

Adding Equine Assisted Psychotherapy to Conventional Treatment: A Case Study of Adolescent Resilience among Charter High School Students

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Abstract

This case study examined the impact of Equine Assisted Psychotherapy (EAP) on resilience among 12 adolescents attending a charter high school in the southwestern U.S. EAP is a mindful, 100% on-the-ground, experiential solution-oriented approach with horses that incorporates the use of objective observation and focuses on the development of symbolic, metaphor-related self-exploration and discovery. For four weeks, participants in the experimental group added a weekly two-hour EAP session to their typical school routine. During the same four weeks, the comparison group participated in the conventional treatment of a psycho education group (PED). Both groups used the same resilience curriculum, with the main difference between groups the addition of EAP to existing treatments. Data were collected using the Resilience Scales for Children and Adolescents™. Results indicated that EAP was more effective than PED in the Sense of Mastery and Sense of Relatedness domains, while PED seemed to be most effective in the Emotional Reactivity domain. Results also showed the EAP group testing primarily higher on positive aspects of resilience and lower on the negative at post-test; however, gender was a factor in the results. The findings suggest that EAP may be more beneficial than PED in certain subscales of resiliency according to gender. Qualitative data from observation and participants' journals added additional insights. Continuing research is needed to determine what factors other than gender may play a part in the understanding of resilience in marginalized adolescents.

Keywords: Adolescents; Behavioral health; Equine assisted psychotherapy; Gender; Resilience

Abbreviations

AHA: American Hippotherapy Association; AIC: Animal Institutional Council; EAA: Equine-assisted Activities; EAAT: Equine-Assisted Activities and Treatment; EAC: Equine-Assisted Counseling; EAGALA: Equine Assisted Growth and Learning Association; EAP: Equine Assisted Psychotherapy; EFP: Equine-facilitated Psychotherapy; EFT: Equine-Facilitated Treatment; ES: Equine Specialist Professional; GAF: General Assessment of Functioning; HHRF: Horses and Humans Research Foundation; IRB: Institutional Review Board; LISW: Licensed Independent Social Worker; MH: Mental Health Professional; OT: Occupational Therapist; PATH Intl: Professional Association of Therapeutic Horsemanship International; PED: Psychoeducational Group; PTSD: Post-traumatic Stress Disorder; RSCA: Resilience Scales for Children and Adolescents™

Introduction

Often excluded and seemingly invisible, many of today's marginalized adolescents live in socioeconomically disadvantaged families. Approximately 15% of these adolescents will have diagnosable mental health disorders [1]. Early onset (before age 15) of problem behaviors is known to be substantially associated with risk of adult disorders [2]. To address this issue, a growing number of behavioral health therapists are putting adolescents and horses together in nature-based therapeutic settings-away from offices and traditional talk-

therapy and an evidence-base for equine-assisted activities and therapies (EAAT) is developing.

To fund the scientific exploration of EAAT, a handful of non-profit human service organizations are raising awareness and funding for the study of the efficacy of therapeutic interventions that involve equines. Recently, Horses and Humans Research Foundation of Chagrin, Ohio [3] has funded research on the impact of Equine Assisted Growth and Learning Association's (EAGALA) Equine Assisted Psychotherapy (EAP) model on trauma among adolescents, as well as the impact of EAP on the post-traumatic stress (PTSD) of returning veterans [4].

According to Tramutt [5], "... mood disorders, anxiety disorders, psychotic disorders, personality disorders and posttraumatic stress disorder are treatable with animal assisted therapy". In addition, "Animals are thought to be uniquely helpful in providing feedback on social behavior due to their unambiguous, honest and immediate responses to both pleasurable and aversive stimuli" [6].

Regarding EAAT, anecdotal evidence has shown that most male adolescents respond favorably to horses. We do know that males can benefit from caring for animals. According to Taylor, "...when caring for an animal, boys in particular can experience giving and receiving nurturance, a skill which is not wholly encouraged in our culture". In recent years, the literature reinforces the importance for females to receive gender-responsive strategies. Regarding EAAT, anecdotal evidence also suggests female adolescents tend to respond to horses in a positive manner. Unfortunately, female adolescents are the fastest growing population in the juvenile justice system. According to the New Mexico Women's Justice Project, 2004:

Girls tend to define themselves in terms of relationships more than boys do....Whereas boys tend to experiment with illegal activity; girls do it intentionally to handle problems. Their first use of drugs follows a similar pattern. Girls biologically react to drugs more quickly and become addicted faster than boys.

Bremer et al. [7] suggest adolescents with behavioral challenges need social skills for a successful transition to adult life. In many cases, "Cooperative learning, role-playing and participation in social and emotional learning programs foster the acquisition of these skills" (p. 1). How the problems confronting these adolescents are treated is critical because their problems have such far-reaching implications.

Literature Review

Equine Assisted Activities and Treatment (EAAT)

Prior to conducting our case study, a review of the growing body of EAAT evidence provided a foundation from which to work. A cross-sectional study of EAP and its effect on children and at-risk adolescents who had experienced intra-family violence was published by Schultz et al. [8]. They studied children ages 4 to 16 over 18 months receiving EAP weekly on the Global Assessment of Functioning-Children Scale every three months. They found significant improvement in GAF-C scores for those with a history of abuse and in those who were also younger ($p \leq .001$) as well as female ($p \leq .02$), though there was no difference by ethnicity.

