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Equine Assisted Activities and Therapies: The Measuring of Equine Temperament

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Abstract

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EDS, University of Wisconsin, 1991

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Dissertation Submitted in Partial Fulfillment

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Abstract

The field of equine assisted activities and therapies (EAAT) is growing in popularity as an alternative healing approach. However, there is a paucity of peer-reviewed research on the horses who serve as equal partners in EAAT. The purpose of this quantitative study was to discover the impact of equine-facilitated therapeutic activities on the temperament of horses, and to determine how to select a better human-to-horse therapeutic match when providing EAAT services. The theoretical framework for this research drew from Romanes' theory of animal intelligence, which predicts that temperament would change as a result of prolonged participation in specific work (EAAT in this case) that would cause the horse to reflect its associate's temperament. The study explored whether horses used in EAAT programs exhibit unique traits, whether the use of horses in an equine-human development program with clients diagnosed with health disorders affects the temperament of the horses over time, and whether a relationship exists between EAAT horses and positive therapeutic outcomes for clients. Sixty-four horse handlers in EAAT and 75 in control programs completed the Horse Personality Questionnaire (HPQ) designed to assess horse temperament. Temperament traits were then compared between EAAT and control horses, for horses participating at EAAT programs for different durations of time, and for horses that were more effective in treatment. Significant differences in temperament traits were present between horses in EAAT and control programs, as revealed by t-tests. The results identified traits of the most effective EAAT horses. This study contributes to social change by providing EAAT with a comprehensive horse temperament assessment that can inform efforts to unify and extend the field.

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Dedication

This dissertation is whole heartedly dedicated to my husband Anthony Helmbrecht Howard, children, Christine Moritz, and my Kamp KESSA family who have supported me throughout the lengthy process of becoming a Health Psychologist.

Acknowledgments

A public thank you must go again to my husband, my academic teachers, my wonderful chairs, Drs. Carmoney, Constantinidis, and Crocker, and to those who have insisted that I never give up.

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Chapter 1: Introduction to the Study

The topic of this study was horses who serve in the equine industry as partners in healing. These horses work with therapists, educators, and horse handlers to provide what Kohanov (2004) called a "divine mirror" for the clients they serve. The field of therapy in which these horses work is called equine-assisted activities and therapies (EAAT). Through the study of the horse's temperament and possible changes to it, the field can gain a better understanding of which horse to place with which client to facilitate the best outcomes in the healing process.

As a lifelong equestrian, horse trainer, and horse partner, I have found my passion in combining my skills as a horseperson with my skills as a scholar-practitioner. This study was needed to better understand how best to match horses with humans in EAAT settings while understanding the impact of the matching on the temperaments of the equines. The results add to existing empirical evidence confirming the efficacy of EAAT, and support the acceptance of EAAT as a viable therapeutic intervention.

If practitioners use the findings of my study, it is possible that previously unavailable options will be made available to better serve clients in EAAT programs, thus potentially creating a considerable impact on the world of equine therapy. Alternative therapies are struggling to maintain visibility and funding in the United States as insurance companies, drug companies, and medical providers are vying for available Medicare, Medicaid, and private insurance dollars. Safe, peer-reviewed research will assist providers in finding high-impact, effective alternatives to serve clients with physical and mental health issues.

In this chapter I include the background of the study, a statement of the problem, the purpose and nature of the study, the research questions, supporting theory, definitions, assumptions, limitations, delimitations, and a summary. My study built on research done by Lloyd (2007) on the temperament of horses in competition arenas. Lloyd conducted this study with the intent of finding the perfect horse for a specific event, and found that the use of a horse personality questionnaire (HPQ) resulted in better understanding the behavioral temperament of horses for specific tasks. There has also been a plethora of research conducted on the effects of EAAT on the well-being of the clients. However, there have been almost no peer-reviewed studies done on the effects of EAAT on the horses who serve in these programs. This lack of research on the horses highlights the need for my study, and marks the problem in the field of EAAT that I sought to address. The basic purpose of the study was to apply Lloyd's HPQ to horses who serve in EAAT programs. I assumed that the horse handlers who served as the informants in an online survey were capable of accurately and thoroughly responding to questions about the behaviors of the horses they handle. The geography delimitation of the study to Kentucky means that it will need to be either generalized to national programs or replicated for larger-scale viability.

In summary, horses have served clients with physical and mental issues for several decades with little or no peer-reviewed research to regarding the role of the horse. This study served to develop an awareness of the impact of EAAT intervention on the temperament of the horse and demonstrated a parallel direction for research in considering the impact not only on the client, but also on the horse.

Background of the Study

EAAT have been proven to be effective for the mental, emotional, physical, and spiritual welfare of humans (Cantril & Haylock, 2007; Chardonnens, 2009; Klontz, Biven, Leinart, & Kontz, 2007; Trotter, Chandler, Goodwin-Bond, & Casey, 2008). Horses have been effective in the treatment of autism (Bass, Duchowny, & Llabre, 2009), at-risk children (Trotter et al., 2008), children with mental, physical, and emotional traumas and addictions (Biven, Leinart, & Kontz, 2007; Chardonnens, 2009; Yorke et al., 2012), and cancer (Cantril & Haylock, 2007). However, very little is known about the effects of these therapeutic interventions on the horses. To date, there has been one study that points to how equines are affected by participating in EAAT services (Kaiser, Heleski, Siegford, & Smith, 2006). Kaiser et al. (2006) found no significant differences in the mean number of stress-related behaviors when horses were ridden by any therapeutic client with the exception of at-risk youth. When a horse was partnered with at-risk youth, the horse showed significantly higher stress behaviors over time. The researchers of this preliminary study used only 14 horses in one program setting. However, it has given impetus to practitioners in the field to seek out the perfect match of horse and human during the provision of therapeutic equine services.

Problem Statement

Horses have been used to reduce negative behaviors and increase positive behaviors in at-risk children (Trotter et al., 2008). Given the paucity of peer-reviewed literature addressing how equines are affected by working with clients in a therapeutic setting, I focused on gaining information about the horses who participate in the therapeutic activities with youth. The only study researchers currently have available

shows an increase in horses' stress- related behaviors when working with at-risk children (Kaiser et al., 2006).

I tested whether horses engaged in EAAT services with youth either were or were not affected temperamentally by participating in the program. The findings of this study regarding horse temperament can contribute to the continued effectiveness of EAAT which has already been proven effective for the human side of the equation. The research design of my study replicated that other studies which have addressed temperament in horses used in the disciplines of trail riding, showing and education (Lloyd, Martin, Bornett-Gauci, & Wilkinson, 2007). The population of horses engaging in the field of EAAT in Kentucky provided the participant pool I used for my research.

Purpose of the Study

The purpose of this quantitative study was to discover the impact of EAAT on the temperament of horses. Temperament, as defined here, is the novel personality of horses measured by observable behavioral characteristics noted in the HPQ that I used for this study. The resultant data provides the field with salient information that may foster the continued growth of the currently burgeoning field of EAAT. My study offers a different perspective from that of the clients who reap the benefits of equine therapy. I evaluated the horses as partners in the therapy, where decision making on their use can be essential to the human-horse bonding required for therapeutic alliance. The independent variables were related to the EAAT participants and included time in the program, length of sessions, number of sessions per day, and the ratio of physical to mental health diagnoses of the clients that participated with each horse. The dependent variable was the temperament of the horse as determined by the HPQ.

Nature of the Study

Horses have been the subject of study for centuries (Caballarius, 1859; Farrall, 1858; Hamlin, 1808; J, 1853; Pegge, 1775). My study was new inasmuch as it pertained to the horse's partnership with humans in a healing endeavor, and to the effect this partnership has on the horse's temperament. Equine facilitated activities have come into popularity as a method for working with many different populations (Bizub, Joy, & Davidson, 2003). The healing nature of horses has been long appreciated (Garcia, 2010). From the time of the Crusades to the 2010 Equestrian Games in Lexington, Kentucky, the horse has been touted as an amazing creature. The study focuses on the healing nature of horses and ecological consciousness as a healing medium. Horses were the subjects, and their handlers (as participants) assessed possible temperament changes as the horses worked with clients. My goal was to facilitate the health and emotional wellbeing of horses as they meet the rigorous demands of EAAT service.

Research Questions and Hypotheses

This study addressed the following questions:

Research Question 1 (RQ1): Does the use of horses in an EAAT program for clients diagnosed with health disorders affect the temperament of the horses?

Ho_1: There is no significant difference in the temperaments of horses participating in EAAT programs and horses not participating in EAAT programs.

Ha_1: There is a significant difference in the temperaments of horses participating in EAAT programs and horses not participating in EAAT programs.

Ho$_2$: There is no significant difference in the temperaments of horses participating in EAAT programs serving youth diagnosed with physical disabilities and youth diagnosed with mental disabilities.

Ha $_2$: There is a significant difference in the temperaments of horses participating in EAAT programs serving youth diagnosed with physical disabilities and youth diagnosed with mental disabilities.

Research Question 2 (RQ2): Does the duration of time a horse participates in an EAAT program affect their temperament?

Ho$_3$: There is no intrusive influence of duration on the temperaments of horses participating in an EAAT program.

Ha $_3$: There is an intrusive influence of duration on the temperaments of horses participating in an EAAT.

Research Question 3 (RQ3): Can we better match horse and patient for EAAT?

Ho$_4$: Horse temperament predicts best outcomes for patients with physical versus mental disabilities.

Ha$_4$: Horse temperament does not predict best outcomes for patients with physical versus mental disabilities.

Theoretical Base

George Romanes' theory of animal intelligence reflects his hypotheses regarding the horse's emotional attachment to man "sic" (Romanes & Darwin, 1883). Romanes purported that the horse's intellect is reflective of man's desires and emotive states. Criticism of Romanes' theory includes the fact that he based his theory more on observation than empirical evidence (Epstein, 1994). His foundational studies will

provide a frame from which to reflect as my data will either support or refute his findings. Romanes' findings would support the horse reflecting the personality and behaviors of the client he or she serves. Thus, the horse's temperament would change as prolonged access to specific work (or EAAT in this study) caused the horse to reflect its associate's temperament.

Definitions

The following definitions clarify terms that exist within the field of equine activities and therapies. For the purpose of the dissertation the term EAAT program has been used as an umbrella term unless paraphrasing a source. All definitions below have been operationalized from the Professional Association for Therapeutic Horsemanship (PATH) handbook (2012).

Equine-Assisted Activities and Therapies (EAAT): A general term used to refer to both equine-assisted activities and equine assisted therapy.

Equine-Assisted Activity (EAA): Any specific activity, such as therapeutic riding, mounted or ground activities, grooming and stable management, education, schooling, and so on, in which the clients, participants, volunteers, instructors, and equines are involved.

Equine-Assisted Therapy (EAT): Treatment that incorporates equine activities and the equine environment. Rehabilitative goals are related to the patient's needs and the medical professional's standards of practice.

Equine-Facilitated Learning (EFL): An experiential approach to teaching and learning with the help of horses for the purpose of promoting human growth and development. EFL is also referred to as EAA.

