

# A Comparative Study of the Efficacy of Group Equine Assisted Counseling With At-Risk Children and Adolescents

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**ABSTRACT.** This study demonstrates the efficacy of Equine Assisted Counseling (EAC) by comparing EAC to classroom-based counseling. Students ( $n = 164$ ) identified as being at high risk for academic and/or social failure participated in 12 weekly counseling sessions. Within-group paired sample *t*-test results comparing pre- and post-treatment scores for externalizing, internalizing, maladaptive, and adaptive behaviors determined that the EAC made statistically significant improvements in 17 behavior areas, whereas the RD group showed statistically significant improvement in 5 areas. Between-groups ANCOVA results indicated that the EAC showed statistically significant improvement in 7 areas when compared directly to RD. Repeated measures ANOVA of the EAC participants' social behavior

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Journal of Creativity in Mental Health, Vol. 3(3) 2008

Available online at <http://www.haworthpress.com>

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doi:10.1080/15401380802356880

ratings showed statistically significant improvement with increases in positive behaviors and decreases in negative behaviors.

**KEYWORDS.** Equine Assisted Counseling, animal assisted therapy, At-Risk children and adolescents, creativity

Equine Assisted Counseling (EAC) is the incorporation of horses into the counseling process to facilitate the therapeutic outcome. With EAC, both individuals and groups interact with horses in order to facilitate the prevention or resolution of emotional and behavioral difficulties with themselves and others (Beck, 2000; Equine Assisted Growth and Learning Association [EAGALA], 2005). Mental health therapy with horses is thought to assist participants in ways unique and sometimes superior to more passive counseling formats. EAC provides a safe and secure environment that nurtures inner healing and encourages optimal growth and development.

According to Hart (2000), "The horse offers a peak experience, perhaps unmatched by any other, with a totally unique physical experience while in a joyous social environment" (p.94). EAC can help individuals of all ages and backgrounds become stronger in communication, problem solving, self-confidence, conflict resolution, and relationships (Kersten & Thomas, 2004). Interacting with horses has been shown to contribute to client motivation in attending, participating, and cooperating in therapy regularly. Interacting and controlling such a large and powerful animal empowers clients, increases self-esteem, and increases self-confidence (Chandler, 2005). For abuse victims, having a 1400-pound horse respond to your command in a nonthreatening manner provides the ultimate sense of validation of power and control. This provides the abused client a safe medium for regaining control over their life (Bowers & MacDonald, 2001). O'Connor (2006) suggests

... it is the horse's differences to the socialized man that brings about the successes that the traditional therapist cannot achieve. Horses allow us to unite unconditionally with another living being. We can take our masks off without fear of rejection. The horse has no expectations, prejudices, or motives. All of these traits allow the patient to open up, reveal their selves, and receive feedback from the horse's responses. This is the key to healing: expressing true feelings and interactions with another being to develop a true self-concept. (p. 5)

Additionally, through the process of risk taking, clients can test and improve their ability to control themselves and their surroundings. The risk-taking behavior that is associated with EAC tends to produce deeper therapy than working in a traditional counseling setting (Taylor, 2001).

Equine Assisted Counseling programs are comprised of equine-based activities, some mounted and others on the ground, combined with traditional counseling techniques. The ability to ride a horse provides the client with unique opportunities to explore and address issues that are not possible with other animals or counseling experiences (Chandler, 2005). The foundation of EAC is based on a partnership between a licensed mental health professional experienced in EAC and a horse professional also experienced in EAC interventions. In 1999, the Equine Assisted Growth and Learning Association (EAGALA) was founded to establish and monitor standards and practices for equine-assisted psychotherapy. A three-level certification program has been established to ensure professionalism, safety, and quality in the field. To date, EAGALA members are located in every U.S. state, as well as in Australia, Belgium, Canada, England, Germany, Mexico, New Zealand, Scotland, and Sweden (EAGALA, 2005).

### ***PRIOR RESEARCH OF EQUINE ASSISTED COUNSELING***

In an EAC program designed for male and female juvenile offenders, Chandler (2005) reported that highly troubled juveniles displayed new positive behaviors. She observed the at-risk teens “. . . reduce and eliminate manipulative behaviors, over-come fears, display courage, develop and practice stress management and anxiety- reduction skills, become less self-focused and more other-focused, increase communication skills, support and help each other and lookout for and encourage one another” (p.112). She also personally observed that working with horses in an EAC program increased the juveniles’ desire to complete a complex task. In addition, a boost in self-esteem and self-confidence was experienced in just one 3-hour-session. Chandler concluded that the juveniles’

. . . desire to develop and maintain a positive relationship with a powerful being with an independent mind of its own is a very difficult yet important life lesson of the juvenile. . . . Undoubtedly, there are some therapeutic tasks that are more easily and quickly accomplished and better integrated with the assistance of a therapy horse. (p.120)

MacDonald (2004) evaluated and summarized five EAC programs across the United States that examined and measured depression, aggression, self-esteem, internal locus of control, empathy, and loneliness; when all five programs were grouped together no statistically significant outcomes were found. However, when examined independently, two programs produced statistically significant results. The first study findings indicated that, after completing a 14-week therapeutic riding program, adolescents between the ages of 13 and 16 reported increased self-esteem and greater internal locus of control as measured by two different instruments: the Self-Esteem Index (Brown & Alexander, 1991) and the Harter Self-Perception Profile for Adolescents (Harter, 1998). In addition, participants reported feelings of being in control of their lives following the EAC intervention. The second study found statistically significant outcomes in self-reports of hostility and global aggression that decreased after treatment as measured by the Self-Esteem Index and the Harter Self-Perception Profile for Adolescents (MacDonald, 2004). These findings were consistent with those of Bowers & MacDonald (2001), who found statistically significant decreases in depression following EAC. Participant observations yielded increased life skills and improved communication, honesty, respect, awareness of power, and control struggles. A qualitative equine-facilitated vaulting study examined by MacDonald (2004) showed improvement in the areas of communication, insight about others, and relationship-building skills. MacDonald postulated that the quantitative and qualitative research studies, together with examples of how participants' lives were changed after treatment, were powerful examples of the efficacy of Equine Assisted Counseling.

