest (range = 46-48), and continued to be in the Average range at posttest (range = 40-40). In comparing these scores, no reliable changes were found from pre- to posttest on any of the three parent-report scales with a 7-point difference on the Total score, a 6-point difference on the Emotional Problems scale, and an 8-point difference on the Functional Problems scale.

Figure 1. *Participant A CDI-2:SR T-scores, Pre- and Posttest*

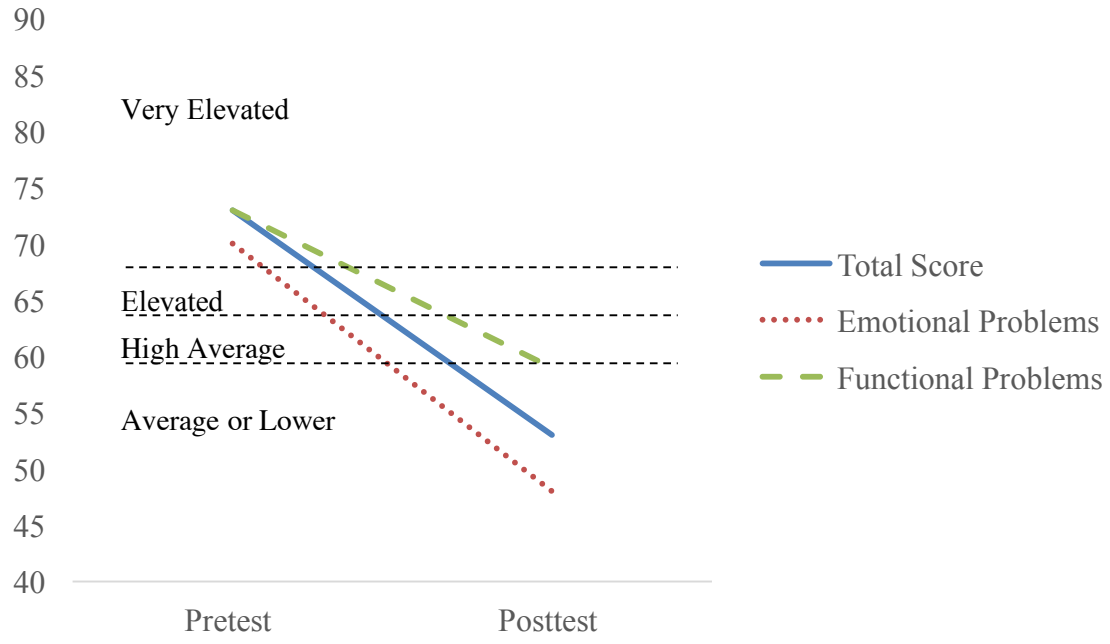
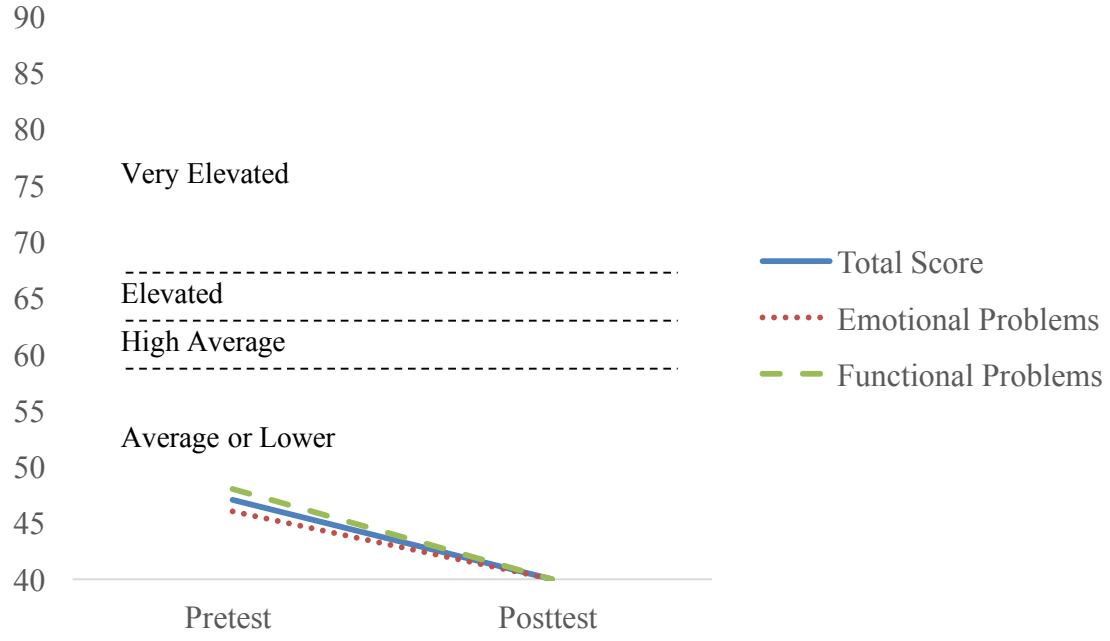


Figure 2. *Participant A CDI-2: P T-scores, Pre- and Posttest*



Reliable differences between parent and child ratings. In comparing self-reported and parent-reported scores for Participant A, reliable differences were found across all three scales at

pretest, with the self-report reflecting higher levels of symptomology in each domain compared to the parent report. Specifically, Participant A's self-reported pretest Total score was 26 *T*-score points higher, the Emotional Problems score 24 *T*-score points higher, and the Functional Problems scale 25 *T*-score points higher, than parent-reported pretest scores. At posttest, reliable differences across raters were found in the Total score (13-point difference) and the Functional Problems scale (19-point difference), but not in the Emotional Problems scale (8-point difference).

Overall, these results indicate that Participant A self-reported a meaningful decrease in depressive symptoms across all three scales across time, but that the corresponding parent-rater did not. At posttest, both raters reported levels of depressive symptomology in the Average range. Differences in raters' perceptions of Participant A's depressive symptoms were found at both pretest and posttest, with self-reported scores reflecting higher levels of depressive symptomology compared to parent-reported scores.

Participant B. Participant B was referred to the current study by a school professional because he was observed to cry at school, to have seemed sad at times, and to have expressed feelings of hopelessness and/or worthlessness. At the time of the referral, the referring professional also noted that this participant was emotionally and socially behind his same-aged peers.

Visual analysis and reliable change. Complete CDI-2: SR and CDI-2: P raw scores, *T*-scores, and the corresponding descriptive labels for Participant B can be found in Table 3. Additionally, Table 3 denotes scales with reliable change, clinical meaningfulness, and/or reliable differences between raters. Self-reported *T*-scores for the three major scales of the CDI-2 are shown in graph form in Figure 3, and parent-rated scores in Figure 4. Participant B's self-

reported *T*-scores for each of the three major scales were in the High Average or Very Elevated range at pretest (range = 64-89), and were similarly in the Very Elevated range at posttest (range = 81-86). In comparing self-ratings between pre- and posttest, a reliable change was found for the Emotional Problems scale only, with an increase of 17 *T*-score points. This reflects an increase in depressive symptoms from pretest to posttest. No reliable changes were found from pre- to posttest in the Total scale (8-point change) or the Functional Problems scale (3-point change).

Participant B's parent-reported *T*-scores for each of the three major scales were in the Average range at pretest (range = 53-56), and continued to be in the Average range at posttest (range = 46-56). In comparing these *T*-scores, no reliable changes were found from pre- to posttest on any of the three parent-reported scales with a 4-point difference on the Total score, a 10-point difference on the Emotional Problems scale, and a 3-point difference on the Functional Problems scale.

Figure 3. *Participant B CDI-2:SR T-scores, Pre- and Posttest*

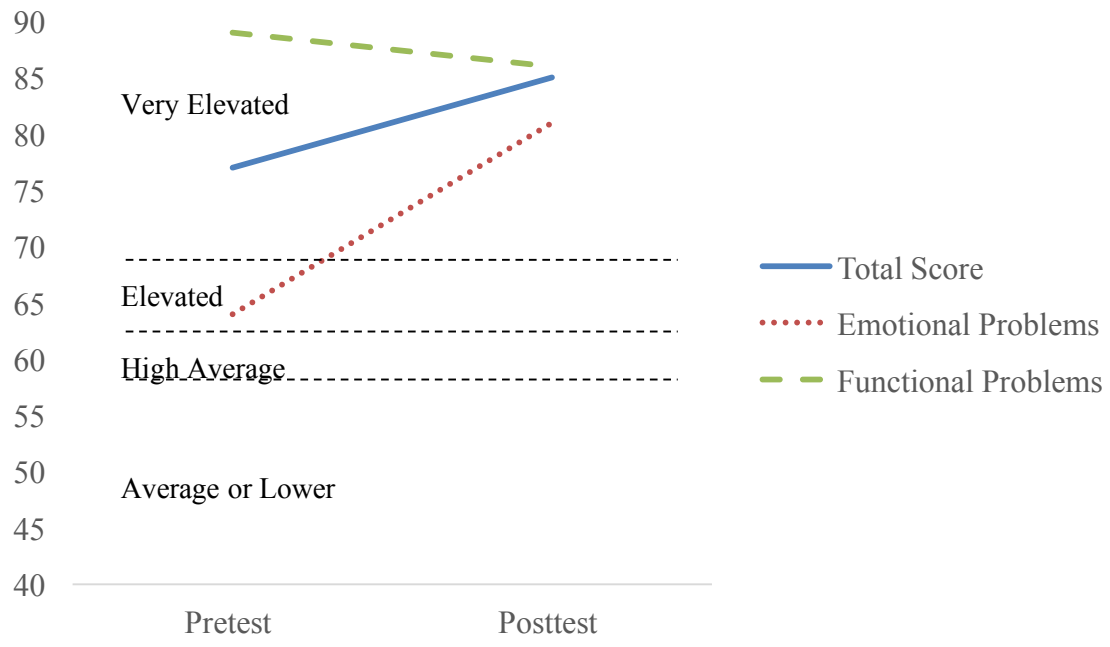
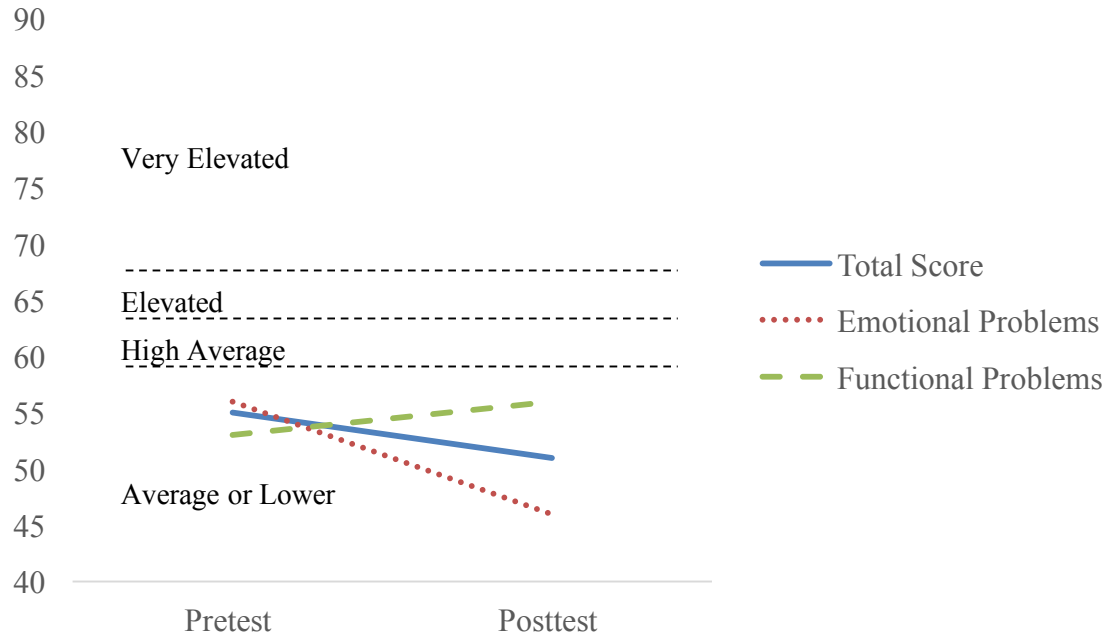


Figure 4. *Participant B CDI-2: P T-scores, Pre and Posttest*



Reliable differences between parent and child ratings. In comparing self-reported and parent-reported scores for Participant B, reliable differences were found for the Total score (23-point difference) and Functional Problems scale (36-point difference) at pretest, but not the Emotional Problems scale (8-point difference). Across the Total score and Functional Problems scale, Participant B's self-report reflected higher levels of symptomology compared to the parent-report. At posttest, reliable differences across raters were found in the Total score (34-point difference), the Functional Problems scale (35-point difference), and the Emotional Problems scale (30-point difference), with the participant continuing to report higher levels of symptoms than the parent.

Overall, these results indicate that neither Participant B nor the corresponding parent-rater reported a meaningful decrease in depressive symptoms in any of the three major scales of the CDI-2. Further, Participant B's self-report indicated a meaningful increase in emotional problems related to depression. Differences in raters' perceptions of Participant B's depressive

symptoms were found at both pretest and posttest, with self-reported scores reflecting higher levels of depressive symptomology compared to parent-reported scores across both points in time.

Case Analysis: Horsemanship

Two subjects participated in the horsemanship group in the current study. Both were female. Neither participant in this group received Special Education services at the time of the study.

Participant C. Participant C was referred to the study by school professionals due to having been observed to cry at school, and because she seemed to feel hopeless and/or worthless and sad at times. At the time of the referral, the school professional further noted that this participant struggled with peer relationships, conflict management, and coping skills.

Visual analysis and reliable change. Complete CDI-2: SR and CDI-2: P raw scores, *T*-scores, and the corresponding descriptive labels for Participant C can be found in Table 4. Additionally, Table 4 denotes scales with reliable change, clinical meaningfulness, and/or reliable differences between raters. Self-reported *T*-scores for the three major scales of the CDI-2 are shown in graph form in Figure 5, and parent-rated scores in Figure 6. Participant C's self-reported *T*-scores for each of the major scales were in the Average range at pretest (range = 45-49), and continued to be in the Average range at posttest (range = 42-46). In comparing these scores, no self-reported reliable changes were found in any of the three domains, with a 4-point difference on the Total score, a 3-point difference on the Emotional Problems scale, and a 3-point difference on the Functional Problems scale.

Participant C's parent-reported *T*-scores for each of the three major scales were in the Very Elevated range at pretest (range = 70-79), but in the Average range at posttest (range = 44-

53). In comparing these scores, reliable changes indicating a decrease in symptoms were found from pre- to posttest on each of the three parent-report scales. More specifically, the parent-reported Total score decreased by 30 *T*-score points, the Emotional Problems scale by 35 points, and the Functional Problems scale by 17 points. Each of these changes is clinically important, as reliable change was accompanied by posttest scores within the Average range.

Figure 5. *Participant C CDI-2:SR T-scores, Pre- and Posttest*

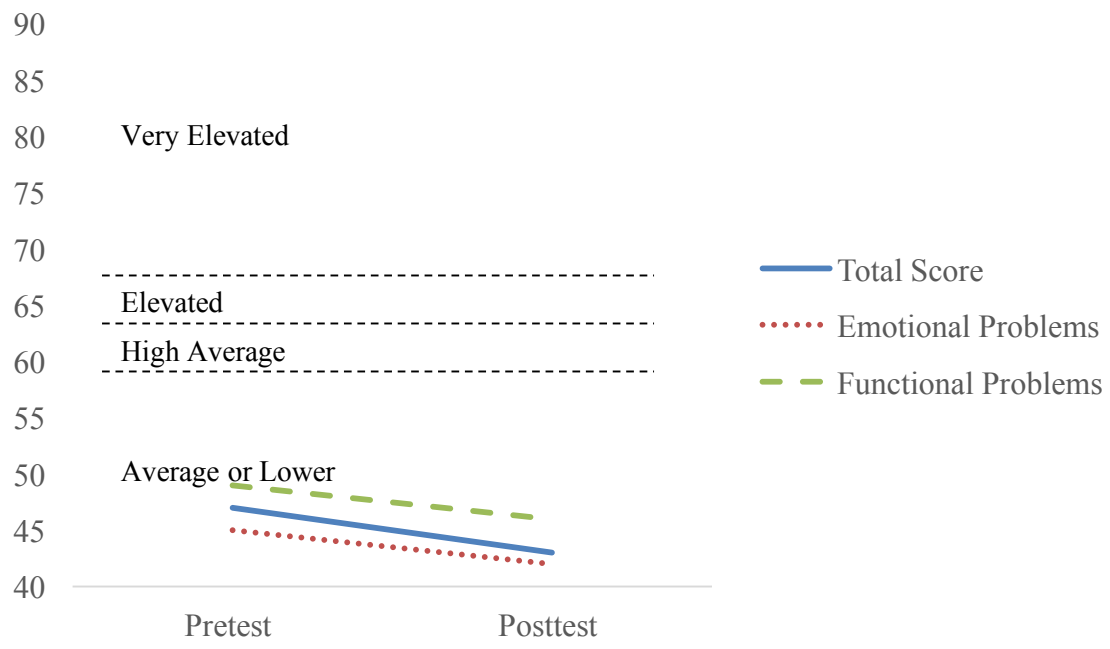
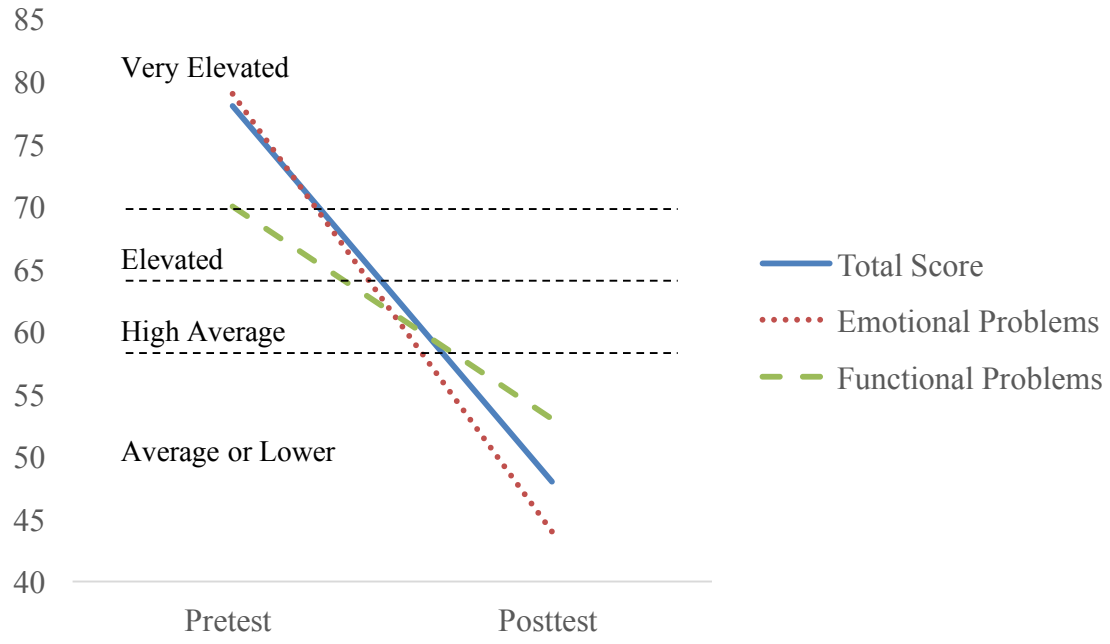


Figure 6. *Participant C CDI-2: P T-scores, Pre- and Posttest*



Reliable differences between parent and child ratings. In comparing self-reported and parent-reported scores for Participant C, reliable differences were found for the Total score (31-point difference), the Emotional Problems scale (21-point difference), and the Functional Problems scale (34-point difference) at pretest. Across each of these three domains, Participant C's self-report reflected lower levels of symptomology than the parent-report. At posttest, no reliable differences across raters were found.

Overall, these results indicate that while Participant C did not report a meaningful decrease in depressive symptoms in any of the three scales, Participant C's parent rater reported meaningful decreases in symptoms in all three. Further, at posttest, both raters reported levels of depressive symptomology falling within the Average range. Differences in raters' perceptions of Participant C's depressive symptoms were found at pretest, but not posttest. At pretest only, self-reported scores reflected lower levels of depressive symptomology compared to parent-reported scores.

Participant D. Participant D was referred to the study by school professionals due to having been sometimes or often observed to cry at school, and because she at times seemed sad and to feel hopeless and/or worthless. At the time of the referral, the referring professional also noted that this participant often appeared withdrawn, and that she struggled with peer relationships and academics.

Visual analysis and reliable change. Complete CDI-2: SR and CDI-2: P raw scores, *T*-scores, and the corresponding descriptive labels for Participant D can be found in Table 5. Additionally, Table 5 denotes scales with reliable change, clinical meaningfulness, and/or reliable differences between raters. Self-reported *T*-scores for the three major scales of the CDI-2 are shown in graph form in Figure 7, and parent-rated scores in Figure 8. Participant D's self-reported *T*-scores for each of the three major scales was in the Average range at pretest (range = 48-52), and continued to be in the Average range at posttest (range = 48-56). In comparing these scores, no reliable changes were found for any of the three scales with a 1-point difference on the Total score, a 0-point difference on the Emotional Problems scale, and a 4-point difference on the Functional Problems scale.

Participant D's parent-reported *T*-scores for each of the three major scales was in the Elevated or Very Elevated range at pretest (range = 69-72), but in the Average range at posttest (range = 51-51). In comparing these scores, reliable changes indicating a decrease in symptoms were found from pre- to posttest on each of the three parent-report scales. More specifically, the parent-reported Total score decreased by 21 *T*-score points, the Emotional Problems scale by 18 points, and the Functional Problems scale by 19 points. Each of these changes is clinically important, as reliable change was accompanied by posttest scores within the Average range.