Therapeutic Riding: Uses equine-assisted activities for the purpose of contributing positively to cognitive, physical, emotional, and social well-being of people with disabilities. Therapeutic riding provides benefits in the areas of therapy, education, sport and recreation, and leisure.

Equine-Facilitated Psychotherapy (EFP): A form of experiential psychotherapy that includes equine(s). It may include, but is not limited to, a number of mutually beneficial equine activities such as handling, grooming, longeing, riding, driving, and vaulting. EFP is also referred to as EAT.

Assumptions

There were several assumptions I made related to the participants and data I obtained for this study. First, I assumed that the instruments for collecting data were administered in a consistent manner, and that each survey informant had the capacity to understand the questionnaire and demographics provided by informants. I also assumed: a) that the participants were able to evaluate horse temperament based on their previous training as a horse handler; b) that the sample of horses used was representative of breeds of horses commonly used in the field of EAAT and; c) that the instruments used provided accurate description of horse temperament.

Limitations

There is little research in the area of stress in horses, and the paucity of scholarly, peer-reviewed research is even greater. However, the research that has been conducted

has been methodologically sound. At present, more university researchers are studying the area of stress in horses because horses are increasingly being used in partnership with humans for many ventures (Kentucky Equine Education Project, 2007). I did not conduct an exhaustive study of temperament in horses. However, this dissertation includes the most relevant share of the scholarly research available on the subject. There is little discrepancy of results within and across scholarly findings regarding the causes and implications of stress in horses.

Scope and Delimitations

The population and the participants of the study were located throughout the U.S. state of Kentucky. Although there is a plethora of horse programs in Kentucky, the uniqueness of the area may limit application of my study to programs outside of the state.

Significance of the Study

The results of this study may provide those working in the field of EAAT with data to help them make decisions regarding which horse to utilize in a therapeutic partnership given the client's needs and projected duration of service. There are several associations (see Appendix A) that support standards of operation in EAAT, and I solicited their help to recruit participants who served as respondents to the questionnaire.

My rigorous research with horses and clients revealed possible avenues of healing that have only been alluded to in the past, and that situate the horse as an equal partner. Positive social change often comes from considering alternatives to the *status quo* (Kohanov, 2004). Horses are sentient beings, and this study has demonstrated the gifts they are to humans and how they can provide us a divine mirror upon which to reflect.

The time is upon us to devote serious research to the equine partner, and to understand them as healers.

Summary and Transition

In this chapter I have laid the framework for my project which served to help determine a healthy process for the horse and human healing connection. In the background section, I reviewed articles which provided findings that, while not directly geared toward therapeutic equine studies, were useful as I designed my study. The problem I addressed was whether EAAT services to clients impacts the temperament of the horse serving in this intervention method. The purpose of the study was to use the HPQ in an online survey to find out whether the equine was affected in the EAAT process. The study was quantitative in nature, and the main research question queried whether EAAT impacted the temperament of the horse involved. I reviewed definitions and assumptions, and considered the scope and delimitations of the study. I also noted limitations, namely the paucity of peer-reviewed research available, and delimitations including the limited geographic area involved in the study.

This study is significant because it considered all of the sentient beings involved in the EAAT partnership. Historically, horses have served humans and provided us with a strong foundation for the horse-human connection. With mindful consideration of the past combined with tools for evaluating the present, a new, mutually beneficial horse-human relationship may emerge and contribute to the future success of EAAT programming.

In Chapter 2, I discuss the findings of my review of peer-reviewed research, and I identify the gap that I sought to address with my study. In Chapter 3, I describe the

quantitative research approach that I used to determine whether EAAT activities have significant effects on the horse's temperament. Chapter four explicitly describes the results of the study and which personality traits differed between groups. Chapter five discusses the possible uses of the results within the field of EAAT, the limitations, and the possibilities of future research based on this study.

Chapter 2: Literature Review

Introduction

Temperament is what makes an individual unique, and it reflects the characteristics that account for patterns of thinking, behaving, and feeling (Pervin & Oliver, 1997). Animal research has given us the opportunity to explore the uniqueness of temperament, and Watson's (1930) work on animal behavior helped establish psychology as a legitimate field of study (Pervin, 1984). He believed that through long-term observation of an animal's behaviors, he could determine an animal's temperament. Watson's methodology was at the forefront of efforts to establish objective methodology in the field of psychology in general (Pervin, 1984). Animals have served to help us explain human behavior. It is now time for us to consider these same animals, as sentient beings, in their own right, as worthy of research that will lead us to partnering with them as important sentient beings for the healing of our youth today.

In recent research, more and more emphasis has been placed on the human-animal bond (Fine & Beck, 2010; Sherman & Serpell, 2008). EAAT programs, including but not limited to equine therapy, equine assisted learning, centered riding, hippo therapy, and therapeutic riding, have provided additional tools for fostering human health. Research results have given rise to more natural ways of working with humans who struggle with such health issues as post-traumatic stress disorder, depression, anxiety, relationship disorders, eating disorders, physical disabilities, and grief and death. Not much research has been done to address the equine partner in this therapeutic process which has possibly led to confusions or disruptions in the therapist-client-equine healing triangle (Lloyd, Martin, Bornett-Gauci & Wilkinson, 2008). Gosling and John (1999), Gosling (2001),

and Gosling and Vazire (2002) have all argued that research efforts on mammals need meet to increase reliability due to the paucity of findings available.

In this chapter, I first review the strategy I used to review scholarly literature review. I then provide a history of animal temperament for its own sake. I proceed to discuss the horse-human interaction as it has been understood by researchers. And, finally to describe the instrument I used to assess the temperament of horses, and offer a summary.

Literature Search Strategy

The literature review includes available findings that assist in assessing equine temperament as well as making a connection with other species that have been participants in research, promoting a case for the necessity of taking an objective look at the temperament of the horse in EAAT programs. Early animal research conducted by Watson and Pavlov was largely based on physiology. They linked traits such as central nervous system properties to what is today referred to as temperament (Strelau, 1997). Their findings led the way for a series of other researchers who developed studies based on dynamic or motivational concepts and personalities traits in the 1930s, 1940s, and 1950s, at which time research on animal personality significantly declined (Lloyd et al., 2007). In what follows, I provide a brief timeline of animal personality research in general and then target equine temperament research in particular, ending with a current look at available findings regarding methods, instrumentation, and results.

Pertinent peer reviewed literature was searched through the Walden University library services, querying Psychology abstracts, ERIC searches, Phoenix psychology abstracts, and Universities of Kentucky, Wisconsin, Texas, and Iowa library searches

particularly in the animal science abstracts. Animal Behavioral Science journals provided the most consistent research information. Equine personality, equine temperament, equine healers, equine participants in therapy, and the same terms substituting horse for equine yielded reference journal and peer reviewed studies for the topic.

Theoretical Foundation

Pavlov argued that an animal's phenotype was based on the development of its nervous activity within an environment (Strelau, 1997). While Pavlov used classical conditioning (1952) and Skinner (1932) used operant conditioning, both studied animal behavior or the personality of animals in a constant environment. Yerkes (1939) began his animal research with the premise that an animal mind is similar to a human mind. Yerkes studied chimpanzees and likened them to humans in development, social relations, physiological, and behavioral processes. Hebb (1949) followed with chimpanzee research and found personality difference among chimpanzees, but stability of individual personalities across time. Hebb suggested that his findings indicated the need for further study of personality. Weinstein, Capitano, and Gosling (2008) compiled animal personality/temperament research and found very little research was conducted in the 1950s and 1960s. *Animal Social Psychology* (Zajonc, 1969) presented an inclusive document of known animal personality studies.

Temperament, or personality studies in animals have been more prevalent in the past couple of decades. Through the use of comparative studies, which look at personality aspects such as biology, genetics, and environment, we have been made more aware of the sentient nature of animals (Gosling & Vazire, 2002). Gosling (2001) reviewed 187 animal personality studies which included 64 different species, although most of the

animal personality studies attempted to examine individual differences. Most of the dog research has been conducted for the purpose of identifying temperament, has been devoid of a comparative nature, and generally has been geared to understanding the suitability of specific breeds for specific job-related positions such as guide dogs, police dogs, and therapy dogs (Jones & Gosling, 2005). Jones and Gosling identified common personality traits in dogs including reactivity, fearfulness, activity, sociability, responsiveness in training, submissiveness, and aggression. One of the largest personality studies of dogs was conducted by Svartberg and Forkman (2002), who studied the temperament traits of over 15,000 dogs. The results of their research yielded data reflecting how to determine playfulness, curiosity, fearlessness, chase-proneness, sociability, and aggressiveness in dogs, all of which are highly relevant to the employment of dogs as work animals. This personality research, especially on dogs, has paved the way to considering the animal therapy world in a different light.

Animal Therapy

Historically, animals have been portrayed as associates, friends, and hunting partners for thousands of years. Furthermore, Hooker, Freeman, and Stewart (2002) maintain that animals have been used to bring about healing for hundreds of years. They purport that domestication occurred as animals showed interest in providing companionship and comfort. O'Haire (2010) has argued that humanity's view and belief system regarding a particular animal played a role in how that animal could be used to facilitate human healing. Since the middle of the 20th century, there has been a considerable range of animals used for treatment of human ailments, and animals have been found to be especially effective for treating the emotional, mental, and physical

ailments of children and youth. Animals have been used in schools, hospitals, and treatment settings as healing partners since the 1960s. Dogs, cats, birds, horses, donkeys, snakes, and rabbits are the most frequently sought after healing partners, and they have been used primarily for tactile, auditor, and other sensorial contact (Hooker et al., 2002; Matuszek, 2010). Service animals are most commonly used by the blind and by others with physical disabilities. The presence of service animals in public settings has created a host of related issues over the years, and has thus let to the creation of standards for acceptable behaviors in order for the animal to receive service certification (Fredricksson-MacNamara & Butler, 2010).

Horses as Healers

The horse-human connection is a human development tool and a historical phenomenon beyond the scope of this dissertation (Hausberger, Roche, Henry, & Visser, 2008; Mills, 1998). However, a brief description of the uses of horses as a treatment modality is necessary to offer perspective as to why this study is so important to the field. In a 2003 study, Benda, McGibbon, and Grant found that after 8 minutes of EAAT, there was a significant positive change in muscle activity in a population of youth ages 4-12 diagnosed with spastic cerebral palsy. In another study of children who were victimized by intra-family violence, participants were given a mean number of 19 sessions of EAAT. Results demonstrated a statistically significant correlation between the percentage improvement in the Global Assessment of Functioning (GAF) scores and the number of EAAT sessions given (Schultz, Remick-Barlow, & Robbins, 2007). Autistic children participating in EAAT have exhibited greater sensory seeking, sensory sensitivity, social

motivation, and less inattention, distractibility, and sedentary behaviors (Bass et al., 2009; Yorke, Adams, & Coady, 2008).