Mann and Williams' (2002) study targeted children and adolescents experiencing behavioral disorders, mood disorders, and psychotic disorders, in addition to juvenile delinquency issues. This pre-test-post-test study utilized a paired sample *t*-test to determine statistical significance from admission scores to discharge scores. Findings indicated that after completion of EAC, 9 out of 11 clients demonstrated a statistically significant reduction in overall symptoms, and 2 of the 11 failed to achieve any measurable improvement, as measured by the Youth Outcome Questionnaire (Dunn, Burlingame, Walbridge, Smith, & Crum, 2005).

The counseling literature reveals a very limited amount of EAC research and much of it is qualitative in nature. The purpose of the current study was to provide quantitative evidence of the efficacy of EAC with at-risk children and adolescents by comparing EAC with a more traditional, in-class, school-based counseling program from Rainbow Days, Incorporated (RD;

1998, 2006). The researchers sought to determine if the unique therapeutic environment and activities of EAC (a) would positively impact children who were at risk for academic and social failure and (b) could be more effective, in some respects, with this population than a more traditional in-class, school-based program such as RD.

## METHOD

### *Participants*

This was a nonrandom sample convenience study that was conducted in a school district in the southwestern region of the United States. Students from the third through eighth grades who were identified by their school counselors as being at-risk for academic and/or social failure were invited by their school counselors to participate in a group-counseling program. Students were considered at-risk if they had serious behavioral issues, learning difficulties, or social adjustment concerns. Students who accepted an invitation to participate in a group-counseling program were invited to choose between EAC or RD. EAC participants were assigned to an EAC treatment group by the school district's director of guidance and counseling based on the school they attended. Participation in this study was completely voluntary, and participants understood they could terminate treatment and withdraw from the study at any time with no negative repercussions. Parental permission was obtained for the students who had accepted the invitation to participate in their school's group counseling program.

Both the EAC and RD treatment groups included students from grades three through eight. Due to the school district's delay in initiating data collection for the RD comparison treatment, RD ( $n = 38$ ) data collection was not begun until the second semester of the study, and data was collected only during one semester. This resulted in a disproportionately larger total number of participants for the EAC treatment ( $n = 126$ ), which was run during two semesters. The school district's delay in implementing RD data collection was based on not having a sufficient number of school counselors who were trained to perform the RD program and to collect pre- and posttreatment data. Once this issue was resolved, data collection for the RD program was initiated (the following semester after the EAC program began). A further contribution to the larger number of participants for the EAC program was that more students preferred

to participate in EAC over RD and could have contributed to participant bias. Of the total 205 students who volunteered to participate, 164 completed the study, and 41 dropped from the study. The demographics of the 164 students in the study were as follows: 102 male, 62 female, 136 Caucasian, 12 African American, 11 Hispanic, and 5 of other ethnicities. Of the 164 participants, 86 attended elementary school and 78 attended middle school. The ratio of males to females was two-thirds male to one-third female; this percentage is typically found in most child psychotherapy research (Bratton, Ray, Rhine, & Jones, 2005). The EAC and RD treatment groups' demographics were similar in composition.

### ***Instruments***

#### ***Behavioral Assessment System for Children (BASC)***

The Behavioral Assessment System for Children (BASC), Self-Rating Scale (SRS) and Parent-Rating Scale (PRS), was used at the beginning and end of treatment to evaluate treatment outcomes of the participants' functioning. The PRS was sent home to be completed by the parents, pre- and posttreatment of their children, whereas the SRS was completed by participants just before the first and at the end of the final treatment sessions. This assessment was chosen for its reliability and validity with a mean correlation of approximately 0.60. The BASC has a high internal consistency (coefficient alpha) and test-retest reliability (behaviors rated twice within several weeks), with scores in the 0.80s to 0.90s, indicating a high degree of reliability (Reynolds & Kamphaus, 1992). The instrument was standardized on a large national sample that is representative of the general population of U.S. children. This assessment also has been shown to be reliable with both sexes. In a review of the BASC, McCarthy (2003) noted that the instrument line items were derived from empirical measures, relevant literature, and collection of clinical experiences.

#### ***Psychosocial Session Form (PSF)***

The Psychosocial Session Form (PSF) was developed by Chandler (2005) to be used in rating client social behaviors at the end of every treatment session. The PSF is designed to track client progress across treatment sessions in a consistent and measurable format. It also provides a determination of how much change may have occurred between sessions, allowing the clinician to measure the differential impact of sessions. The

PSF provides repeated measures of clients' positive and negative social behaviors using a 6-point Likert scale.

A Rasch analysis was conducted on the PSF instrument evaluating its usability for creating a behavior variable (Trotter, 2006). The Rasch analysis clearly indicated that the rated items followed an expected pattern. The Rasch analysis supported the ordering (clustering) of rated items. The positive behavior items grouped together along the continuum and the negative behavior items grouped together along the continuum. The number column indicated the item numbers; item numbers 1 through 21 were positive while item numbers 22 through 34 were negative (reflecting reliability in the design for the 34 items, 21 positive and 13 negative). The Rasch test-retest internal-consistency yielded reliability values in the high 0.90s, indicating a high degree of score reliability or consistency. A test-retest Pearson correlation of logit score values also yielded reliability values in the high 0.90s. This indicated that the logit score responses were consistent or reproducible for each session. Because the PSF instrument has not been standardized on a large national sample that is representative of the general population and varying age populations, research is needed to further establish validity and reliability (Trotter, 2006).

Assessment using the PSF relies on direct observations of a client by a therapist. For the purposes of this study, the PSF was completed by the EAC therapy team who met together after each treatment session to assess each participant's social behavior during the session. Although developed for use with animal assisted therapy, the PSF can be used to assess the efficacy of any counseling modality designed to impact human social behavior.