Ewing et al. [9] studied cases of children 10 to 13 years of age with learning and behavioral disorders. There were no significant differences across measures. However, clinicians saw improvements in emotional disorders when using equines in therapy, which encouraged the authors to suggest addition of EAP to physical, occupational and speech therapies. MacDonald [10] reported five different studies among at-risk children and youth of differing ages ranging from 11-17 years of age. Of those, two studies were favorable for EAP. The first found significantly higher scores on self-esteem and locus of control measures and the second found significantly lower scores on aggression. Two studies failed to find significant results and the last found an unexpected, but statistically significant increase in aggression, possibly brought on by issues surrounding termination. In several of these studies, qualitative data from teachers and volunteers supported positive effects for EAP.

Among a sample of 3rd to 8th grade students, Trotter et al. found equine assisted counseling (EAC) effective in preventing and resolving emotional and behavioral issues. Over the course of 12 weeks, experimental group participants experienced conventional talk therapy, processing among group members, the EAGALA model and ecotherapeutic adventures. Comparison group participants experienced conventional counseling group in a school-based indoor setting. Results indicated that both groups were effective; however, the EAC group showed greater improvements in self-awareness, ability to recognize dysfunctional patterns of behavior and development of positive relationships [11].

According to Kemp et al. [12], positively impacting children and adolescents with child sexual abuse through traditional talk therapy is challenging, as such children often have difficulty developing a therapeutic relationship. Kemp et al. [12] conducted a program evaluation study of equine-facilitated treatment (EFT) and psychological distress and functioning of six boys and nine girls (aged 8-11 years) and 15 adolescent girls (aged 12-17 years). When

measuring functioning in both groups at three separate points in time, (service intake = Time 1; six weeks post-in-clinic counseling/pre-EFT = Time 2; nine weeks post-EFT = Time 3), they found significant improvements in functioning between the second measurement and third measurement across all psychometric measures on psychological distress for both age groups.

Bachi et al. [13] found, for at-risk adolescents in a residential treatment facility, the equine-facilitated psychotherapy (EFP) group trended toward increased trust, self-control and general life satisfaction over the comparison group. A one-year follow-up found EFP group had used less alcohol and/or drugs and experienced fewer run-ins with the law or legal system than the comparison group. Hayden [14] found, for at-risk youth, thirteen major and three minor themes embedded in the construct of resilience when measuring EFP. These reflected protective factors such as self-esteem, mastery, positive relationships with people and horses. Bowers et al. [15] found, for at-risk adolescents, a significant decrease in self-reported depression after EFP treatment but no effect on self-worth, empathy, locus of control or loneliness.

Hauge et al. [16] conducted two studies and found, among adolescents 12 to 15 years of age, no differences in self-esteem and general self-efficacy between the equine-assisted activities (EAA) groups and respective comparison groups. A reduction in anxiety was found with adolescents with emotional, behavioral or learning difficulties [17], whereas for children and adolescents who had been sexually abused, improvements in functioning across gender, age and indigenous or non-indigenous status were found [12]. Overall, the results from a number of exploratory studies of EAAT are:

Suggestive though not overwhelming, as there appears to be a similar number of studies reporting no differences as there are with significant findings. However, when there are significant differences between groups, those differences tend to favor EAP and related approaches. In such cases, the small sample sizes of these studies may be compromising this overall research effort [18].

Marginalized adolescents and resilience

Successful transition from adolescence to adulthood depends on many factors. In cases where school-age youth are struggling, they are more likely to disappear from home or school-often without parental consent-for extended periods of time. They may seem beyond the control of their parents or guardians and may endanger themselves and/or others, plus have substance addiction and/or anger control issues [19]. According to Ewing et al. [9], "Severe emotional disorders not curtailed in adolescence often lead to serious psychopathology in adulthood. Positive and effective interventions at the crucial adolescent stage are imperative to the emotional growth of adolescents" (p. 59). Howell [20] stated that more than 20% of individuals ages 6-17 years living in poverty had mental health issues and over half (57%) lived in households at or below the federal poverty level. Yet, over three-quarters (75-80%) of these individuals in need of such services were not receiving them [21].

Resilience is the capacity of a person to recover from adversity. When working with school-age youth, the idea of studying resilience is intriguing. In the literature, resilience is known as the process of "bouncing back" from adversity-of responding to life stress in adaptive ways that are often predicated upon having necessary resources and relationships. Resilience helps people connect to people-to shared interests and, ultimately, to their lives themselves. Indeed, this

“bounce-back ability” to return to health and well-being after experiencing stress or a series of stressors has been studied widely [22].

Consistent, trust-building environments can help strengthen these youth for dealing with their stressful everyday worlds. Such environments assist by helping the youth develop their own internal resources that will be necessary for successful transition into adulthood [19,23,24]. Though a sense of trust is not easily developed—particularly in these youth, some long-term studies have suggested that between 50% and 70% of youth living in risk-filled environments have gone on to live successfully as adults, despite earlier exposure to stress [2,22]. Resilience, or the lack thereof, may then portend the degree to which they will ultimately become successful as adults [8]. Due to these issues, we explored the possible use of EAP in at-risk youth and its potential for increasing resilience and variables related to resilience in this population—sense of mastery, sense of relatedness and emotional reactivity.