Figure 7. *Participant D CDI-2:SR T-scores, Pre- and Posttest*

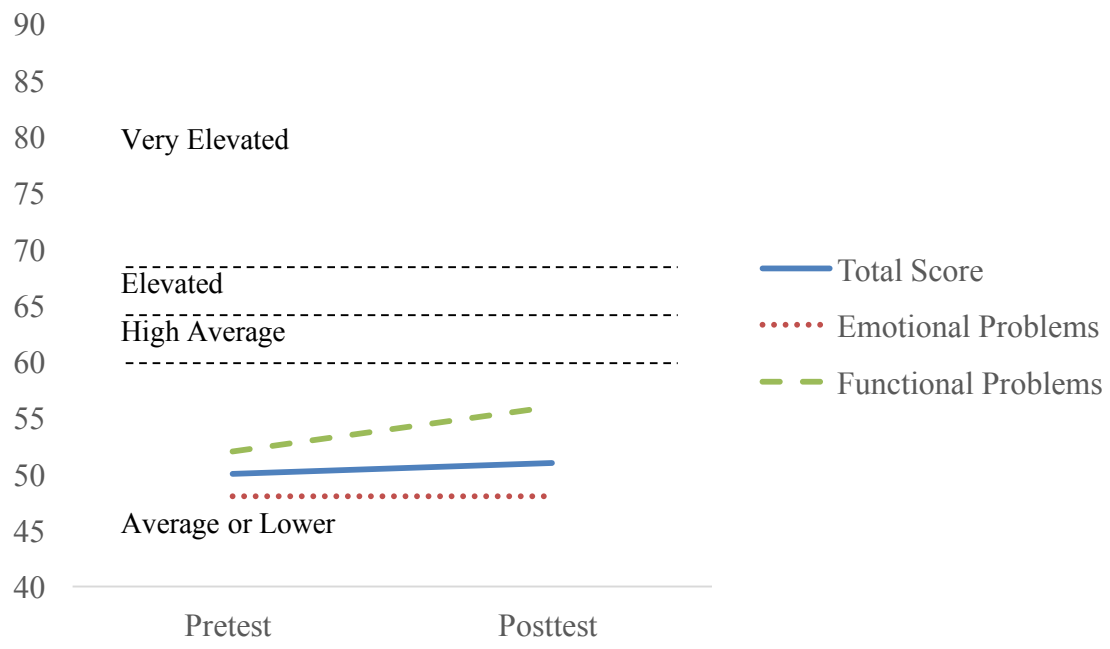
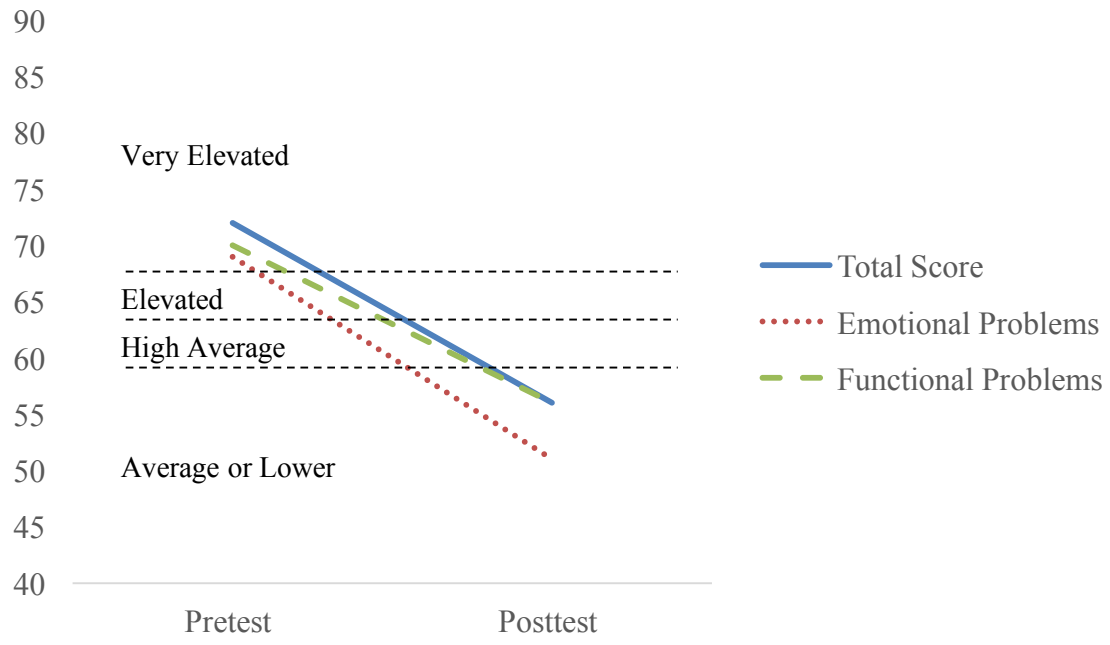


Figure 8. *Participant D CDI-2: P T-scores, Pre- and Posttest*



Reliable differences between parent and child ratings. In comparing self-reported and parent-reported scores for Participant D, reliable differences were found for the Total score (22-

point difference), the Emotional Problems scale (21-point difference), and the Functional Problems scale (18-point difference) at pretest. Across each of these three domains, Participant D self-reported lower levels of symptomology compared to the parent-report. At posttest, no reliable differences across raters were found. This indicated that the participant and parent reported similar levels of depressive symptomology at the completion of the intervention period.

Overall, these results indicate that while Participant D did not report a meaningful decrease in depressive symptoms in any of the three CDI-2 scales, Participant D's parent rater reported meaningful decreases in symptoms in all three areas. Further, at posttest, both raters reported levels of depressive symptomology in the average range of functioning. Differences in raters' perceptions of Participant D's depressive symptoms were found at pretest, but not posttest. At pretest only, self-reported scores reflected lower levels of depressive symptomology compared to parent-reported scores.

Case Analysis: Control Group

The control group consisted of one participant. This participant was not receiving Special Education services at the time of the study.

Participant E. Participant E was referred to the current study by the school professional because he was observed to cry sometimes or often at school. At the time of the referral, the referring professional indicated that he struggled with applying coping skills effectively and managing emotional reactivity.

Visual analysis and reliable change. Complete CDI-2: SR and CDI-2: P raw scores, *T*-scores, and the corresponding descriptive labels for Participant E can be found in Table 6. Additionally, Table 6 denotes scales with reliable change, clinical meaningfulness, and/or reliable differences between raters. Self-reported *T*-scores for the three major scales of the CDI-

2 are shown in graph form in Figure 9, and parent-rated scores in Figure 10. Participant E self-reported *T*-scores on each of the three scales in the High Average or Elevated range at pretest (range = 63-67), but in the Average range at posttest (range = 50-56). In comparing self-ratings between pre- and posttest, reliable changes were found for the Total score (decrease of 15 points) and in the Emotional Problems scale (decrease of 17 points), but not in the Functional Problems scale (decrease of 8 points). Both changes in the Total score and the Emotional Problems scale are clinically important, as reliable change was accompanied by posttest scores within the Average range.

Participant E's parent-reported *T*-scores for each of the three major scales were in the Elevated or Very Elevated range at pretest (range = 68-79), and continued to be in the Elevated or Very Elevated range at posttest (range = 65-74). In comparing these parent-reported pretest and posttest scores, no reliable changes were found on any of the three scales, with a 4-point difference on the Total score, a 5-point difference on the Emotional Problems scale, and a 3-point difference on the Functional Problems scale.

Figure 9. *Participant E CDI-2:SR T-scores, Pre- and Posttest*

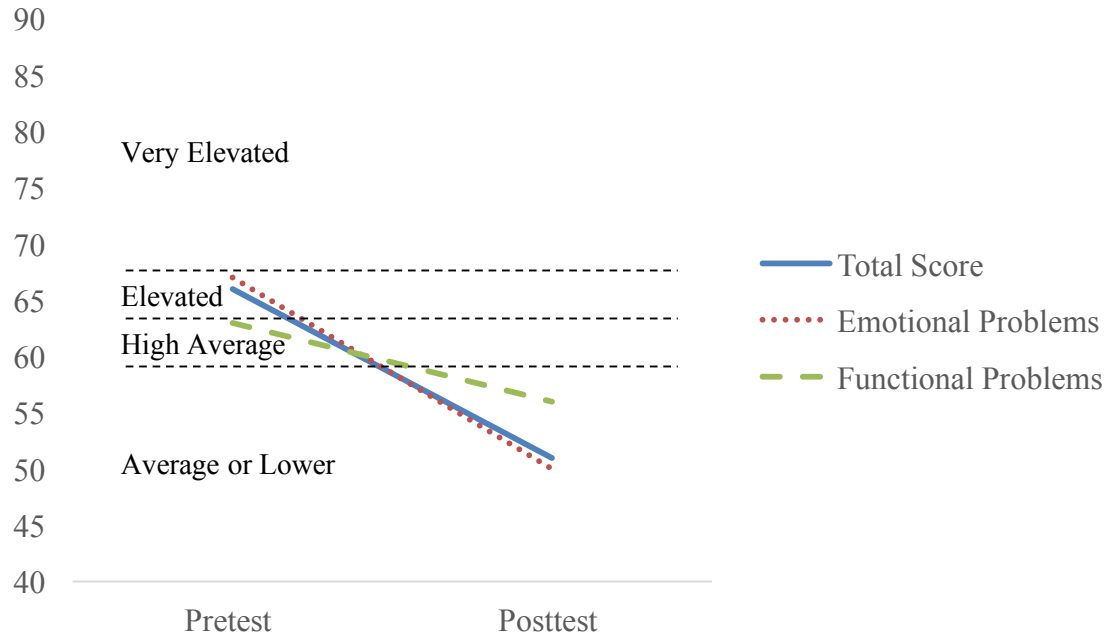
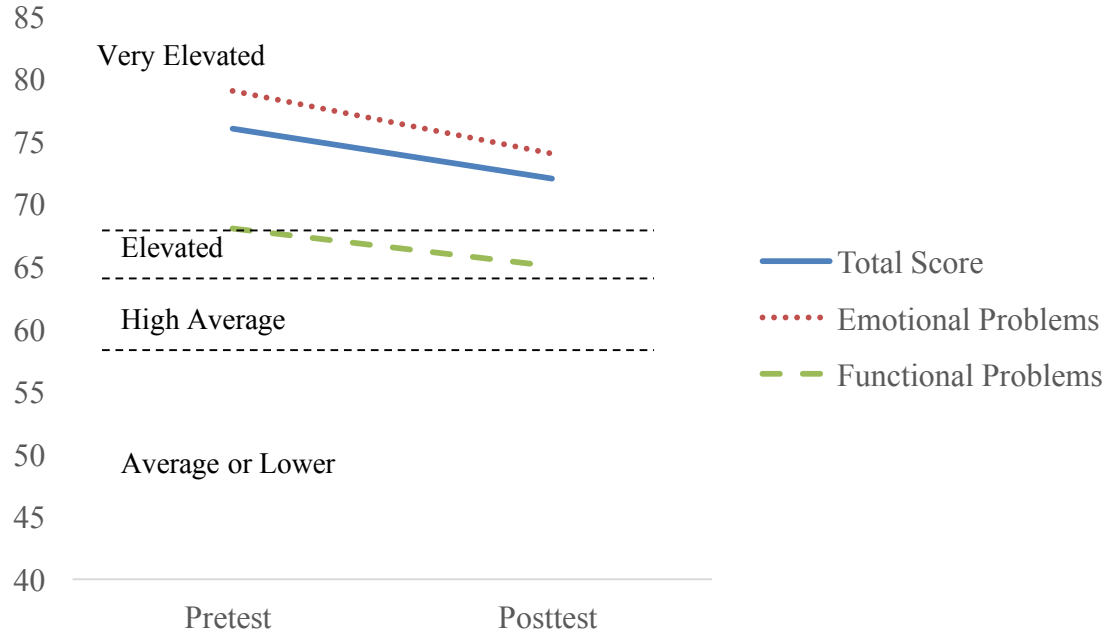


Figure 10. *Participant E CDI-2: P T-scores, Pre- and Posttest*



Reliable differences between parent and child ratings. In comparing self-reported and parent-reported pretest scores for Participant E, reliable differences were found for the Emotional

Problems scale (12-point difference), only. No reliable differences were found for the Total score (10-point difference) or the Functional Problems scale (5-point difference) at pretest. Across each of the reliably different domains, Participant E's self-report reflected lower levels of symptomology compared to the parent report. At posttest, reliable differences were found for the Total score (21-point difference) and the Emotional Problems scale (24-point difference), but not the Functional Problems scale (9-point difference).

Overall, these results indicate that Participant E reported meaningful decreases in depressive symptomology across time as measured by the Total score and the Emotional Problems scale, but not in terms of the Functional Problems scale. In contrast, Participant E's parent reported no meaningful decreases from pre- to posttest in any area. At posttest, Participant E rated himself as demonstrating average levels of depressive symptoms, while his parent-rater reported elevated levels of depressive symptomology. Differences in raters' perceptions of Participant E's depressive symptoms were found at pretest, and became even more divergent at posttest. At both pretest and posttest, self-reported scores reflected lower levels of depressive symptomology compared to parent-reported scores.

Effects across Groups

In order to further analyze group differences, the mean Total score *T*-score from the CDI-2: SR and the CDI-2: P was calculated for each of the three experimental groups, and for the EAP and horsemanship groups combined (see Table 7). This combined group reflected *equine contact*, generally. Table 7 also notes significant changes in mean *T*-score between pretest to posttest. Additionally, the pretest and posttest Total score *T*-score means of each group were graphed for visual analysis (Figures 11 and 12).

Figure 11. *Mean CDI-2: SR Total Symptom T-score, by Group*

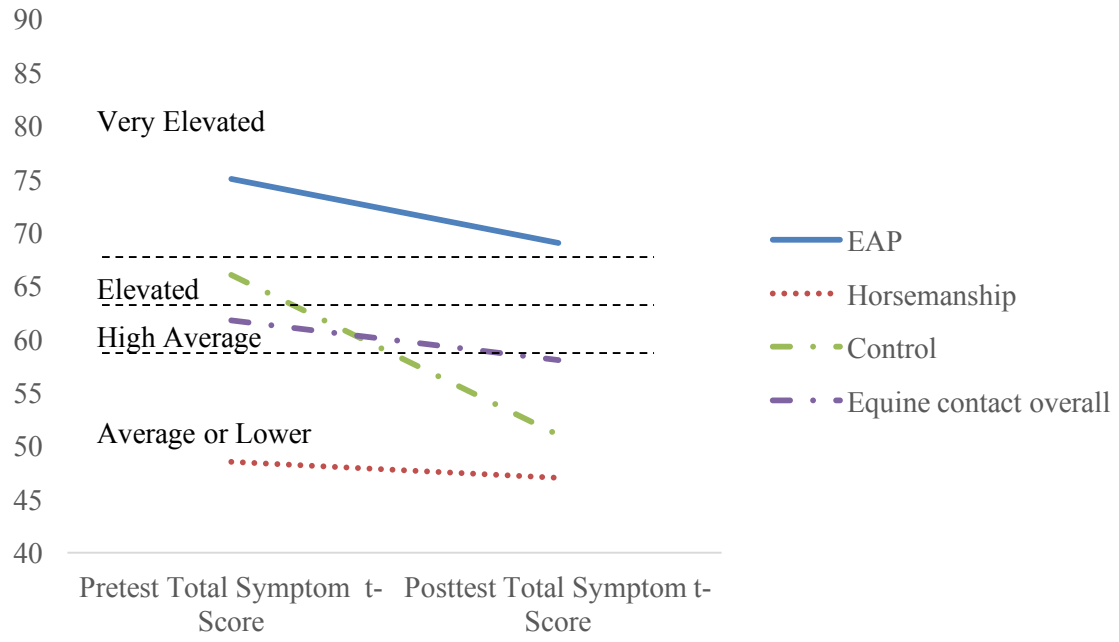
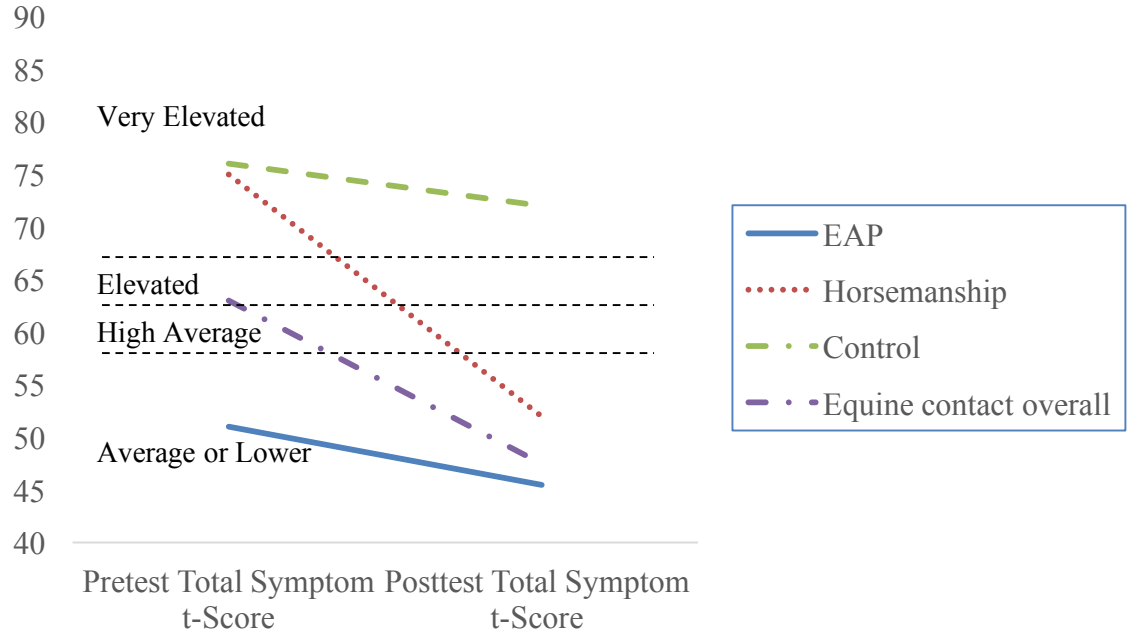


Figure 12. *Mean CDI-2: P Total Symptom T-score, by Group*



Participants in the EAP group had a self-reported Total score *T*-score mean in the Very Elevated range at pretest (*M* = 75; SD = 2.83), with a similar mean score in the Elevated range at posttest (*M* = 69; SD = 22.63). This 6-point difference reflected no reliable changes between pretest and posttest ratings for self-reported depressive symptoms for the EAP group. The

parent-reported Total score *T*-score mean for the EAP group was in the Average or Lower range at pretest (*M* = 51; SD = 5.66), and continued to be in the Average or Lower range at posttest (*M* = 45.5; SD = 7.78). Again, this 5.5-point difference reflected no reliable changes between parent-rated pretest and posttest scores for the EAP group. Overall, no reliable shifts in symptoms of depression were found for the EAP group mean Total score.

For participants in the horsemanship group, the self-reported Total *T*-score mean fell into the Average or Lower range at pretest (*M* = 48.5; SD = 2.12), and similarly, continued to be the Average or Lower range at posttest (*M* = 47; SD = 5.66). This 1.5-point decrease in *T*-score reflected no reliable changes between pre- and posttest for self-reported depressive symptoms in the horsemanship group. The parent-reported mean Total score for the horsemanship group was in the Very Elevated range at pretest (*M* = 75; SD = 4.24), but in the Average or Lower range at posttest (*M* = 49.5; SD = 2.12). This 25.5-point difference indicated a reliable decrease in total depressive symptoms as reported by parent-raters between pretest and posttest. Overall, while self-reported scores in the horsemanship group reflected no reliable changes between pre- and posttest, parent-reported scores reflected a decrease in depressive symptoms at the end of the treatment.

The control group had only one participant, therefore calculating the mean of the group was not necessary. Nonetheless, this participant's Total score *T*-scores are reported across each of the raters and points in time for comparison to the group means, above. The self-reported Total score for the control participant was in the Elevated range at pretest (*T*-score = 66), but in the Average or Lower range at posttest (*T*-score = 51). This difference of 15 *T*-score points constituted a reliable decrease in depressive symptoms between pre- and posttest for the control participant's self-report. Parent Total score *T*-scores for the control participant reflected no

reliable change, with both pretest and posttest scores in the Very Elevated range and a *T*-score decrease of 4 points across time. Overall, the control participant's self-reported scores reflected a reliable change from pre- to posttest, while parent-reported scores reflected no such decrease in depressive symptoms.

When combining EAP and horsemanship results into an equine contact group, the self-reported Total score *T*-score mean was in the High Average range at pretest (M = 61.75; SD = 15.44), but in the Average or Lower range at posttest (M = 58; SD = 18.51). Despite the shift in classification, this 3.75-point difference reflected no reliable changes from pretest to posttest for mean self-reported depressive symptoms within the combined equine contact group.

The parent-reported Total score *T*-score mean for the combined equine contact group was in the High Average range at pretest (M = 63; SD = 14.45), but in the Average or Lower range at posttest (M = 47.5; SD = 5.2). This 15.5-point difference reflected a reliable decrease from pretest to posttest for parent-reported depressive symptoms within the combined equine contact group. Overall, no reliable shifts in overall mean symptoms were reported by participants; however, reliable decreases in these symptoms were found for parent-raters in the combined equine contact group.

Treatment Acceptability Survey

Each of the four participants who worked with horses in either the EAP or horsemanship sessions completed a brief, four-question survey about the acceptability of the intervention they received. These questions were answered on a six-point scale where 1 meant *strongly disagree* and 6 meant *strongly agree*.

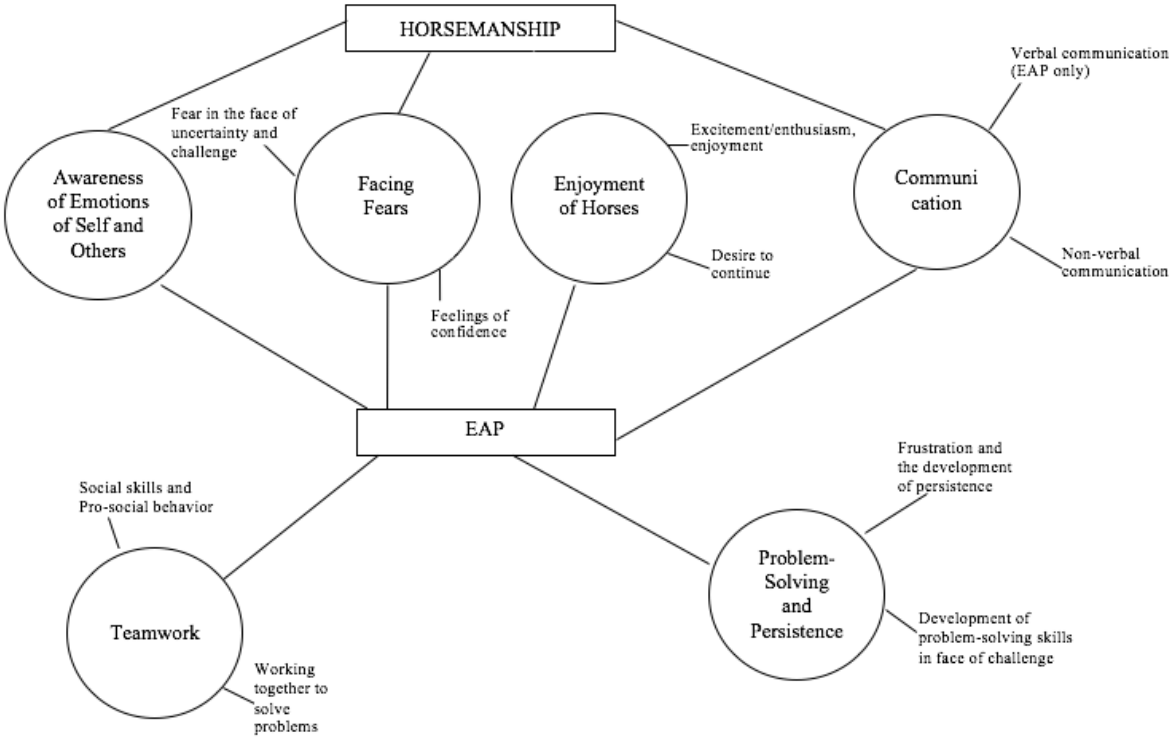
The results of the Treatment Acceptability Survey, by item, are found in Table 8, and descriptive statistics for each item are found in Table 9. The questions included (1) working

with horses is a good way to help kids who are feeling sad or depressed (M = 5.75; range = 1; SD = .5); (2) working with horses helped me (M = 5.25; range = 2; SD = .957); (3) I would tell a friend that was feeling sad or depressed to try the kind of work I did with horses (M = 5.25; range = 2; SD = .957); and lastly, (4) I liked working with horses (M = 6; range = 0; SD = 0). All of the participants in both the EAP and horsemanship group positively endorsed each of the four questions, indicating that the equine treatments were enjoyable to participants.