## ***Treatments***

### *Equine Assisted Counseling Treatment Group*

The 12-week EAC treatment plan consisted of group interactions with horses in order to facilitate the prevention and resolution of emotional and behavioral concerns. EAC intervention included the following: traditional talk therapy, group processing, equine-based therapy activities, and complementary adventure-based therapy activities. These techniques were designed to enhance participant self-awareness, to enhance recognition of dysfunctional patterns of behavior, and to foster healthy relationships. Heavy emphasis was placed on ongoing and post-intervention clinical processing with participants during each session. The EAC treatment group consisted of weekly sessions at a ranch setting. Six to eight participants

were in each EAC group. EAC treatment-provider teams consisted of one master's level mental health counselor and one equine professional, both experienced in EAC intervention. The EAC intervention was designed as a progressive 12-week experience, with each session building on the activities and outcomes of a previous session. Because the completion of each EAC activity depended on the performance of its group, groups moved through EAC activities at a varying pace. Those groups that moved more quickly experienced more EAC treatment activities. All participants received an equal amount of treatment, that is, 24 contact hours (2 hours per week over 12 consecutive weeks). A treatment manual with detailed descriptions of all of the activities used during the 12-week EAC treatment intervention is provided by Trotter (2006). A brief description of the 12-week EAC intervention follows.

The first session began with an introduction to the ranch setting, an introduction to horse safety, and completion of the assessment instrument (BASC-SRS) by group participants. The 1-hour ranch tour served to familiarize participants with the outdoor setting of the ranch and to provide the therapy team with initial observations of participant interaction without much direction. As the group explored the ranch setting they were introduced to the horse's world and to herding mentality. It was explained that a horse's behavior would teach them about the horse and would give them an understanding of the horse, and in order to keep themselves safe while around horses they needed to learn a horse's traits and instinctive responses. As the group observed a pasture of horses, horse communications and social interactions were described. A discussion of "being safe when around horses" was facilitated as the group was asked to look for different horse behaviors they should take note of for their own safety, such as "What does it mean when the horse puts his ears back? What is a horse's first line of defense? What is the first thing a horse is going to do when he feels threatened?" During the discussion of horse behavior and being safe around horses, participants were reassured that it was okay to be a little fearful of the horse, that they need to respect the power of the horse and to respect the fact that the horse could hurt them.

Next, during the first session, the stage was set that "this was going to be a different experience than what they were used to" and "that things were different here at the ranch." To start off this process, participants were asked to select ranch names. The act of claiming a ranch name personalized the equine therapy. This exercise initiated a sense of ownership and personal investment in the experience positively impacting motivation to participate. Ranch names required each participant to choose an

adjective that described them and started with the same sound as their name or rhymed with their name such as “Jumpin’ Jen,” “Cowboy Chris,” or “Dynamic Deb.” If someone had difficulty thinking of a name, the entire group was asked to offer suggestions. This stimulated a creative thinking process that initiated the formation of unity within the group while establishing the uniqueness of the EAC experience. Also during the first session it was important to establish group expectations. This was accomplished with the introduction of the “five finger contract,” where each finger of one hand represented an important safety rule for self and others. The purpose of the five finger contract was (a) to understand and create safe and respectful behavioral norms under which to operate, (b) to gain a commitment of those norms by everyone in the group with a verbal and tactile agreement, and (c) to accept a shared responsibility for the maintenance of those norms. This was a simple way to establish and teach respectful behaviors expected of each group member, thereby creating an emotionally and physically safe environment supported by all.

The next sessions focused on activities that introduced the participants to the horse’s world such as, the nature of horses, horse communication, horse body language, horse body parts, and in-depth horse safety. During these sessions participants had personal interactions with horses with exercises such as *Building a Relationship with Your Horse* (Goodwin-Bond, personal communication, April 26, 2005), which was an exercise that allowed each participant to pick the horse they wanted to work with for the duration of the treatment regime for all exercises that involved grooming, riding, or other human-horse pairing. For this exercise participants interacted with all of the therapy horses that were loose in a small arena. Adequate time was allowed for the social mingle with no structure applied. It required involvement and participation by both humans and horses. Getting close and personal with their horses, and learning about their horses’ instinctual, natural, nonverbal cues can help participants understand their horses and generalize this to better understand themselves and other participants in the group. Group processing at the end of the exercise naturally led to an exploration of how the basics of horse interactions can be translated into the basics of people interactions. For example, “Do you say what you mean and mean what you say?” The therapy team facilitated discussion of how the horse’s actions and reactions can help the participant to recognize reinforcing cues and rewards that enhance relationship building, and of the behaviors that get in the way or interfere with relationship building. There ensued in-depth discussion around how, like people, horses treat you based on the way you communicate. Elements of

communication that were explored with the group included (a) active listening with both the ears and the eyes, (b) attention to nonverbal cues regarding the horse's body language and the participant's body language, and (c) communicating to the horse that you are safe to be with or that you are not safe to be with. The horse-human relationship was strengthened during several interactive equine activities that took place during the 12-week treatment period, and the relationship flourished in an environment of support and honesty that benefited both the individual and the group. A common clinical observation from this exercise was that participants were often instinctively drawn to a horse that had characteristics similar to their own. Because of this, the horse often dramatized the participants' inner struggles and relationship issues by magnifying and mirroring what a participant needed to recognize in him- or herself.

Following sessions involved a variety of activities. During horse safety sessions participants were taught how to mount and dismount, including an emergency dismount, how to tie a safety knot to secure a horse to a rail, how to walk safely behind a horse, and about the "gas pedal and brake for a horse" when one is mounted and when one is in an arena with horses who are moving about freely. *Horse Body Parts* (Goodwin-Bond, personal communication, April 2005) was an exercise where participants worked together to place small adhesive labels of horse body parts on the correct part of the horse using an anatomy guide. When the exercise was completed the horse looked quite silly with all of the white labels on it and because of this, the post exercise processing included discussion about how labeling and stereotyping can hurt people's feelings. Through an activity called *Catch and Release* (EAGALA, 2005), teams of two were handed a halter and lead rope and asked to go into the pasture and halter a horse to their best ability with little to no additional direction by the therapists. The treatment team observed participants' reactions to determine if (a) they picked the horse that came to them, (b) they went up to a horse, or (c) were fixated on doing the task the "the right way," all significant in assessing participant's intrapersonal dynamics. To assess participants' style of facing a challenge, therapists assessed the following:

1. Did participants use all of the resources available to them such as asking members of the treatment team to assist them?
2. What, if any, level of frustration was evoked by participants as a result of (a) not knowing "how to do it right," (b) not asking for assistance, (c) giving up on the task prematurely, and (d) difficulty thinking "outside the box" (initiating creative solutions).