This four-week case study received approval by the Institutional Review Board (IRB) of our university. In addition, a proposal was submitted to the Animal Institutional Council (AIC)—a group of animal sciences faculty who determine the potential risks of research on animals. The horses were to be free roaming in an arena; in a few cases, horses could be led with halters and lead ropes. The horses would also be groomed. Working along with the participants, the horses negotiated obstacle courses constructed of rubber traffic cones, plastic pipe pieces, buckets and other safe tools used in EAP. Thus, the AIC found the negative or harmful risks for the horses would be negligible.

Hypothesis

Our research hypothesis (H_1) was: Participation in a four-session EAP group will increase scores on indicators of resilience among a sample of marginalized students attending a charter high school compared with those participating in a four-session psycho-education group (PED). Our null hypothesis (H_0) was: There is no difference in scores on indicators of resilience among a sample of marginalized students attending a charter high school participating in a four-session EAP group compared to those participating in a four-session PED group.

The Equine Assisted Psychotherapy (EAP) treatment model

The focus of our case study was to measure the impact of EAGALA's EAP on the resilience of marginalized charter high school students. EAP is a mindful, 100% on-the-ground therapeutic approach with horses that incorporates the use of objective observation and symbolic metaphor. Though several well-established fields of equine-based treatment use the riding of horses as part of the intervention—therapeutic riding, interactive vaulting (Professional Association of Therapeutic Horsemanship International [25] and hippotherapy [26], EAGALA's model of EAP is quite different. It takes place 100% on-the-ground—and this one major characteristic sets it apart from these other well-known riding (horsemanship) therapies. EAP focuses on a client's own development and interpretation of symbols and metaphors in the presence of horses and without influence of the therapist's own treatment agenda. Shifts, patterns and unique behaviors of both horses and humans are observed, as are discrepancies in human behavior. The therapist's own issues are taken into account, if they surface, by the treatment team during and after an EAP session. The acronym SPUD'S is used to describe the internal cognitive process of the team/dyad [4].

Cognitive theory, behavior theory and family systems theory are the evidence-based theories that provide the foundation for EAP and reality therapy, experiential/gestalt therapy and solution-focused, brief therapy are, to an extent, intertwined in the therapeutic activities and processes. As such, EAP is an eclectic, emerging alternative therapy for children and adolescents with a wide variety of behavioral health needs.

Adding strength and safety to the treatment, a dyad of two EAGALA-certified professionals facilitate the therapeutic experience—a mental health professional and an equine specialist. The mindfulness aspect of the model is embedded in the ongoing training this dyad receives. Throughout the training and thereafter, they are to remain aware and conscious of how their behaviors and words can influence clients during the EAP experience. The focus of the therapeutic work is two-fold: the developing relationship between the human and the horse as equals and exploring the client's strengths and challenges through the subconscious stories that come to light through the exploration of symbolic metaphor. Without the influence of the therapist's own agenda, clients can become aware of deeply held beliefs reflected through metaphors surfacing as a result of working with horses on-the-ground, in the animal's own territory and on their own terms.

The EAP Model was developed by a licensed clinical social worker, Lynn Thomas in 1999 and efforts to develop an evidence-base for its use are expanding. It currently can exist as a stand-alone treatment or as an add-on to a broad array of evidence-based interventions. In our case study, we added EAP to the conventional treatment of PED to see what differences, if any, might occur in our participant's resilience.

Method

Participants

The participants in this case study were 12 adolescent students enrolled in a charter high school (grades 8-12) that offers both academic and extracurricular activities integrated with mental/emotional and behavioral health therapy in a personalized approach and supportive environment. Potential participants were identified by school administrators and counselors through a convenience sampling strategy and were then assigned either to the PED group or the EAP group.

The case study was conducted between mid-April and mid-May, while school was in session. The EAP group met on Friday afternoons. Because several of the selected participants needed to stay on school grounds on Friday afternoons, they were assigned to the PED group, which met on Monday afternoons in the anteroom of the school's gymnasium. Parents and/or guardians were contacted by the assistant principal and in a face-to-face meeting, the assistant principal gained their signatures on the informed consent forms.

The PED group consisted of seven (7) participants. The range of ages was 15 to 19, with the mean age of 16.8 years. Five (71%) self-identified as female and two (29%) as male. Three (43%) identified as Hispanic, two (29%) as Black, one (14%) as American Indian/Hispanic and one (14%) as White/Non-Hispanic. Four (57%) participants were in the 10th grade, one (14%) was in the 11th grade and two (29%) were in the 12th grade. The EAP group consisted of five (5) participants. The range of ages was 15 to 18, with the mean age of 16.8 years. Two (40%) self-identified as female and three (60%) as male. Four (80%) participants identified as Hispanic and one (20%) as White/Non-

Hispanic. Two (40%) participants were in the 9th grade, one (20%) was in the 10th grade and two (40%) were in the 11th grade. The characteristics of the two groups are found in Table 1.