EAAT has been used extensively with at-risk children with mental health disorders, and has been found to be highly effective in assisting them in social reintegration and social habilitation (Trotter et al., 2008). Chardonnes (2009) found that EAAT helps clients begin to trust again, to stop holding themselves back in life, and to reengage in intimate relationships. Bonding with a horse is a singularly buoying experience, giving humans an outlet for their fears and anxieties while promoting leadership skills and responsibility. It also provides a visceral, tactile understanding beyond intellectual awareness. In their work with families, Klontz et al. (2007) found horses' to be useful for identifying patterns of familial interaction because the horses provided participants the context to work within a non-threatening environment to try out new behaviors and receive instant feedback. They found that EAAT helped in the discovery and treatment of the crucial role the family plays in the development of emotional regulation. Emotional regulation is inclusive of grief, neglect, relationship attachment, and emotional and physical trauma. Furthermore, the client often believes that one of the greatest benefits of EAAT is the opportunity to have a creative experience with another being without having to worry about the psychological baggage of another person (Lentini & Knox, 2008). For some clients, working with the horses is the first time in their lives they've felt an authentic relationship with another being. This horse-centered relationship is about contact, connection, and interaction instead of the manipulation and abuse that characterizes so many human-human interactions (Lentini & Knox, 2008).

Horses as Temperamental Partners

Lloyd et al. (2008) identified 48 specific horse temperament traits using a non-specific breed pool of participant horses. In an earlier study, Viser et al. (2001) likewise identified temperament trait differences, but noted that as the horses changed circumstances, they were unable to maintain temperament consistencies. Contrary to these findings, Lansade, Pichard, and Leconte (2008) found that personality tests including facets of arousal and sensation provided strong evidence of stability over time and across events or situations. Reactivity or arousal influences manageability and overall usefulness in specific tasks, and is the most researched trait in the horse personality literature (McCall, Hall, McElhenney, & Cummins, 2006). Le Scolan, Hausberger, and Wolff (1997) found a negative correlation between emotivity and learning abilities. Using handlers as informants, they found that the more reactive the horse, the more socially dependent it is. A horse's avoidance of strange objects correlated with a longer inability to change tasks. Socialization studies focused on Horses' response to odors, food, visual stimuli, sounds, touch, their reactions of confinement, and their proclivity for running away with riders have all yielded indicators of temperament (McCall et al., 2006).

Morris et al. (2002) studied horse temperament using the human Big Five factors of Extraversion, Neuroticism, Openness to Experience, Agreeableness, and Conscientiousness. Horse handlers rated Extraversion and Neuroticism more frequently than any other of the Big Five factors. Horses also demonstrated less extraverted behaviors and more conscientious behaviors over time when they were used regularly. The populations studied were show jumpers, event horses, ceremonially used horses, and lesson horses. Over time lesson horses and ceremonially used horses (weddings, funerals,

parades, etc.) were less sociable and less open to new experiences. Additional dimensions studied in horse temperament research were dominance, anxiousness, excitability, protection, sociability, and inquisitiveness (Lloyd et al., 2008); reactivity to humans, locomotor activity, fearfulness, and social motivation (Lansade et al., 2008); and understanding, anxiety, and novelty seeking (Momozawa et al., 2003).

Temperament Assessment

Equine temperament assessment is presently involved with either the classification and assessment of a given behavior observation (Anderson, Friend, Evans, & Bushong, 1999; Le Scolan et al., 1997; McCall et al., 2006; Visser et al., 2001, 2002, 2003, 2008; Wolff, Hausberger, & Le Scolan1997; Seaman, Davidson, & Waran, 2002) or the observation of horses over a variety of environmental events and completion of a questionnaire or survey (Anderson et al., 1999; French, 1993; Le Scolan et al., 1997; Lloyd et al., 2007; Momozawa et al., 2003, 2005; Morris et al., 2002; Wolff et al., 1997).

The efficacy of questionnaire or survey-based approaches to research has been well documented and demonstrated across a variety of animal species, and has been the main method used by humans to assess peer and self-personality traits (Pervin & John, 1997). Morris et al. (2002) used a human personality rating system as an equine personality assessment while French (1993), Anderson et al. (1999) and Momozawa et al. (2003, 2005) created behavioral adjectives to create a rating scale. Le Scolan et al. (1997) utilized a rating system dependent upon situationally specific behaviors along with specific behavioral observation. Only Lloyd et al. (2007) to date used an assessment previously used with other non-human animals.

The Stevenson-Hinde and Zunz (1978) and Stevenson-Hinde et al. (1980) method of assessing the rhesus macaques was adapted for a studying a variety of species including hyenas (Gosling, 1998), gorillas (Gold & Maple, 1994), cats, (Feaver et al., 1986), cheetahs (Wielebnowski, 1999), chimpanzees (Martin, 2005), pig-tailed macaques (Caine et al., 1983) and equines (Lloyd et al., 2007). Principal component analysis (PCA) of the results assisted researchers in identifying components of personality and allowed further exploration of personality structures of each species studied.

Gosling and Vazire (2002) developed three criteria (adapted from Kenrick & Funder, 1988) that animal research should address in order to increase reliability. They were:

1. Independent observers completing a questionnaire must agree with each other.
2. Outcome must have real-world implications and predict behaviors.
3. Ratings must reflect genuine attributes of the specie rated, devoid of subjectivity noted by the observer or rater.

Lloyd et al. (2007) found that none of the previous equine personality or temperament research met all three criteria, which led to the development of the horse personality questionnaire (HPQ). The construction was based on a 25 item survey conducted by Stevenson-Hinde and Zunz (1978) and Stevenson-Hinde et al. (1980), which had previously been proven its adaptability across species. The behaviors rated were traits expressed as adjectives relating to horses: suspicious, hardworking, and reliable developed by Morris et al. (2002) and two more: stubborn and intelligent, added by Lloyd et al. Horses were rated on these 30 behaviorally defined adjectives (BDA) on a 7-point Likert-type scale (Coolican, 2004). The scores ranged from one (no expression)

to a seven (total expression). Further demographic information was collected regarding the horse handler's intensity and duration of relationship with the individual horse assessed. Two to three separate raters responded on each horse for all 30 BDAs. The horses were livery horses in the UK, from a variety of breeds. They were service horses in the community owned by individuals at 2 different liveries. They were handled often and participated in light exercise. The Kendall coefficient of concordance was used to calculate the scores between the three raters. Lloyd et al. also used Spearman's rank-order correlations for further clarification of possible correlations. Questionnaires by the raters of the same horse not scoring significant correlation were dropped from the study as unreliable BDAs. Data from 44 reliable horses were ultimately analyzed with Principal Component Analysis with varimax rotation. The results for the mean *W* and *r* values for significant association between raters was .61 and .51, which respectably match findings from the other animal studies (Gosling & Vazire, 2002) as well as those personality studies done on the human animal (Funder et al., 1995) providing evidence for the existence of equine temperament (Lloyd et al., 2007).

The Horse-Human Interaction

Findings indicate that the horse in an EAAT session is an active, responsive sentient being that encourages human self-expression and improves self-esteem (Reichert, 1998). The horse creates an avenue from which projection and self-identification, as well as a safe place to show emotions, is realized (Fine & Beck, 2010). Fine (2010) found that indirectly, the horse is responsible for a client's positive response to physical touch, reinforcement of proper touch or extinction of improper touch. Frame, as cited in Bachi (2013), found that horses often relate to clients as their herd. This fact

can both be positive as a way to mirror their present adolescent group peer behaviors per se as well as negative via the creation of a possible danger. A natural herd has a well-defined pecking order which can look aversive to an outsider and must be monitored carefully by a well-trained horse handler in the human development session. The field of EAAT as an umbrella term for equine assisted learning, equine therapy, equine counseling, etc., is relatively new (Kazdin, 2010). In order to understand the total dynamic the field of equine therapy is working with, it must do more research on what makes the outcomes different.

Summary

A considerable amount of research has assessed mammal species for personality. Gosling (2001) clearly demonstrated that personality differences exist among individuals of various species. A limited number of equine personality studies have demonstrated that within breeds of horses there exist like temperaments that are labeled breed-typical behaviors (Lloyd et al., 2008). Equine temperament studies across breeds have been studied even less rigorously for the purpose of their usability (Lloyd et al., 2008).

The paucity of research on horses' temperament has been documented herein with even less rigorous research data available to date on the horses used for EAAT purposes. Chapter 3 includes the definition of the use of the horse personality questionnaire (HPQ) with 75 horses who participate in an EAAT program to assist the field in determining whether there is a measureable impact on their temperament while participating.

Chapter 3: Research Method

Introduction

This chapter opens with a description of the research design, the approach I used, and a justification for the design. I outline the logical trajectory that led from the problem to the research methodology. Next, I offer a discussion of the setting and the sample, including size, eligibility criteria, and characteristics of the participants chosen for study. Following this discussion, I present instrumentation that I used, and explain the procedures for collecting and scoring the data. When discussing data collection, I also address reliability and validity issues regarding the HPQ instrument that I used. I next discuss directions I provided participants concerning completion of the questionnaire, and then offer detailed descriptions of the study's dependent and independent variables. Finally, I present data collection and analysis procedures, describe the tabulation process of the nominal data, and discuss ethical considerations.

Hypotheses

This study addressed the following questions:

Research Question 1 (RQ1): Does the use of horses in an EAAT program for clients diagnosed with health disorders affect the temperament of the horses?

Ho_1: There is no significant difference in the temperaments of horses participating in EAAT programs and horses not participating in EAAT programs.

Ha_1: There is a significant difference in the temperaments of horses participating in EAAT programs and horses not participating in EAAT programs.

Ho$_2$: There is no significant difference in the temperaments of horses participating in EAAT programs serving youth diagnosed with physical disabilities and youth diagnosed with mental disabilities.

Research Question 2 (RQ2): Does the duration of time a horse participates in an EAAT program affect their temperament?

Ho$_3$: There is no intrusive influence of duration on the temperaments of horses participating in an EAAT program.

Ha $_3$: There is an intrusive influence of duration on the temperaments of horses participating in an EAAT.

Research Question 3 (RQ3): Can we better match horse and patient for EAAT?

Ho$_4$: Horse temperament predicts best outcomes for patients with physical versus mental disabilities.

Ha$_4$: Horse temperament does not predict best outcomes for patients with physical versus mental disabilities.

The independent variables were related to the EAAT session. These variables included time in the program, length of sessions and number of sessions per day, as well as the ratio of physical to mental health diagnoses of the clients that participate with each horse. The dependent variable was the horse's temperament as determined by the HPQ. I used demographic data to test the hypotheses regarding duration of time and presenting conditions as a possible contributing factor in the increase or decrease of horse temperament characteristics.

Research Design and Approach

I used questionnaire and the survey research method because it allowed me to easily generalize the data from a sample to a population, and enabled me to make regarding the behavior of the population (Creswell, 2009). Furthermore, my research questions lent themselves to the survey method because the information could be obtained economically, within a given time frame, and provided data reflective of the population at large (Fazio & Ferlazzo, 2003). The survey was cross-sectional and I collected the data in one session. I used the 30-item HPQ questionnaire in its entirety to provide the consistency needed to instrumentalize Lloyd et al.'s (2007) for the specific needs of my study.