Qualitative Themes

An inductive, thematic analysis of the researcher's session observations and focus group data was completed. This was done in order to understand what major skills participants seemed to practice and develop through their participation in EAP or horsemanship interventions. The qualitative data allowed for several themes to be drawn from it with relation to how horses impact at-risk youth. Across both the EAP and horsemanship group, four universal themes were found. These themes included *awareness of self and others*, *facing fears*, *enjoyment of horses*, and *communication*. Beyond these four major themes, two additional themes were found primarily in the EAP intervention data-set. These themes included *teamwork* and *problem-solving and persistence*. Each theme, and the relevant subthemes, are discussed in detail, below. A general visual overview of the themes and subthemes generated can be found in Figure 13, in the form of a thematic map.

Figure 13. *Thematic Map*



Awareness of emotions in self and others. The first theme, entitled awareness of emotions in self and others, was defined here as the ability to identify various emotions in one's self and others. This theme was seen in the data across sessions for both groups, and was corroborated by observations made by parents and by participant reports. Overall, 20 examples of this theme were found across the data corpus: eight from the EAP group, and 12 from the horsemanship group.

Specifically, participants in both groups were found to identify and name their own feelings, and to identify and name the feelings of the horses across sessions. Data reflected the participants verbally identifying their own feelings of fear in response to the horses, frustration in response to difficulties with communication, sadness when a horse wouldn't cooperate, and

accomplishment after having succeeded in a challenge. Participants also verbally identified feelings such as fear, anger, and happiness in the horses that they worked with across sessions.

Examples illustrating the development of skills related to identifying the emotions of others in participating youth were also found across observations. In one session, an EAP participant was having difficulty getting the horse to trot. The participant stated, "I think he's [the horse] mad. He's not doing anything and his ears are back." In another example, participants were standing next to a horse stall, and a horse moved its head toward one of the participants. The horse's behavior startled the participant, which resulted in her jumping. Consequently, this startled the horse. Her peer then said to her, "you scared her [the horse]!" In both of these examples, participants utilized the nonverbal cues given by the horse to identify what the horse was likely to be feeling, demonstrating skills related to thinking about the emotions of others.

Examples of participants applying these awareness skills to their peers in session were also found across groups. In a later session in the EAP group, one participant became upset when asked to walk the horse he had caught. His peer approached him, took the horse, and had the upset participant walk on the far side of him, away from the horse. When the frightened participant felt confident enough, the participants switched places so he could lead the horse. This example demonstrates how a participant identified an emotion in another, thought about what that person might want or need in that moment, and then attempted to provide some comfort. In a second example, one participant in the horsemanship group was afraid of putting on the part of the bridle that goes into the horse's mouth (the bit). She was afraid of getting bitten, and when the horse started to move its mouth in response to the bit, she exclaimed

nervously, "she [the horse] can bite me!" Her peer then tried to normalize the horse's response to help her calm down, replying, "she's [the horse] just getting used to it."

Consistent with these session observations were statements from participants and parents during the focus groups. In the focus group with the horsemanship participants, they reported that they learned to recognize emotions, and to "pay attention to other things not just yourself." Further, the parent of one of the horsemanship participants noted that her child was more aware of her surroundings after the intervention. Overall, the data suggests that all participants who worked with horses practiced identifying emotions in themselves and others throughout their respective interventions. Further, it seems that some participants across groups may have generalized these skills to interpersonal relationships.

Facing fears. The second theme found in the data was that of facing fears, defined here as the experience of fear in the face of challenges or uncertainty, followed by the pursuit of goals despite fear. This theme was observed in both treatment groups, and reported by parents and staff across groups. This theme was also reported directly by both participants in the horsemanship group. Overall, 70 examples of this theme were found across the data corpus: 26 from the EAP group, and 44 from the horsemanship group. This theme consisted of two subthemes: *facing fear in the face of challenge and uncertainty*, and *feelings of confidence*.

Facing fear in the face of challenge. The subtheme of facing fear in the face of challenge and uncertainty was found across both treatment groups. Housed within this subtheme were examples of participants experiencing fear or doubt, yet pursuing the goal, anyway. Participants were observed to take breaks when faced with strong levels of emotion in response to a presented task, often to return to the challenge afterward. In the horsemanship group, one of the participants had expressed fear about leading the horses on several occasions. Early in the

intervention, she had said that, "when you lead them [the horses], you're just worried you're going to lead them the wrong way, do it wrong." In that same session, when faced with the challenge of leading the horse, this participant stated, "I don't think I can do this; I'm nervous." Nonetheless, she continued on with the instructor by her side. Once in the arena, the participant walked the horse in a small circle in the ring. As she became comfortable, she increased her own challenge by asking, "do you want me to try [to weave through] the cones by myself?"

A second example involved a participant in the EAP group. In one session, one of the participants began a challenge of leading a horse through cones and poles. At first, the participant seemed nervous and jumpy in response to movements of the horse, such as it stomping its foot. He initially demonstrated a timid approach, only lightly pulling on the lead rope. He had difficulty getting the horse to move, but kept trying and eventually was successful. After his accomplishment, he exclaimed, "a perfect turn!" Similarly, in focus groups, staff members noted that participants overcame fears, and participants themselves reported decreases in feelings of fear from the beginning to the end of the intervention period.

Feelings of confidence. As can be seen in examples in the section above, the participants in treatment groups seemed to experience feelings of success and confidence as a result of their facing and overcoming the challenges presented to them. Such examples were grouped into the subtheme of feelings of confidence, which was also found across both groups. To support this conclusion, during the focus group, parents of participants gave examples of their children standing up for themselves in new situations and having overcome fears about horses. Similarly, staff members noted increases in confidence in participants. Overall, it seems that working with horses in either the EAP or horsemanship context can provide opportunities to face

fears in the face of challenges, which then seem to contribute to feelings of success and confidence.

Enjoyment of horses. The third theme found was that of enjoyment of horses. This was defined as excitement, enthusiasm, and enjoyment surrounding time spent with horses, which may be accompanied by a desire to continue working with horses or to own a horse in the future. This theme was found across observations of the EAP and horsemanship group sessions, and focus groups. Overall, 27 examples of this theme were found across the data corpus: 16 from the EAP group, and 11 from the horsemanship group. Enjoyment of horses consisted of two subthemes: *excitement, enjoyment and enthusiasm for work with horses*, and *desire to continue work with horses*.

Excitement, enthusiasm, and enjoyment. Excitement, enthusiasm, and enjoyment for work with horses was reflected in many forms across the data. This suggested that participants associated their equine experience with a variety of positive emotions. Affection for the horses across groups was reflected in comments made by participants during sessions, such as "Shorty [the horse] is the one that's like perfect," and "Dixie [the horse] was great!" Enjoyment of the activities were also reflected across groups, in statements such as, "I really like this and I think I'll get better the more I do it," and in requests to do an additional activity before ending the work with horses for that day. In the focus groups, a parent shared her daughter's excitement for the intervention, saying, "she's ready hours before we have to be here." Two parents agreed that their child looked forward to coming to the barn, and a parent of one of the EAP participants noted that her child was "happy on the way home, giddy, singing, putting his head out the window. It's been a while since he's been that free and happy." These positive emotions

seemed to play a role in keeping participants involved in challenges that were intimidating or frustrating to them, enhancing engagement in the learning process.

Desire to continue work with horses. A desire to continue work with horses was the second subtheme nested within the theme of enjoyment of horses. During sessions, remarks such as "I want to own that horse," and, "are you doing this again next summer? I would do this again next summer," were observed. In focus groups, participants across groups discussed wanting to own a horse in the future. One horsemanship parent noted that her child was excited because they were considering riding lessons, and staff reported that some of the participants had requested information about riding lessons at the facility. It is clear that at least a couple of participants enjoyed their time with horses enough to want to pursue further equine contact.

The theme of enjoyment of horses is consistent with responses on the Treatment Acceptability Survey, where all participants agreed that they enjoyed working with horses. Further, this theme was supported by the choice of these students to participate in the study at all, as recruitment was targeted at youth who liked horses. Overall, the data suggests that equine interventions are enjoyable for at least some youth, which may result in higher levels of treatment engagement and acceptability.

Communication. The fourth theme discovered was that of communication, defined here as the ability to observe, interpret, and send verbal and nonverbal cues. Overall, 49 examples of this theme were found across the data corpus: 29 from the EAP group, and 20 from the horsemanship group. This theme consisted of two subthemes: *nonverbal communication*, and *verbal communication* (found in the EAP group only).

Nonverbal communication. With regard to the subtheme of nonverbal communication, data across both intervention groups reflected development in participants' ability to observe and

interpret nonverbal cues from horses. In the EAP group, participants learned to communicate nonverbally with horses through trial-and-error discovery of means such as body positioning, bribing, and leading. Participants in the horsemanship group were directly instructed on reading horses' signals, posture, body positioning, and leading. Additionally, in the EAP group, participants were noted to verbally observe features of the horse's body language during sessions, such as noting that, "his [the horse's] ears were back… I stopped," or observing after a horse startled and began running that, "something's going on with [the horse]." In another example, a participant observed one horse putting its ears back at another horse and said to it, "be nice." In the horsemanship group, the growth in ability to communicate nonverbally with horses was demonstrated in their success with steadily increased challenges, such as weaving the horses through cones, backing the horse up, and picking up the hoof. Participants were observed to become more smooth in the execution of their leading skills across sessions, indicating that they were communicating with the horses more successfully than they had when they had started.

Examples of successful nonverbal communication between participants and horses abound in the data. In one session of the EAP group, participants communicated with the horse by using touch and poles placed on the ground to guide the horse over a jump. In another example, when it was pointed out to a horsemanship participant that her horse was walking very briskly, she changed her own pace in order to effectively slow the horse. These examples demonstrate the success that participants developed in using nonverbal communication with the horses. To further support this subtheme, in focus groups, youth from both groups reported improvement in communication with horses. Comments such as, "it was easier to talk to the horse at the last session than the first," were made. Further, in the staff focus group, facilitators

from both groups noted that communication with the horse was a fundamental lesson, and that participants learned that they must change their nonverbal communication to get the desired response from the horse.

Verbal communication. The subtheme of verbal communication was found in the EAP-related data-set only, specifically in session observations and focus groups. It seemed that the clear verbal communication required in many of the EAP activities was a source of frustration for these participants. For example, one participant withdrew entirely from an activity in response to an overwhelming set of directions from his peer. At the focus group interview, this participant also reported communication with his peer as a source of frustration across the intervention. Nonetheless, EAP participants had a variety of opportunities to work on clear verbal communication across sessions, and had to improve this skill in order to have success in certain tasks. Taken as a whole, this theme suggests that work with horses in general can support the development of nonverbal communication skills. Additionally, it seems that EAP may present unique instructional opportunities with regard to verbal communication skills.

Teamwork. The fifth theme was reflected in the data collected from the EAP group, only. This theme, teamwork, consisted of the skills and motivation needed to work as a team to solve problems, including social skills and collaboration skills. This theme was found across EAP session observations, and focus groups with participants and parents. Overall, 38 examples of this theme were found across the EAP data-set. This theme consisted of two subthemes: *social skills and prosocial behavior*, and *working together to solve problems*.

Social skills and prosocial behavior. In terms of social skills and prosocial behavior, participants in the EAP group were observed to develop social skills such as providing encouragement and engaging in cooperation. For example, as the intervention went on,

participants would work together to set up obstacles and move poles around the ring, and were observed to encourage each other and the horses at times. The practical impact of this friendship development seemed to be reflected in the parent focus group, where one parent reported that her child had begun seeking out social interactions rather than spending all of his time on his tablet. Further, in the participant focus group, one participant reported that he was glad to have made a friend.

Working together to solve problems. Although some competitiveness between participants was seen throughout the EAP intervention activities, it also appeared that participants learned to work together to solve problems. For example, participants increasingly asked for help from each other during tasks across the intervention period. Further, many activities required participants to work together to achieve a goal, creating specific opportunities to practice collaboration skills. To support this conclusion, both EAP participants reported in the focus group that they had learned that they could use each other to solve problems. Overall, the data suggests that EAP in particular may provide opportunities for the development of social skills related to friendship, as well as opportunities for collaboration with others to solve problems. Further, friendships within the group itself may be developed.

Problem-solving and persistence. The final theme, only observed within the EAP group, was that of problem-solving and persistence. This was defined as the ability to, when faced with a challenge, persist through feelings of frustration and to consider and utilize resources to solve problems. This theme was observed across all EAP sessions, as well as in focus groups with parents and with staff. Thirty-eight examples of this theme were found across the EAP data-set. This theme consisted of two subthemes: the *development of problem-solving skills in the face of challenge*, and *frustration and the development of persistence*.

Problem-solving skills in the face of challenge. In terms of the development of problem-solving skills in the face of challenge, participants in the EAP group were observed to develop and apply problem-solving processes increasingly throughout the intervention period. For example, in the first session, participants were unsure of what to do to solve a task. Rather than applying problem-solving skills independently, they asked for help from facilitators. When facilitators redirected them to the task without providing hints, they continued to reapply their original, inefficient strategies until they had eventually accomplished their goal of putting a harness on a horse. In a later session, when presented with a new challenge of brushing a horse while a hand was immobilized, one participant in particular began assessing resources and trying different solutions to solve the problem immediately after the task was given, while the other participant approached the task by mirroring his peer's solutions. Solutions that were discovered included dropping one's body onto objects that needed to be picked up, and using hay to lure the horse to the necessary position. In both examples, participants considered their resources in relation to their objective, and used the objects, people, and/or other resources around them to solve the problems they encountered. While it took longer for them to begin to engage in this process earlier on in the intervention period, the participants seemed to adopt an active problem-solving approach from the outset of activities in later sessions. As such, it seems that participants developed more active problem-solving approaches while participating in EAP.

Consistent with these observations, one participant reflected his development of problem-solving skills in the focus group interview. He stated that he learned that they could, "use each other to solve problems." Similarly, staff that worked with this group noted that participants used problem-solving skills and the assessment of resources to work through challenges.

Frustration and the development of persistence. The subtheme of frustration and the development of persistence was also found across the EAP data. Specifically, participants were observed to face challenging situations, to experience frustration, and to then persist through their frustration to achieve targeted outcomes. During sessions, both EAP participants would often note that the challenge was hard, but would also report that they felt accomplished or successful afterwards. One example of this was when an EAP participant was having difficulty lifting a horse's hoof. He became frustrated and said to the horse, "you're stubborn, you're really stubborn." He then asked his peer, whom had been successful in the task, how he had gotten it done. With instruction from his peer, the participant was then able to successfully lift the horse's foot.

Another example consisted of a time when the same participant was trying to get a horse over a jump. The horse would not go, and the student reflected frustration in his comment to the horse, saying "you are stubborn." He reattempted the task, this time walking further down the ring before approaching the jump, and was successful. In processing this activity, he stated that, "I always try to do my best and I got it the second time. I walked down further." In both examples, participants experienced frustration over a lack of success in a task with a horse, yet continued to work toward the objective anyway.

In addition to observational data, this subtheme was also reflected in participant and staff interviews. Participants noted that they learned to not give up, with one commenting that he learned, "if you get frustrated, don't rage and give up. Calm down and keep trying." Similarly, staff that worked with this group noted that participants seemed to "appreciate a need to be persistent when an obstacle came up." In sum, the totality of this theme suggests that contact with horses in the context of EAP may be useful in developing problem-solving skills in the face

of challenges, and through this means, in developing frustration management and persistence skills.

Chapter 5: Discussion

Equine-assisted interventions have become popular in practice, but the research-base of evidence to demonstrate the effectiveness of these approaches is limited. Further research is needed to clarify the effectiveness of EAP using well-controlled and randomized samples, and to help shed light on the mechanisms of effectiveness for these techniques. The current study aimed to evaluate the impact of equine-assisted psychotherapy (EAP) versus traditional contact with horses on the social-emotional functioning of at-risk adolescents. The results have helped to shed light on whether contact with horses can reduce the depressive symptoms of people who interact with them. The results of this study, taken as a whole, suggest that structured contact with horses may be both enjoyable and beneficial for at-risk youth within the areas of depressive symptoms and social skills. This finding advances the field of horse-human relationships by providing promising case study, small n, and qualitative support for the benefit of contact with horses on mental health outcomes.

Comparing EAP and Horsemanship to Control Group Outcomes

The first hypothesis of the current study was that the EAP and horsemanship groups would show greater decreases in depressive symptomology over the control group. To address this hypothesis, a visual and reliable change analysis of results from the EAP and horsemanship groups combined (equine contact), compared to those of the control group, was conducted.

With regard to equine groups combined, results of the equine contact group analysis reflected reliable decreases in mean parent-rated overall depressive symptoms, but not in mean self-reported symptoms. Nonetheless, all but one participant working with horses perceived themselves to be experiencing age-appropriate levels of depression in most CDI-2 scales at posttest, regardless of their group assignment. Further, all four equine participants' parents

perceived their child as demonstrating age-appropriate levels of depressive symptomology at the end of the study. Results from the analysis of the control group found that while the control participant reported reliable decreases in depressive symptoms from pre- to posttest, the corresponding parent rater did not and continued to report significantly elevated symptoms at posttest.

Overall, the results of this study indicate that, at least from a parent perspective, youth who participated in activities with horses (EAP and horsemanship participants combined) demonstrated lower levels of depressive symptomology after the intervention as compared to the wait-list control group participant. It seems that contact with horses in general may have a more positive effect on observable depressive symptoms than no treatment or treatment as usual, from a parent perspective. The idea that contact with horses has a positive effect on depressive symptoms for youth is consistent with findings from previous studies. Specifically, Kemp and colleagues (2013) found large effect sizes for reductions in depressive symptoms in youth who have experienced trauma, as measured by the CDI and BDI, after exposure to equine therapy. Trotter and colleagues (2008) also reported significant improvements on the parent-rated depression scale of the BASC-2 for at-risk youth after receiving EAP intervention.

To the knowledge of this author, the current study is the only one that has specifically examined the impact of nontherapeutic horsemanship as an intervention for depressive symptoms in youth at the time of this writing. As such, the finding that horsemanship instruction appeared to contribute to improvements in depressive symptoms is unique to this study. Additionally, this finding suggests that contact with horses generally, rather than contact within the specifically therapeutic context of EAP, may contribute to positive mental health outcomes in EAP studies. This is consistent with the idea that there is something inherently

psychotherapeutic about work with horses (Bass et al., 2009; Gabriels et al., 2012). In totality, this finding suggests that a good portion of the effect seen in EAP is due to natural qualities of the horse.

Comparing EAP and Horsemanship Group Outcomes

The second hypothesis of the current study was that the EAP group would show greater decreases in depressive symptomology over the horsemanship group. In order to address this hypothesis, a visual and reliable change analysis of results from the EAP group compared to the horsemanship group was completed, and qualitative themes across treatment groups were compared.

Depressive symptoms. Results from the small n analysis indicated that in the EAP group, no reliable changes in mean total depressive symptoms between pretest and posttest were found, as reported by either participant- or parent-raters. In contrast, overall group means from the horsemanship group revealed reliable decreases in overall depressive symptoms according to parent-raters, but not participants. Despite these group differences, it should be noted that one of the two EAP participants did self-report clinically meaningful change at the end of the intervention. This suggests, despite the lack of reliable change in EAP group scores, that EAP can be effective in significantly reducing symptoms of depression in some cases. Overall, these results indicate that in this sample, horsemanship had more of an impact on parent-reported depressive symptomology than did EAP. This could have significant implications for practice, in that youth who participate in less costly horsemanship activities may be able to improve depressive symptomology beyond youth participating in EAP. These results, in conjunction with evidence from previous studies, provide promising information about using the power of horses to reduce depressive symptoms for at-risk youth.

Social skills. In addition to improvements in depressive symptoms, qualitative data from both equine groups reflected gains in other areas of social-emotional wellness. Specifically, themes drawn from the current study reflected the development of social skills, which can be defined as specific behaviors that increase the likelihood of having positive interpersonal interactions and responses from others (Gresham, 1988; Gresham & Elliot, 1987). Outcomes related to social skills are an area specifically targeted by experiential therapies (AEE, 2015); as EAP is considered an experiential therapy, it follows that social skills may be impacted by EAP. Specifically, themes from the current study reflect practice with social skills related to communication skills and cooperative behaviors, as conceptualized by Gresham (1988). While participants in both equine groups seemed to make gains in social skills related to nonverbal communication, participants in EAP appeared to practice additional social skill areas. These included using cooperative behaviors to work as a team and help each other to reach goals, and in using verbal communication skills effectively.

Themes from the current study indicated that both equine groups worked on social skills related to nonverbal communication, such as reading the body language of others and communicating using their own body language. Participants in both groups seemed to be required to: (1) become aware of the nonverbal cues the horses were giving, (2) assess these nonverbal cues, and (3) consider how they could change their own nonverbal cues to elicit the desired behavior from the horse across their sessions. It seemed that the specific types of challenges faced in task-oriented interactions with horses may have pushed participants to attend more carefully to nonverbal cues manifested themselves by and others. Some qualitative studies have found results consistent with those of the current study, reporting perceived increases in awareness of the nonverbal communication of the self and others by participants who have

simply had contact with horses through traditional ownership (Brandt, 2004; Keaveney, 2008). Further, researchers have previously discussed EAP as an opportunity to practice with nonverbal communication skills (Pendry & Roeter, 2013; Skeen, 2011). These results suggest that both therapeutic and nontherapeutic contact with horses can help youth understand nonverbal communication. Further, equine contact may allow youth to practice modifying their behaviors to change nonverbal communication in real, yet emotionally safe, situations.

While both the EAP and horsemanship groups seemed to work on nonverbal communication skills, the EAP group alone appeared to work on social skills related to verbal communication. It should be noted that improvement in communication skills is a common outcome targeted in experiential therapies in general (AEE, 2015), and was one of the overarching therapeutic goals of the curriculum designed for the EAP group in the current study. As such, the presence of themes related to communication skills in the current study is not surprising. EAP participants had to figure out ways to communicate their thoughts and ideas clearly to each other in order to be successful in many tasks, while horsemanship participants primarily worked on learning to communicate with the horse. Verbal communication between participants was found to be a source of frustration at times within EAP sessions in the current study; however, such experiences seemed to provide an opportunity for participants to discover the importance of clarity and specificity in verbal communication within a group problem-solving context.

Previous research supports communication skills in particular as an area of improvement for EAP participants. Tetreault (n.d.) found significant improvement on a researcher-developed measure of communication skills for a small sample of youth with emotional disorders after EAP, with eight out of 10 participants improving their teacher-rated communication skills by

16% from pre- to posttest. Further, Wilson and Schuster (n.d.), despite a lack of statistically significant findings, reported a strong positive correlation between week in EAP treatment and positive growth in communication skills, as measured by a researcher-generated assessment, for male youths in a residential treatment facility.

Social skills related to cooperative behaviors, such as collaboration and group work with other participants, were uniquely observed in the teamwork theme drawn from the EAP intervention data. Specifically, participants in this group were observed to demonstrate cooperative behaviors such as congratulating others, listening effectively, communicating clearly, helping others, and working together. The uniquely collaborative and experiential nature of many of the EAP tasks selected seemed to provide an opportunity for EAP participants to develop cooperative behaviors; only the EAP framework included tasks that required teamwork between participants for goals to be achieved. This teamwork appeared to provide opportunities to discover and practice social skills related to cooperation.

Previous research is consistent with the assumption that EAP may impact social skills. One study found significant improvements in the parent-rated Social Skills scale of the BASC-2 after providing EAP to at-risk youth (Trotter et al., 2008). This finding indicated that participants in Trotter and colleagues' (2008) study were observed to show an increase in behaviors such as complimenting, encouraging, and helping others after EAP. Similarly, others have found increases in relationship skills in participants after EAP (Pendry & Roeter, 2013), as well as improvements on teacher-rated measures of social skills (Tetreault, n.d.). Taken as a whole, results from the current study and previous research suggest that interaction with horses in general (whether through EAP or horsemanship contact) can impact social skills related to nonverbal communication. Additionally, youth who participate in EAP specifically may have

the opportunity to practice additional social skills: namely, verbal communication and cooperation. Overall, it appears that work with horses may provide an opportunity to improve a variety of social skills in at-risk youth, which could have important implications for their future interpersonal success.