Therapists and participants thoroughly processed the experience immediately after the exercise. Participants shared their experience while therapists shared their observations. Therapists assisted each individual and the group to translate their experience into enhanced self- and other-awareness and an understanding of how this would help participants cope with other life challenges, such as with family members, peers, and achievement tasks. This included processing of interpersonal dynamics (such as, how this experience related to human-to-human interactions, like meeting someone for the first time, or interacting in a large group of strangers, or exploring how participants worked or did not work as a team) and defining and identifying various roles each participant may have assumed during the exercise (for example, active or passive, leader or follower, productive or counterproductive). This catch, halter, and release activity allowed participants to improvise and to ask for what they needed but these actions needed to be initiated by the participants; therapy team members, by not rescuing participants from their frustration, resisted the temptation to enable helplessness. Providing support and encouragement while allowing participants to struggle through a challenging task provided a heightened sense of accomplishment for participants, which could contribute to self-esteem.

Therapy horses are well-suited to their role as pet practitioners because of their ability to read and respond to social behaviors, a necessary skill for survival in a herd with a competitive pecking order. This translates into an ability to read and immediately respond to human verbal and nonverbal communications. In other words, the horse acts as a mirror for the human participant and the horse's behavior in response to the participant confronts the participant's behavior (EAGALA, 2005). Horses are much more effective at confronting behaviors and attitudes than people because of their keen ability to observe and respond immediately and honestly to nonverbal and verbal communication (Irwin & Weber, 2001). Thus, as in the case with the halter task with horses, interacting with a horse and observing the horse's reactions increases the participant's awareness of the impact of their own thoughts, words, and actions. This can assist individuals to better manage their lives and foster positive relationships. Participants can also learn problem-solving, communication, and social skills. The risk-taking activities associated with working with horses are a conscious decision by clients that is physical as well as emotional in nature. Through the process of risk taking, clients can test and improve their abilities to control themselves and their surroundings. The in-depth clinical processing by the therapy team with the EAC participants that occurs at the conclusion of

each EAC activity is a vital component in transferring insights and knowledge gained from the EAC activity to a participant's life.

As EAC treatment sessions progressed, participants learned how to groom a horse. Interacting with such a large and powerful animal potentially empowers the participant, increases self-esteem, and increases self-confidence. For example, when grooming a horse the participant must pick up the horse's hoof and clean the dirt out. In order to do this, the participant must gain the cooperation of the horse, and a horse that does not know, like, or trust a person will not pick up its feet for that person. Success with this exercise can be empowering because if one can gain the cooperation of a thousand-pound horse, then smaller life challenges do not seem quite so daunting after all. This exercise helps participants see other life problems as more manageable. Because all horses are different, they each require different responses for participants to be successful. Through their experience with the horses, participants learn to observe and respond to behaviors presented by the horses in a fashion that results in success, and thus participants can become better at observing and responding to people in ways that promote positive outcomes, instead of staying stuck in current patterns of negative behavior. Picking up a hoof of a very large horse and placing your body within range of getting kicked requires an act of courage. Participants are motivated to engage in and complete this activity because the reward is to spend time with a horse. Courage to stay positively engaged with a powerful horse can generalize into courage to stay positively engaged with another person.

In a following session, participants experienced an equine-based activity called *Life's Little Obstacles* (EAGALA, 2005). This activity asked the group to get a horse to walk over a low jump placed in the arena. Symbolically the jump can represent any challenge that the group is facing, such as school testing, making friends, or deciding how to deal with bullies. It doesn't sound too difficult until the rules of the activity are given: While engaging with the horse there can be no physical touching of the horse, no halters or lead ropes used, no bribing the horse with food, and no verbal communication with each other. The group was allowed to verbally communicate with one another to form a plan before the task began and during time-outs called by the therapists. Time-outs were called infrequently so as not to interrupt the participants' efforts and were used to allow the participants to briefly rest and process what was and was not working. There is no one right solution to this activity. It can be solved in any number of ways, but it is up to the participants to work together to come up with a creative solution. EAC activities are designed to symbolically re-create life situations participants may be struggling with. The rules of this

EAC activity prevented the group from using tools they commonly use in relationships—touch, bribery, and verbal talking. The rules were designed to move the participants out of their comfort zones and help them discover new solutions and healthier ways of doing things. Completion times for equine activities can vary depending on the interpersonal dynamics of the group. Some groups completed the *Life's Little Obstacles* exercise relatively quickly, in about 45 minutes or so, but it took one group of fourth grade girls three sessions (6 hours over 3 weeks) to be successful with this task. They would make an elaborate plan, and no one would follow it; blaming and finger pointing made this an emotionally painful experience. They knew that they had to be successful at this task before they could move on to another one and they all were anxious to progress to an activity where they could ride the horses, but they had to complete this task first. One girl said, "You guys! We have to get this done to move on! We're going to have to work together! Let's just try saying please to each other! We'll see if that works!" They started addressing each other with "please," resulting in a more respectful tone that changed the temperament of the group. With better communication the participants constructed a creative plan that quickly led to success. Using other jumps in the arena, the group constructed an elaborate labyrinth that guided the horse to step over the target jump pole as the group walked behind encouraging the horse's forward movement. The therapeutic intent of the obstacle exercise was to (a) allow the group to struggle, become frustrated, and then achieve success; (b) process after each attempt at the activity to discover what helped them be successful or not successful; and (c) relate what happened during the obstacle exercise with what happens at home or at school, in essence tying this experience to real life situations. For example when they were trying to do an activity and the horse was acting stubborn the therapist asked, "Has there been a time in your life when someone wanted you to do something and you were acting stubborn?" One participant said, "This must be how my mom feels when she asks me to clean my room." A therapist replied, "So, what could you do differently with the horse? If the roles were reversed, what would work with you?" This type of processing increased the impact and longevity of the lessons learned.

Equine-based activities such as the "halter" and "obstacle" exercises are especially beneficial to participants because horses react to participants' body language, giving them incredible and immediate feedback as to what they are communicating verbally and nonverbally. Participants learn that if they wanted to change the horse's behavior, they had to change their own behaviors, thoughts, and feelings. In EAC activities the horse

acts as a metaphor for relationships. The horse provides the vehicle for the projection of a participant's unconscious worries and fears. A participant has the opportunity to examine what works, what does not work, and whose needs are being met, and offers the opportunity to take responsibility for recognizing how personal actions affect others. The symbolic meaning associated with horses that individuals use to represent strong emotions and feelings that are both difficult to describe and prone to repression have long been recognized by psychoanalysts and social anthropologists (Kruger, Trachtenberg, & Serpell, 2004).