Setting and Sample

The population I studied was horses who engage in EAAT activities at programs that have a minimum of 10 horses and whose horse handlers are members of Professional Association of Therapeutic Horsemanship International (PATH) or Equine Growth and Learning Association (EAGALA), and whose program is also a member of one of these certifying bodies. Both of these international, therapeutic, equine associations have their home offices in the United States. Both therapeutic associations have certifying bodies which set standards for operation, inclusive of horse and human interaction, equine selection for EAAT, and requirements for continuing education for those who have certifications in each respective association. I collected data from programs in Kentucky in the order that they appeared on the sampling list.

I used a random sampling technique to select EAAT programs that work with a minimum of 10 horses. All the horses at each randomly selected program were invited to

participate in the study. I used the demographics provided to a certifying body by the Kentucky EAAT programs to determine eligibility. I sent blind carbon copy (BCC) invitations to all EAAT programs that were a member of an equine certifying body, requesting to have their horse handlers participate with the limited target number of respondents being 64. This number was based on the number of equines needed to insure reliability. I emailed the directors of each program to see if they wanted to participate in the survey, and then asked them to provide names of horse handlers to participate. I then contacted prospective participant horse handlers via BCC email. The contact information of program directors is voluntarily provided to the therapeutic association in which they have membership.

The control group included Kentucky horses, which are required to be counted by the state annually via a survey conducted by the Kentucky Equine Education Project (KEEP). The at-large population of horses in Kentucky served as the group from which I collected and analyzed a random sample. I asked this sample to participate in the same HPQ, and made comparisons with the experimental group based on the mean differences on each item. I provided all participants a link that allowed them to complete their participating agreements, and access confidentiality documents and the online survey. I limited the research to programs that engage a minimum of 10 horses in order to generate a more homogenous group of horses within the least number of programs for efficacy sake, and to increase the probability of there being two horse handlers to evaluate every horse.

Demographics of each horse were provided by the horse handlers and indicated the horse's age, time spent in program including duration in years and months, times per

week, length of sessions, and primary disability category of the clients the horse serves (that is, physical health versus mental health). No specific information regarding children or youth was provided other than this gross categorization.

I conducted a power analysis using GPower3 software to determine the appropriate sample size for the study. An *a priori* power analysis, assuming a medium effect size (f = .30), a = .05, indicated that a minumum sample size of 64 participants was required to achieve a power of .80. Therefore, I sought 75 horses for the study. I determined that this sample number would provide the necessary data for a desired outcome, considering attrition (Gravetter, 2012).

Measures

I used the HPQ which included a Likert-type scale (Lloyd et al., 2007). The HPQ is a four page document including both demographic questions (Appendix B) about both the horse and the owner, and a list of 30 behaviors accompanied by their descriptions. The horse handler informant, selected at random using a systematic sampling technique from the PATH and EAGALA list serve of horse specialists, scored the horse by circling a number ranging from 1 (no expression) to 7 (total expression) of a behavior. I distributed the HPQ (Appendix C) using an online anonymous survey. I sent a brief email letter to participants prior to the start of the study describing survey participation, a timeline for completion, email address for any questions the participants may have, the anonymity of the process, how the data would be utilized, and how they may obtain access to the results (Appendix D).

The Horse Personality Questionnaire (HPQ)

The HPQ is a 30 item questionnaire that was developed by Lloyd (2007) based on the personality assessment research by Gosling (2001). The instrument is valid and reliable with the mean *W* and *r* values for significant associations between raters being .61 and .51, respectively, with raters agreeing on scores of 72.1% of the horses participating (Lloyd, 2007). The HPQ is a four page online document inclusive of demographic information (Appendix B) regarding both the horse and the program, as well as the 30 behavioral descriptors and their definitions, and a Likert scale to which each participant responded. A horse handler (including staff and owner) must have a current relationship with the horses being observed. I provided instructions for how to complete the survey. Each horse observed had two raters, and I instructed the raters not to share their responses with the other rater observing the same horse.

Statistical Analysis

The following paragraphs explain what was tested, what variables were examined, what the sample size was, what the level of significance was, and what result led to the rejection of the null hypothesis for each research question.

The first hypothesis was that there is not a significant difference in temperaments of horses participating in EAAT programs from horses not participating in EAAT programs. I used a *t* test to analyze the difference between non-EAAT horse and EAAT horse results. The purpose was to compare the mean ordinal number that results from each sample populations' response to the HPQ. The *p*-value must be lower than .05 in order to reject the null hypothesis.

The second hypothesis was that there exists no significant difference in the temperaments of horses participating in EAAT programs serving youth diagnosed with a physical disability from youth diagnosed with a mental disability. I used a *t* test to determine whether there existed a significant difference between the results from equines used with each independent group. The independent variable was the type of disability, and the hypothesis was tested at a level of significance of less than .05.

The third hypothesis was that there is or there is not a significant difference in the temperament of the equine participating in therapeutic sessions based on duration of time (less than or greater than 6 months) a horse serves in the program. I analyzed the data using a *t* test analysis and a *p*-value of less than .05 to reject the null hypothesis.

The last hypothesis states that horse temperament does or does not predict best outcome. The demographics questionnaire contained a question on level of progress made toward goals 1 (very little), 2 (some progress made), or 3 (significant progress made) for patients with physical versus mental disabilities. I used the Spearman's rank order coefficient (r_5) (Siegel & Castellan, 1988) for analysis of ordinal data obtained from the survey on horse temperament variations relative to each population of clients (clients with physical disabilities and those with mental disabilities). Specifically, I used Spearman's rank order coefficient to see the relationship that may exist between the two, knowing that temperament may significantly change for both in the same direction, may have no significant change, or may be significantly different. Using a *p*-value of .05, I would reject the null hypothesis if the level fell below the critical value.

The study used the unique rating method employed by Lloyd et al. (2007), based on the adapted version of the Stevenson-Hine et al. (1980) questionnaire. Lloyd et al.

found that the HPQ was a reliable method of assessing horse personality and that it correlated with observed behaviors significantly. They concluded that the instrumentation developed by Gosling and Vazire (2002) for nonhuman personality assessment and adapted by Stevenson-Hine et al. (1980) was a valid, reliable method for gaining insight into the horse's temperament. Based on this previous investigation it may be possible to predict personality of horses who are specific to the equine discipline of human development programs. The results of interest of horse temperament provided a mean component score following a principal component analysis for each study. The mean component scores were saved as a variable and analyzed with Pearson's correlation using SPSS 21.0. This study provided a blueprint for further investigation in this most unique partnership between horses and humans, improved the overhead cost of the EAAT operation, and further improved the welfare of horses in general.

Threats to Validity

It is possible that some potential informants were not computer savvy and found this online survey intimidating or caused them to have anxiety affecting their ability to complete the survey adequately. An informant may not always know the demographics on each horse and human frailty may cause them to guess which could threaten the validity as well. Making the programs aware of the importance of the study up front and stressing the need for quality, peer reviewed research addressed this possible threat to validity.

Ethical Procedures

Section 8.09 of the Ethical Principles of Psychologists and Code of Conduct of the American Psychological Association has published standards on maintaining humane

treatment to nonhuman animals (APA, 2010). Utilizing animals for research is only allowed when the cost and benefits of procedures outweigh the research activity. It is with this guidance that I proceeded with research to further the field's understanding of the disposition of horses.

The level of risk to the horses themselves was low as no invasive procedures were carried out that might need to be addressed with the Institutional Review Board (IRB). Using animals for research purposes, in this study, will enable the field of equine therapeutic riding to better match healthy horses with humans with health concerns. Agreements to gain access to participants or data is included is in the appendices in accordance with IRB requirements. Informants will be told that all materials and personalized data will be destroyed following data analysis. Online data obtained from the survey was secured on a flash drive and will be saved for five years consistent with approval provided by the IRB (#09-30-14-0176753) and university committee. All future publication of findings will be devoid of personal identity.

Dissemination of Findings

The findings will be presented at future professional psychology conferences, at the Professional Association of Therapeutic Horsemen, the Certified Horsemen's Association National Conferences, and the Equine Association of Growth and Learning National conference in 2016.

Dr. Adele Lloyd, University of Texas, granted permission to use her Horse Personality Questionnaire (Appendix E). Dr. Sam Gosling, University of Texas (from which Dr. Lloyd's work was developed) agreed to allow his work to be used as well (Appendix E) in exchange for the research outcome contained in this study. I also intend

to find a publisher and submit a proposal for a book containing the work that I have done over the past 14 years as well as the research findings contained herein.

Summary

The research design was patterned after the study designed by Lloyd et al. (2007) and included a control group for comparative results. The HPQ was the sole survey instrument from which all data were analyzed. This included both the online questionnaire and the short demographic identifiers.

The research was cross sectional (regarding both physical and mental health disabilities) and may very well become the blueprint for future considerations of the selection of right tempered horses matched with their right human clients. The field of EAAT is burgeoning with new populations to serve and appear to have overlooked the needs of the silent partner – the horse.

Chapter 4: Results

Introduction

The purpose of my study was to determine the effect of EAAT services on the temperament of the therapy horse. Temperament, as defined in this study, is the novel personality of horses measured by observable behavioral characteristics noted in the HPQ that I used for this study. The evaluator assessed the temperament of horses participating in an EAAT program, temperament differences between horses participating in EAAT programs for youth diagnosed with physical disabilities and those diagnosed with mental disabilities, and the temperament of the equine participating in therapeutic sessions based on duration of time and/or as a predictor of clients' best outcome.

There is a paucity of peer-reviewed research on this topic, even within the body of members who comprise the organizations certifying EAAT providers. The results of this study will provide the field clarity and a common knowledge base from which the field can promulgate a unified and sustainable protocol as it more closely aligns with the mental health and medical fields as a professional partner.

I present the results of the data analyses in this chapter, which I have divided into three sections. The first section provides a description of the equine and human participants in EAAT programs, and the second section presents results regarding the impact of EAAT on the temperament of horses and our ability to better match client and horse for future EAAT consideration. In the third section of the chapter, I present the inferential statistical analyses I used to test the hypotheses.

Data Collection

I sent blind carbon copy (BCC) invitations to all EAAT programs in Kentucky that were a member of an equine certifying body. The program directors then forwarded the invitation to their horse handlers with a note regarding the voluntary nature of their participation. I sent identical invitations to non-EAAT stable program directors, and asked their horse handlers if they wanted to participate in the same fashion as the EAAT program participants. I conducted two separate, parallel surveys, one of handlers in the EAAT programs and the other of handlers in non-EAAT stable programs. Data were collected via an online survey (surveymonkey.com) from October 15th to December 27th, 2014. All participants in each group were eliminated from analysis if they knew the horse they were rating for less than 6 months. This criterion was based on the original HPQ study (Lloyd et al., 2008) and helped to make the instrument more reliable and valid.