Treatment acceptability and engagement. Results of the current study revealed that participants enjoyed the interventions with horses. Specifically, all equine participants reported enjoyment of the intervention on the Treatment Acceptability Survey. Further, participants in both groups appeared to be highly engaged with the interventions. This engagement could have potentially been related to attention elicited by the size and power of the horses, as theorized by Freund et al. (2011), and/or the high levels of interest and enjoyment observed in and reported by participants. This latter explanation would be consistent with Melson's (2008) discussion of how children's attention and curiosity are engaged by animals.

It seems possible that in this study, participants' preexisting interest in horses provided an important motivator for them to engage with and practice presented skills. Although the challenges they faced were intimidating for them at times, their interest in horses may have increased their investment in the outcome of working with the horse. This may have then motivated them to push through fears or frustration in order to rise to the challenge presented. Similar to this idea, Burgon (2011) noted that the horses appeared to serve a motivational purpose in EAP, getting children to return to the barn for sessions.

Overall, the high levels of enjoyment and engagement found in the current study suggest that the use of equines in psychotherapy may increase engagement and treatment acceptability in participating youth. This may especially be the case if the participant is already interested in horses, but without substantial experience. With regard to mental health work, these levels of

enjoyment and engagement could be especially significant, as it can be difficult to engage youth in psychotherapeutic processes. The evidence suggests that EAP is a promising avenue for increasing levels of treatment engagement in at-risk youth, and may be a particularly effective intervention for youth who do not engage effectively with traditional talk therapies. Further, high levels of engagement in interventions with horses may translate into increased learning for participants (Melson, 2003).

Coping skills, problem-solving, and persistence. Across intervention groups, the data reflected the use of coping skills within sessions. Participants in both equine conditions experienced strong feelings (e.g., fear, frustration) in their work with horses. They seemed to be motivated to confront these feelings to continue working toward their goal with the horse, and appeared to utilize coping skills to do so. As such, tasks with horses appeared to provide participants in both groups opportunities to practice using coping skills in order to manage their emotions, allowing them to continue to work toward the session's goal despite feelings of fear or frustration.

Participants in the EAP group only generated data related to problem-solving and persistence. Problem-solving is another of the major outcome areas in experiential therapies (AEE, 2015), and was also targeted as a primary treatment goal in designing the EAP treatment protocols for the current study. As such, it seems reasonable to expect problem-solving outcomes in the current study. Repeated opportunities to practice problem-solving skills were provided to participants in the EAP group through hands-on challenges and real-life obstacles across sessions. Nondirective instruction and a focus on participants' discovery of solutions in EAP sessions seemed to encourage the development of independence and creativity in problem-solving, and typically resulted in tasks that required multiple attempts and an openness to novel

solutions. Participants seemed to feel pushed to try different approaches, to think about their surroundings in new ways, and to persist in the face of adversity. In the current study, persistence toward goals seemed to be supported by the psychotherapeutic nature of EAP, which provided various opportunities to process the relationship between hard work and success.

Consistent with themes related to coping skills developed in the current study, previous researchers have proposed connections between horses and emotional control (Cooper & Jobe, 2007; Keaveney, 2009). Others have found significant relationships between EAP and self-management skills (Pendry & Roeter, 2013). Similarly, consistent with themes related to problem-solving and persistence, a previous study found that an EAP intervention had a significant positive impact on goal-directed behavior for a group of middle school students (Pendry & Roeter, 2012). Overall, the current study and previous research indicate that while nontherapeutic contact with horses can provide opportunities to practice coping with strong emotions, EAP additionally seems to impact skills like persistence and problem-solving. As such, EAP may be an effective approach for the development of each of these areas with at-risk youth. This has important implications for at-risk youth, as skill development in these areas is likely to serve as a protective factor against risk of negative future outcomes.

Taken as a whole, the current study and previous research suggest that structured contact with horses (e.g., horsemanship, EAP) may have the ability to reduce symptoms of depression, to elicit high levels of engagement, to develop nonverbal communication skills, and to provide opportunities for practice coping with strong emotions. With regard to symptoms of depression, the results of the current study found horsemanship to be more effective in reducing parent-rated symptoms than EAP in the small n analysis. EAP, however, may have the potential to impact unique areas beyond that of nontherapeutic equine contact, particularly with regard to verbal

communication, persistence, and problem-solving. Participants may be particularly motivated to work on these skills in equine contexts when they begin this work with an interest in horses, which may keep them engaged in problem-solving tasks when they otherwise may have given up.

The results of the current study also suggest that the unique traits of horses contribute to the effectiveness of psychotherapies that incorporate them. Horses differ from other animals typically used in AAP, such as dogs, in a variety of ways. These differences seem to contribute to benefits seen in EAP studies. Uniquely equine traits, such as conditional positive regard and their responsiveness to humans, seem to require those who interact with horses to actively work on modifying their behaviors to build trust with the horse. Further, the paradox of intimidation and vulnerability that horses present, coupled with one's desire to interact with them, may create an ideal situation to practice coping with emotions. While work with horses is stress-inducing, it is also largely safe and able to be under the participant's control. This contrast may well allow people who work with horses to develop coping skills in less threatening but equally powerful ways, compared to real-life scenarios. Overall, it appears that specific characteristics of horses themselves contribute substantial benefit to the psychotherapeutic process.

Limitations of the Research

Several limitations of the current study exist. First, it is important to note that the planned experimental design of the study was impacted by the low number of participants recruited. The recruitment process was rigorous and included multiple contacts with school mental health professionals to seek referrals, informational pamphlets for distribution to potential participants, a relatively easy referral process, and direct follow-up with referred families. The referral process ran smoothly and was used to attempt to recruit from 16 schools within a 45-

minute radius from the equine facility. Despite these efforts, the process was insufficient to produce the number of participants needed for the planned experimental study in the rural area in which the study was run. Challenges to participation may have included lack of time on the part of referring professionals, small numbers of students known to school professionals meeting the relatively narrow criteria at local schools, small numbers of students generally at many referral schools, lack of transportation and/or childcare for families, or lack of interest on the part of parents and/or children.

The low number of participants recruited forced a change in methodology and analysis, leaving a design that no longer allowed for a definitive functional relationship to be established between the independent and dependent variables. Due to this lack of establishment of a functional relationship, confounds such as the time of year still remain. Time of year may be a particularly powerful confound in this instance, as the pretest took place just after the end of the academic school-year while the posttest occurred just over three weeks into summer vacation. It is possible that the removal of stressors related to school contributed to the positive changes that were reported. Overall, some degree of effect found for the intervention and control groups may well reflect timing, rather than the intervention itself.

An additional weakness in the study was related to the distribution of participants across groups. Although random assignment was utilized to form the groups, participant characteristics across the EAP and horsemanship groups did not end up equally distributed. Participants across these groups differed on variables such as gender, special education status, and pretest ratings on self-report and parent-report measures. Specifically, both participants in the EAP group were male, while both horsemanship participants were female. Additionally, both EAP participants were receiving special education services, while neither horsemanship participant was. Lastly,

with regard to pretest ratings, both EAP participants self-reported elevated depressive symptoms at pretest while their parents reported average levels of symptoms. The opposite was true of the horsemanship group, with both participants self-reporting average depressive symptoms at pretest while their parents reported elevated symptoms. These differences add additional confounds to the results of the current study, as the inequality of the groups did not allow for control of participant characteristics. This makes it especially difficult to compare across the EAP and horsemanship groups, and to draw definitive conclusions from the results.

The number of sessions that EAP and horsemanship participants engaged in from pretest to posttest could also be considered as a limitation of the study, as parameters regarding the appropriate frequency and duration of EAP treatments for various presenting problems have not yet been established. While previous researchers have found significant improvements in various outcome measures after only five or six sessions (Shultz et al., 2007; Tetreault, n.d.), trends reflecting increased improvement with increased number of sessions have been reported (Shultz et al., 2007). As such, it is possible that this study's short duration is an under-representation of the effects that structured contact with horses can have.

Lastly, a weakness of this study, and all equine studies generally, is the difficulty that comes with exact replication and manualization of activities that involve horses. Specifically, horses are unpredictable at times and choose the in-session behaviors they demonstrate themselves. As such, it is impossible to exactly replicate the way in which a specific horse or group of horses behaved while being observed by or interacting with a participant. While researchers may plan identical sessions from intervention to intervention, equine reactions cannot be so contrived. Individual clients can also have varied reactions to the horses and various circumstances and challenges that arise. Processing the specific reactions that are brought out in

working with horses could be important for the participant's growth, yet is at odds with a manualized approach that can be easily replicated. Due to this difficulty with replicability and lack of manualization, varying levels of practitioner skill will continue to be a challenge in controlling for confounding variables within and across studies.

Recommendations for Future Research

Several recommendations for future research can be made from the current study. These recommendations, discussed in more detail below, are related to research design, clarification of treatment effects, and establishment of best practice within the field of EAP.

Pursuit of initial research design. First, it is recommended that researchers continue to strive to design and execute well-controlled experimental studies to evaluate the efficacy of EAP for specific populations. It is also recommended that researchers strive to build upon previous studies in a meaningful way with regard to population and outcome measures, and that researchers strive to standardize their approach in order to allow for as close of replication as is possible (Cody et al., 2011; Freund et al., 2011; Selby & Smith-Osborne, 2013). As such, it is recommended that the present study be run as originally designed, with larger participant numbers and group analysis of results. Doing so would produce a study that addresses each of the recommendations above, previously made by other researchers in the field. Further, it would allow for the current study's original hypotheses to be tested. This would address an important foundational question in the field: Is there something inherently beneficial about interactions with horses? While the current study provided preliminary evidence for horses themselves as a mechanism of action in EAP, it is important for future research to determine the extent to which nontherapeutic contact with horses impacts social-emotional outcomes.

In order to recruit a satisfactory number of participants for a well-controlled experimental design, researchers in rural areas will need to consider strategies above and beyond traditional recruitment methods. For example, researchers could consider enrolling participants in waves across time in order to allow for an adequate number of participants to be recruited. Additionally, a wider referral net should be cast and could include local pediatricians, private mental health practitioners, and community-based counseling centers. Incentives for referring professionals, gas vouchers for participating families, and other such additions in compensation may also be helpful in the recruitment of participants. Lastly, replication of the original design in more populated areas (e.g., urban or suburban areas) should be pursued, as recruitment may be more feasible in locations with higher population densities.

Clarification of effects. As research into the relationship between horses and humans continues to progress, it will be important to clarify the specific skills that humans learn from equine interaction, as well as the specific mental health outcomes that may be obtained. Themes that emerged in the current study provide preliminary areas of exploration when looking at horses across psychotherapeutic and horsemanship settings. Potential benefits of EAP within the broad constructs of depressive symptoms and social skills should be examined. Further, research into the impact that contact with horses has on specific skills like nonverbal and verbal communication, cooperation, coping skills, persistence, and problem-solving would help to clarify effects in these areas. Future research would also be well-served to examine level of engagement for youth in equine activities, particularly in comparison to engagement in traditional talk therapy settings.

In addition to more clearly defining the relationship between EAP and these various outcomes, future research should strive to establish an understanding of the necessary treatment

dosage for optimal benefit. Developing an understanding of how many sessions are necessary in order for clients to benefit, and how the frequency of sessions impacts the magnitude of benefits obtained, will be important for future studies. Such an understanding would inform future researchers, as well as the field at large, with regard to the appropriate number and frequency of sessions.

Distillation of best practices. Lastly, it will be important for the field to elucidate and disseminate best practice in using EAP with various age groups, presenting concerns, and desired outcomes. It is important that practitioners not have to use trial and error in their application of EAP for various populations and concerns when working with the wellness of individuals. Guidance on best practice with various populations is likely to increase consistency in the quality of interventions from practitioner to practitioner, and will support the forward movement of the EAP field in working toward outcomes like strong empirical support and recognition by insurance companies. In order to develop best practices, well-controlled studies should include detailed information about their activities, instructions within the activities, and modifications thereof, so that others can (1) distill best practice from them, and (2) replicate their intervention programs as closely as possible.

Summary

The current study was designed to investigate the impact of different kinds of interactions with horses on at-risk youth with depressive symptomology. The totality of the results indicates that structured contact with horses may be both beneficial and enjoyable for at-risk youth, and suggest that the use of horses in treatment can result in high levels of treatment engagement, which may then increase learning in that setting for participants. These results suggest that EAP

may be an effective alternative technique for participants who do not sufficiently engage with traditional talk therapy approaches.

Interactions with horses in this study reduced depressive symptoms for some participants. Further, interactions with horses were qualitatively found to elicit themes related to social skills (i.e., nonverbal communication) and coping with strong emotions. However, results indicate that EAP interventions may produce additional, unique social skills gains related to cooperation and verbal communication, as well as skills related to persistence and problem-solving. In sum, either horsemanship or EAP may be effective in reducing symptoms of depression, and an engaging way to develop social skills and coping skills in at-risk youth. As such, the results of this study suggest that it may be possible for at-risk youth to reduce symptoms of depression with traditional horsemanship work, rather than with more expensive, structured therapy. Further, these results indicate that interaction with horses, in and of itself, is likely a substantial change mechanism of EAP. Beyond the benefits of horses themselves, though, EAP may provide an avenue to work on additional social skills, persistence, and problem-solving. These benefits may have important implications for the future success of at-risk youth in that EAP may potentially enhance protective factors, thus reducing the risk of negative future outcomes.

Several limitations existed in the current study, including a small number of participants, an inability to analyze results from an experimental perspective, confounds related to time of year and differences in raters, a lack of equitable distribution of participant characteristics across groups, exposure to only six sessions per treatment group, and difficulties with manualizing activities involving horses. Future research aiming to pursue the initial research design laid out in the current study, to clarify the effects of equine contact on mental health symptoms, to determine the appropriate dosage of treatment, and to distill best practices in this field, would

benefit researchers' understanding of this unique approach. Further, such research endeavors have the potential to enhance the acceptability of treatment approaches using horses as viewed by institutions of higher learning, insurance companies, and professionals in the field of mental health.

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Table 1

Demographic Information

Age	Grade	Gender	Race	School	Special Ed.	Group
11	6	Male	Caucasian	1	Yes	EAP
12	6	Male	Caucasian	2	Yes	EAP
11	6	Female	Caucasian	3	No	Horsemanship
11	6	Female	Caucasian	3	No	Horsemanship
12	6	Male	Caucasian	1	No	Control

Note: Special Ed. = special education

Table 2

Participant A Children's Depression Inventory, Second Edition Self-Report and Parent-Report pretest and posttest raw scores, T-scores, and qualitative descriptions

CDI-2:SR Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	20	73	Very Elevated	8	53[a]	Average[b]
EMOTIONAL PROBS	10	70	Very Elevated	2	48[a]	Average[b]
FUNCTIONAL PROBS	10	73	Very Elevated	6	59[a]	Average[b]
CDI-2:P Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	8	47[c]	Average	1	40[c]	Average
EMOTIONAL PROBS	3	46[c]	Average	0	40	Average
FUNCTIONAL PROBS	5	48[c]	Average	1	40[c]	Average

Note: CDI-2:SR = Children's Depression Inventory, 2nd Edition Self-Report; CDI-2:P = Children's Depression Inventory, 2nd Edition Parent Rating Scales; Raw = raw score; *T* = *T*-score; [a] reliable change at the probability level of p = .10; [b] change has clinical meaningfulness; [c] reliable differences found between CDI:SR and CDI:P scale scores at the probability level of p = .10.

Table 3

Participant B Children's Depression Inventory, Second Edition Self-Report and Parent-Report pretest and posttest raw scores, T-scores, and qualitative descriptions

CDI-2:SR Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	23	77	Very Elevated	28	85	Very Elevated
EMOTIONAL PROBS	8	64	High Average	14	81[a]	Very Elevated
FUNCTIONAL PROBS	15	89	Very Elevated	14	86	Very Elevated
CDI-2:P Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	14	55[c]	Average	11	51[c]	Average
EMOTIONAL PROBS	7	56	Average	3	46[c]	Average
FUNCTIONAL PROBS	7	53[c]	Average	8	56[c]	Average

Note: CDI-2:SR = Children's Depression Inventory, 2nd Edition Self-Report; CDI-2:P = Children's Depression Inventory, 2nd Edition Parent Rating Scales; Raw = raw score; *T* = *T*-score; [a] reliable change at the probability level of p = .10; [b] change has clinical meaningfulness; [c] reliable differences found between CDI:SR and CDI:P scale scores at the probability level of p = .10.

Table 4

Participant C Children's Depression Inventory, Second Edition Self-Report and Parent-Report pretest and posttest raw scores, T-scores, and qualitative descriptions

CDI-2:SR Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	4	47	Average	2	43	Average
EMOTIONAL PROBS	1	45	Average	0	42	Average
FUNCTIONAL PROBS	3	49	Average	2	46	Average
CDI-2:P Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	30	78[c]	Very Elevated	9	48[a]	Average[b]
EMOTIONAL PROBS	16	79[c]	Very Elevated	2	44[a]	Average[b]
FUNCTIONAL PROBS	14	70[c]	Very Elevated	7	53[a]	Average[b]

Note: CDI-2:SR = Children's Depression Inventory, 2nd Edition Self-Report; CDI-2:P = Children's Depression Inventory, 2nd Edition Parent Rating Scales; Raw = raw score; *T* = *T*-score; [a] reliable change at the probability level of p = .10; [b] change has clinical meaningfulness; [c] reliable differences found between CDI:SR and CDI:P scale scores at the probability level of p = .10.

Table 5

Participant D Children's Depression Inventory, Second Edition Self-Report and Parent-Report pretest and posttest raw scores, T-scores, and qualitative descriptions

CDI-2:SR Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	6	50	Average	7	51	Average
EMOTIONAL PROBS	2	48	Average	2	48	Average
FUNCTIONAL PROBS	4	52	Average	5	56	Average
CDI-2:P Scales:	**Pretest**			**Posttest**		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	26	72[c]	Very Elevated	11	51[a]	Average[b]
EMOTIONAL PROBS	12	69[c]	Elevated	5	51[a]	Average[b]
FUNCTIONAL PROBS	14	70[c]	Very Elevated	6	51[a]	Average[b]

Note: CDI-2:SR = Children's Depression Inventory, 2nd Edition Self-Report; CDI-2:P = Children's Depression Inventory, 2nd Edition Parent Rating Scales; Raw = raw score; *T* = *T*-score; [a] reliable change at the probability level of p = .10; [b] change has clinical meaningfulness; [c] reliable differences found between CDI:SR and CDI:P scale scores at the probability level of p = .10.

Table 6

Participant E Children's Depression Inventory, Second Edition Self-Report and Parent-Report pretest and posttest raw scores, T-scores, and qualitative descriptions

CDI-2:SR Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	16	66	Elevated	8	51[a]	Average[b]
EMOTIONAL PROBS	9	67	Elevated	3	50[a]	Average[b]
FUNCTIONAL PROBS	7	63	High Average	5	56	Average
CDI-2:P Scales:	Pretest			Posttest		
	Raw	*T*	Description	Raw	*T*	Description
TOTAL	29	76	Very Elevated	26	72[c]	Very Elevated
EMOTIONAL PROBS	16	79[c]	Very Elevated	14	74[c]	Very Elevated
FUNCTIONAL PROBS	13	68	Elevated	12	65	Elevated

Note: CDI-2:SR = Children's Depression Inventory, 2nd Edition Self-Report; CDI-2:P = Children's Depression Inventory, 2nd Edition Parent Rating Scales; Raw = raw score; *T* = *T*-score; [a] reliable change at the probability level of p = .10; [b] change has clinical meaningfulness; [c] reliable differences found between CDI:SR and CDI:P scale scores at the probability level of p = .10.

Table 7

CDI-2 Mean Total T-scores and Changes from Pretest to Posttest

Condition	CDI-2: SR Total Score				
	Pretest		Posttest		
	SRP *M*	SD	SRP *M*	SD	Total Change
EAP	75	2.83	69	22.63	6
Horsemanship	48.5	2.12	47	5.66	1.5
Control	66	n/a	51	n/a	15*
Combined	61.75	15.44	58	18.51	3.75
	CDI-2: P Total Score				
	Pretest		Posttest		
	PRS *M*	SD	PRS *M*	SD	Total Change
EAP	51	5.66	45.5	7.78	5.5
Horsemanship	75	4.24	49.5	2.12	25.5*
Control	76	n/a	72	n/a	4
Combined	63	14.45	47.5	5.2	15.5*

Note: CDI-2: SR = Children's Depression Inventory, 2nd Edition Self-Report; CDI-2: P = Children's Depression Inventory, 2nd Edition Parent Rating Scales; *M* = Mean; SD = Standard Deviation; *reliable change at the probability level of p = .10.

Table 8

Treatment Acceptability Survey Responses, by Group

	EAP			Horsemanship		
Question	Slightly Agree	Agree	Strongly Agree	Slightly Agree	Agree	Strongly Agree
1. Working with horses is a good way to help kids who are feeling sad or depressed.	0	1	1	0	0	2
2. Working with horses helped me.	1	1	0	0	0	2
3. I would tell a friend that was feeling sad or depressed to try the kind of work I did with horses.	1	0	1	0	1	1
4. I liked working with horses.	0	0	2	0	0	2

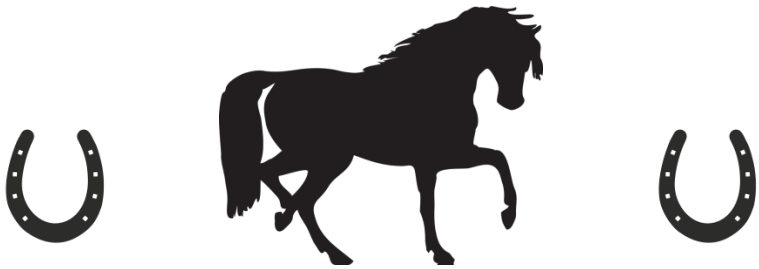
Table 9

Treatment Acceptability Survey Results Descriptive Statistics

Question	Mean	Range	SD
1. Working with horses is a good way to help kids who are feeling sad or depressed.	5.75	1	.5
2. Working with horses helped me.	5.25	2	.957
3. I would tell a friend that was feeling sad or depressed to try the kind of work I did with horses.	5.25	2	.957
4. I liked working with horses.	6	0	0

Note: scores ranged from 1 = strongly disagree to 6 = strongly agree.

Appendix A: School Professionals Referral Packet and Forms



Hello!