*Give and Take* (Tidmarsh & Tidmarsh, 2005) was an exercise used that was designed to facilitate skill-building in communication, cooperation, adaptation, and respect. A lightweight string of about 5 feet in length was tied to each side of the horse's bit and held at the end by one participant on each side of the horse. Using only the string as a communication and control device the two participants had to guide the horse down a short path (about 9 feet) and weave the horse through a line of orange cones spaced close together on the ground. Too much pressure and the string breaks, too little and the horse goes the wrong way. *Equine Billiards* (Kersten & Thomas, 2004) was used as a team-building exercise and required the group of participants to move three to four horses, which were loose in a small arena, to a designated spot in the arena for each horse, much like calling the pocket on a billiard table for a particular ball except the pockets and balls were pre-assigned by the therapy team. Participants were not allowed to touch or bribe the horses to get them to move. Creative solutions were allowed, and the more cooperative and creative the participants were with one another the quicker the exercise was completed.

EAC treatment included intermixing equine activities (that involved direct interaction with a horse) with some complementary team-building, adventure-based activities that did not directly involve a horse. These were designed to encourage creative thinking, cooperation, leadership, and integrity. These types of activities served to enhance communication and build empathic responses. Team-building activities that did not involve a horse included *Marshmallow River* (Rohnke, 1984; Rohnke & Bulter, 1995), *Bull Ring* (Cain & Smith, 2006), *One True Path* (Cavert, 1999), and *Horse and Rider* (Goodwin-Bond, personal communication, April 2005). *Marshmallow River* required the group to form a mutually supportive plan to move each group member safely across an imaginary dangerous river that must be negotiated by stepping on imaginary giant marshmallow stones; members must be honest if they fall off and must submit to consequences, such as trying to cross again but the second time

blindfolded and guided by a team member. The *Bull Ring* exercise required a group to work with maximum cooperation in order to balance a small ball on a small ring supported by strings extending from the center out to the circle of group members who must move in unison to transfer the ball from one stand to another several feet away without the ball falling off of the center ring. Any unbalanced tension on the string from any one group member would cause the ball to fall. *One True Path* was a choice challenge exercise where team members helped one another find a way across a 10 × 10-foot flat grid maze with hidden safe spaces. *Horse and Rider* was an exercise that emphasized communication skills. One participant played the role of “horse” and the other played the role of a “rider.” The one playing the horse placed a horse bridle around his or her own neck and held the bit with both hands. The reins went back over each shoulder and were held by the rider standing behind. The rider used the reins to direct the horse person to walk across the arena and around obstacles. Riders were not allowed to talk to their horse person or lead their horse person, and had to remain directly behind their horse person. Each rider had been confidentially instructed by the therapist to guide the horse person to perform specific tasks and a different instruction was assigned to each rider. The horse person was instructed to only respond to the rein commands and not verbal commands. This exercise was designed to give participants a real-life experience of what it must be like to be a horse trying to understand what a rider is attempting to communicate and to be a rider who experiences the frustration of failed communication. Each participant had the opportunity to play both a “rider” and “horse.” This activity served to enhance communication and build empathic responses and was an effective way of teaching participants how difficult it is for a horse and rider to communicate. Post-exercise processing generalized the lesson to participants’ other life experiences where a failure of communication resulted in a negative outcome. Clinical processing after this activity explored things such as, “What was more difficult, playing the horse or the rider? What was difficult about it? What did you like about what your partner did when they were the rider? What would you have liked your partner to do differently? How was playing the horse difficult? How did you feel about the way your rider treated you?” During this clinical processing the treatment team encouraged participants to explore how to apply what they learned and experienced to problems, stressors, and issues in their everyday life.

The final phase of the 12-week EAC treatment plan provided the students with the opportunity to ride bareback and eventually ride with a saddle and reins. Lessons in riding and horsemanship were secondary to the

primary focus of this activity, which was facilitation of communication, assertiveness, leadership, taking responsibility, confidence, teamwork, and cooperative relationships. The objective was to have participants learn to take care of themselves, effectively communicate with their partners, and get in harmony with their horses. Riding bareback required the participant to stay focused, to read and feel the horse's body language, and to trust and communicate to their partner who was leading the horse with a rope. Progressing to the phase of riding solo on a saddled horse was an ultimate goal and reward for participants who conquered their fear and sense of inadequacy and embraced their strength.

Throughout all equine-based activities students were encouraged to pay attention to what the horse was communicating to them and also to what they were communicating to the horse (both verbally and nonverbally), and to continue to build and maintain a positive relationship with their horse. The treatment team focused on processing horse-human interactions and applying these experiences to each participant's life. Equine-based group activities challenge participants to face and solve problems that can symbolize any life dilemma that a participant may be facing, such as school testing, making friends, or deciding how to deal with bullies. Counseling with a therapy horse provides metaphors for life challenges. Group processing of how participants try to accomplish their goal leads to intense discussions that contribute to personal insights. Equine-based activities are especially beneficial because horses immediately react to a participants' body language, giving potent and timely feedback to the individual about how they are presenting themselves in a social interaction. Participants learn that if they want to change a horse's behavior, they have to first change their own behaviors, thoughts, and feelings.

*Horseshoe Closing Ritual* (Goodwin-Bond, personal communication, April 2005) was always the last exercise of the last treatment session. The purpose of the exercise was to bring closure to the 12-week experience by allowing participants to step back and view themselves and the group with objectivity and sensitivity. Horseshoes of various shapes and sizes were placed in the center of the group and each participant was asked to choose a horseshoe. The therapeutic team guided the group in a discussion about each horseshoe being different and likewise that everyone in the group was different, but because of this group experience, everyone had come together as one. As each group member guided a lanyard string through one of the holes of their horseshoe, the therapist guided the conversation to highlight personal awareness and growth for

the individual and the group as a whole. When all of the horseshoes were added, the ends of the string were connected to form a complete circle. This exercise allowed participants to cognitively and emotionally integrate the experiences of the past 12 weeks.