I did not question the veracity of any of the responses, and I used all available information to obtaining results from both the treatment group and the control group. I got the initial contact information of program administrators from listservs provided by the Kentucky Equine Education Project, Certified Horsemen's Association, Kentucky Horse Council, Equine Growth and Learning Association, and Professional Association of Therapeutic Horsemen. I only considered Kentucky participants for this study. Initially, 150 program or stable administrators provided me with lists of prospective handler participants that totaled 725. I sent out 725 invitations for survey participation which included EAAT horse handlers and non-EAAT horse handlers. Of those, 64 EAAT surveys were completed and 75 non-EAAT surveys were completed, which represents a response rate of 19.2%, though it is possible that the 725 horse handlers contacted

directly requested that other horse handlers participate. This information is not available due to the anonymity of the survey and the mechanics of this type of distribution.

Chapter 3 presented my plan for data collection, a plan which I fully implemented. I contacted all participants as planned through the program administrators, and there were no discrepancies in data collection. Furthermore, no adverse events related to the online survey were reported. Some participants did not provide scores for all personality traits. As a result, those items not responded to in every survey (32–33 and 49–52) were not available for analysis for both the control and EAAT groups, respectively. Because 64 EAAT surveys and 75 non-EAAT surveys were completed, both groups met or exceeded the power analysis requirement for the study ($p < .05$).

Results

I collected data using two identical online surveys, one targeting the treatment group, and another the control group. A stable group was used as a control group. The means and standard deviation for temperament traits (30 characteristics) are reported in Table 1 below for the two groups.

Table 1

Group Statistics of EAAT versus Non-EAAT (Stable) Horses

	EAAT			Stable		
	N	*M*	*SD*	*N*	*M*	*SD*
Intelligent	33	5.88	1.293	49	5.82	1.523
Aggressive	33	1.91	1.422	51	1.76	1.142
Subordinate	33	3.94	1.694	51	3.55	1.724
Tense	33	1.88	1.576	51	1.98	1.225
Hardworking	33	5.64	1.454	51	5.92	1.111
Playful	33	4.24	1.562	51	4.12	2.113
Opportunistic	33	4.06	1.886	50	3.58	1.918
Irritable	33	2.21	1.816	51	1.82	1.072
Active	33	4.00	1.803	51	3.18	1.884
Effective	33	3.67	2.072	50	3.74	2.068
Reliable	33	5.76	1.37	51	5.65	1.508
Slow	32	4.09	1.957	51	3.59	2.09
Confident	33	5.55	1.227	51	5.61	1.15
Stubborn	33	2.94	1.731	51	2.49	1.642
Strong	33	5.15	1.544	51	4.78	1.973
Suspicious	33	2.39	1.836	51	2.18	1.532
Protective	33	4.03	1.571	51	3.67	1.894
Understanding	32	5.38	1.408	51	5.39	1.15
Permissive	33	3.79	1.728	51	3.9	1.628
Equable	33	4.88	1.781	50	5.08	1.563
Sociable	33	5.82	1.402	49	5.55	1.385
Fearful	33	1.79	1.244	51	2.14	1.575
Motherly	33	4.70	1.96	51	4.02	1.871
Apprehensive	32	1.84	1.526	52	1.85	1.211
Excitable	32	2.16	1.568	51	1.84	1.447
Insecure	33	2.55	1.769	51	2.1	1.345
Solitary	33	2.61	1.919	52	2.23	1.664
Curious	33	4.48	1.805	51	4.25	1.896
Eccentric	33	2.18	1.776	51	2.29	1.792

In this section, I present three research questions with associated hypotheses that I developed for this study. I used inferential statistical analyses to answer the questions and test the hypotheses. All decisions on the statistical significance were made using a criterion alpha level of .05.

RQ1: Does the use of horses in an EAAT program with clients diagnosed with health disorders affect the temperament of the horses?

Ho_1: There is no significant difference in temperament of horses participating in an EAAT program and horses not participating in EAAT programs.

Ha_1: There is a significant difference in temperament of horses participating in an EAAT program and horses not participating in EAAT programs.

I used two-sample *t* tests to evaluate the differences in temperament between EAAT therapy and control horses. The *t* tests indicated no significant differences between the EAAT group and the non-EAAT group, for any of the 30 personality traits, even without correcting for multiple comparisons. Only the trait "Active" approached statistical significance: $t(82) = 1.990$, $p = .050$. The null hypothesis was not rejected because there was no significant difference in temperament of horses participating in an EAAT program and horses not participating in EAAT programs. The results of this analysis are presented in Table 2.

Table 2

Results of t tests of EAAT versus Non-EAAT Horses

Personality Trait	*t*	*Df*	*p* (2-tailed)
Intelligent	.193	80	.847
Aggressive	.513	82	.609
Subordinate	1.020	82	.311
Tense	-.331	82	.741
Hardworking	-1.017	82	.312
Playful	.291	82	.772
Opportunistic	1.125	81	.264
Irritable	1.234	82	.221
Active	1.990	82	.050
Effective	-.158	81	.875
Reliable	.340	82	.735
Slow	1.099	81	.275
Confident	-.236	82	.814
Stubborn	1.199	82	.234
Strong	.904	82	.368
Suspicious	.587	82	.559
Protective	.917	82	.362
Understanding	-.061	81	.952
Permissive	-.306	82	.760
Equable	-.543	81	.589
Sociable	.852	80	.397
Fearful	-1.075	82	.286
Motherly	1.591	82	.116
Apprehensive	-.008	82	.994
Excitable	.929	81	.356
Insecure	1.313	82	.193
Solitary	.954	83	.343
Curious	.553	82	.582
Eccentric	-.281	82	.779

Ho$_2$: There is no significant difference in the temperaments of horses participating in EAAT programs serving youth diagnosed with physical disabilities and youth diagnosed with mental disabilities. The means and standard deviation for differences in

temperament (30 characteristics) for horses serving both physical and mental health clients and those serving only mental health clients are reported in Table 3.

Table 3

Group Statistics of Horses Serving Mental vs Mental and Physical Disabilities

	Mental			Mental & Physical		
	N	*M*	*SD*	*N*	*M*	*SD*
Intelligent	13	5.08	1.801	33	6	1.369
Aggressive	13	1.62	1.044	35	1.77	1.215
Subordinate	13	3.69	1.702	35	3.57	1.803
Tense	13	1.69	1.109	35	2.03	1.294
Hardworking	13	5.15	1.463	35	6.20	0.759
Playful	13	3.00	2.00	35	4.46	1.945
Opportunistic	13	2.69	1.377	35	3.77	1.972
Irritable	13	1.62	0.768	35	1.89	1.183
Active	13	2.92	1.847	35	3.37	1.911
Effective	13	2.92	2.139	35	3.91	1.976
Reliable	13	5.38	1.325	35	5.91	1.483
Slow	13	3.62	2.181	35	3.77	2.059
Confident	13	5.31	1.109	35	5.66	1.162
Stubborn	13	2.62	1.261	35	2.46	1.837
Strong	13	4.23	1.922	35	4.8	1.967
Suspicious	13	2.15	1.214	35	1.97	1.317
Protective	13	3.31	1.843	35	3.66	1.878
Understanding	13	5.15	0.801	35	5.51	1.222
Permissive	13	4.08	1.038	35	4	1.732
Equable	13	5.15	1.068	34	5.21	1.591
Sociable	13	5.31	1.032	33	5.52	1.503
Fearful	13	1.54	0.519	35	2.29	1.619
Motherly	13	3.23	2.006	35	4.23	1.832
Apprehensive	13	1.54	0.967	36	1.94	1.264
Excitable	13	1.69	1.377	35	1.89	1.53
Insecure	13	1.85	1.214	35	2.29	1.405
Solitary	13	1.77	0.832	36	2.33	1.724
Curious	13	3.46	1.808	35	4.34	1.83
Eccentric	13	1.69	1.316	35	2.49	1.946

RQ1 Ho_2: t-test results. I used a series of *t* tests to compare the differences in the scores of horses in EAAT programs serving both physical and mental health clients, and those serving only mental health clients. Table 4 reflects these results.

Table 4

Differences in Scores of Physical and Mental Clients versus Mental Clients Only

Personality Traits	*t*	*df*	*P*
Intelligent	-1.880	44	.067
Aggressive	-.410	46	.684
Subordinate	.209	46	.835
Tense	-.829	46	.411
Hardworking	-3.246	46	.002
Playful	-2.289	46	.027
Opportunistic	-1.810	46	.077
Irritable	-.764	46	.449
Active	-.729	46	.470
Effective	-1.511	46	.138
Reliable	-1.130	46	.264
Slow	-.230	46	.819
Confident	-.937	46	.354
Stubborn	.286	46	.776
Strong	-.896	46	.375
Suspicious	.435	46	.666
Protective	-.576	46	.568
Understanding	-.985	46	.330
Permissive	.150	46	.882
Equable	-.109	45	.914
Sociable	-.456	44	.651
Fearful	-1.624	46	.111
Motherly	-1.635	46	.109
Apprehensive	-1.050	47	.299
Excitable	-.399	46	.692
Insecure	-.997	46	.324
Solitary	-1.128	47	.265
Curious	-1.487	46	.144
Eccentric	-1.355	46	.182

In summary, 2 of 30 characteristics showed significant results ($p < .05$): hardworking .002, and playful .026. However, after applying Bonferroni correction for multiple comparisons, all 30 characteristics fail to reject the null hypothesis Ho_2. Therefore, the null hypothesis could not be rejected. The study does not indicate any difference in temperament of horses participating in EAAT programs for youth diagnosed with physical and mental disabilities, and those participating in programs for youth diagnosed with only mental disabilities.

It is possible that the time a horse spends in a program may affect its temperament. Research question two examined any possible influence duration may have had on the temperament of the horse.

RQ2: Does duration of time a horse participates in an EAAT program affect their temperament?

Ho_3: There is no intrusive influence of duration on temperament of horses participating in an EAAT program.

Ha_3: There is an intrusive influence of duration on temperament of horses participating in an EAAT program.

RQ2 Ho_3: t test results. I used a series of *t* tests to compare the differences in the scores of EAAT program horses serving clients from 6 months to a year, and horses serving clients over a year. Equal variance was assumed for all but three of these traits, for which Levene's test for equality of variances was rejected at the .05 level (Reliable, Protective, and Curious). I performed a two-sample *t* test assuming unequal variance for these traits. Table 5 reflects these results.

Table 5

Duration as a Factor

Personality Trait	*t*	*df*	*p*
Intelligent	1.288	47	.204
Aggressive	.426	49	.672
Subordinate	.241	49	.811
Tense	-.815	49	.419
Hardworking	.612	49	.543
Playful	1.636	49	.108
Opportunistic	1.000	48	.322
Irritable	.827	49	.413
Active	.909	49	.368
Effective	.510	48	.612
Reliable	1.183	49	.037
Slow	.160	49	.874
Confident	-1.103	49	.275
Stubborn	-.618	49	.539
Strong	.752	49	.455
Suspicious	-.918	49	.363
Protective	.915	49	.048
Understanding	.644	49	.522
Permissive	.762	49	.450
Equable	.556	48	.581
Sociable	-.827	47	.412
Fearful	-.840	49	.405
Motherly	.254	49	.800
Apprehensive	.262	50	.794
Excitable	.224	49	.824
Insecure	.233	49	.817
Solitary	.334	50	.740
Curious	.540	49	.179
Eccentric	2.045	49	.046

In summary, 3 of 30 characteristics showed significant results ($p < .05$): Protective $p = .048$, Reliable $p = .037$, and Eccentric $p = .046$. However, after applying Bonferroni correction for multiple comparisons, all 30 characteristics failed to reject the

null hypothesis H03. Therefore, the null hypothesis that the duration of time horses participate in an EAAT program affects their temperament could not be rejected.