My name is Jessica Iwachiw, M.A., C.A.S., and I am a doctoral candidate in psychology at Alfred University in Alfred, New York. I am writing to share an exciting opportunity that could benefit students with depressive symptomology, and to ask for your help in recruiting such students from your district. As you may be aware, the use of animals in a therapeutic environment is becoming more and more popular in the health and wellness fields (Pet Partners, 2015). Further, some have argued that horses provide an added benefit to the psychotherapy process (Bachi, 2012). As such, I will be investigating the impact of psychotherapy using horses within the session, as well as the impact of horses on well-being generally, as my culminating dissertation project. Toward this end, I am requesting your assistance in identifying and referring students with symptoms of depression in grades 6 through 8 from your district. Selected students will participate in research activities at the Bromeley-Daggett Equestrian Center at Alfred University during July 2016. Students will be participating in one of three groups, in which they will be exposed to time with horses at the equestrian center. Sessions will occur two times per week for three weeks. Their time with horses will be working with either a) a NYS-licensed mental health professional, or b) trained equestrian professionals. Although it is research, we anticipate that students will find the activities fun, engaging, and novel. When selecting students for appropriate referral, please consider those in 6th through 8th grade who demonstrate one or more of the following inclusionary criteria:

1. Observed to cry sometimes or often at school (not due to fear of school)
2. At times seems sad, and reports or alludes to (in writing, verbally, etc.) feelings of hopelessness and/or worthlessness
3. Known or suspected to have engaged in self-harm behavior, now or in the past
4. Has reported or alluded to thoughts of death or suicide, and/or peers and adults have been concerned about the student's safety in the past

Additionally, in selecting appropriate candidates, please refrain from referring students who meet any of the following exclusionary criteria:

1. More than two weeks of experience with horses in the past 3 years
2. A history of cruelty toward animals
3. Identified or suspected intellectual disability
4. A school-based classification of Emotional Disturbance
5. Significant fear or phobia of horses
6. Significant allergic reactions to hay, dust, horses, etc.

Within this packet, you will find further information, including (1) the Informational Brochure, (2) the Referral to Study form, and (3) the Consent for Release of Information form. If you believe that you have a student that fits the eligibility criteria and may be interested in participating in this study, please complete the following referral steps:

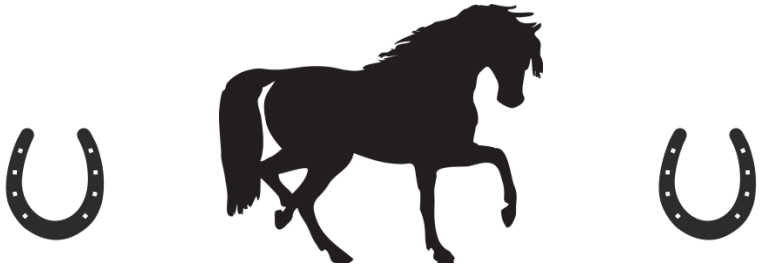
1. Contact parents of potential participants and provide them with the Informational Brochure and the Release of Information form
2. Ask that parents return the Release of Information form to you, directly
3. Once the Release of Information form is returned, complete the Referral to Study form and return it, along with a copy of the signed Release of Information form, to the Primary Investigator, Jessica Iwachiw, at jsi1@alfred.edu
4. Once I receive your referral, I will then contact the parent(s) directly myself in order to obtain further information, answer any questions, and to discuss the details of the study.

Please feel free to contact me, the primary investigator, at jsi1@alfred.edu, or by phone at (631)445-8778, with any questions or concerns. You may also contact my faculty advisor, Lynn O'Connell, at oconnellm@alfred.edu or (607) 871-2750. Lastly, if you have questions or concerns for Alfred University's Human Subjects Research Committee, please contact the HSRC Chairperson, Steve Byrne, at hsrc@alfred.edu or by phone at (607) 871-2857.

Thank you so much for your time, efforts, and amazing help in this matter!!!

Sincerely,

Jessica Iwachiw, M.A., C.A.S.
Doctoral Candidate
Alfred University



Bachi, K. (2012). Equine-facilitated psychotherapy: The gap between practice and knowledge. *Society & Animals, 20*, 364-380. doi: 10.1163/15685306-12341242

Pet Partners (2015). *AAT professional information.* Retrieved from Pet Partners: http://www.petpartners.org

Referral to Study Form:

This form should be completed by the school professional for each student referred to the study. It should be submitted to the researcher once a parent's consent for release of information to the researcher is returned to the school professional.

Please try to submit all referrals ASAP, but no later than June 30th, 2016.

School District: _____
Name and Title of Professional Completing Form: _____
_____
Professional's Phone Number: _____
Professional's E-mail Address: _____

PART 1: Student Demographic Information
Name of Referred Student: _____
Parent/Guardian Names: _____
Parent/Guardian Address:_____
Parent/Guardian Phone Numbers: _____
Parent/Guardian E-Mail Addresses: _____

Student's Gender (circle one): MALE FEMALE OTHER
Student's Age: _____
Student's Grade in School: _____
Student's Race (circle all that apply):

White
Black or African American
American Indian or Alaska Native
Asian Indian
Chinese
Filipino
Japanese
Korean
Vietnamese
Other Asian (specify): _____
Native Hawaiian
Guamanian or Chamorro
Samoan
Other Pacific Islander (specify):_____
Other Race (specify): _____

Student's Ethnicity (circle one):
Hispanic or Latino
Not Hispanic or Latino

Is the student currently receiving special education services?
YES* NO
**If yes, please write in the disability category or categories identified on the student's IEP:*
_____

→ Continued on Back →

PART 2: Inclusionary Criteria

INSTRUCTIONS: Please check any of the below symptoms that the student has demonstrated in the past four weeks/months/etc. (except as otherwise noted):

- □ Observed to cry sometimes or often at school (not due to fear of school)
- □ At times seems sad, and reports or alludes to (in writing, verbally, etc.) feelings of hopelessness and/or worthlessness
- □ Known or suspected to have engaged in self-harm behavior, now or in the past
- □ Has reported or alluded to thoughts of death or suicide, and/or peers and adults have been concerned about the student's safety in the past

Briefly describe the specific concerns you have about this student:

Please direct questions/correspondence to:
Jessica Iwachiw, M.A., C.A.S., Primary Investigator
6161 Business Center Dr., Highlands Ranch, CO 80130
Phone: (631) 445-8778
Email: Jsi1@alfred.edu

Lynn O'Connell, Psy.D., Faculty Supervisor

Phone: (607) 871-2750
Email: oconnellm@alfred.edu

Steve Byrne, Human Subjects Research Committee Chairperson
Phone: (607) 871-2857
Email: hsrc@alfred.edu

Appendix B: Parent/Guardian Informational Brochure

Please Contact Us With Any Questions or Concerns:

Questions about the program and/or research:

Jess Iwachiw, M.A., CAS., Primary Investigator
Jsi1@alfred.edu
(631) 445-8778

Lynn O'Connell, Psy.D., Faculty Supervisor
oconnellm@alfred.edu
(607) 871-2750

Questions about your rights as a research participant:

Steve Byrne, IRB Chairperson
hsrc@alfred.edu
(607)871-2857

You and your child's participation in this program and this research is completely voluntary.

Thank you for considering participating!

General Information:

- All activities are hosted at the Bromeley-Daggett Equestrian Center in Alfred, NY
- All participants will have the opportunity to work with horses
- All horse activities are on the ground, NOT on horseback
- Your child will be asked to sign a document indicating that they agree to participate, and you will be asked to sign similar forms.
- You and your child will each be asked to complete questionnaires at the start and the end of the study.

Randomization:

In order to prevent bias in the results, participants will be randomly assigned to one of the three horse experiences available (described in the 'Other Details' section). This procedure is similar to that of flipping a coin.

Length of Commitment:

You will be asked to bring your child to the Equestrian Center either:

- On two seperate occasions (5.5 hours total)
- Or twice per week for three weeks (10.5 hours total)

Other Details:

- Activities your child may be involved in include:
  - A day of Horse Camp
  - Three weeks of twice-per-week instruction in horsemanship skills
  - Three weeks of twice-per-week small group activities involving simple exercises with horses
- Transportation to the equine facility is not provided and must be arranged by the parent/guardian.
- Participants are free to choose how much they participate in any given activity; they will never be made to participate in any activity if they choose not to.

Potential Benefits:

Your child may benefit from participating in this study by:

- Building self-confidence as they learn to work confidently with horses
- Developing teamwork and cooperation skills as they work in a group
- Developing problem-solving skills as they work through the challenges brought about by working with horses
- Gaining first-hand experience in interacting with animals.
- Learning important equine safety skills.

Most people who have participated in such equine activities report that they found it to be fun and meaningful. Your child can have the opportunity for these experiences, too!

I'M INTERESTED! WHAT'S NEXT?

If you and your child would like to participate in this unique study opportunity, please complete and return the attached "Release of Confidential Information" form to the school professional who contacted you about this experience. This will allow the school professional to submit the referral paperwork to the Program Coordinator. You will then be contacted by the Coordinator directly by phone in order to answer any questions you may have, to determine your child's eligibility, and to arrange next steps.

Appendix C: Consent for Release of Confidential Information

Spring 2016
Dear Parent/Guardian:

Your child is being recommended for participation in a unique equine experience hosted at Alfred University's Bromeley-Daggett Equestrian Center in July of 2016. This experience is designed for students in grades 6 through 8 who are experiencing feelings of sadness and/or symptoms of depression, and who are willing to work with horses. Please see the attached brochure for more information about the program and how your child may be able to spend time learning with horses at no cost to you this summer.

If you are interested in allowing your child to participate in this research study, please complete and return the release statement, below, to the school professional who gave you information about the study (e.g., school psychologist, school counselor, school administrator). Completing this form does not mean that you've agreed for your child to participate, but it does allow the school professional to release information about your child to the Program Coordinator so that your child can be considered for participation. After receiving information about your child from your school professional, the Program Coordinator will contact you directly by phone to gather more information, answer your questions, and discuss next steps if you are interested in your child participating.

By signing below, you are authorizing a professional at your child's school of attendance to release information to the researcher in order to refer your child to this research program.

If you would like more information about this research experience, please contact Jessica Iwachiw, M.A., C.A.S., Primary Investigator and graduate student at Alfred University, at (631) 445-8778 or by e-mail at jsi1@alfred.edu. Additionally, you may contact the faculty supervisor of this project, Dr. Lynn O'Connell at (607) 871-2750 or by e-mail at oconnellm@alfred.edu.

By signing below, I agree that school personnel may release my name and phone number to Jessica Iwachiw, Program Coordinator. Once received, the Program Coordinator will contact me by phone to fully explain the program components and to explore my child's participation in this study.

(Referring Professional: Please attach a copy of the signed release to the referral form and retain a copy for your records.)

PARENT/GUARDIAN RELEASE

I, _____, authorize _____
(Parent/Guardian Name) (Name of School/Agency/Practice)
to release information regarding my child, _____
to Jessica Iwachiw, M.A., C.A.S., to facilitate consideration for Alfred University's research experience involving horses this summer. I understand that all information, written or verbal, that is provided to the researcher will be kept confidential and will not be re-released to any other individual or entity. This is a time-limited authorization, and will expire August 1, 2016.

Parent/Guardian: _____ Date: _____

Referring Professional: _____ Date: _____

Appendix D: Demographic Survey

Date: _____
Time: _____
Phone Interview With: _____

□ Mother □ Father □ Legal Guardian □ Other:_____

Verification of Demographic Information on Referral to Study form, submitted by school professional (check box on left if data copied from Referral form is verified by parent):

□ **Student's Gender:** MALE FEMALE OTHER
□ **Student's Age:** _____
□ **Student's Grade in School:** _____
□ **Student's Race:** _____
□ **Hispanic or Latino:** YES NO
□ **Is the student currently receiving special education services?** YES NO
**If yes, disability category:* _____

EXCLUSIONARY INFORMATION:

1. Is your child allergic to anything such as horses, dust, hay, etc.? If yes, what?

   YES NO

   If yes, _____
   Is this allergy able to be safely controlled by medicine? YES NO

2. Is your child afraid of horses?

   YES NO

3. Has your child had any previous experience with horses?

   YES NO
   - IF YES:
     - How many years/months ago? _____
     - How long were they involved with horses? _____

4. Has your child ever harmed or been cruel to animals, not by accident?

   YES NO

POWER OF HORSES OR A POWERFUL APPROACH?

INCLUSIONARY CRITERIA*:

5. At home, does your child:
    - Cry sometimes or often? YES NO
    - Seem sad sometimes and/or seem to feel hopeless or worthless? YES NO

6. Has your child ever:
    - Been known or suspected to have engaged in self-harm behavior (e.g., cutting, burning oneself, hitting oneself, scratching, pulling out hair)? YES NO
    - Had thoughts about wanting to be dead or planning suicide? YES NO

What days and times during the week are you NOT available for the equine experience?

Appendix E: Informed Consent Form
Alfred University
Division of Counseling and School Psychology

INFORMED CONSENT FOR NON-MEDICAL RESEARCH

The Power of Horses or a Powerful Approach?

Your child is invited to participate in a research study conducted by Jessica Iwachiw, M.A., C.A.S., Principal Investigator, and Lynn O'Connell, Psy.D., Faculty Supervisor at Alfred University, because your child was identified as experiencing sadness and/or symptoms of depression at school. Your child's participation is voluntary. You should read the information below, and ask questions about anything you do not understand, before deciding whether to participate. Please take as much time as you need to read the consent form. You may also decide to discuss participation with your family or friends. If you decide to have your child participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY
The purpose of this study is to learn about how horses impact the well-being of youth. In order to participate in this study, your child must be in the 6th to 8th grade, be experiencing sadness and/or symptoms of depression, and be interested in working with horses.

STUDY PROCEDURES
If you volunteer for your child to participate in this study, your child will first be assigned to a group through a process called *randomization*. This process is used in order to prevent bias, or influences on results from factors other than the procedures being tested. This means that your child will be assigned to a control or investigational group by chance, using a procedure similar to flipping a coin.

After giving your consent for your child to participate, both you and your child will be asked to complete a questionnaire that asks about your child's thoughts, feelings, and behaviors over the past two weeks. This questionnaire is expected to take 15 to 30 minutes to complete. After completing the questionnaire, you and your child will be informed of your group assignment and schedule.

If you are assigned to one of the experimental groups, you will be asked to bring your child to the Bromeley-Daggett Equestrian Center twice per week at a designated time for sessions. Each session will be 90 minutes in length, and sessions will run for three weeks. On the day of the last session, questionnaires will be completed again. As such, the final session is expected to require an additional 45 to 60 minutes of time.

If you are assigned to the control group, you will be asked to bring your child to the Bromeley-Daggett Equestrian Center once more in three weeks. During this time, you and your child will be asked to complete questionnaires once more. You and your child will then be given the opportunity to participate in a five-hour Horse Camp program immediately following, to include a light lunch.

POTENTIAL RISKS AND DISCOMFORTS

Safety is a priority, and the program is designed to ensure the safety of your child and all involved. There are, however, some general risks in working with horses. These include the possibility of being bitten, kicked, stepped on or bumped by a horse. Simple precautions can prevent most incidents, but it is your right to be aware of any and all risks that exist. Precautions that will be taken to promote the safety of participants will include careful horse selection, as well as the ground-only nature of the experience. Should an injury occur, medical attention will be sought as needed. If any medical expenses resulted from interacting with horses in this study, they would be the responsibility of the participant. Great effort is also made to ensure the emotional safety of participants, and participants may decline to participate in any activities that are uncomfortable for them. Nonetheless, equine experiences may at times result in emotional reactions such as anxiety, fear, or frustration as participants work through new and challenging experiences. Your child will be given opportunities to discuss their feelings and reactions, and, if needed, the facilitators will arrange for individual consultation. The sessions will be held outdoors during the summer. Due to the time of year and physical exertion that will at times be required of participants, it is possible that the heat will become uncomfortable at times.

POTENTIAL BENEFITS TO PARTICIPANTS

Your child might benefit from participating in this study through building self-confidence as they learn to work confidently with horses, through developing teamwork and cooperation skills as they work in a group, through developing problem-solving skills as they work through the challenges brought about by working with horses, and through a first-hand experience in interacting with animals. Most people who have participated in such equine activities report that they found it to be fun and meaningful. With regard to the research, your child's participation in this project may benefit other youth who could have similar growth from participation in this program. Further, your child's participation would play an important role in helping researchers further understand the impact that animals have on the lives of youth. Since this is a research study, we can only state that we anticipate such benefits but cannot guarantee that they will occur.

CONFIDENTIALITY

We will keep your records for this study confidential as far as permitted by law. However, if we are required to do so by law, we will disclose confidential information about you. Otherwise, the primary investigator only may access the data.

For research records and data, your child and each other participant will be assigned a code so that their name will not appear on any data that is stored in any manner. The list of names and codes will be kept in a locked file that is completely separate from any of the data, only accessible by the primary investigator. All data that is collected will be coded, and all data will be kept in a locked file or in a secure, password-protected database, and the primary investigator and research team will be the only people with access to the raw data. These steps will protect the privacy of all individuals who choose to participate. Hard-copies of forms completed by participants and their guardians will be destroyed three years after the completion of the study.

PARTICIPATION AND WITHDRAWAL

Your participation is voluntary. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

EMERGENCY CARE AND COMPENSATION FOR INJURY

If you are injured as a direct result of research procedures you will receive medical treatment; however, you or your insurance will be responsible for the cost. Alfred University and the Bromeley-Daggett Equestrian Center do not provide any monetary compensation for injury.

INVESTIGATOR'S CONTACT INFORMATION

If you have any questions or concerns about the research, please feel free to contact:

Jess Iwachiw, M.A., C.A.S., Doctoral Candidate; Primary Investigator
Jsi1@alfred.edu
(631) 445-8778

Lynn O'Connell, Psy.D., Faculty Supervisor
oconnellm@alfred.edu
(607) 871-2750

RIGHTS OF RESEARCH PARTICIPANT – HSRC CONTACT INFORMATION

If you have questions, concerns, or complaints about your rights as a research participant or the research in general and are unable to contact the research team, or if you want to talk to someone independent of the research team, please contact Alfred University's Human Subjects Research Committee:

Steve Byrne, HSRC Chairperson
hsrc@alfred.edu
(607)871-2857

SIGNATURE OF RESEARCH PARTICIPANT/GUARDIAN

I have read the information provided above. I have been given a chance to ask questions. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

_____
Name of Participant

_____ _____
Signature of Participant Date

_____ _____
Signature of Parent/Guardian Date

SIGNATURE OF INVESTIGATOR

I have explained the research to the participant and answered all of his/her questions. I believe that he/she understands the information described in this document and freely consents to participate.

_____
Name of Person Obtaining Consent

_____ _____
Signature of Person Obtaining Consent Date

Appendix F: Hold-Harmless Agreement

RELEASE OF LIABILITY AND HOLD HARMLESS AGREEMENT

This Release of Liability and Hold Harmless Agreement ("Agreement"), is made as of this _____ day of _____, 2____ between Alfred University, Alfred University's Bromeley-Daggett Equestrian Center, cooperating school districts, and all of their owners, agents, employees, volunteers, students, family, boarders, leasers and any other person or entity acting on their behalf (hereinafter referred to collectively as "Owner") and the person(s) executing this document (hereinafter referred to as "Parent of participant"). The Parent of participant is a PARENT or guardian of PARTICIPANT of the equine program at Alfred University Equestrian Center (owner).

PARENT OF PARTICIPANT ACKNOWLEDGES THAT THERE ARE INHERENT RISKS IN BEING ON OR AROUND HORSES. THOSE RISKS INCLUDE SERIOUS BODILY INJURY AND DEATH. PARENT OF PARTICIPANT UNDERSTANDS THAT THESE RISKS ARISE FROM THE FACT THAT ANY HORSE MAY ACT UNPREDICTABLY, AND THAT ALL HORSES ARE CAPABLE OF SUDDEN, UNEXPECTED, AND POTENTIALLY DANGEROUS MOVEMENTS. PARENT OF PARTICIPANT APPRECIATES THAT ALL HORSES ARE EASILY FRIGHTENED BY SOUND, MOVEMENT, UNFAMILIAR OBJECTS, ODORS, PERSONS, OTHER ANIMALS, NATURAL HAZARDS, AND ARTIFICIAL CONDITIONS AMONG OTHER THINGS AND MAY RUN, BOLT, BITE, BUCK, OR KICK WITH NO WARNING AS A RESULT. PARENT OF PARTICIPANT UNDERSTANDS THAT SERIOUS BODILY INJURY, PROPERTY DAMAGE, OR DEATH MAY RESULT WHILE PETTING, FEEDING, WATERING, BRUSHING, TACKING, SADDLING, MOUNTING, DISMOUNTING, RIDING, OR OTHERWISE BEING ON OR AROUND ANY HORSE. BY SIGNING THIS AGREEMENT, PARENT OF PARTICIPANT ACKNOWLEDGES THAT HE/SHE IS AWARE OF THE INHERENT RISKS OF BEING ON OR AROUND HORSES, APPRECIATES THAT THESE RISKS INCLUDE SERIOUS BODILY INJURY, PROPERTY DAMAGE, AND DEATH, BUT VOLUNTARILY CHOOSES TO ENCOUNTER THESE RISKS ANYWAY THEREBY ASSUMING ALL RESPONSIBILITY FOR ANY INJURY, DAMAGE, OR DEATH CAUSED TO PARTICIPANT AS A RESULT OF BEING ON OR AROUND HORSES.

CONDITIONS OF NATURE – Alfred University, Alfred University Equestrian Center, cooperating school districts, and their owners, agents, employees, volunteers, students, family, boarders, leasers and any other person or entity acting on their behalf is NOT responsible for total or partial acts, occurrences, or elements of nature that can scare a horse, cause it to fall, or react in some other unsafe way. SOME EXAMPLES ARE: thunder, lightning, rain, wind, wild and domestic animals, insects, reptiles, which may walk, run, fly near, bite and/or sting a horse or person; and irregular footing on out-of-door groomed or wild land which is subject to constant change in condition according to weather, temperature, and natural and man-made changes in landscape

PARTICIPANT'S RESPONSIBILITY –The PARTICIPANT'S safety largely depends upon his/her ability to carry out simple instructions. The PARTICIPANT shall be responsible for following all safety instructions.

NATURE OF HORSES – No horse is a completely safe horse. Horses are 5 to 15 times larger, 20 to 40 times more powerful, and 3 to 4 times faster than a human. If a horse is frightened or provoked it may divert from its training and act according to its natural survival instincts which may include, but are not limited to: stopping short, changing directions or speed at will; shifting its weight; bucking; rearing; kicking; biting; or running from danger.

INPSECTION OF PREMISES – PARENT OF PARTICIPANT has inspected FACILITY facilities and trails and is satisfied that all premises conditions are reasonably safe for the intended purpose, usage and presence upon the FACILITY premises. in consideration for Owner's equine services and participating in – or observation of - its equine activities including but not limited to riding, trail riding, training, and riding instruction, Parent of participant hereby releases, waives, and forever discharges Owner of all actions of whatever kind arising from bodily injury, death, or property damage which relate in any way to Owner's equine related services and activities so long as such injury, property damage, or death is not caused by an intentional, willful, or wanton act or omission of Owner (*i.e.* Parent of participant releases Owner from liability for damages caused by Owner's negligent acts or omissions only). Parent of participant further agrees to indemnify Owner for, and hold Owner harmless from, all judgments, claims, demands, attorney fees, and costs arising from any such action.

This release is given on behalf of Parent of Participant, Parent's legal representatives, administrators, executors, heirs, and assigns, as well as on behalf of the participant, their legal representatives,

administrators, executors, heirs, and assigns. This release is an ongoing release that does not expire and remains in effect until the completion of the research study.

PARENT OF PARTICIPANT ACKNOWLEDGES THAT HE/SHE HAS CAREFULLY READ THIS RELEASE, UNDERSTANDS THAT HE/SHE IS KNOWINGLY AND VOLUNTARILY ASSUMING ALL RISKS ASSOCIATED WITH HIS/HER CHILD BEING ON OR AROUND HORSES INCLUDING SERIOUS BODILY INJURY, DEATH, AND PROPERTY DAMAGE, AND RELEASES OWNER FROM ALL LIABILITY FOR BODILY INJURY, DEATH, OR PROPERTY DAMAGE NOT RESULTING FROM OWNER'S NEGLIGENCE AND SHALL INDEMNIFY AND HOLD OWNER HARMLESS FROM THE SAME.