Characteristics	EAP Group	PED Group
Gender		
Males	3 (60%)	2 (33%)
Females	2	4
Ethnicity		
Hispanic	4 (80%)	5 (71%)
Non-Hispanic	1	2
Age	16.8 ± 1.1 years	16.9 ± 1.9 years

Table 1: Participant characteristics.

Data Collection

The Resiliency Scales for Children and Adolescents™ (RSCA) is an instrument with three subscales: Mastery-which is designed to assess optimism, self-efficacy and adaptability; Relatedness-which is designed to measure trust, support, comfort with others and tolerance to differences; and Emotional Reactivity-which is designed to measure sensitivity to intense arousal, recovery to normal functioning following a strong emotional reaction and impairment of functioning due to strong emotional reactions [27]. Others who have studied this instrument have determined that the particular subscale of emotional reactivity is also a measure of social control-the ability to willfully control one's social behavior [28].

The RSCA was given both as the pre-test at the beginning of the first session just prior to the distribution of journals and as the post-test at the end of the last session, just prior to the presentation of a certificate and the final celebration. Once the instruments were completed, collected and organized, they were scored by a graduate nursing student under the supervision of the Director of the School of Nursing at the university sponsoring the study.

The sense of mastery scores are indicative of how well adolescents interact with and enjoy the cause and effect relationships that exist in the environment. The sense of mastery is driven by curiosity and is a source of problem-solving skills. The sense of mastery is considered a core characteristic of resiliency. The scale is a 20-item self-report questionnaire written at a 3rd grade level, high scores are indicative of resiliency.

The sense of relatedness is a reflection of the adolescent's relational experience, perceived and/or actual. It assumes that supportive relationships act as a buffer to adversity and a high sense of relatedness enhances resilience. The scale is a 24-item self-report questionnaire written at a 3rd grade level, high scores are indicative of resiliency. Emotional reactivity reflects one's ability to manage emotional reactivity through self-regulation in the response to adversity. The scale is a 20-item self-report questionnaire written at a 3rd grade level, high scores are indicative of vulnerability, therefore low scores are indicative of resiliency.

Over a one-month period, the two groups of adolescents received either PED or EAP (respectively) in four, two-hour weekly sessions. At the beginning of the first session, participants in both groups

completed the pre-test and then received a gift bag with a journal, stickers and pens and highlighters from the researcher. They were instructed by the researcher to use the journal during the study-to write whatever they were thinking down on paper, or draw; whatever they wanted to do with the journal was fine. The school's assistant principal and counselor had decided to give one (1) credit for participation in the study. The journals would be due to them at the end of the study as proof of participation.

The sessions included the following subject-matter, which was taken from concepts operationalized and measured by the RSCA. The first session focused on getting to know each other (breaking the ice), feeling safe with each other and developing ground rules and goals for the group (forming). The second session focused on mastery (self-efficacy) and included boundaries and developing an attitude of resilience. The third session focused on relatedness (relationships) and being respectful, in the now, honest and truthful with each other. The fourth session focused on emotional reactivity (feelings and behaviors) and included reviewing successes and potential for the future and saying goodbye (adjourning).

The study participants were attending a charter high school for marginalized adolescents. The RSCA was selected as the pre- and post-test instrument because it identified vulnerable children and adolescents who lack personal resources [27] and also attempts to identify these individuals before symptoms of distress lead to decreased efficacy. Standardized on a sample of 200 males and females ages 15 through 18, strong internal consistency of .93 to .95 was reported with standard error from .90 to 2.45 on all subscales, indicating good reliability. Test-retest reliability of .70 to .92 was reported on all subscales and strong construct validity was also reported [27].

All 12 adolescents participating in the EAP group and the PED group were given new journals with pens and stickers at the beginning of the study. They were asked to write about their thoughts and feelings throughout the study and each was assured by the school counselor that several points of extra credit would be given for participation at the end of the study based on journal completion. All gave permission for their words to be used by the researchers after the study was completed. No identifying information would be shared. The researchers were hopeful that this qualitative data would add depth and breadth to the findings.

Procedures

This case study was planned to last four weeks, with groups meeting weekly, each for a two-hour session. The EAGALA-certified mental health professional (MH) crafted curricula to address the constructs embedded in the data collection instrument. Both groups used the same resilience-based curriculum throughout the study. The quantitative data were collected using the RSCA [27]. At the beginning of the first session, participants in the EAP and PED groups completed the pre-test. The PED group was then co-facilitated by a researcher and a graduate social work student and took place on the school grounds in the anteroom to the gymnasium. Participants sat in a circle on a rug and through the use of recreational therapy props, came up with Group Rules and a process for sharing and discovery that, over time, covered the curriculum. Each group session began with a check-in and ended with debriefing.

The EAP group used the EAGALA Model. Each session was co-facilitated by the MH who was, in this case, a Licensed Independent

Social Worker (LISW) credentialed by EAGALA, in partnership with an equine specialist (ES) who was, in this case, an Occupational Therapist (OT) also credentialed by EAGALA. Several of the horses belonged to the ES and she was an expert in their behavior, having worked around horses most of her life. The EAP group took place in a natural setting with horses and props such as halters, lead ropes, grooming supplies, oil drums/barrels and poly-vinyl chloride pipes of differing lengths, traffic cones, swim noodles of bright colors and anything else that might be used safely with horses in an arena. All horses were trained especially for the psychotherapeutic work and deemed safe. The same curriculum was followed, though the options for activities increased as a result of the outdoor arena setting. Importantly, a safety plan was in place that covered physical as well as behavioral health circumstances at the barn as well as on the round-trip to and from the school to the agency.