Clinical processing after every EAC activity, whether it was with or without direct horse involvement, was critical to the counseling experience. Personal insight for participants could result in learning about their attitudes toward their temptations, addictions, or other destructive thought processes and, as a result, they could identify thoughts, feelings, and behaviors that would assist them to either (a) resist temptation or relapse, (b) cope with frustration or internalize low self-worth, (c) meet challenges or surrender to failures, and (d) conquer fears or avoid opportunities. EAC lessons focused on practicing healthy communication, forming healthy relationships, developing problem-solving skills, and searching for creative solutions. According to Chandler (2005) "the skill of the group process leaders is the key to the success of the program for the participants" (p. 112). Counseling processing techniques used by the counselor after every equine-based activity facilitates participants' ability to relate personal insight into their own lives (Chandler, 2005).

### *Comparison Treatment Group*

Kid's Connection, a program of RD (1998, 2006), was utilized as the comparison treatment group. Kid's Connection is an indoor, school-based (in-classroom) group counseling program. Kid's Connection is designed to address developing healthy and constructive coping skills in a wide array of issues (RD, 1998). The Center for Substance Abuse Prevention selected Kids' Connection as the 1999 recipient of their Exemplary Substance Abuse Prevention Award for its *curriculum-based support group* model of life-skills education for children (RD, 2006). Grade-level curriculum that was developmentally appropriate to each age group included social, academic, and personal needs of children and adolescents. The group format included competence enhancement, cognitive-behavioral techniques for self-control and peer pressure, social influence modeling and rehearsal and normative education consisting of prosocial bonds, negative consequences and correcting erroneous beliefs (RD, 1998).

The Kids' Connection (RD) comparison treatment groups received 1-hour weekly sessions over 12 consecutive weeks, and groups consisted of six to eight participants each. The school counselor for each participating

school had been previously trained in a 2-day training to facilitate this program and conducted each session in either their office or classroom.

### **Data Analysis**

The researchers sought to determine if the unique therapeutic environment and activities of EAC (a) would positively impact children who were at risk for academic and social failure and (b) could be more effective, in some respects, with this population than a more traditional in-class, school-based program such as RD. The researchers wished to determine specific differences in the two treatment outcomes (EAC treatment versus RD comparison treatment) on each behavior scale of each BASC instrument. Given the a priori planned comparisons and clinical nature of the project, for each specific hypothesis comparing the two treatments, multiple *t*-tests were preferred. The a priori specific planned comparisons would provide the required information while still yielding similar power and control for Type I error rate as a multivariate statistic. According to Rothman (1990):

Adjustments for making multiple comparisons in large bodies of data are recommended to avoid rejecting the null hypothesis too readily. Unfortunately, reducing the Type I error for null associations increases the Type II error for those associations that are not null. The theoretical basis for advocating a routine adjustment for multiple comparisons is the “universal null hypothesis” that “chance” serves as the first-order explanation for observed phenomena. This hypothesis undermines the basic premises of empirical research, which holds that nature follows regular laws that may be studied through observations. A policy of not making adjustments for multiple comparisons is preferable because it will lead to fewer errors of interpretation when the data under evaluation are not random numbers but actual observations on nature. Furthermore, scientists should not be so reluctant to explore leads that may turn out to be wrong that they penalize themselves by missing possibly important findings. (p. 43)

For the a priori hypothesis (specific planned comparisons), a pretest-posttest, experimental-comparison group design was utilized to gather BASC data. To test specific a priori planned hypothesis (to determine the efficacy of each of the two treatments on each scale of each BASC instrument) a within-group paired sample *t*-test analysis of pretest to posttest

change in behavior was conducted on BASC-SRS and BASC-PRS for each of the two treatment groups (EAC and RD). To determine overall group differences, a between-group ANCOVA compared the EAC with the RD treatment group. Partial eta squared effect sizes were calculated in order to determine the strength of the relationship between treatment and outcome for practical significance.

As a further determinant of the efficacy of EAC, a repeated measures ANOVA was performed on the PSF instrument across 12 sessions of the EAC treatment. The Mauchly's test of sphericity was conducted to determine if the homogeneity of variance assumption was met for the PSF instrument. A Rasch analysis was conducted on the PSF instrument evaluating its usability for creating a behavior variable. For more detailed information on data analysis see Trotter (2006).

## RESULTS

### *Results as Measured by the BASC*

Participants in the EAC treatment groups demonstrated a statistically significant decrease in negative behaviors and a statistically significant increase in positive behaviors on the BASC SRS and PRS as illustrated in Table 1. The BASC self-reports (SRS) for the EAC treatment group achieved statistically significant improvement in 5 areas: (a) Emotional Symptom Index, (b) Clinical Maladjustment Composite, (c) Atypical Scale, (d) Sense of Inadequacy Scale, and (e) Relationship with Parents Scale. The BASC parent reports (PRS) for the EAC treatment group achieved statistically significant improvement in 12 areas: (a) Behavioral Symptoms Index, (b) Externalizing Problems Composite, (c) Internalizing Problems Composite, (d) Adaptive Skills Scale, (e) Hyperactivity Scale, (f) Aggression Scale, (g) Conduct Problems Scale, (h) Anxiety Scale, (i) Depression Scale, (k) Somatization Scale, (k) Attention Problems Scale, and (l) Social Skills Scale.

Participants in the RD comparison treatment group demonstrated a statistically significant decrease in one negative behavior and demonstrated a statistically significant increase in four positive behaviors on the BASC, as illustrated in Table 2. The improved areas (on the self-report) were (a) Emotional Symptom Index, (b) Personal Adjustment Composite, (c) Social Stress Scale, and (d) Self-Esteem Scale, and (on the parent report) the (e) Depression Scale.