_____ _____

Print Minor's Name Parent signature

_____

Date: _____ Print Parent's Name

Emergency Contact Person and Phone Number_____

_____

Appendix G: Emergency Contact and Permission to Obtain Emergency Medical Treatment

Emergency Contact* Information:

Name: _____ Home Phone Number: _____
Relationship to Child: _____ Cell Phone Number: _____
Work Phone: _____

*This is the person who will be contacted in the case of an emergency medical situation. If either physically present or available by phone, this individual will be asked to consent to medical treatment after being given the pertinent information about the emergency.

Consent to Obtain Emergency Medical Treatment:

If the emergency contact is unable to be reached in the event of an emergency, your signature below indicates that you consent to allow agents of the study to pursue emergency medical treatment for your child as is needed, acting as a legally authorized decision-maker for the child until the time at which parents/guardians are able to be reached. If you do not wish to allow agents of the study to obtain emergency medical treatment for your child, please be aware that in the unlikely event your child does experience such an incident requiring emergency medical treatment, the responsibility of decision-making, as well as this record of your wishes, will be passed on to law-enforcement and medical professionals.

Please check the box (below) that corresponds with your decision, and sign and date on the appropriate lines. If consenting to emergency medical treatment, please provide insurance information as requested after the signature lines.

☐ Yes, I consent to agents of the study making emergency medical decisions about treatment in the event that the designated guardian (named above as 'Emergency contact') is unable to be reached.

☐ No, I do not consent to agents of the study making emergency medical decisions about treatment in the event that the designated guardian (named above as 'Emergency contact') is unable to be reached. I understand that medical treatment may still be sought in instances of emergency, but that the responsibility for decision-making will fall into the hands of law enforcement and medical professionals.

_____
Print Name of Parent/Guardian

_____ _____
Parent/Guardian Signature **Date**

_____
Name of Child

Insurance Information:

Insurance Carrier: _____

Policy Number: _____

Policy-Holder's Name: _____

Primary Care Physician: _____ **Phone:** _____

Preferred Hospital: _____

Allergies: _____

Height: _____

Weight: _____

Appendix H: Participant Assent Form

Student Participation Agreement

I, _____, agree to participate in the horse experience at Alfred University's Bromeley-Daggett Equestrian Center.

1. I understand that I will be working with horses within in barn and/or arena setting.

2. I will stay in the areas that I am instructed to and will not enter barns, stalls, pastures, or any other area without being accompanied by a staff member.

3. I understand that I can choose to not participate in any activity that is presented.

4. I agree to protect the privacy of everyone involved by keeping information about other participants and what happens in sessions private.

5. I understand that I can talk about my own personal experiences with whomever I want, but I promise that I will only discuss concerns about other participants with the researchers/co-leaders of the program.

6. If I have any questions or concerns about these expectations or anything else related to the program, I will talk to the program leaders to get answers to my questions.

I agree to follow these guidelines, and to participate in the equine study program at Alfred University.

_____
Student Name

_____ _____
Student Signature Date

Appendix I: Participant and Family Debriefing Statement
Feedback for Participants and Families

Study: A Powerful Approach or the Power of Horses: Is Equine-Assisted Psychotherapy an Effective Technique or the Natural Effect of Horses?

Alfred University, Division of Counseling and School Psychology

First, thank you for your participation in this study! The data you have provided us with will be incredibly valuable in our research.

The study that you participated in is intended to look at how horses impact youth, particularly youth who feel sad and/or depressed. Horses are being used by mental health professionals to help youth with these kinds of problems, but there isn't much evidence for how helpful horses actually are in dealing with these problems. Further, lots of people who work with horses in traditional settings (like riding them) report that horses have been very helpful for them in areas like feeling better about themselves, what they are able to accomplish, and how they are able to communicate with others. This leaves the question of whether horses in and of themselves are actually helpful to youth who are feeling sad or depressed, and whether horses are even more helpful for those feeling sad or depressed when used in the context of working with a mental health professional.

In order to investigate these questions, each of you (parent and child) completed a measure of symptoms of depression at the Introductory Session, called the Children's Depression Inventory, 2nd Edition. Your child was then assigned randomly to one of three groups: one that received equine-assisted psychotherapy, one that received horsemanship lessons, and one that did not receive equine contact during the data collection period (the *control* group):

1. **EQUINE-ASSISTED PSYCHOTHERAPY:** Participants in this group met twice per week for three weeks for a total of six 90-minute sessions. The group that received equine-assisted psychotherapy worked with a NYS-licensed mental health professional and an equine specialist, and worked on skills related to communication and problem-solving. In each session, participants were given an activity, worked on the activity in their group, then processed the activity with the mental health professional and equine specialist.

2. **HORSEMANSHIP LESSONS:** The group that received horsemanship lessons also met for six 90-minute sessions across three weeks. Participants in this group, however, learned how to safely and properly interact with horses. Those in the horsemanship groups worked with experienced horse professionals. In each session, participants were taught a new skill, watched the instructor demonstrate the skill, and then had opportunities to practice the skill with a horse.

3. **CONTROL GROUP:** Those in the control group did not receive an intervention during the time of this study, and instead were offered a similar opportunity to participate in a three-hour Horse Camp hosted at the Bromeley-Dagget Equestrian Center after the

completion of the final data collection and debriefing session. Participants in this group also received a Horse Camp t-shirt.

After the three-week intervention period, you and your child again completed the Children's Depression Inventory. Your child's scores on these measures of depression will be compared from the first time you completed the forms at the initial information session, to the second time you completed them just now. Looking at these changes across the three different groups will help us to understand whether working with horses on traditional horsemanship tasks is helpful for kids who have symptoms of depression, and also whether working with horses with a mental health professional is even more helpful than working with horses on horsemanship skills.

Now that the data is collected for this study, it will be analyzed and written in a timely fashion. The data provided by you and other study participants will be a part of a doctoral dissertation defense, and will then be submitted for publication in a scholarly journal. Throughout this process, your data will be treated with confidentiality and security. All data is stored using a participant number only, rather than a name. Further, all data will be maintained under a lock and key, and all electronic files will be password protected with only the primary investigator having access.

If you have any questions, concerns, feedback about the study that you would like to share, or if you decide at a later point that you would like further information about the results of the study, please do not hesitate to contact us:

Questions about the program and/or research:
Jess Iwachiw, M.A., C.A.S., Primary Investigator
Jsi1@alfred.edu
(631) 445-8778

Lynn O'Connell, Psy.D., Faculty Supervisor
oconnellm@alfred.edu
(607) 871-2750

Questions about your rights as a research participant:
Steve Byrne, HSRC Chairperson
hsrc@alfred.edu
(607) 871-2857

Thank you again for your valuable time and participation. We hope that you have enjoyed this experience, and that horses will continue to have a special place in your heart. Your participation will help us to understand how we can best use horses to heal ourselves, and will in turn help many others. Thank you!!

Sincerely,

Jessica Iwachiw, M.A., C.A.S.
Doctoral Candidate

Appendix J: Treatment Acceptability Survey

Question:	Strongly Disagree	Disagree	Disagree Slightly	Slightly Agree	Agree	Strongly Agree
1. Working with horses is a good way to help kids who are feeling sad or depressed:	1	2	3	4	5	6
2. Working with horses helped me:	1	2	3	4	5	6
3. I would tell a friend that was feeling sad or depressed to try the kind of work I did with horses:	1	2	3	4	5	6
4. I liked working with horses:	1	2	3	4	5	6

Appendix K: Debrief Focus Group Questions

Student Interview Questions:

1. What did you like about this program?

2. What frustrated you in the program?

3. What did you learn from your time here?

4. What about yourself, if anything, has changed since you started this program?

5. How do you think the skills you've learned here will be helpful in other parts of your life?

Parent Interview Questions:

1. Why did you choose to allow your child to participate in this study?

2. Were there any issues, problems, or changes that you would like to see addressed if this program were to continue?

3. What, if anything, do you feel that your child learned or gotten from this program?

4. What changes, if any, have you seen in your child's mood, behavior, and/or thoughts since starting this program?

Professional Interview Questions:

1. What were the strengths of this program?

2. Weaknesses/challenges?

3. What do you think the kids you worked with learned from their participation? what did they get out of this?

4. How, if at all, did you see their thoughts, feelings, and behaviors change from the beginning to the end of the program?

5. What, if anything, do you feel *you* have gotten from the program?

Appendix L: Session Agenda Overview – EAP

Goal: The development of problem-solving and communication skills.

Session 1: Introduction: Herd dynamics and the parallel to human groups and relationships

- Key equine tasks: Observe social structure of horses, get horse to comply.
    - Goal: participants will make connections between herd dynamics and the relationships between themselves and systems (e.g., family, school).
    - Goal: participants will make connections between individual equine interactions and their own interactions with others.
    - Goal: participants will identify the human groups that they are a part of and will consider communication and conflicts within their own systems.

Session 2: Nonverbal communication

- Key equine tasks: Observe nonverbal communication, utilize nonverbal communication to achieve objective.
    - Goal: participants will identify ways in which horses and people communicate nonverbally.
    - Goal: participants will learn that their nonverbal behavior impacts the behavior of equines.
    - Goal: participants will reflect on what their nonverbal behavior says to those around them (e.g., parents) about what they are thinking and feeling.

Session 3: Group functioning

- Key equine tasks: Make a plan within the group, motivate horse(s) to get over obstacles.
    - Goal: participants will identify how they work and communicate within a group.
    - Goal: participants will explore how they communicate with those they "work with" in their lives (e.g., friends, family, teachers), and will identify successful and unsuccessful approaches they have used.

Session 4: Goal-setting

- Key equine tasks: set reasonable goals for influencing equine's behavior and attempt to achieve those goals.
    - Goal: participants will determine their definitions of success and find ways to make reasonable, achievable goals.
    - Goal: participants will reflect on the ways that unrealistic goals have impacted their feelings of success. Participants will reflect on the ways that setting realistic goals can support their feelings of competence and worth.

Session 5: Managing stress and negative pressure

- Key equine tasks: limit influence of temptation on horse, motivate horse to complete task.
    - Goal: participants will identify the challenges that stress creates in their lives.
    - Goal: participants will identify the challenges that specific negative influences create in their lives with regard to their ability to solve problems.

Session 6: Coping with adversity

- Key equine tasks: complete challenge with significant imposed limitation.
    - Goal: participants will analyze how they view their stressors and difficulties in life.
    - Goal: participants will consider their expectations for themselves and whether their expectations are helping or hindering them in achieving goals and solving problems.

Appendix M: Expanded and Modified EAP Manual

EAP Intervention Protocol

For the doctoral dissertation project of:

Jessica Iwachiw, MA, CAS
Alfred University
Division of Counseling and School Psychology
July, 2016

Implementation Notes:

Intervention Goal: the development of problem-solving and communication skills.

1. These activities are drawn from the Fundamentals of EAGALA Model Practice book, with some modifications for the age of participants and size of the group.
2. The same paddock and the same three horses were used for each session across the intervention**.**
3. Modifications made to traditional EAP activities are noted throughout the manual where appropriate.
4. Due to the development level and individual differences in children, adjustments to terminology and additional structure may be needed to ensure their engagement and understanding.

Session 1: Introduction to EAP
Herd Dynamics and the Parallel to Human Groups and Relationships

- Key Equine Tasks: Observe social structure of horses, get horse to comply.
    - Goal: participants will make connections between herd dynamics and the relationships between themselves and systems (e.g., family, school).
    - Goal: participants will make connections between individual equine interactions and their own interactions with others.
    - Goal: participants will identify the human groups that they are a part of and will consider communication and conflicts within their own systems.

MATERIALS: several horses turned out in ring/pasture (smaller pasture used due to size of participants and levels of anxiety); several halters, lead ropes, lunge line, crops, cones, etc.

1. Check-in with group (10 min.)

2. 1st Activity: ***Observation and Approach*** (p. 71) (10 min.)
    - Key Ideas**:** Introducing herd dynamic as a parallel to family, existing in a group, assessing participants (belief systems, perceptions, behavior).
    - Method: Ask participants to observe the horses for a period of time.

3. Processing: (15 min.)
    - Ask about:
        - Observations of which horse is most similar to the participant, participants' family members, and why.
        - Observations related to herd dynamics and their parallel to human groups/relationships.

4. 2nd Activity: ***Select a Horse*** (p. 71) (40 min.)
    - Key Ideas: Assessment (participant behavior, responses), familiarize participants with EAP activities and structure
    - Method: set up with multiple horses in the arena and various equipment around the ring (e.g., halters, lead ropes, crops). Ask participants to choose of the horses and bring the horse back to a pre-determined spot.

5. Processing (15 min.)
    - When the activity is complete, ask about:
        - Why participants chose particular horses
        - Dynamics between horses, between horse and human
        - Parallels with human relationships
        - Similar or parallel situations participants have experienced

Session 2: Communication
Nonverbal Communication

- Key Equine Tasks: Observe nonverbal communication, utilize nonverbal communication to achieve objective.
    - Goal: participants will identify ways in which horses and people communicate nonverbally.
    - Goal: participants will learn that their nonverbal behavior impacts the behavior of equines.
    - Goal: participants will reflect on what their nonverbal behavior says to those around them (e.g., parents) about what they are thinking and feeling.

MATERIALS: 2-3 horses; saddle; saddle pad; halter; lead rope

1. Check-in with group (10 min.)

2. Activity: ***Extended Appendages*** (p. 80) (50 min.)
    - Key Ideas: Understanding roles, verbal and non-verbal communication, teamwork
    - Method: set up arena with 2-3 horses as well as the following materials: a saddle, a saddle pad, a halter, and a lead rope. Have participants line up and somehow physically connect to each other (e.g., holding onto a piece of clothing, linking arms, holding hands). Tell them that they are going to be acting as one giant body. The two participants directly in the middle of the chain will be the brains, one controlling the left arm and one controlling the right arm. The brain gives all of the directions; the others are not allowed to act without specific instructions from the brain. Everyone else makes up the arms, but they cannot use their arms. Only last person on the end of the left arm can only use their left arm, and the person at the end of the right arm can only use their right arm. The brain will give a specific instruction to the part of the arm next to it (e.g., 'lift your hand), and that part of the arm will have to pass the instruction down to the next part of the arm (like in the child's game Telephone). This relay of information continues until it reaches the last person in the arm line, who then enacts the instructions with the appropriate side of their body. The instructions need to be really specific and well-described because the hands are not able to think for themselves. Inform the participants that their task is to halter the horse.
        - To modify for two participants, one participant was assigned to be the left hand and the other the right hand. To add further challenge with only two participants, they took turns with one being the brain and the other the arms, and vice versa.
    - With extra time, participants are rearranged and asked to saddle the horse.
        - Another variation used was to have the participants move the horse forward and backward without equipment.

3. Processing (30 min.):
    - When this activity is complete, ask about:
        - Non-verbal communication during the task
        - What each role was like for participants to experience
        - Cooperation during the task and relationship to role
        - What went well, and what didn't
        - The response of the horse
        - Parallels with participants' own experiences of communication, teamwork and conflict

Session 3: Working Together
Group Functioning

Key Equine Tasks: Make a plan within the group, motivate horse(s) to get over obstacles.

- Goal: participants will identify how they work and communicate within a group.
- Goal: participants will explore how they communicate with those they "work with" in their lives (e.g., friends, family, teachers), and will identify successful and unsuccessful approaches they have used.

MATERIALS: 3 horses; poles; cones; buckets; 2-3 jumps

1. Check-in with group (10 min.)

2. Activity: ***Life's Obstacles*** (p. 74) (50 min.)
   - Key Ideas: Teamwork, communication, problem-solving, expectations, overcoming challenges
   - Method: To set-up, select multiple horses and place objects such as poles, cones, and buckets around the ring. Have 2-3 jumps set up toward the center of the ring. Tell participants that they are to get the horses over the obstacles. Ask participants to name the obstacles for an obstacle in their life that they are facing. Tell participants that the rules of the activity are as follows: 1) no physical contact is to be made with the horse (through bodies or objects), 2) horses cannot be bribed, and 3) no talking (horse noises excepted) after the plan time is over. Ask the team to develop a consequence for if any of these rules are broken (e.g., 5-second freeze). Give team up to 10 minutes to plan.
     - Lifted rule about talking after participants began to disengage from frustration.

3. Processing: (30 min.)
   - After the activity, ask about:
     - Group communication within the group and with the horses
     - Roles taken on by people and horses
     - Decision-making process used by group
     - Group-members and horses reactions to each other
     - Definition of success
     - When shifts toward success occurred, and what facilitated these shifts
     - Patterns noticed in the group and/or in the horses
     - Role of rules/consequences and how participants defined them
     - Parallels to team-work, achieving goals in participants' lives

Session 4: Setting Goals and Defining Success
Goal-Setting

- Key Equine Tasks: set reasonable goals for influencing equine's behavior and attempt to achieve those goals.
    - Goal: participants will determine their definitions of success and find ways to make reasonable, achievable goals.
    - Goal: participants will reflect on the ways that unrealistic goals have impacted their feelings of success. Participants will reflect on the ways that setting realistic goals can support their feelings of competence and worth.

MATERIALS: 3 horses; poles; 1 jump; cones; mounting block

1. Check-in with group (10 min.)

2. Activity: ***H-O-R-S-E*** (p. 86) (50 min.)
    a. Key Ideas: Creative thinking, choosing and being role-models, managing competition, clarifying beliefs and definitions (of success, determining success, of rules and how they are formed)
    b. Method: Ask participants about their experience with the basketball game of the same name. Explain the revised version, using real horses. Taking turns, each participant will have an opportunity to set a goal for something they will try to get the horse to do (e.g., pick up its hoof). They will first state what they intend to get the horse to do, and then they will try to do it. If they are successful, then the next person must also try to get the horse to do this. If they are not successful, then the initial person gets a letter and the next person sets a new goal and tries to meet it. When a participant ends up earning an 'E' (after 5 failed attempts), they will observe for the remainder of the game.
        - Due to the number of participants, the rules were modified such that the game started over when a participant got an 'E.'
        - Emphasis was placed on clearly communicating the goal prior to attempting it.

3. Processing: (30 min.)
    - When the activity is complete, ask about:
        - How and why participants chose the activities/goals that they did
        - How success and failure were defined
        - How rules were defined and how these decisions were made
        - Whether participants cooperated or competed
        - How activity was perceived by participants (fun, stressful, etc.)
        - What worked and what didn't – the role creativity played
        - How horses responded at various times
        - Parallels to role models in real life

Session 5: Managing Stress and Negative Pressure
Managing Stress and Negative Pressure

- Key Equine Tasks: limit influence of temptation on horse, motivate horse to complete task.
    - Goal: participants will identify the challenges that stress creates in their lives.
    - Goal: participants will identify the challenges that specific negative influences create in their lives with regard to their ability to solve problems.

MATERIALS: 2-3 horses, several halters, lead ropes, poles, barrels, jump standards, buckets of grain, apples, and/or treats, cones, flakes of hay

1. Check-in with group (10 min.)

2. Activity: ***Temptation Alley*** (p. 76-77) (50 min.)
    - Key Ideas: Communication, teamwork, problem-solving, dealing with stressors and temptations
    - Method: Set-up by creating an alley out of poles, barrels, jump standards, etc. Ask participants to use provided supplies such as buckets of grain, apples, treats, and hay to set up temptations for the horse alongside and within the alley. After the course is set, the group is asked to lead the horse through the alley without lead ropes. The following rules apply: 1) neither the people nor the horses can move or knock anything over, 2) the horse must remain inside of the alley, 3) the horse may not eat anything, and 4) the participants cannot enter the alley. The group generates a consequence for if any of these rules are broken.
        - To increase challenge for the one participant in attendance on this day, several versions of this task were used: the original, the horse without a halter, completing the task without touching the horse, and lastly completing the horse with the most challenging horse in the ring.

3. Processing: (30 min.)
    - After the activity, ask about:
        - How the horses responded to the temptations they set
        - How the set-up of the temptations impacted the difficulty of the course
        - What roles were taken on
        - Dynamics between participants, horses
        - Communication throughout the activity
        - How the horse felt and behaved through the activity, and what the horse might represent in participants' lives
        - What moments were most difficult and easiest, and where they occurred
        - The impact of the consequence on participants, process, horse
        - Parallels between participants' own experiences with avoiding temptation

Session 6: Reaching Our Goals – Final Session!
Coping with Adversity

- Key Equine Tasks: complete challenge with significant imposed limitation.
    - Goal: participants will analyze how they view their stressors and difficulties in life.
    - Goal: participants will consider their expectations for themselves and whether their expectations are helping or hindering them in achieving goals and solving problems.

MATERIALS: 2 horses with halters, many lead ropes, bandanas, big boots, apple, bucket, brushes

1. Check-in with group (10 min.)

2. Activity: ***Handicaps*** (p. 87 – Falco. K, & Wells, C.) (50 min.)
    - Key Ideas: Adjustment, coping with loss, resilience
    - Method: Set-up with the same number of horses as participants. Each participant is given a 'handicap' (e.g., legs tied together, hands tied behind back, blindfolded, bucket tied and dragging behind, hand tied to foot, too big of boots and an apple in mouth, etc.). Participants are told that they are to catch each horse with a lead-rope, brush it, and pick up its hoof.
        - To adjust for size of group and speed of task completion, the following iterations were used: participants switch handicaps; participant is instructed to find, catch, and lead a specific horse to a given spot blindfolded without talking while other participant directs them,

3. Processing: (30 min.)
    - After the activity, ask about:
        - How participants dealt with and viewed their handicaps
        - Whether anyone asked for or offered help
        - Perceptions on receiving help
        - Whether any handicaps offered any strengths
        - How actual accomplishments compared with what participants thought they would be able to at the beginning

Appendix N: Session Agenda Overview – Horsemanship

Goal: to build skills needed for safe and effective handling of equines on the ground.

Session 1: General horse safety

- Key equine goal participants will learn the basics of safety around horses, including basics on characteristics of horses

Session 2: Approaching and haltering, leading, turning, and backing

- Key equine goal: participants will learn how to effectively approach a horse, and how to properly put a halter on a horse's head. Participants will learn how to effectively direct the forward and backward movement of the horse using a halter and lead-rope.

Session 3: Grooming and handling feet

- Key equine goal: participants will learn how to care for the horse's cleanliness, learn how to safety lift the horse's hoof, and how to care for the cleanliness of the horse's hooves.

Session 4: Simulated riding experience

- Key equine goal: participants will preview parts of the bridle and saddle, and will learn about the ways in which horses move when mounted.

Session 5: Bridling and saddling

- Key equine goal: participants will learn how to properly bridle and saddle the horse, with equipment positioned and fitted properly.

Session 6: Putting it All Together

- Key equine goal: participants will put together the variety of skills learned to complete a relay.

Appendix O: Expanded Horsemanship Intervention Manual

Horsemanship Lesson Plan Manual

For the doctoral dissertation project of:

Jessica Iwachiw, MA, CAS
Alfred University
Division of Counseling and School Psychology

General Intervention Guidelines for Instructors:

First of all, I cannot thank you enough for your willingness to be involved in this project. I am incredibly excited to be able to offer this opportunity to youth, and I would not be able to do it without you!! Your generosity of time and your service to our youth are appreciated beyond words! I hope that you find this an opportunity to share your love of horses with kids who might not otherwise have had the chance to interact with them first-hand, and I believe that you will have fun doing it!!

Within this manual, you will find detailed lesson plans for each of the six sessions. Handouts are included within the manual for your reference. Below you will find some general points of note.