At the end of the last session, participants in both groups completed the post-test in their respective environments and then celebrated their success with a pizza party on-site that was just for them. Each was given feedback from the professionals and a Certificate of Bounce-Back Ability as well as an opportunity to talk about his or her experience during the study. The qualitative data were collected from journal entries written by the participants in their own environments in their own time and at their own discretion. Qualitative data were based on experiences within the social setting of the facility arena for the EAP group and the school setting for the PED group. All adolescents recruited for the study understood that the information they chose to write in their journals could be used in the final manuscript and no identifying information would be included. All chose to participate fully.

t Scores	EAP	PED	p Value
Sense of Mastery			
Pre	43.4 ± 10.9	49.9 ± 7.3	0.2
Post	48.0 ± 6.6	50.0 ± 9.6	0.7
% Change	Increase by 10%	Increase by 0.2%	
Sense of Relatedness			
Pre	40.6 ± 7.8	45.1 ± 8.3	0.4
Post	45.4 ± 6.0	43.6 ± 9.2	0.7
% Change	Increase by 11%	Decrease by 3%	
Emotional Reactivity			
Pre	47.8 ± 14.4	58.0 ± 11.9	0.2
Post	49.2 ± 9.7	54.4 ± 12.4	0.5
% Change	Increase by 3%	Decrease by 7%	

Table 2: Mean ± standard deviation of t-scores between interventions and the sense of mastery, relatedness and emotional reactivity.

The context in which the qualitative data were produced varied. One was a charter school where a culture of support and encouragement for the adolescents fostered “trust” as a central focus of all human relationships and interactions. Another was an equine facility where a

number of horses lived and worked. Still another was the participant’s own living environments. We were curious about the effects EAP or PED might have on the adolescents’ resilience and their thoughts and feelings about their experience during the study. Because the study was embedded in a caring and supportive environment, the adolescents felt comfortable expressing their own curiosity about and participating in, the study.

We had no EAP session observer, other than the certified professionals, for this case study. The journals were the only written evidence for insight into the thoughts and feelings of our participants. There were no opportunities for school staff to discuss what they were seeing from the adolescents in class, so we depended heavily on the written comments in the journals-which were kept by the participants until the end of the study. However, there were opportunities for the EAGALA-certified professionals to share their observations and insight with the researchers and we found their stories very interesting. As mentioned earlier, the participants turned in their journals at the end of the study in order to accrue one (1) point on the “volunteer assignment”. Upon completion of the preliminary data analysis, the journals were returned to the school counselor for distribution back to the students at the end of the school year.

Results

Quantitative data

There were 12 participants in the sample and they were divided into two groups. The EAP group had five (5) participants and the PED group had seven (7) participants. The gender, ethnicity and age were similar between the two groups. The characteristics of the two groups are indicated in Table 1.

The mean ± standard deviation of the presense of mastery t-scores were similar between the two groups (49.9 ± 7.3 vs. 43.4 ± 10.9, $p \leq 0.24$). However, the female scores were significantly higher than the male scores (51.6 ± 7.6 vs. 41.0 ± 7.7, $p \leq 0.04$). When the subscales for this domain were analyzed by gender, statistically significant differences were found. Univariate results of the subscales of optimism and self-efficacy revealed significantly higher scores for females than males (20.1 ± 3.6 vs. 12.4 ± 6.5, $p \leq 0.02$; 31.0 ± 5.5 vs. 24.0 ± 3.5, $p \leq 0.03$).

The pre sense of relatedness t-scores were similar between the two groups (40.6 ± 7.8 vs. 45.1 ± 8.3, $p \leq 0.4$) and the female scores were significantly higher than the male scores (47.3 ± 7.6 vs. 37.6 ± 5.0, $p \leq 0.03$). When the subscales for this domain were analyzed by gender, statistically significant differences were found. Univariate results of the subscales of trust, support and tolerance were statistically significantly higher in females than in males (19.6 ± 3.7 vs. 13.6 ± 2.5, $p \leq 0.01$; 18.9 ± 3.2 vs. 12.6 ± 5.3, $p \leq 0.03$; 21.4 ± 4.4 vs. 15.0 ± 2.4, $p \leq 0.02$).

The pre emotional reactivity t-scores were similar between the two groups and between males and females (47.8 ± 14.4 vs. 58 ± 11.9, $p \leq 0.2$; 60.2 ± 11.4 vs. 47.7 ± 13.2, $p \leq 0.1$). The sense of mastery, the sense of relatedness and the emotional reactivity t-score means were analyzed using the t-test between the two groups before intervention and at the conclusion of the intervention. The results indicated some trends as to the most effective intervention. The differences and trends are indicated in Table 2.