TABLE 1. BASC paired sample t-test of pre- and posttest scores, EAC treatment group (n = 126)

Behaviors	Average Mean	Std. Error Mean	t	df	p
<b>BASC Self-Report</b>					
Emotional Symptom Index	1.865	0.832	2.242	125	0.027
School Maladjustment Composite	0.270	0.809	0.334	125	0.739
Clinical Maladjustment Composite	1.651	0.753	2.193	125	0.030
Personal Adjustment Composite	1.016	0.902	1.126	125	0.262
Attitude Toward School Scale	0.325	0.808	0.403	125	0.688
Attitude Toward Teachers Scale	1.159	0.877	1.322	125	0.189
Atypical Scale	2.508	0.783	3.204	125	0.002
Locus of Control Scale	0.865	0.781	1.107	125	0.270
Social Stress Scale	0.849	0.862	0.985	125	0.326
Anxiety Scale	1.095	0.828	1.323	125	0.188
Depression Scale	1.540	0.879	1.751	125	0.082
Sense of Inadequacy Scale	2.508	0.859	2.918	125	0.004
Relationship with Parents Scale	2.339	0.978	2.390	125	0.018
Interpersonal Relations Scale	0.276	0.912	0.302	126	0.763
Self Esteem Scale	0.118	0.880	0.134	126	0.893
Self Reliance Scale	0.181	0.839	0.261	126	0.829
<b>BASC Parent-Report</b>					
Behavioral Symptoms Index	6.186	1.076	5.749	85	0.000
Externalizing Problems Composite	5.128	0.956	5.364	85	0.000
Internalizing Problems Composite	5.384	1.013	5.316	85	0.000
Adaptive Skills Scale	2.709	0.882	3.073	85	0.003
Hyperactivity Scale	5.372	1.039	5.171	85	0.000
Aggression Scale	5.198	0.933	5.571	85	0.000
Conduct Problems Scale	3.814	1.076	3.545	85	0.001
Anxiety Scale	5.337	0.911	5.859	85	0.000
Depression Scale	4.779	1.354	3.530	85	0.001
Somatization Scale	2.372	1.114	2.130	85	0.036
Atypical Scale	2.570	1.608	1.599	85	0.114
Withdrawal Scale	0.837	1.068	.784	85	0.435
Adaptability Scale	0.486	0.845	5.74	85	0.567
Attention Problems Scale	2.326	0.748	3.109	85	0.003
Social Skills Scale	2.779	1.054	2.636	85	0.010
Leadership Scale	1.245	0.639	.968	85	0.336

$p < 0.05$ .

Participants in the EAC experimental treatment group demonstrated a statistically significant greater decrease in five negative behaviors and statistically significant greater increase in two positive behaviors when compared to the RD treatment group, as illustrated in Table 3. The

TABLE 2. BASC paired sample t-test of pre- and posttest scores, RD treatment group (n = 38)

Behaviors	Average Mean	Std. Error Mean	t	df	p
<b>BASC Self-Report</b>					
Emotional Symptom Index	3.737	1.608	2.325	37	0.026
School Maladjustment Composite	1.395	1.644	0.848	37	0.402
Clinical Maladjustment Composite	2.763	1.414	1.954	37	0.058
Personal Adjustment Composite	3.553	1.532	2.318	37	0.026
Attitude Toward School Scale	.526	1.491	0.353	37	0.726
Attitude Toward Teachers Scale	2.316	1.668	1.388	37	0.173
Atypical Scale	2.237	1.324	1.689	37	0.100
Locus of Control Scale	2.579	1.763	1.463	37	0.152
Social Stress Scale	5.368	2.350	2.284	37	0.028
Anxiety Scale	2.842	1.678	1.693	37	0.099
Depression Scale	2.974	1.833	1.622	37	0.113
Sense of Inadequacy Scale	2.658	1.780	1.494	37	0.144
Relationship with Parents Scale	0.158	1.610	0.098	37	0.922
Interpersonal Relations Scale	4.158	2.281	1.823	37	0.076
Self Esteem Scale	4.158	1.574	2.641	37	0.012
Self Reliance Scale	2.816	1.823	1.545	37	0.131
<b>BASC Parent-Report</b>					
Behavioral Symptoms Index	1.091	1.246	0.876	32	0.388
Externalizing Problems Composite	0.545	1.631	0.334	32	0.740
Internalizing Problems Composite	1.697	1.081	1.570	32	0.126
School Problems Composite	0.758	1.182	0.641	32	0.526
Hyperactivity Scale	0.212	1.753	0.121	32	0.904
Aggression Scale	2.394	1.548	1.546	32	0.132
Conduct Problems Scale	0.606	1.611	0.376	32	0.709
Anxiety Scale	0.606	2.677	0.226	32	0.822
Depression Scale	3.788	1.494	2.535	32	0.016
Somatization Scale	0.394	1.519	0.259	32	0.797
Atypical Scale	1.303	1.662	0.784	32	0.439
Withdrawal Scale	2.485	1.660	1.497	32	0.144
Adaptability Scale	1.139	1.193	0.955	32	0.346
Attention Problems Scale	0.242	1.229	0.197	32	0.845
Social Skills Scale	0.303	1.652	0.183	32	0.856
Leadership Scale	1.594	1.426	1.117	32	0.272

$p < 0.05$ .

improved areas were (a) Social Stress, (b) Self Esteem, (c) Behavioral Symptoms Index, (d) Externalizing Problems Composite, (e) Hyperactivity, (f) Aggression, and (g) Conduct Problems.

TABLE 3. ANCOVA table comparing the EAC treatment group with the RD treatment group

Scale	Source	Sums of Squares	df	MS	F	P	Partial Eta Squared
BASC- Self-Report Social Stress	Pre-BASC-SRS	5379.906	1				
	Service	425.498	1	425.498	4.313	0.039	
	Error	15884.630	161	98.662			
	Corrected Total	21522.848	163				
Self Esteem	Pre-BASC-SRS	3239.591	1				
	Service	386.635	1	386.635	5.202	0.024	0.031
	Error	12040.455	162	74.324			
	Corrected Total	15553.636	164				
BASC-Parent Report Behavioral Symptoms Index	Pre-BASC-PRS	8517.904	1				
	Service	275.504	1	275.504	3.791	0.050	0.032
	Error	8430.519	116	72.677			
	Corrected Total	16949.580	118				

(Continued)

TABLE 3. (Continued)

Scale	Source	Sums of Squares	df	MS	F	P	Partial Eta Squared
Externalizing Problem Composite	Pre-BASC-PRS Service	9570.242	1				
	Error	528.625	1	528.625	7.613	0.007	0.062
	Corrected Total	84430.519	116	72.677			
Hyperactivity	Pre-BASC-PRS Service	11375.152	1				
	Error	403.823	1	403.823	5.790	0.018	0.048
	Corrected Total	8090.986	116	69.750			
Aggression	Pre-BASC-PRS Service	1957.849	1				
	Error	7054.605	1	7054.605	11.352	0.001	0.089
	Corrected Total	692.118	1	692.118			
Conduct Problems	Pre-BASC-PRS Service	7072.286	1				
	Error	14179.647	116	60.968			
	Corrected Total	14179.647	118				
	Pre-BASC-PRS Service	7752.608	1				
	Error	375.918	1	375.918	4.768	0.031	0.039
	Corrected Total	9145.895	116	78.844			
	Corrected Total	17129.109	118				

$p < 0.05$ .