1. Safety is paramount. Please ensure that you are always in a position to intervene before dangerous situations occur when students are working with horses directly.
2. As much as is possible, when instructing on points please try to utilize demonstrations while you are describing specific points so that students are able to learn from both an auditory and visual standpoint while you teach.
3. Throughout the lessons, please provide corrective feedback and positive praise whenever it is appropriate.
4. Please encourage your students to challenge themselves with the tasks at hand.
5. Please provide corrective feedback as necessary to your students as they learn the various skills at hand.
6. We want these students to be excited about attending and engaged in the lesson, so please use encouragement with students and share with them your passion for horses!!
7. Please do spend some time familiarizing yourself with the lesson plan prior to each lesson so that they run smoothly and so that I may address any questions or concerns you have prior to the lesson time.
8. Students can opt out of any activity that they choose, so please honor any such requests.
9. Students must be with an adult at all times while on the facility's property. As such, please be sure to release students to their adults directly at the end of the session.
10. If you have any feedback, questions, or concerns about the lessons contained in this manual, please contact Jess Iwachiw at jsi1@alfred.edu
11. If during a session you encounter a problem, please text or call Jess at (631) 445-8778. I will be on-site for all intervention sessions and can help support you with any issues that might come up (whether it's running out of time to complete the lesson, missing materials, a behavior problem, etc.).

The overarching goal of these lessons is to build the skills needed for safe and effective handling of equines on the ground.

Session 1 Lesson Plan: General Horse Safety

Key Equine Goal: Participants will learn the basics of safety around horses, including basics on characteristics of horses.

Materials: white board/chalk board/large paper; 1 quiet horse; 3 pencils; 3 horse safety rules sheet

1. Welcome Students
2. Introduce Objective of the Day
3. Discuss importance of safety around horses. Cover:
    a. Size/approximate weight of horses
    b. Potential to hurt humans
4. Discuss how horses respond to various situations:
    a. Fight vs. flight animals
    b. Horse as flight animal
5. Distribute Basic Horse Safety Rules worksheet and equine Field of Vision handout.
6. Review rules as a group. As you proceed through the worksheet, ask:
    a. Why does horse need to know where we are as we approach it?
    b. Why do horses have difficulty seeing directly in front or directly behind?
    c. What purpose does keeping a hand on the horse serve besides feeling what the horse is going to do next?
    d. Why do your feet need protecting when you're working around horses?
    e. What might happen if a horse is hit in the head? Why might this be a problem?
7. Discuss equine pecking order and how understanding this is relevant for safety (staying out of the way).
8. Introduce approaching the horse
9. Introduce leading the horse, including form and technique
10. Practice
    a. Students get the opportunity to approach and pet the horse on the neck, one at a time.
    b. Ask students to observe how and what the horse communicates while being pet by various people.
    c. Allow each student to lead horse with support one at a time.
11. Review safety rules learned

Session 2 Lesson Plan: Approaching and Haltering, Leading, Turning, and Backing

Key Equine Goal**:** Participants will learn how to effectively approach a horse, and how to properly put a halter on a horse's head. Participants will also learn how to effectively direct the forward and backward movement of the horse using a halter and lead-rope.

Materials: 2 halters, 2 lead ropes, 1 quiet horse, 2 horse safety rules sheet, enclosed arena or paddock.

1. Welcome Students
2. Review of Previous Session
   - review 10 basic horse safety rules
   - Review fight vs. flight animals
   - Review ways to let horses know you're approaching
   - Review horse blind spots and implications for approach
3. Introduce Objective of the Day
4. Distribute halter diagram handout
5. Review parts of halter
6. Distribute halter and lead rope to each student
   - Have students identify on their halters the various parts
   - Have students hold up their halters the way they would put it on a horse
   - Have students practice buckling and unbuckling the halter at the crownpiece buckle
   - Instruct students that the lead rope typically attaches to the tie ring (point out on diagram).
   - Have students practice attaching their lead rope to their halter, and then trading with another student and finding the correct ring on that halter. Have students hold up their halter and lead rope when they think they've gotten it right.
7. Review how to approach horse
8. Review side to approach and on which to walk
9. Teach how to approach holding halter and lead
10. Give instruction on how to observe the body language of the horse to monitor its response to approach
    - Make connection between horse feeling comfortable and horse safety
11. Demonstrate approach with halter and lead
12. Demonstrate catching of horse with lead
13. Demonstrate putting on and adjusting halter properly
14. Remind students of safety aspects:
    - Taking care when approaching a preoccupied horse
    - Speaking to horse while approaching and moving around
    - Keeping a hand on the horse while you are moving around it
    - Staying alert for horse becoming startled
15. Practice:

- Have students again practice adjusting and unbuckling the halter.
- One at a time, students practice approaching and haltering the horse with support and assistance from the instructor.

16. Review how to hold the lead line while leading
17. Teach positioning of the body while leading for safety, control
18. Review how to hold excess lead safely
19. Discuss allowing the horse's head to be held naturally without tension on the lead
20. Discuss use of right elbow as buffer to prevent crowding and as monitor of horse's actions.
21. Practice: demonstrate the proper hold for students and point out features (i.e., at left shoulder, 8-10 inches away, excess lead safely held in left hand).
    - Allow each student to practice their approach and to then demonstrate the proper way to stand with the horse in preparation for the walk. Provide feedback on technique throughout.
22. Discuss how to reinforce a cue (forward, backward, etc.) while leading
23. Discuss why it is important that the human is in control of the walk, why it is important for the horse to not get behind the human.
24. Teach ways to cue the horse forward
25. Teach connection between body language and horse behavior walking/leading forward
26. Teach how to cue the stop
27. Demonstrate moving forward and then stopping
28. Practice

- While practicing, look for opportunities to discuss common difficulties:
    - Whether the human is being assertive enough with body language and commands
    - Thinking mostly about what can go wrong and expecting the horse to not cooperate instead of visualizing success
    - Maintaining tension on the lead rope

29. Review what to do if the horse pulls away while leading
30. Teach how to turn to the left and the right
31. Demonstrate turning
    - Discuss turning to the right without getting stepped on
32. Practice
    - Turning left one at a time
    - Turning right one at a time
33. Teach how to back a horse
34. Demonstrate backing
35. Practice
    - Backing, one at a time
36. As time allows, continue leading practice. Allow students to advance to leading independently, circling, and weaving through objects as time and skill allow.

Session 3 Lesson Plan: Grooming and Handling Feet

Key Equine Goal: participants will learn how to care for the horse's cleanliness, learn how to safety lift the horse's hoof, and how to care for the cleanliness of the horse's hooves.

Materials: 1 quiet horse, cross-tie area, 2 grooming kits (curry, hard brush, soft brush, hoof-pick, shedding comb, mane/tail comb)

1. Welcome Students
2. Review of Previous Session
    - Review correct side of horse to lead from
    - Review how to hold extra lead rope
    - Review body positioning for holding lead-rope, leading
3. Introduce Objective of the Day:
4. Hand out equine anatomy handout
5. Teach names of key features of equine anatomy
    - E.g., mane, forelock, withers, tail, shoulder, neck, belly/barrel, hoof
    - Demonstrate on horse
6. Hand out fill-in grooming worksheet
7. Teach names of major brushes
    - E.g., curry, shedding comb, hard brush, soft brush, hoof-pick, mane/tail comb.
8. Allow time for completion of worksheet
9. Discuss safety rules surrounding working with a tied horse (e.g., not climbing over or under lead line, not walking under belly of horse)
10. Discuss safety rules of grooming (e.g., never sitting on ground or grooming from knees, not leaving equipment where horse can step on it)
11. Teach use of each brush in order of use
    - Allow students to touch and examine brushes while instructor demonstrates use of each. Encourage students to try brushes gently on their own arms/legs.
12. Teach how to safely stand near the rear of the horse, how to move away quickly if needed.
13. Teach how to safely walk behind the horse
14. Teach awareness of horse's body language and reactions during grooming and modifying one's approach based upon these reactions
15. Distribute anatomy of the hoof worksheet
16. Discuss key parts
    - E.g., frog, bars, sole of hoof
17. Show participants parts on demonstration horse
18. Instruct on how to pick up front foot
19. Instruct on how to properly hold foot while lifted

20. Instruct on how to clean hoof properly with pick in downward motion
21. Demonstrate picking up and picking out back foot.
22. Practice:
    - Allow each student to practice picking up a front hoof
    - Participants practice using each of the brushes in the correct order
23. As time allows, return to leading practice. Allow students to advance to leading independently, circling, and weaving through objects as time and skill allow.

Session 4: Simulated Riding Experience

Key Equine Goal: Participants will preview parts of the bridle and saddle, and will learn about the ways in which horses move when mounted.

Materials: 2 saddle stands, 2 bridles, 2 saddles, area for practicing steering, 1 quiet horse, 1 grooming kit

1. Welcome Students
2. Review of Previous Session
    - Review names of brushes and order of use
    - Review uses of each brush
    - Review safety in grooming
    - Review location of frog and importance of frog
3. Introduce Objective of the Day
4. Briefly introduce parts of the saddle
5. Have students place saddles on racks
6. Teach students how to fit stirrups from ground
7. Have students practice adjusting their stirrups
8. Teach students how to mount properly on rack
9. Allow students to practice feeling pull of horse through reins by facilitators standing with bit in hand in front of rack
10. Teach students to keep weight in heels and to strengthen thigh by pulling to sides, forward with reins
11. Teach how to pull back, half-halt
12. Allow students mounted on rack to each practice steering with bit in facilitator's hand, as facilitator reacts to what the students do as a horse would
13. Moving to an arena or aisle, allow students to practice steering facilitator while facilitator walks ahead with bit in hands. As able, advance skill to weaving through cones.
14. As time allows, return to haltered leading practice. Allow students to advance to leading independently, circling, and weaving through objects as time and skill allow.

Session 5 Lesson Plan: Bridling and Saddling

Key Equine Goal: Participants will learn how to properly bridle and saddle the horse, with equipment positioned and fitted properly.

Materials: quiet horse, cross-tie area, grooming equipment, English saddle pad, English saddle, English girth, English bridle.

1. Welcome Students
2. Introduce Objective of the Day
3. Distribute parts of the bridle handout
4. Have students identify key parts on demonstration bridle using their handout
5. Hand out bridle fill-in-the-blank, challenging students to complete without looking at their sheets if possible.
6. Teach how to switch out halter for bridle by using reins over neck
7. Teach how to hold the bridle properly, while demonstrating
8. Teach how to safely get horse to open mouth, and where teeth are in mouth
9. Teach how to put in bit
10. Teach how to put on rest of bridle over ears
11. Demonstrate opening mouth and inserting bit
12. Demonstrate putting on rest of bridle over ears
13. Teach how to fasten and fit the throatlatch and noseband
14. Demonstrate fastening and fitting the throatlatch and noseband
15. Practice:
    - Allow participants to practice each step of the bridling process, one at a time
16. Hand out parts of saddle worksheet
17. Teach parts of saddle while demonstrating parts on demonstration saddle
18. Distribute saddle parts fill-in-the-blank and allow students to complete
19. Teach accessory parts
    - E.g., girth, saddle pad, etc.
20. Have participants brush off horse, ensuring that back and girth areas are attended to
21. Teach how to put on saddle pads of various types
    - E.g., with and without Velcro, blanket vs. pad
22. Demonstrate saddle pad
23. Allow students to practice putting on saddle pad properly
24. Teach how to put on saddle properly, including correct side and placement
25. Demonstrate putting on saddle, checking placement
26. Allow students to practice putting on saddle properly, checking placement
27. Teach how to do up girth, emphasizing safety in grasp under horse
28. Demonstrate girthing and buckling
29. Demonstrate tightening and checking for tightness
    - Discuss horse comfort and tightness when riding vs. tightness when rider is not mounted
    - Discuss reasons for tightening the girth slowly and carefully
    - Discuss overtightening impact
    - Allow students to feel tightness of tightened and loosened girth, one at a time

30. Practice:
    - Participants practice taking girth from on top of saddle and safely doing up girth, cinching on 1st hole.
    - Students practice chaining saddle pad + saddle + girthing process one at a time.
31. As time allows, return to leading practice. Allow students to advance to leading independently, circling, and weaving through objects as time and skill allow.

Session 6 Lesson Plan: Putting it All Together

Key Equine Goal: participants will put together the variety of skills learned to complete a relay.

Materials: quiet horse, lead equipment, grooming equipment, 15 cavaletti poles. 1 additional horse needed for red light green light.

1. Welcome Students
2. Review of Previous Sessions
3. Introduce Objective of the Day

4. Activity 1: Relay Race
    - Three relay stations:
        1. Brush station
            - Brushes are out of order and need to be put in the proper order. When participant thinks they have the brushes in order, they are to raise their hand and facilitator will check. If the order is not correct, facilitator will tell participant to try again.
        2. Halter station
            - Once participant has completed the brush station successfully, they will then grab a halter from next to the brushes and enter the horse's stall. Participants will safely approach and catch the horse using learned skills, will put on the halter, and will then walk it to the grooming station. Facilitator to walk with participant in case of difficulty.
        3. Grooming station
            - Once participant has gotten the horse to the grooming station, facilitator holds horse while participant demonstrates the proper use of the curry, hard brush, and soft brush. Facilitator will say "okay" or "try again" after each brush the participant uses to let them know whether they can move on to the next brush.
    - Once participant has completed the grooming station, they must walk back to the next participant and give them a high-five to start their turn on the course.
    - Once the relay has been run slowly one time for safety, it can be run again with each participant timed (as time allows).

5. Activity 2: Equine Red Light Green Light
    - Each participant will have a horse to lead. Facilitator stands at the end of the arena and says "Red light green light 1, 2, 3…" While the facilitator is turned away from the participants, they will work to get the horse walking forward while maintaining all of the safety rules learned. After the facilitator says 3, they will turn around. If a participant's horse is continuing to walk forward after the facilitator turns around, the participant will start over from the start line. While the facilitator's back is turned, the other facilitator should watch

for safe leading and stopping practices. If any participants engage in an unsafe leading or stopping action, they should be stopped and sent back to the start line as well. The winner is the first person who reaches the finish line safely.

6. Activity 3: Equine Navigation Maze
    - Several poles should be set up in a maze format, requiring sharp turns to be executed. For this task, each participant will walk a horse through the maze using leading and turning skills. Participants should be timed each pass through the maze, and time penalties are to be awarded as follows:
        i. If the horse steps outside of the poles that make up the maze, 5 seconds will be added each time
        ii. if the participant engages in an unsafe leading or turning practice, 10 seconds will be added for each instance.
    - For a safety penalty, the clock should be stopped and the facilitator should explain to the student and others what was unsafe and why it is unsafe, as well as how it should be done.

7. If additional time, cycle through red light green light and maze as needed.

Session Handouts:

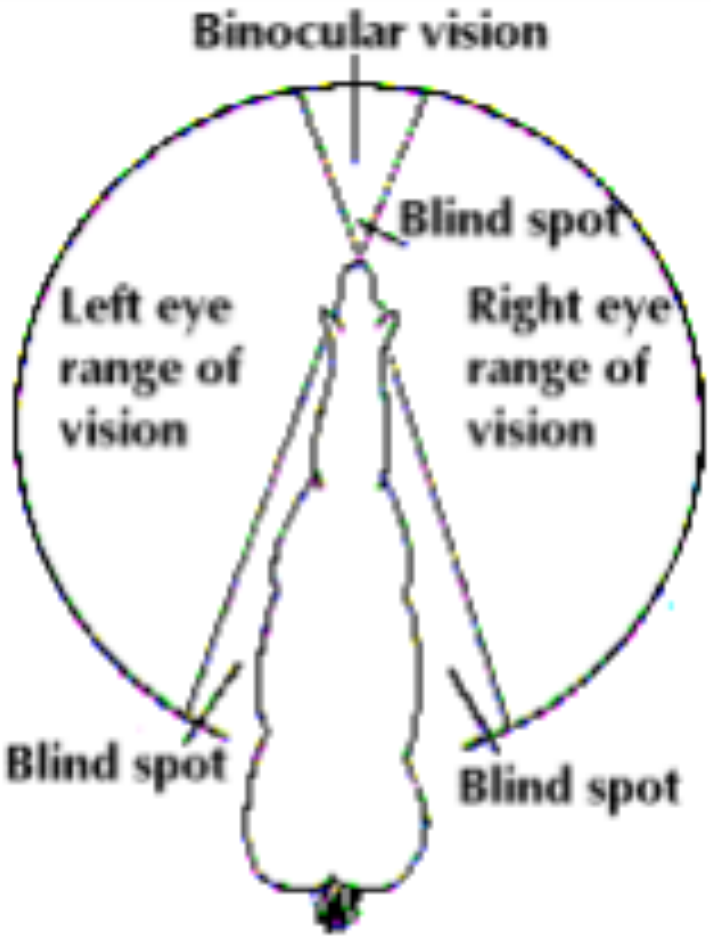
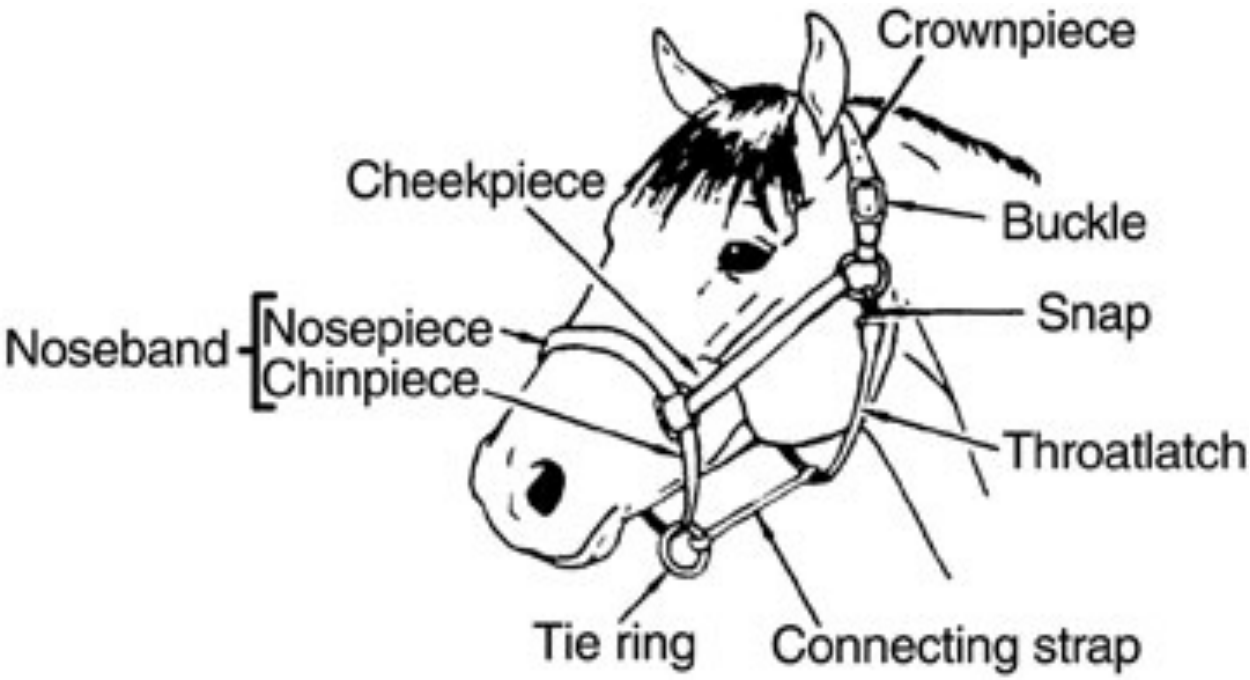


Figure 1: The horse has a large peripheral vision--and three areas of blind spots.

Basic Horse Safety Rules

1. _____ run up to or around a horse. This can _____ it.
2. Always _____ to your horse when you are approaching it so it knows _____ you are.
3. Never _____ a horse from directly in _____ or directly _____. It has trouble seeing anything in these positions because of the location of its eyes.
4. Always keep one _____ on the horse at all times so you can feel what it is going to do _____ it does it.
5. Always wear _____ shoes or proper boots when working around the horses to help _____ your feet.
6. Don't _____ or yell around the horses. It makes them _____ and they might pull back or _____ when frightened.
7. Never _____ things at a horse. If you hit it in the _____ it can become head shy and/or react in a dangerous fashion which might harm itself and you.
8. Always let the horse _____ what you are going to do _____ you do it.
9. Keep your horses _____ when leading or riding in a group so they can't kick or _____ each other.
10. _____! The horse can pick up on your _____ and it makes it nervous also.

Parts of the Halter



NAME _____ DATE _____

WE USE THESE TOOLS TO CLEAN THE HORSES AND PONIES. DRAW A LINE TO THE RIGHT TOOL.