RQ3: Can we better match horse and patient for EAAT?

Ho_4: Horse temperament predicts best outcome for patients with physical versus mental disabilities.

Ha_4: Horse temperament does not predict best outcome for patients with physical versus mental disabilities.

An initial *t* test was used to compare the differences in the effectiveness of treatment in EAAT programs of horses serving clients with mental disabilities alone versus horses serving clients with physical and clients with mental disabilities. Table 6 reflects descriptive statistics of the two groups.

Table 6

Group Statistics Matching Horses for Client Outcome Effectiveness

How Well Horse's Work Helped Treatment	*N*	*M*	*SD*	Std. Error Mean
Mental	14	5.71	1.069	.286
Physical	31	6.35	.798	.143

A 2-sample *t* test compared the mean values of effectiveness in treatment. Equal variance was assumed (Levene's test for equality of variances, $p > .05$).

Table 7

How Well Horse's Work Helped Treatment

	T	*df*	*p*
	-2.239	43	.030

The overall group statistics for RQ3 shows a significant value of .030 ($p < .05$). This rejects the null Hypothesis and establishes that treatment outcomes were best for horses serving both clients with mental and clients with physical disabilities versus horses that served clients with mental disabilities alone.

Subsequently, the Pearson's correlation coefficient was computed between the variable of how well a horse's work helped treatment, and each of the personality traits. It was necessary to divide the groups by both mental and physical and purely mental disabilities after seeing that programs that served youth with physical disability issues also served clients with mental disability issues. However, clients who served youth with mental disabilities only did not report serving clients with physical disability issues. This analysis was performed separately for the "mental clients only" and "physical and mental clients" groups. Results for the "mental clients only" group are shown in Table 8.

Table 8

Mental Clients Only

Personality Trait	*N*	*r*	*p* (2-tailed)
Intelligent	13	.127	.680
Aggressive	13	-.257	.409
Subordinate	13	.560	.046
Tense	13	-.030	.921
Hardworking	13	.311	.300
Playful	13	.494	.086
Opportunistic	13	.135	.661
Irritable	13	-.341	.255
Active	13	-.005	.988
Effective	13	-.414	.159
Reliable	13	.280	.354
Slow	13	.534	.060
Confident	13	.327	.275
Stubborn	13	.054	.862
Strong	13	-.558	.048
Suspicious	13	.285	.345
Protective	13	.078	.800
Understanding	13	-.253	.404
Permissive	13	.008	.979
Equable	13	.119	.700
Sociable	13	.139	.650
Fearful	13	.537	.059
Motherly	13	.231	.447
Apprehensive	13	.401	.174
Excitable	13	.453	.120
Insecure	13	.528	.064
Solitary	13	.365	.220
Curious	13	.210	.491
Eccentric	13	-.526	.065

In summary, 2 of 30 characteristics showed significant results ($p < .05$): Subordinate $p = .046$ and Strong $p = .048$. However, after applying Bonferroni correction for multiple comparisons, all 30 characteristics fail to reject the null hypothesis H04.

The analysis was repeated for the “mental and physical clients” group. Results are shown in Table 9.

Table 9

Mental and Physical Clients

Personality Trait	*N*	*R*	*p* (2-tailed)
Intelligent	29	.115	.552
Aggressive	30	-313	.093
Subordinate	30	.376	.040
Tense	30	-.250	.182
Hardworking	30	.254	.175
Playful	30	.322	.082
Opportunistic	30	.312	.094
Irritable	30	-.327	.078
Active	30	-.518	.003
Effective	30	-.550	.002
Reliable	30	.380	.038
Slow	30	.339	.067
Confident	30	.235	.211
Stubborn	30	-.153	.421
Strong	30	-.380	.039
Suspicious	30	-.427	.019
Protective	30	-.102	.593
Understanding	30	.083	.664
Permissive	30	-.011	.955
Equable	30	.247	.197
Sociable	30	-.125	.519
Fearful	30	-.438	.015
Motherly	30	.310	.095
Apprehensive	30	-.470	.008
Excitable	30	-.534	.002
Insecure	30	-.224	.233
Solitary	30	.135	.470
Curious	30	-.145	.446
Eccentric	31	-.459	.009

In summary, 9 of 30 characteristics showed significant results ($p < .05$): Subordinate $p = .040$ Sig, Active $p = .003$, Effective $p = .00164$, Reliable $p = .038$, Strong $p = .039$, Suspicious p = .019, Fearful $p = .015$, Apprehensive $p = .008$, Excitable $p = .002$, Eccentric $p = .009$. These results, as subsets, are positive correlates that can serve for future research as a jumping off place

However, after applying Bonferroni correction for multiple comparisons only the Effective characteristic continues to reject the null hypothesis Ho_3 ($p < .05$). Therefore horse temperament does not generally predict the best outcome for patients with mental disabilities. For horses serving both patients with mental and with physical disabilities, the "effective" trait may be predictive of success.

Summary

The statistics presented, although not extremely predictive across collective scores, do indicate subtest analysis that is significant temperamentally if taken characteristic by characteristic. In general, the data analysis indicated:

1. There was no significant difference in temperament of horses participating in an EAAT program and horses not participating in EAAT programs
2. There is no significant difference in temperament of horses participating in EAAT programs between youth diagnosed with physical disabilities and mental disabilities and youth diagnosed with only mental disabilities.
3. The study does not support difference in temperament of horses participating in EAAT programs between youth diagnosed with physical disabilities and mental disabilities from youth diagnosed with only mental disabilities

4. The null hypothesis could not be rejected that the duration of time horses participate in an EAAT program affect their temperament.
5. Treatment outcomes were best for horses serving both clients with mental and clients with physical disabilities versus horses that served clients with mental disabilities alone.

Subtest analysis indicates a glimpse at future research via approaching or reaching a significant level. Chapter 5 will support the reader in determining a course of action based on these findings. The field of EAAT has burgeoned forward within the last 25 years and with consideration for the welfare of the horse in conjunction with the welfare of the human involved in the equation, the service will maintain its legitimacy for man and animal in years to come.

Chapter 5 will relate to possibilities and promises for the future of EAAT. Armed with considerations of what EAAT horses may or may not provide to the therapeutic equation, the field will be more informed and able to research the human horse bond and its therapeutic possibilities. Significant research on the EAAT's effectiveness for humans over the past three decades and humane society concerns are now providing impetus for equine research such as this study (Walsh, 2009). Chapter five will point further to the horses' possible, temperamental regard for serving the human.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

EAAT has been in existence under one name or another for over three decades. To date, little is known about EAAT as a therapeutic model of intervention in the mainstream model of therapies (Fine & Beck, 2010; Sherman & Serpell, 2008). In my review of the literature, I found no peer-reviewed articles on the effects of EAAT on the horse involved. The purpose of this quantitative study was to discover the impact of equine facilitated therapeutic activities on the temperament of horses. Temperament, as defined in this study, is the novel personality of horses measured by observable behavioral characteristics noted in the HPQ (Lloyd et al., 2008) that I used for the study. The HPQ assessed personality traits in horses used with youths, and the assessments were carried out by horse handlers who had professional knowledge of each horse. A population of stable horses provided the control group for the study.

This chapter includes a discussion of the purpose of the study, the conclusions that I drew from the research, and recommendations for future research on the topic. This research has opened the way for further research of horses involved in EAAT programs plus client and therapist interactions. My interpretation of the findings may inform subsequent studies about the gaps in research that exist in this field.

Interpretation of the Findings

The study was inspired by the work of Lloyd et al. who created the HPQ that found significant personality differences between horses using a non-specific breed pool of participant horses. Lansade et al. (2008) found that horse personality tests including

facets of arousal and sensation provided strong evidence of stability over time and across event or situations.

Reactivity or arousal influences manageability and overall usefulness in specific tasks is the most researched trait in the horse personality literature (McCall et al., 2006). Le Scolan et al. (1997) found a negative correlation between emotivity and learning abilities. Using handlers as informants, they found that the more reactive the horse, the more socially dependent it is, the more likely it is to show avoidance of strange objects, and the longer it takes for the horse to change tasks. These findings provided the basis for the original temperament study done by Lloyd (2007). Lloyd's studies were an attempt to account for horse temperament in the same vein that Morris et al. (2002) studied horse temperament using the human "big five" factors of extraversion, neuroticism, openness to experience, agreeableness, and conscientiousness. The horse populations studied by Lloyd (2008) were show jumpers, event horses, ceremonially used horses, and lesson horses. Over time, lesson and ceremonially used horses (weddings, funerals, parades, etc.) were less sociable and less open to new experiences. Although my study does not support generalized findings, it does indicate the utility of a possible future study comparing show horses to therapy horses in these specific 30 personality traits. Lloyd et al. (2007) found that none of the previous equine personality and temperament studies adequately addressed current research needs for horse/human relationships, which led them to develop of the HPQ.

My study was informed by Lloyd's findings (2007, 2008) which I drew on to develop three research questions which became the foundation for the hypotheses. The three questions were:

1. Does the use of horses in an EAAT program with clients diagnosed with health disorders affect the temperament of the horses?
2. Does duration of time a horse participates in an EAAT program affect its temperament?
3. Can we better match horse with patient for EAAT?

Using the first hypothesis, I examined whether there was a difference in the temperaments of horses participating in an EAAT program and horses not participating in an EAAT program. A series of *t* tests revealed that the difference between the treatment group and the control group was not significant, which resulted in retaining the null hypothesis. It is possible that the HPQ contained too wide a range of traits, some which were not significant to EAAT programs specifically. The literature is sparse and it provides little or no context for interpretation even in a comparative manner. Horses used for showing, jumping or racing have been studied in a similar fashion but no research has been done on the population of therapy horses used for this study. Previous research has shown temperamental differences that can inform the field of EAAT by comparison. My research can assist the field in taking it a step further in determining if specific personalities can be indicators of right horse for the right job (Lloyd, 2008). My analysis revealed that the personality trait that most differentiated the two groups was "Active." Had I identified this variable a priori, I would have found that EAAT horses score lower than the control, stable horses and that this difference was at the margin of statistical significance ($p = .05$). This result calls for follow-up studies to verify if such a difference is consistent. If proven true, it would provide empirical evidence against the use of overly active horses in EAAT programs. Perhaps overly active horses are not easily observed for

other behavior traits because of their own behavioral issues, and fear over-rides their use in EAAT programs. It would be interesting to take a look at whether the overall stress level is higher in overly active horses, making them more receptive to the stress caused by clients with mental or physical disabilities and therefore less able to perform therapeutically. No prior research has made the correlation between a less active temperament in a horse, and a positive therapy outcome.