Sub scale scores	EAP	PED	p value
Optimism			
Pre	13.6 ± 8.1	19.2 ± 3.3	0.1
Post	19.0 ± 3.4	20.3 ± 5.4	0.6
% Change	Increase by 28%	Increase by 5%	
Self-efficacy			
Pre	26.2 ± 6.1	29.4 ± 5.8	0.4
Post	26.6 ± 6.2	30.0 ± 6.0	0.4
% Change	Increase by 2%	Increase by 2%	
Adaptability			
Pre	9.0 ± 2.7	9.4 ± 1.9	0.8
Post	9.2 ± 1.5	8.1 ± 2.9	0.5
% Change	Increase by 2%	Decrease by 14%	
Trust			
Pre	16.6 ± 4.0	17.4 ± 4.9	0.8
Post	18.2 ± 3.7	16.4 ± 4.3	0.5
% Change	Increase by 9%	Decrease by 6%	
Access to support			
Pre	13.6 ± 5.6	18.1 ± 4.1	0.1
Post	16.8 ± 5.5	17.4 ± 4.9	0.8
% Change	Increase by 19%	Decrease by 4%	
Comfort with others			
Pre	10.2 ± 2.0	11.1 ± 3.2	0.6
Post	9.8 ± 1.8	11.7 ± 3.6	0.3
% Change	Decrease by 4%	Increase by 5%	
Tolerance of differences			
Pre	17.2 ± 4.5	20.0 ± 5.2	0.4
Post	20.4 ± 2.9	18.6 ± 5.3	0.5
% Change	Increase by 16%	Decrease by 7%	
Sensitivity			
Pre	7.4 ± 5.9	10.7 ± 2.1	0.2
Post	6.8 ± 3.8	9.3 ± 4.3	0.3
% Change	Increase by 8%	Decrease by 13%	
Recovery			
Pre	2.2 ± 2.5	6.0 ± 5.1	0.2
Post	2.4 ± 2.6	3.1 ± 3.1	0.7

% Change	Increase by 8%	Decrease by 48%	
Impairment			
Pre	11.0 ± 12.3	18.2 ± 11.1	0.3
Post	13.4 ± 8.8	17.0 ± 10.9	0.6
% Change	Increase by 18%	Decrease by 7%	

Table 3: Mean ± standard deviation of subscale scores between interventions.

There were no statistically significant differences, but there were some trends in the scores. The sense of mastery, the sense of relatedness and the emotional reactivity showed increases in their mean scores in the EAP group whereas in the PED group, the sense of mastery remained unchanged, the sense of relatedness decreased and the emotional reactivity decreased.

The subscales of the three domains were analyzed using the t-test of the mean scores and comparisons were made between the EAP and PED groups. None of the scores were statistically significant; however, certain subscales showed improvement, especially within the EAP group. Optimism scores increased in the EAP group by 28%, access to support increased by 19% and tolerance to differences increased by 16%; the subscales in the EAP group which showed less than 10% increases were self-efficacy, adaptability and trust. In the PED group, adaptability decreased by 14%, trust, access to support and tolerance of differences decreased by less than 10%; optimism, self-efficacy and comfort with others increased by less than 10%. In the EAP group all subscales increased by 8-18%, whereas in the PED group all subscale scores decreased by 7-48%.

Gender was a significant factor in interpreting the results. Univariate results for the subscales in each domain following the intervention resulted in some significant differences in the scores according to gender. Females had significantly higher scores than males in self-efficacy (31.4 ± 24.6 vs. 24.6 ± 5.9, $p \leq 0.05$), females scored significantly higher in adaptability (9.7 ± 1.6 vs. 7.0 ± 2.5, $p \leq 0.05$). Females scored significantly higher than males in trust (19.3 ± 3.6 vs. 14.2 ± 2.3, $p \leq 0.02$). Females scored significantly higher than males in comfort with others (12.4 ± 2.9 vs. 8.8 ± 1.6, $p \leq 0.03$). Finally, females scored significantly lower than males in sensitivity and impairment of functioning due to emotional arousal (6.3 ± 3.3 vs. 11.0 ± 3.7, $p \leq 0.04$; 10.6 ± 7.4 vs. 22.4 ± 9.0, $p \leq 0.03$). The mean ± standard deviation of subscale scores between interventions are indicated in Table 3.

Qualitative results

Qualitative data from participant's journals added some depth to the results. Several themes emerged in the analysis of the qualitative data from the adolescent's journals and the observation notes: working together, patience, sense of pride, leadership. The data from the journals captured the essence of the experiences of the adolescents in each group. In reflection, asking the adolescents to journal immediately after their group experience might have produced more vivid themes and more consistent detail; however, in this study, the journals were seen as a secondary source of data only.

The observations from the facilitators of the PED group and the EAP group provided a nice complement to the journal data. Here we

present one excerpt from a debriefing session as an example of an experience where an adolescent found a measure of success with a particularly stubborn female horse. A 16 year old male EAP participant said the following:

Lady just stood there and looked at me like Pinhead-DUH! The other kids in group were watching and laughing at me. Suze (the MH) said to try it again, but this time, try something different. So I put the halter on Lady's neck and tugged. She stepped off the rope and let me lead. We went round the arena and it was just her and me. She walked on like it was no big deal but she stayed right by my side the whole time. And I wasn't pulling her-she came along like she wanted to be with me. And it felt great.