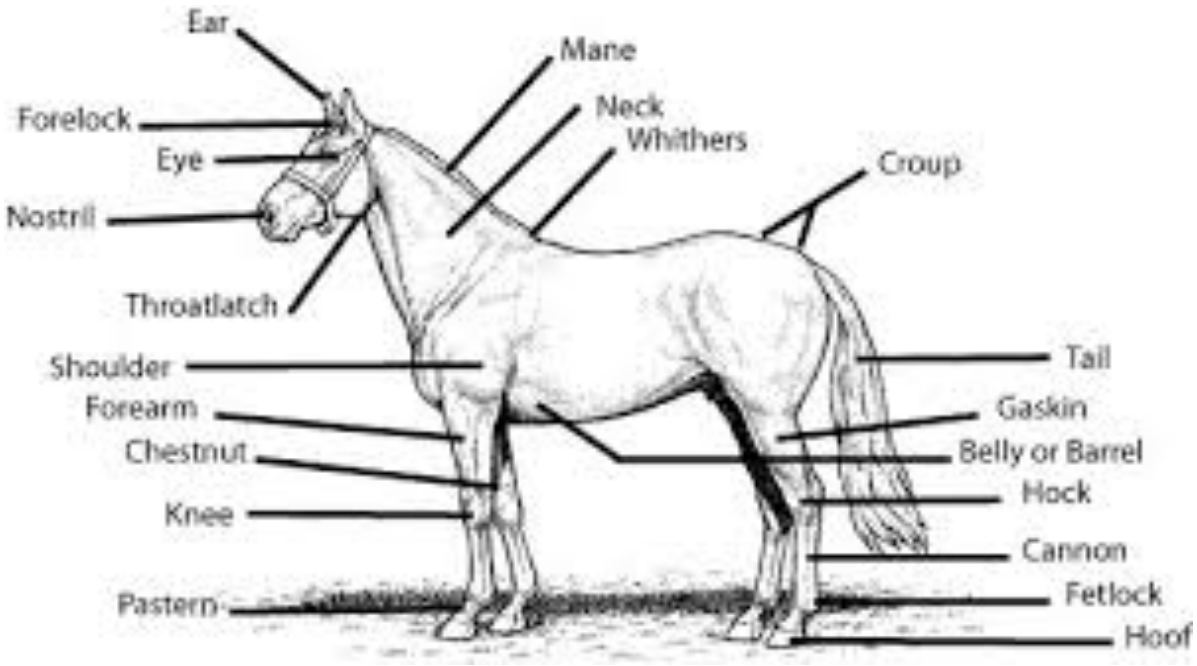
BODY BRUSH

HOOF PICK

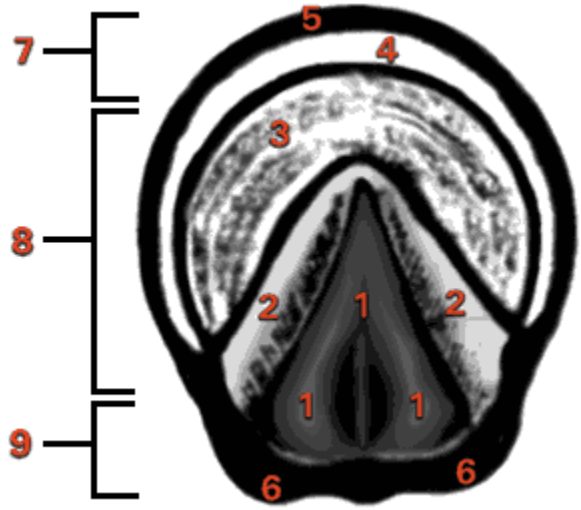
MANE COMB

CURRY COMB

Parts of the Horse

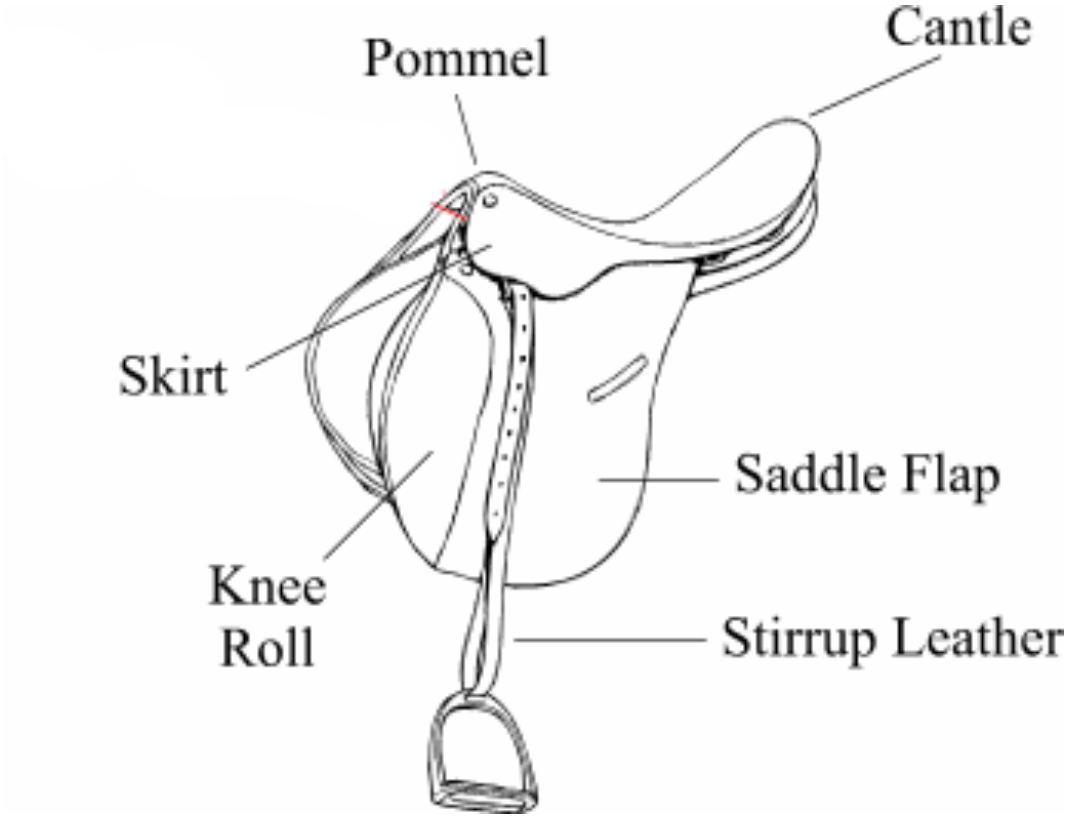


Anatomy of the bottom of the foot

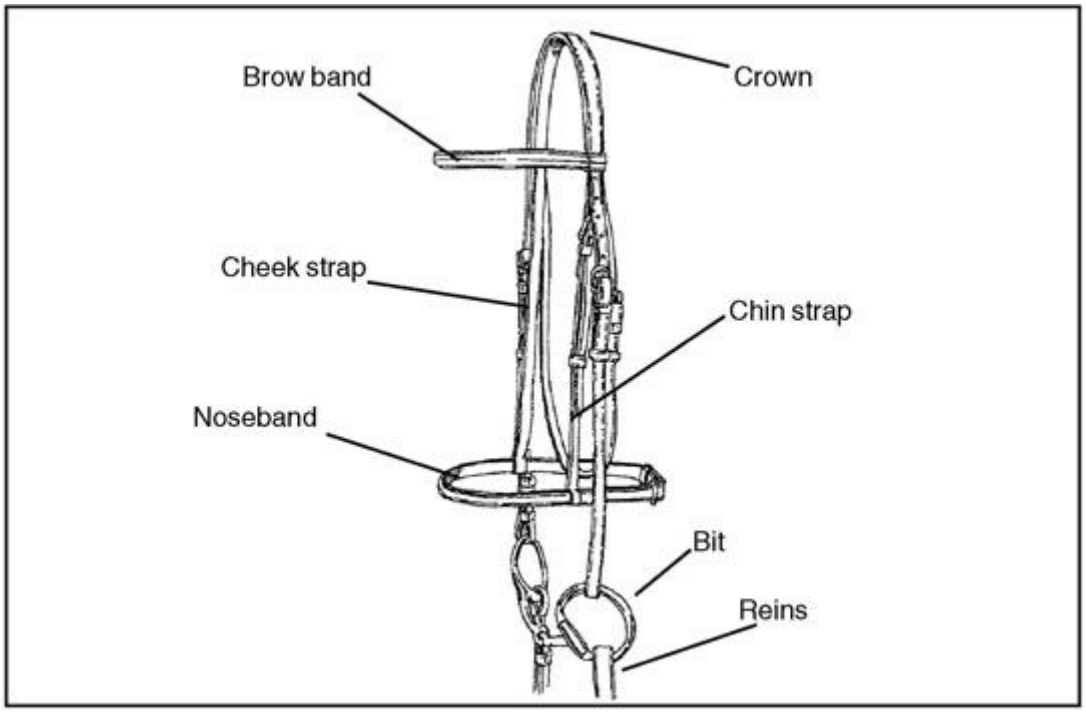


1. **Frog**
2. **Bars**
3. **Sole**
4. **White Line**
5. **Hoof Wall**
6. **Bulbs**
7. **Toe**
8. **Quarter**
9. **Heel**

Parts of the Saddle



Parts of the Bridle



NAME _____ DATE _____

SADDLE PARTS - DRAW A LINE TO:

HANDHOLD

POMMEL

SEAT

SADDLE PAD

STIRRUP LEATHER

STIRRUP IRON

GIRTH

SAFETY STIRRUP

NAME _____ DATE _____

BRIDLE PARTS - DRAW A LINE FROM WORDS TO PICTURE.

CROWN PIECE

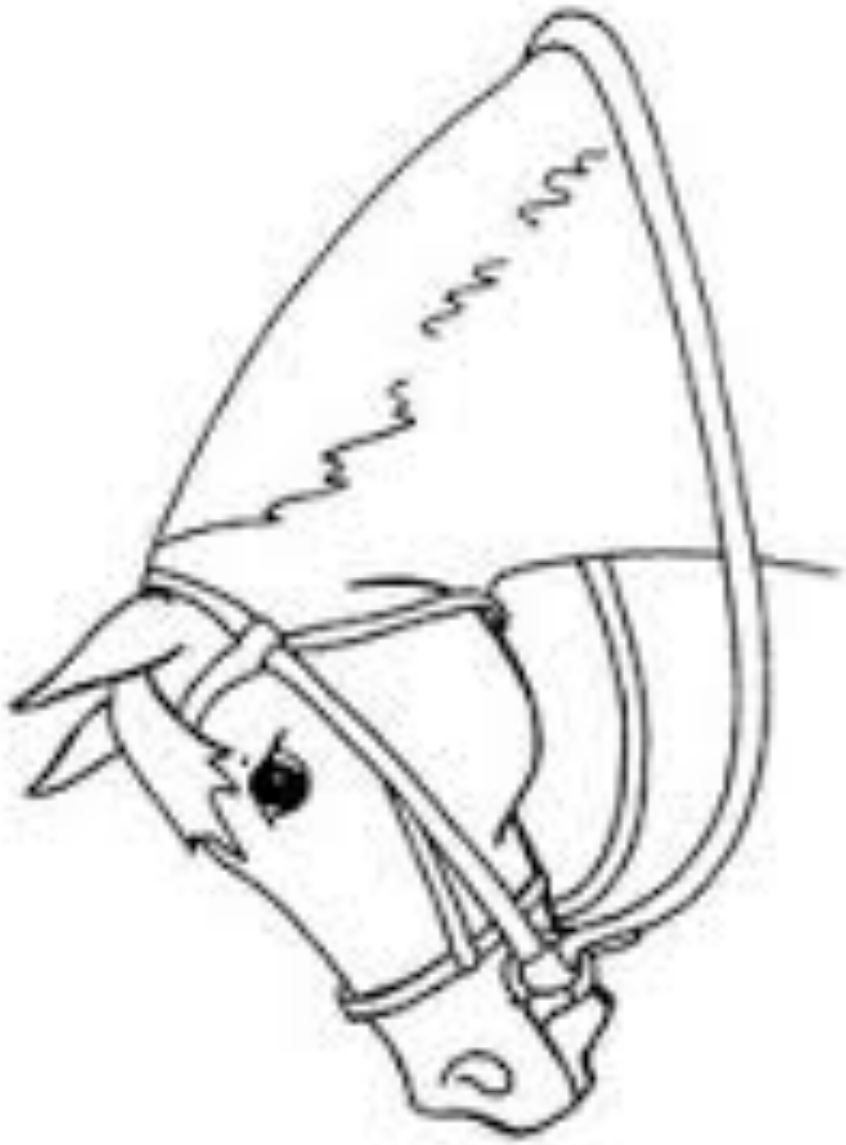
BROW BAND

THROAT LATCH

NOSE BAND

SNAFFLE BIT

REINS



Appendix P: Horse Camp Session Manual

The Equine Experience: Horse Camp! Horsemanship and EAP Activity Plan

For the doctoral dissertation project of:

Jessica Iwachiw, MA, CAS
Alfred University
Division of Counseling and School Psychology
July, 2016

HORSEMANSHIP
Block 1 (10-11am)
Lesson Plan: General Horse Safety

Key Equine Goal: Participants will learn the basics of safety around horses, including basics on characteristics of horses.

Materials: white board/chalk board/large paper; 1 quiet horse; 3 pencils; 3 horse safety rules sheet

12. Welcome Students
13. Introduce Objective of the Day
14. Discuss importance of safety around horses. Cover:
    a. Size/approximate weight of horses
    b. Potential to hurt humans
15. Discuss how horses respond to various situations:
    a. Fight vs. flight animals
    b. Horse as flight animal
16. Distribute Basic Horse Safety Rules worksheet and equine Field of Vision handout.
17. Review rules as a group. As you proceed through the worksheet, ask:
    a. Why does horse need to know where we are as we approach it?
    b. Why do horses have difficulty seeing directly in front or directly behind?
    c. What purpose does keeping a hand on the horse serve besides feeling what the horse is going to do next?
    d. Why do your feet need protecting when you're working around horses?
    e. What might happen if a horse is hit in the head? Why might this be a problem?
18. Discuss equine pecking order and how understanding this is relevant for safety (staying out of the way).
19. Introduce approaching the horse
20. Introduce leading the horse, including form and technique
21. Practice
    a. Students get the opportunity to approach and pet the horse on the neck, one at a time.
    b. Ask students to observe how and what the horse communicates while being pet by various people.
    c. Allow each student to lead horse with support one at a time.
22. Review safety rules learned

Lesson Plan: Approaching and Haltering, Leading, Turning and Backing

Key Equine Goal**:** Participants will learn how to effectively approach a horse, and how to properly put a halter on a horse's head. Participants will also learn how to effectively direct the forward and backward movement of the horse using a halter and lead-rope.

Materials: 2 halters, 2 lead ropes, 1 quiet horse, 2 horse safety rules sheet, enclosed arena or paddock.

- Welcome Students
- Review of Previous Session
    - review 10 basic horse safety rules
    - Review fight vs. flight animals
    - Review ways to let horses know you're approaching
    - Review horse blind spots and implications for approach
- Introduce Objective of the Day
- Distribute halter diagram handout
- Review parts of halter
- Distribute halter and lead rope to each student
    - Have students identify on their halters the various parts
    - Have students hold up their halters the way they would put it on a horse
    - Have students practice buckling and unbuckling the halter at the crownpiece buckle
    - Instruct students that the lead rope typically attaches to the tie ring (point out on diagram).
    - Have students practice attaching their lead rope to their halter, and then trading with another student and finding the correct ring on that halter. Have students hold up their halter and lead rope when they think they've gotten it right.
- Review how to approach horse
- Review side to approach and on which to walk
- Teach how to approach holding halter and lead
- Give instruction on how to observe the body language of the horse to monitor its response to approach
    - Make connection between horse feeling comfortable and horse safety
- Demonstrate approach with halter and lead
- Demonstrate catching of horse with lead
- Demonstrate putting on and adjusting halter properly
- Remind students of safety aspects:
    - Taking care when approaching a preoccupied horse
    - Speaking to horse while approaching and moving around
    - Keeping a hand on the horse while you are moving around it
    - Staying alert for horse becoming startled

- Practice:
    - Have students again practice adjusting and unbuckling the halter.
    - One at a time, students practice approaching and haltering the horse with support and assistance from the instructor.
- Review how to hold the lead line while leading
- Teach positioning of the body while leading for safety, control
- Review how to hold excess lead safely
- Discuss allowing the horse's head to be held naturally without tension on the lead
- Discuss use of right elbow as buffer to prevent crowding and as monitor of horse's actions.
- Practice: demonstrate the proper hold for students and point out features (i.e., at left shoulder, 8-10 inches away, excess lead safely held in left hand).
    - Allow each student to practice their approach and to then demonstrate the proper way to stand with the horse in preparation for the walk. Provide feedback on technique throughout.
- Discuss how to reinforce a cue (forward, backward, etc.) while leading
- Discuss why it is important that the human is in control of the walk, why it is important for the horse to not get behind the human.
- Teach ways to cue the horse forward
- Teach connection between body language and horse behavior walking/leading forward
- Teach how to cue the stop
- Demonstrate moving forward and then stopping
- Practice
    - While practicing, look for opportunities to discuss common difficulties:
        - Whether the human is being assertive enough with body language and commands
        - Thinking mostly about what can go wrong and expecting the horse to not cooperate instead of visualizing success
        - Maintaining tension on the lead rope
- Review what to do if the horse pulls away while leading
- Teach how to turn to the left and the right
- Demonstrate turning
        - Discuss turning to the right without getting stepped on
- Practice
        - Turning left one at a time
        - Turning right one at a time
- Teach how to back a horse
- Demonstrate backing
- Practice
        - Backing, one at a time

- As time allows, continue leading practice. Allow students to advance to leading independently, circling, and weaving through objects as time and skill allow.

Block 2: (12-1pm)

continue practice from lesson above – practice safety, approach, haltering, and leading (through obstacles if skill is established)

EAP
Part 1: 10-11am
Select A Horse

MATERIALS: 3-4 horses, several halters, lead ropes, crops, poles, cones, etc. placed around inside the arena

Activity: ***Select a Horse*** (p. 71) (40 min.)

- Key Ideas: Assessment (participant behavior, responses), familiarize participants with EAP activities and structure
- Method: set up with multiple horses in the arena and various equipment around the ring (e.g., halters, lead ropes, crops). Ask participants to choose of the horses and bring the horse back to a pre-determined spot.

Processing demo (15 min.)

- When the activity is complete, ask about:
  - Why participants chose particular horses
  - Dynamics between horses, between horse and human
  - Parallels with human relationships
  - Similar or parallel situations participants have experienced

Part 2: 12-1pm
H.O.R.S.E.

MATERIALS: 1 horse; poles; 1 jump; cones; mounting block

Activity: ***H-O-R-S-E*** (p. 86) (50 min.)

b. Key Ideas: Creative thinking, choosing and being role-models, managing competition, clarifying beliefs and definitions (of success, determining success, of rules and how they are formed)
c. Method: Ask participants about their experience with the basketball game of the same name. Explain the revised version, using real horses. Taking turns, each participant will have an opportunity to set a goal for something they will try to get the horse to do (e.g., pick up its hoof). They will first state what they

intend to get the horse to do, and then they will try to do it. If they are successful, then the next person must also try to get the horse to do this. If they are not successful, then the initial person gets a letter and the next person sets a new goal and tries to meet it. When a participant ends up earning an 'E' (after 5 failed attempts), they will observe for the remainder of the game.

Processing demo: (10 min.)

- When the activity is complete, ask about:
  - How and why participants chose the activities/goals that they did
  - How success and failure were defined
  - How rules were defined and how these decisions were made
  - Whether participants cooperated or competed
  - How activity was perceived by participants (fun, stressful, etc.)
  - What worked and what didn't – the role creativity played
  - How horses responded at various times
  - Parallels to role models in real life

Appendix Q: Equine Passport

Equine Passport

Date Issued:

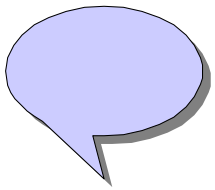
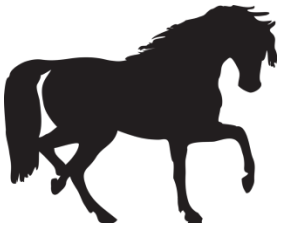
Name: _____

Favorite Horse: _____

Best Memory from the Barn: _____

_____

_____

Areas of Knowledge:				
 **Understanding the Language of Horses**	 **Basic Horsemanship Knowledge**	 **Approaching and Haltering**	 **Leading**	 **Obstacles**

Approved By: _____

Program Director

Appendix R: Skills Score Cards

Station 1 – Understanding the Language of Horses Station

Student Name: _____

	# of Attempts	Needed Multiple Choice?
Question 1		Yes No
Question 2		Yes No
Question 3		Yes No
Question 4		Yes No
Question 5		Yes No
Question 6		Yes No
Question 7		Yes No

Other Notes:

Station 2 – Basic Horsemanship Knowledge Station

Student Name: _____

	# of Attempts	Needed Multiple Choice?
Question 1		Yes No
Question 2		Yes No
Question 3		Yes No
Question 4		Yes No
Question 5		Yes No
Question 6		Yes No
Question 7		Yes No

Other Notes:

Station 3 – Approaching and Haltering Station

Student Name: _____

# of Attempts: Approach _____

Halter_____

Overall Confidence:	1 Minimal	2	3 Moderate	4	5 Lots
Overall Safety:	1 Unsafe Often	2	3 Unsafe Sometimes	4	5 Never Unsafe

Other Notes:

Station 4 – Leading Station

Student Name: _____

# of breaks (off the straight course) in line: _____

# of attempts: Circle _____

Halt _____

# of times horse broke stride (stopped, trotted): _____

Overall Confidence:	1 Minimal	2	3 Moderate	4	5 Lots
Overall Safety:	1 Unsafe Often	2	3 Unsafe Sometimes	4	5 Never Unsafe

Other Notes:

Station 5 – Obstacles Station

Student Name: _____

# of Attempts for Success: Approach _____

Taking control of horse _____

Walking over poles _____

Weaving through cones _____ (# knocked down: _____)

Changing direction _____

Weaving through cones #2 _____ (# knocked down:_____)

Backing through chute _____

# of times horse broke stride (stopped when not supposed to, trotted): _____

Total time to complete: _____

Overall Confidence:	1 Minimal	2	3 Moderate	4	5 Lots
Overall Safety:	1 Unsafe Often	2	3 Unsafe Sometimes	4	5 Never Unsafe

Other Notes:

Appendix S: Equine Assessment Protocol

Adapted from Fureix et al.'s (2009) measures of equine response to humans in non-work related contexts.

Date: _____ Time: _____ AM/PM

Name of Horse: _____

Name of Evaluator: _____

BEFORE or **AFTER** **session** *(circle one)*

1. Check for lameness or soreness (quick rub across body, legs, brief observation in turn-out for walk and trot gaits)

   ☐ Signs of lameness or soreness present ☐ None

2. Sudden Approach Test (handler walks down the aisle, then suddenly appears at the horse's stall while horse is feeding):

   ☐ Atypical reactions to approach, including: pinned ears, threaten to or actually kick out, bared teeth/bite attempt, startle response observed *(circle those that apply)*

   ☐ Typical reaction observed

3. Motionless Person Test (handler enters stall and stands with back against stall door, with eyes set on the ground:

   ☐ Atypical reactions, including: pinned ears, threaten to or actually kick out, bared teeth/bite attempt, startle response observed *(circle those that apply)*

   ☐ Typical reaction observed

4. Approach Contact Test (handler enters stall, stands 5 feet away and waits for horse to resume eating. Handler then approaches the animal from the side with a slow walk, eyes on the horse's shoulder, and arms at sides. The handler attempts to touch it on the neck):

   ☐ Atypical reactions to approach, including: pinned ears, threaten to or actually kick out, bared teeth/bite attempt, startle response observed *(circle those that apply)*

   ☐ Typical reaction observed

***If any of the atypical response boxes on the equine assessment are checked, the horse should not be used for study-related activities on that day. Behavioral assessment should be repeated the next day. Any horse determined to be unable to participate on three consecutive days shall be reviewed for suitability in the program.*

Notes:

Biographical Information

Jessica Iwachiw is currently a school psychologist in the Douglas County School District in Colorado, where she has lived since 2013. She completed her undergraduate degree in psychology with a minor in criminal justice at the State University of New York at Geneseo in 2008, and her doctoral degree in child, family, and school psychology at Alfred University in 2017.

Jessica has been a horse enthusiast since early in life. She began riding at age 6, rode on the varsity equestrian team during her undergraduate work at SUNY Geneseo, and continues to ride when she can. This lifelong love of horses, and the effect that she feels working with horses has had on her own personal development, inspired her to pursue the impact of horses on humans for her dissertation study.

JESSICA S. IWACHIW
jiwachiw@gmail.com

ACADEMIC BACKGROUND

Alfred University, Alfred, NY: Psy.D. in Child, Family and School Psychology *2017*
Alfred University, Alfred, NY: C.A.S. in School Psychology *2014*
Alfred University, Alfred, NY: M.A. in School Psychology *2011*
SUNY Geneseo, Geneseo, NY: B.A. in Psychology, Minor: Criminal Justice *2008*

AWARDS

Powell Academic Fellowship, *Alfred University* *January 2011 – May 2014*
Lea R. Powell Fellowship, *Alfred University* *September 2009 – May 2010*
National Psychologist Trainee Register Credentialing Scholarship *April 2013*

WORK EXPERIENCE

ThunderRidge High School: School Psychologist – 2016 to present
SkyView Academy: School Psychologist, Mental Health Team Lead – 2014-2016
Alfred University: Adjunct Instructor – 2012-2013

PUBLICATIONS AND PAPERS

Iwachiw, J., Schiavone, J., Ervin, B. & Pranckitas, E. (2010, February). *An investigation in friendship.* Poster presented at the annual meeting of the National Association of School Psychologists, San Francisco, CA.

Iwachiw, J., Button, A., Atlas, J., & Gaughan, E. (2012, August). *The impact of null results.* Poster presented at the annual meeting of the American Psychological Association, Orlando, FL.

Button, A., Iwachiw, J., & Atlas, J. (2013, August). The efficacy of academic consultation for college students with disabilities. Poster presented at the 2013 annual convention of the American Psychological Association, Honolulu, HI.