The second hypothesis explored whether there was a significant difference in the temperament of horses participating in EAAT programs for youth diagnosed with mental disabilities only, and for those participating in programs for youth diagnosed with mental or physical disabilities. In general, horses who serve clients with physical handicaps are often older, more sedate, and calm. Horses who work with clients therapeutically are under stress in general (Kohanov, 2004). I attempted to separate out the resultant data obtained from horses who worked with clients who have mental disabilities form those who worked with clients with physical disabilities. This data could assist the field in selecting, utilizing, and retiring horses from the therapeutic arena who do not match well with specific clients based on temperament. Given the resultant data, it was only possible to single out horses who worked with mental disability issues from horses who worked with both mental and physical disability issues. This was a step in the right direction, and pointed the way to creative follow-up research. The results of the *t* test showed no evidence of statistical significance between horses working with the distinct client populations. Therefore, the null hypothesis could not be rejected. This is consistent with research done by Kaiser and colleagues that found no difference in temperament between horses used with varying disabilities, with the exception of at-risk youth (Kaiser et al.,

2006). It is possible that a larger population of horses that serve only those with physical disabilities needs to be studied in order to see more significant results using the HPQ.

In my analysis, I identified two traits that most differed between groups, "hardworking" and "playful." Had I identified these variables a priori, we would have found that horses working both with clients with physical disabilities and clients with mental disabilities score higher in the Hardworking category and also score higher in the playful category, because both categories' scores were significant, but never researched on their own merit. This result calls for follow-up studies to verify if such a difference is consistent. If proven true, it would provide empirical evidence in favor of using hardworking and playful horses for clients with mental disabilities and physical disabilities. This could clarify which population is most effectively influenced by the personality traits. No prior research has addressed "hardworking" and "playful" as positive therapy attributes.

With the third hypothesis, I explored whether there is an intrusive influence of duration on the temperaments of horses participating in an EAAT program. If temperament is believed to be important to the wellness of both horse and client, then it is important to note if temperament changes over time. One purpose of this study was to look at time served in a program as a possible factor for temperament changes in hopes of facilitating the best match of horse and rider by clinicians and horse handlers. The results of the *t* test revealed no statistically significant differences between duration and temperament. If a significant relationship was found between duration and temperament, it would have indicated that horses that serve clients with mental and physical disabilities would need to be rotated to protect the horse's health and that of the clients who they

serve. Therefore, the null hypothesis was retained. The three traits of protective, reliable, and eccentric were significant here, as the *t* test indicated, thus indicating the need for follow-up studies that include a larger population of horses, and that might compare show horses and therapy horses. If protective, reliable, and eccentric traits were further researched on their own merit, it would possibly be a way to demonstrate a match between physical or mental disabilities and the perfect therapy horse. No prior research has addressed protectiveness, reliability, and eccentricity as a therapeutic filter for selecting horses for therapy.

I used the fourth hypothesis to examine whether horse temperament can predict best outcome for patients with physical versus mental disabilities. An example of a good prediction would be when an even-tempered horse is used with a given client, and that client meets his or her goals or outcomes for the therapy session. For example, if a client with a physical disability approaches the treatment session with a physical malady, this client would expect a treatment outcome of physical improvement, such as walking, talking reaching, grasping, etc. A mental disability outcome would be in the realm of behavior and emotional wellness. I performed a comparison of progress between clients with physical disabilities and mental or physical disabilities, which revealed significant effects between populations. Treatment outcomes such as the client having more core strength or the client being better able to handle frustration, were significantly better for horses serving both clients with mental disabilities and clients with physical disabilities. Perhaps variety in service is important to the horse in this case. No peer literature is available to align with this thought, to date. It is possible that future studies may address horses who only serve physical disabilities versus horses who serve physical and mental

disabilities. These studies might help the field understand how using horses for multiple types of clients would serve the welfare of both the horse and the client better. Subordinate and strong traits were significant with the mental health population only, whereas subordinate, active, effective, reliable, strong, suspicious, fearful, apprehensive, excitable, and eccentric where all significant personality traits for horses who served mental or physical health issues. This was not supported by Lloyd findings (2008). However the research tool was used with horses who served non-EAAT programs. It is possible that programs that serve both populations did so for financial reasons. Hippotherapy, or therapy for the sake of physical needs, was first on the therapeutic scene. When mental health therapy was established, it was more abstract in nature and its outcomes were not so easily assessed, so the field struggled to stay afloat and often took on physical patients as well.

In general, the findings in this study support Romanes' and Darwin's (1883) findings. Romanes purported that horses reflect the personalities and behaviors of the clients they serve. The horses' temperaments change through prolonged exposure to specific EAAT services, causing the horses to reflect their associates' temperaments (Visser & Van Wijk-Jansen, 2012). This, in fact, cannot be stated in all cases or personality traits, but only for those traits that have been shown as significant or close to significant. Nonetheless, it is easy to conclude that Romanes's theory is validated. Armed with significant findings in subset or items within a hypothesis, the field will have a initial frame of reference for finding out whether and just how significant these personality indicators are to the future of the field of EAAT.

Limitations of the Study

The current study did not provide overall conclusive support for the possibility that EAAT services may be impacting the horse that participates in the EAAT equation. However, the outcomes of this study provide a point from which to proceed with further research. There are several limitations to consider when evaluating the findings of this study, which affect its generalizability. The data used were Kentucky based only, via Internet survey, relying on evaluations of horse handlers, and prohibited control of collection by a single source. Although the HPQ was a sound tool, and possessed validity and reliability, the informants may or may have not perceived the questions accurately. This procedure had to rely on the trustworthiness of the informants. Additionally, there was no control over the selection of participants and assignment to the surveys which were done at random for both the EAAT treatment group and the stable control group. Targeting a complete section of the population such as all PATH certified members only, regardless of anonymity, might yield a better informant base. All the above issues may have affected the generalizability of the results and therefore recommendations that follow.

Recommendations

There are three primary questions for future EAAT equine research: the role of horses in other disciplines, the effect of Equine Therapy, and the impact of a client's personality as it interacts with the horse's personality during therapy (Kazdin, 2010). For future studies, it is recommended that a larger sample size be included to increase generalizability and reliability of the outcomes. Alternatively, few specific variables identified in this study may be tested in a future study. It would be important to design a

study which may incorporate more specific criteria of participants who handled the horses under specific therapy conditions. This would create more specific selection criteria and consistency in response to the assessment tool in order to measure outcomes. An example of this would be working directly with a certifying body such as the Professional Association of Therapeutic Horsemanship in pursuing only those horse handlers who had completed either mental health or physical health certifications rather than referrals at large. In essence, the study would be looking at the field of EAAT service participants from the inside out with more access to the background of participants, rather than from the outside in where data was not shared, nor requested on informants.

Furthermore, it may be important to know more about the clients' diagnoses, medical history, and medications with possible side effects. This information could then be evaluated as it related to the temperament/personality of the horse. Health Insurance Portability and Accountability Act (HIPAA) and Children's Online Privacy and Protection Act (COPPA) may remain obstacles that would limit or prohibit access. Again, some of these roadblocks could be more easily addressed from inside an association providing services.

Finally, it may be helpful in the future to collect information about the series of mental or physical conditions that the horse may be serving for possible effect on the horse between participants, creating a stronger case for the impact of the horses' temperament on the horse and the clients' condition/temperament on the horses that serve them. Qualitative research in addition to the quantitative research may be help uncover the possible role of demographics as well as educational background and horse and

human relationship training as it relates to disabilities of clients and temperament of the horses involved. By specializing this way, it may be easier to divide informants by specialty services with attention being drawn to cognitive versus physical, versus mental or emotional disabilities.

Implications

The field of EAAT has provided "state of the art" treatment interventions for persons diagnosed with mental or physical issues (Fine & Beck, 2010). By knowing just how severe a client's condition might be in order that they can safely participate in EAAT could have significant impact. There would need to be more research on the effect the severity of a person's condition may have on the horse as well. Overall EAAT interventions, with positive regard for the horse, could ultimately be the next step in addressing horse human relationships in this new age.

Van Dierendonck & Goodwin (2005) report that horses have been the instrument of social change throughout time. Horses wet the stage for humans to spread their culture throughout the known world. The horse was the change agent, creating trade routes and fighting wars on horseback for territorial disputes and domination. Daily sustenance was dependent on horses for planting and harvesting and commuting. Today, the horse has once again shown itself as a change again through its bond with humans in the provision of EAAT.

This study has provided impetus for follow up studies to address the equine ethic of care on a national basis, assuring horse temperament be considered prior to matching a horse with a given client. Outcome based research longitudinal might allow the field of EAAT to create standards of care that include the temperament of the horse in the EAAT

equation. Treatment options for clients being provided this alternative service with deference to the horses' temperaments may increase longevity of time the horse may serve, ultimately deepening the understanding of the relationship, thus creating better standards of care for client and the horse. The study of horse characteristics or temperament and how it impacts social changes in clients has become more in the forefront since the inception of this study (Ward, Whalon, Rusnak, Wendell, & Paschall, 2013) It is interesting to look at the item analysis within each hypothesis demonstrated and see those characteristics that approached or were significant and see how that can be applied to the field of EAAT. The field of EAAT combined with temperament of healthy horses can look forward to producing youth who may better serve the communities they live in, in return. By utilizing these finding, the world of EAAT will have a bookmark for future study. In fact, by starting in Kentucky, the horse capital of the world, and going outward with research that is reflective of these outcomes, more clients will be matched with horses with temperament that can best serve the individual and the world. The findings obtained through this study can contribute to the sparse existing literature related to EAAT and the temperament of the horses that serve. This can truly provide the framework for future studies. Sound research will add to the credibility of the field of EAAT and it will find its place with the insurance companies and professional organizations. The results may indicate that mirroring the survey method utilizing the HPQ is effective for matching clients for better outcome with the horses who serve in the therapeutic triangle for clients with both mental and physical or strictly physical disabilities. It is further possible that there may be implications for specific personality traits of the horses who work in the therapeutic field to closely match the needs of the

client to the personality condition of the horse. Such specific traits were noted in each of the hypotheses results in chapter four. Romanes' theory (Romanes & Darwin, 1883) that intellect is reflective of man's desires and emotive states is supported by this study via the temperament indicators of Subordinate, hardworking, playful, active, effective, reliable, strong, suspicious, protective, fearful, apprehensive, excitable and eccentric, which were significant in one hypothesis or the other. The significant differences between ratings of horses who work only with clients with physical disorders and those working with horses with both mental and physical disorders may indicate that variety of clients are a deciding factor in this equation. Perhaps horses are most reflective and therefore better partners when they are given a less homogenous population of disabilities to work with; in other words, variety is the spice of life. For example, if a horse that is excitable works with an anxious client all the time, it would be hard to examine, based on this theory, whether the horse was making the client more anxious or the client was making the horse more excitable. It is possible that by providing different types of horse temperaments with a single client and allowing the client and horse to find each other through methods provided by Kohanov (2004), a better, less linear approach could be utilized. Thornton, Clayton, and Grodzinski, (2012) have recently described the way an animal utilizes this phenomenon as a type of associative learning theory.

Considerations for EAAT Services

The study has provided the following considerations for future EAAT services.