The EAGALA-certified professionals noticed that the EAP participants found cooperating as a member of the group made working with the horses easier. Hoodies came off. Baggy pants were rolled up to make walking easier and ear buds went into pockets. The female participants seemed more patient with the horses, especially when the horses did not comply with what they wanted them to do. With the exception of one 15 year old male participant (who was asked to leave the group after flailing his arms, yelling and running aggressively toward the horses), the male participants seemed to find a balance between their wants and expectations and tested out appropriately assertive behaviors with the horses and their capacity for patience appeared to increase.

In order to give a glimpse into the way the certified professionals facilitating EAP use agenda-free language and metaphor, we present the following actual case story. During a particular session, the group of adolescents had a task. They were to build an obstacle and name it as their "safe place" and then each identify a horse as a feeling or thought. Then, they were handed buckets of grain and went to their "safe place." The challenge was to keep the horses (feelings or thoughts) out. Some were successful-others not, as the horses were hungry.

In the case of the oldest male participant, he spent most of the session in the round pen with King, the gelding of the herd and did not participate in the task. Afterwards, a debriefing session started under a tree in the barnyard with a question from the MH, "So, what was that like for you?" He was the first to respond. This male participant was also known to the others to have a very quick temper. He said,

"Okay... good I mean."

"Good... what's good like?"

"I like King. He likes me, too. He tugged my t-shirt in the front and he bumped me."

"Tugged your t-shirt and bumped you..."

"He was trying to get my attention."

“Your attention...”

“Yea-I think he wanted me to play with him.”

“Hmmm...” [Actively listening]

“Well, I walked away to get the ball... and when I turned around, King’s tail was swishing and his ears were back and he looked like he was pissed. I just stood there watching him and letting him know I was there and then he came right back over to me.”

“He came right back over...”

“Yeah.”

“What was that like?”

“Cool, like he really wanted to be with me even though he was mad at first.”

“So he wanted to be with you, even though he was mad?”

“Yeah, it made me feel like he liked me and wanted to play.”

“King wanted to play with you...”

“Yeah.” [Quizzical look]

“Hmmm...” [Some silence]

“I know! He wanted to play and then I walked away and so he got mad, but then he came back.”

“Hmmm... so what can you take away from your experience with King?”

[Thinks] “Maybe I should just relax and not get so mad sometimes.”

“Hmmm...anything else?”

“I want to spend more time with King.”

“We can definitely do that.”

Notice how the MH in this scenario was reflecting back to the adolescent his own words and not influencing him by speaking based on what she interpreted was going on. In another circumstance, we present words from a well-seasoned MH about her experience with EAP:

This therapy works-I’ve seen it, felt it, saw a kid changed... in just five minutes. It was mind-blowing-so fast, so immediate, so profound-the learning I mean. Here he is... this kid with an attitude and pants hanging down to his ankles... and the horse could care less about his purple hair and tattoos ... and so this kid gets the halter on the horse but he puts it on upside down and backward! Funny, the horse is cool with it, you know. She is kind of curious about the kid... lets him lead her around. Looks to me like she is kind of warming up to him... and the kid is so proud. And so he starts talking more and more-and we really made a breakthrough.

In the last session, the adolescents were asked to sum up what they learned about themselves from their EAP sessions. Words like, “I learned a lot... I used to be afraid of horses... I really liked being out here with the horses” stuck in the minds of the MH and ES. However, the statements written down in the journals that were most intriguing were these: “I matter...I’m important...I can do this!” These selections are presented to show the richness of the qualitative experience of participants-whether therapists or clients-in the EAP process.

Discussion

We found statistically significant differences in the study responses on the RSCA. Female adolescents showed significantly higher scores than males in the Sense of Mastery and Sense of Relatedness domains before they were exposed to either intervention. Following the intervention, there were significant differences in scores on various subscales by gender. Thus, the EAP intervention appeared to be more effective in the sense of mastery and sense of relatedness domains, while the PED intervention appeared to be most effective in the emotional reactivity domain. Importantly, gender was a factor in the results.

Returning to our research hypothesis (H₁): Participation in a four-session equine EAP group will increase scores on indicators of resilience among a sample of marginalized students attending a charter high school compared with those participating in a four-session PED group. On the RSCA, indicators of resilience are scored based on sense of mastery, relatedness and emotional reactivity. Although the PED group tested higher on positive aspects of resilience and lower on the negative at pre-test, the opposite appeared to occur at post-test. However, the EAP group did poorer on emotional reactivity at post-test than the PED group.

We considered that on familiar turf, the adolescents participating in the PED group may have felt more comfortable and less anxious than the group that ventured out each week to the arena-a new and possibly unsettling place. We nevertheless wondered why, with the exception of emotional reactivity, the PED group’s scores became worse over the course of the study. We considered that some of the adolescents in the PED group were not allowed to leave campus during school hours and, for whatever reasons that might have been, circumstances beyond our awareness may have influenced their outcomes.