1) The HPQ is effective in assessing EAAT horses.
2) Horses appear to do best when clientele are mixed (both mental and physical disabilities).

3) Horses may reflect intellect and emotional states of their riders. A horse may act differently suddenly and provide a clue to the EAAT service provider that something has changed in the client. By watching best practice with a given client, based on industry standards and this research, it is very possible to make better use of equines employed in service to clients with physical and mental disabilities.
4) Horse handlers are effective in providing HPQ responses.

Conclusions

The effect of EAAT, with the use of a variety of species and breeds, their temperaments, and personalities all factor into what make EAAT so unique and special. The horse provides the mental health and physical health clinician with a tool for furthering attainment of client outcomes that heretofore was not possible. This current research has provided us with additional quantitative data supporting their use within an environment that both fosters the client's health as well as positive regard for the horse's reflective temperament.

It is possible to conclude that further research is needed to identify those specific personality temperament traits that either approximated significance or were significant as a subset of each hypothesis. Activity level appeared to a possible significant trait for horses participating in EAAT programs. Hardworking and playful were two temperament traits in a therapy horse that were found to be significantly different between horses who served mental and physical issues and horses who served mental health issues only. Protectiveness, reliability, and eccentricity were found significant for horses used in programs greater than a year. This issue begs further research. Horses that served only

clients with mental health issues found subordination and strength may be related to client outcomes, whereas activity level, subordination, effectiveness, reliability, strength, suspiciousness, fearfulness, apprehensiveness, excitability, and eccentricity were significant for horses when physical disabilities were served as well as mental health issues.

Researchers could investigate further the traits identified in this study, using a more controlled sample in terms of age, breed, or gender. For example, all horses used for follow-up studies would be between 10 and 15 years of age, quarter horse breed and geldings. The personal traits that reached significance could be further investigated for the most amenable traits for EAAT services.

Based on the findings of this research, it is also recommended that the HPQ not be used as a precursor to purchasing an EAAT horse, but rather as part of an ongoing evaluative process. Using the HPQ this way would look at a horse within a program environment after the horse has served clients in a partnership relationship and given members salient information about its behavior over time and with differing clients.

Within each hypothesis, there exist significant behavioral traits which suggest that the field of EAAT further study in order that horses continue to receive humane, long-term consideration on their cooperative path as a healing partner. There appears to be a difference in temperament between horses treating mental vs physical disabilities. Therefore, HPQ can be used to screen horses and identify those that may best serve the population of clients targeted for services. An example of future relevant research might be utilizing the findings as they apply to breeds of horses or gender specificity of horses. The outcome could most likeable result in a win-win situation for all concerned. It is

possible that this study could be replicated on other animals used for therapeutic services. The HPQ is a sound instrument and could perhaps be considered in tact as a blueprint for therapy animals in general.

Horses are important components in the healing equation (Yakimova, 2011). A limited amount of peer reviewed research exists supporting the condition of the horse who serves in providing EAAT services to clients who are seeking health and wellness. This study provides a window of opportunity in the field of EAAT. EAAT services may find it humane to regard the horses' temperaments as well as the clients. Armed with sound research, equine specialists, therapists, and youth or adults with mental and physical needs can journey forth to wellness. The research available from this study will launch us to yet another level of understanding of the horse in its role as a service provider in the 21st century.

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Appendix A: Equine Certifying Associations in the United States

The following agencies provide standards for horse selection, horse handling, certification of professionals participating and therapeutic intervention.

1. Certified Horsemanship Association (CHA) standards and accreditation manual. (cha-ahse.org/store/pages/30/Certifications.htm
2. Equine Assisted Growth and Learning Association (EAGALA) standards and accreditation manual. (www.eagala.org/Certification Program)
3. Professional Association for Therapeutic Horsemanship (PATH) standards and accreditation manual. (www.pathintl.org).

Appendix B: Demographic Questionnaire (copy of online correspondence)

Given that you have read the informed consent information on the previous page and have consented to participate, you must initial below. Your name will remain anonymous and you will not be contacted in regard to your responses without your further consent.

Name: Date:

Please complete this online, demographic questionnaire and the online survey by March 1, 2014.

What is your relationship with the horse you are about to rate?

1. Owner
2. Groom
3. Trainer
4. Horse handler
5. Horse Specialist
6. Equine Psychotherapist/specialist
7. Equine Educator/specialist
8. Other (please explain)

What is the name of the program you work for/with?

What is the horse's name?

What gender is the horse?

Filly, Mare
Gelding
Stallion

What is the age of the horse?

What is the breed of the horse?

What is the horse's home location? (explain)

Pasture
Stable/barn
Other (explain)

How long has the horse lived there?

How long has the horse served as a therapy horse?

How many sessions per week does this horse engage in?

How long is each session?

How long have you known this horse?

Which population does the horse mainly work with? Physical disabilities or Mental disabilities?

On a scale of 1 to 3 how well has the equine assisted activity/therapy modality worked to help meet the clients' treatment plan? 1 (very little) 2 (somewhat) 3 (significantly)

What country does this horse reside in?

What is your overall ranking of this horse (explain from strongly like this horse to strongly dislike this horse)?

Appendix C: The Horse Personality Questionnaire (HPQ)

Please complete this survey online selecting the answers that best describes the horse you are rating. A rating of 1 means this behavior is not demonstrated. A rating of 7 means this behavior is consistently present.

1. Intelligent: Learns new things easily/fast: benefits from mental stimulation.
2. Aggressive: Causes harm or potential harm to other individuals, both horse and human.
3. Subordinate: Gives in readily to others, submits easily and does not put up a fight to defend self.
4. Tense: Shows restraint in posture and movement; carries the body stiffly, which suggests a shrinking tendency, as if to pull back and be less conspicuous.
5. Hardworking: Keen to do well, behaves well during "work," and concentrates on what it is being asked to do.
6. Playful: Initiates play and joins in when play is solicited.
7. Opportunistic: Seizes a chance as soon as it arises
8. Irritable: Reacts negatively with little provocation.
9. Active: Moves around a lot, does not like being still for long.
10. Effective: Gets own way, can control others, fairly dominant individual.
11. Reliable: Can be trusted to do things or behaves well; might also be considered a safe horse to be with.
12. Slow: Moves and rests in a relaxed manner; moves slowly and deliberately, not easily hurried.
13. Confident: Behaves in a positive, assured manner, not restrained, tentative.
14. Stubborn: Does not give in easily, not very cooperative.
15. Strong: Depends on sturdiness and muscular strength.

16. Suspicious: Does not trust others readily (human and horse), trusts few individuals.

17. Protective: Prevents harm or possible harm to others.

18. Understanding: Responds in a discriminating and appropriate manner to the behavior of others.

19. Permissive: could, but does not interfere with the behavior of others.

20. Equable: Reacts to others in an even, calm way; not easily disturbed.

21. Sociable: Seeks companionship of others.

22. Fearful: Retreats readily from others or from outside disturbances.

23. Motherly: Provides warm, receptive, secure base for others; is tender and caring.

24. Apprehensive: Seems to be anxious about everything, fears or avoids any kind of risk.

25. Excitable: Over-reacts to any change, easily excited, high strung.

26. Insecure: Hesitates to act alone; seeks reassurance from others.

27. Solitary: spends a lot of time alone by choice.

28. Curious: Readily explores new situations.

29. Popular: sought out as a companion by others.

30. Eccentric: shows stereotypes, unusual mannerisms and exaggerated behavior.

Appendix D: Informed Consent

A note about the survey: there are questions throughout the survey that may appear irrelevant to the horse-person. These questions are based on a human personality survey and the responses serve a purpose for this study. Please complete one survey for each horse you rate.

Informed Consent Authorization to Participate in this Research

1. *Purpose:* You are asked to participate in an equine temperament study. Participation will assist the researcher in understanding and improving future services for the clients you serve through EAAT services. The results will be beneficial for the horses who partner with you in serving clients with health diagnosis.
2. *Description of the Study:* A doctoral candidate from a US University Health Psychology Department is conducting this study. It will take you about 20 minutes to complete. Mark the answer that best describes the horse you handle for the purpose of EAAT activities, ie. Equine Assisted Learning, Equine Psychotherapy, etc. It is important that you have a current relationship with this horse to assist in the reliability of the survey itself.
3. *Benefits:* Your participation will assist the field in understanding horse temperament and individual differences that will ultimately lead to more relevant services for your clients in their horse/human journey. You will not be compensated for this survey, however, upon your request; results can be mailed to you following the completion of this study.

4. *Risks:* There are no apparent risks involved other than your personal challenge with the online questionnaire/survey completion.

5. *Confidentiality:* Written documentation will be identified by number only and no personal identification will be kept, if provided. Anonymity will be preserved and only the principle researcher will have knowledge of any personal data shared.

6. *Participant's Assurance:* If you agree to participate, you may withdraw from the study at any time you choose by informing the researcher of your decision by email.

Any further questions or comments you may have can be addressed to: Thecla Helmbrecht Howard via personal email provided upon request. This project and consent form have been reviewed by the Institutional Review board (IRB) which follows federal regulations in regard to research participants. If you have any concerns please direct your questions to Jenny Sherer, M.Ed., CIP Associate Director, Office of Research Ethics and Compliance, irb@waldenu.edu.

Appendix E: Permission to Utilize the HPQ

January 6, 2014:

Greetings Dr. Lloyd,

I am a PhD student in Health Psychology at Walden University. I am doing a study on the possible effect of Equine therapy on a horses' temperament. I wish to use the HPQ and would like your permission as well as the data regarding reliability and validity of the instrument.

I would gladly send you a copy of the proposal or abstract. I contacted Dr. Gosling at the University of Texas and received his permission but thought I should go through you as well.

If possible please send the instrument and the data supporting it. I'd sure appreciate it.

Thecla Helmbrecht Howard

Walden University

Kentucky student

Emailed to me

January 7, 2014

Hi,

Your project sounds interesting and I wish you luck with it.

The HPQ reliability and validity was demonstrated in my first paper in applied animal behaviour science. I believe this paper also identifies the behaviourally defined adjectives that were used and the definitions used (get back in touch if not). You should then be able to create your own version of the HPQ using this information and the details in the

method. I have no problem with you using this approach and please get in touch if you need any advice.

Best wishes,

Adele

Thecla Helmbrecht Howard kampkessa@cedarfire.net
July 2, 2012

to Sam Gosling

Hi, I'm asking to use the instrument you developed for assessing the temperament of animals. Do I need your permission and can I get any research on validity and reliability on it? I'm going to assess the temperament of horses use d for equine therapy using this instrument. Very happy to find you. I'd be glad to share my findings. Would you recommend a control group of pasture animals measured against the therapy horses? What are your results from previous measurements and comparisons? Thanks

Sam Gosling samg@mail.utexas.edu
July 3, 2012

Thanks for your note Thelca,

You can use the instruments we have developed. Yes, there's lots of research on the reliability and validity. Have you ready any of my work? Most of it can be downloaded from my website or obtained through libraries, etc. I think you'll find virtually all of your questions are answered by reading my papers/chapters.

You'll need to work out the design of your study with your advisor.

All the best, Sam G (www.snoopology.com).