The facilitators of the PED group noticed that participants were open to experiencing the tasks during each group session. By session three, a sense of trust was identified and discussed and by the last session, group members were expressing sadness at the ending of their group experience. In some clinical settings, clients have brought up important issues during termination in what appear to be attempts to prolong the helping relationship [29]. Several concerning issues facing group members (personal experiences of abuse and neglect, troublesome behaviors of parents and fellow students) came forth during the last PED session. The PED facilitators recommended that the students schedule sessions with their school therapist as soon as PED group was over.

For an adolescent that suffers from a lack of resilience, strengthening that resilience is a preferred avenue for treatment [8]. One of the important characteristics of EAP that makes it appealing for work with adolescents is that EAP can create a trust-building environment relatively quickly. In a natural setting, in the presence of horses and without undue influence from a therapist’s agenda, an adolescent may find thoughts and feelings arising from symbols and metaphors that are personal and profound-and all within a relatively brief period of time.

Limitations

As a case study, our small sample size and subsequent capacity for statistical analysis must be addressed. Indeed, small sample sizes continue to thwart efforts to build a more rigorous evidence-base for EAP, but for purposes of such a case study, they are often used. Our

participants were recruited through convenience sampling techniques and the data collection and intervention took place over a four-week period of time. This case study occurred during mid-April to mid-May, when school was winding up—a time in which most high school students are wrapping up the school year, looking forward to the summer and moving on.

The simple design of pre-test/post-test makes it difficult to attribute any change to one particular treatment [8]. In addition, our use of only the RSCA may have limited our capacity for understanding the confounding variables impacting our participants during the time-frame of the study. We supposed that, based on some of the more personal stories shared by participants during the EAP and PED groups, the majority were living in extended family systems that were unstable and chaotic. Substance abuse, gang affiliation, poverty and crime were quite possibly these participants' next door neighbors. We have considered that some participants may have been enduring physical abuse and neglect during their participation in the study.

How their volatile, unstable environments affected their actual experience of EAP and PED in the groups remained unknown. A content analysis of the journals could have helped shed light on their experiences, including the impact of EAP and PED. In addition, a content analysis might have helped us discover discrepancies between the two groups. Still, our quantitative and qualitative results suggest that the thoughts and behaviors of marginalized adolescents can be positively influenced when horses are used in treatment, especially when they are seen as equals in a 100% on-the-ground therapeutic relationship.

We place our work in the pre-experimental category of existing study of the efficacy of the EAGALA EAP Model; however, we project future impacts to expand as we remain diligent in our scientific inquiry. The increasing number of quasi-experimental studies and clinical experimental studies that are currently seeking funding from HHRF and other funding sources, including those already funded and underway [3] have very specific goals—one being to strengthen the evidence-base for the use of EAP on trauma-related symptoms among adolescents, adult survivors of interpersonal violence and military families, including veterans. With the current increase in funding for studies of EAP and military families, for example, the field of inquiry is expected to continue to grow [4].

Conclusion

Since the late 1990's, social and behavioral scientists have been studying the use of horses for a variety of human health and behavioral health conditions, yet a key question remains: "What is it about being with horses that helps human beings?" [4,25,30]. The overall purpose of this case study was to further scientific inquiry into the efficacy of EAP with marginalized populations—in this case, adolescents attending a charter high school for behaviorally-challenged students. We explored the impact of EAP on a psychological indicator of adjustment and well-being—resilience. Our sample was living in chaos and poverty and were at-risk of dropping out of school because of behavioral issues. Our participants included Hispanic and non-Hispanic students and took place in a culturally diverse, semirural community in the southwestern U.S. Our case study also included a comparison group that received the generally-accepted, established conventional treatment of a weekly PED group in lieu of EAP. Both groups were based on the same resilience-related curriculum topics.

We are watching EAP continue to gain momentum as a mindful, solution-oriented experiential therapy with horses. Cost-containment approaches vary, but EAP remains expensive to provide. The fees for the MH and ES (and facility with horses) are more manageable when the treatment is offered to groups. At its core, the EAP model provides mental health professionals with precocious prey animals who are experts at scanning their environment—and human beings—horses "... act as mirrors that reflect back to us our thoughts and feelings—in many cases before we realize what it is we are thinking or feeling" [4].

Although we know that today's environment can differ widely for high school-age adolescents, we wonder if EAP could provide them a link back to nature, to their physical, mental and emotional selves and the strengths they've lost or are yet to discover? Anecdotal evidence has shown that most male adolescents respond favorably to horses. However, there are a few who have resorted to aggressiveness and intimidation in the arena. In these cases, the males have attempted to problem-solve by trying to bully the horses around. This typically does not work and can lead, ultimately, to a powerful learning experience. Overall, it appears that female adolescents tend to respond to horses in a positive manner. We suggest that, because horses are prey animals, females might naturally identify with them for that reason, thought females often say they are attracted to horses for their strength and beauty. It is easy for humans to forget that horses are prey animals because horses are typically much larger than we are and knowing how powerful they can be will undoubtedly influence our perspective when we are with them 100% on-the-ground as equals in the therapeutic relationship.

Our goal was to explore the use of EAP as an addition to conventional treatments for behavioral change with marginalized adolescents. Our hope is to inspire the scientific community to become even more curious about the therapeutic use of horses and the ways they may impact and influence human behavior, especially with this fragile, marginalized population.

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