## ***Results as Measured by the PSF***

Repeated measures ANOVA showed statistically significant improvement in all three-scale scores on the PSF: (a) total overall behaviors, (b) increased positive behaviors, and (c) decreased negative behaviors.

### *Total Overall Behavior (positive behaviors minus negative behaviors)*

A trend analysis of overall total behavioral ratings for the PSF indicated an upward trend in the averages across the 12 time periods. The repeated measures ANOVA indicated a statistically significant trend of the means across the 12 time periods ( $F = 10.12$ ,  $df = 11$ ,  $p < 0.0001$ ). The in-group means of the serial  $F$  trend analysis demonstrated a statistically significant shift between sessions 1 and 2 ( $F = -13.61$ ) and between sessions 10 and 11 ( $F = 15.32$ ). The first statistically significant shift was a negative shift. This negative shift most likely represents the participants being on their “good behavior” for the first session, which is typical behavior for individuals in new and unfamiliar settings, and resorting back to more true or typical behavior in the second session. The second statistically significant shift, a positive one, occurred between sessions 10 and 11 ( $F = 15.32$ ). Thus, although sessions 2 through 12 followed an upward trend demonstrating progressively better PSF scores, there was an even greater upward shift between sessions 10 and 11.

A test of specific linear, quadratic, and cubic trends indicated that the means appear to have more of a quadratic trend ( $F = 23.139$ ,  $p < 0.0001$ ) than a linear trend ( $F = 10.959$ ,  $p < 0.0001$ ) or cubic trend ( $F = 3.298$ ,  $p < 0.072$ ). This means the overall total behaviors started out level and then the positive behaviors increased and the negative behaviors decreased over time, but not enough to be a pure linear change (straight line), therefore the graphed trend line, has bends in it.

### *PSF Positive Behaviors Only*

A trend analysis of positive behavior ratings of the PSF indicated an upward trend in the averages across the 12 time periods. The repeated measures ANOVA indicated a statistically significant trend of the means across the 12 time periods ( $F = 14.816$ ,  $df = 11$ ,  $p < 0.0001$ ). A test of specific linear, quadratic, and cubic trend indicated that the means appear to have more of a linear trend ( $F = 83.975$ ,  $p < 0.0001$ )

than a quadratic trend ( $F = 2.097, p < 0.150$ ) or cubic trend ( $F = 0.022, p < 0.883$ ). This means the positive behavior increased significantly over time, therefore the graphed trend line is relatively straight and ascending.

### *PSF Negative Behaviors Only*

A trend analysis of negative behavior ratings of the PSF indicated a downward trend in the averages across the 12 time periods. The repeated measures ANOVA indicated a statistically significant trend of the means across the 12 time periods ( $F = 11.601, df = 11, p < 0.0001$ ). A test of specific linear, quadratic, and cubic trend indicated that the means appear to have more of a quadratic trend ( $F = 43.820, p < 0.0001$ ) than a cubic trend ( $F = 16.240, p < 0.0001$ ) or linear trend ( $F = 0.222, p < 0.638$ ). This means the negative behaviors started out level and then the negative behaviors decreased over time, but not enough to be a pure linear change (straight line), therefore the graphed trend line has bends in it.

## **DISCUSSION**

This research found EAC to be effective with at-risk children and adolescents. In addition EAC treatment was determined to be superior to RD treatment. The researchers wished to first compare treatment outcomes with independent examination of specific differences on each scale of the BASC instrument for each treatment group. Given the a priori hypothesis regarding specific planned comparisons, multiple *t*-tests were preferred over multivariate analysis. The a priori specific planned comparisons provided the required information while yielding similar power and control for Type I error rate as a multivariate statistic. The independent examinations on each scale showed both treatments to be effective however the EAC treatment was effective in more areas and in different areas than the RD treatment.

When examining treatments independently, the EAC treatment showed significant improvement on five behavior scales of the BASC-SRS whereas the RD treatment showed significant improvement on four behavior scales of the same instrument. The BASC-SRS revealed the following areas of improvement: Emotional Symptom Index ( $p = 0.027$ ), Clinical Maladjustment Composite ( $p = 0.30$ ), Atypical behaviors ( $p = 0.002$ ), Sense of Inadequacy ( $p = 0.004$ ), and Relations with Parents ( $p = 0.018$ ).

Participants in the RD treatment showed significant improvement in these behavior areas of the BASC-SRS: Emotional Symptom Index ( $p = 0.026$ ), Personal Adjustment Composite ( $p = 0.026$ ), Social Stress ( $p = 0.028$ ), and Self-Esteem ( $p = 0.012$ ). The only common improved behavior area for both treatment groups was Emotional Symptom Index. Thus, the children and adolescents in each modality found their treatment to be effective. But for the most part, each treatment modality affected different behaviors.

The BASC-PRS offers even stronger validation than the SRS that EAC is a viable treatment for at-risk children and adolescents. When examining treatments independently, the EAC treatment showed significant improvement on 12 behavior scales of the BASC-PRS whereas the RD treatment showed significant improvement on one behavior scale on the same instrument. Parents of EAC participants reported improvement in the following behavioral and emotional areas: Behavioral Symptom Index ( $p = 0.000$ ), Externalizing Problems Composite ( $p = 0.000$ ), Internalizing Problems Composite ( $p = 0.000$ ), Adaptive Skills Composite ( $p = 0.003$ ), Hyperactivity ( $p = 0.000$ ), Aggression ( $p = 0.000$ ), Conduct Problems ( $p = 0.001$ ), Anxiety ( $p = 0.000$ ), Depression ( $p = 0.001$ ), Somatization ( $p = 0.036$ ), 11), Adaptability ( $p = 0.003$ ), and Social Skills ( $p = 0.010$ ) scales. It is important to note in contrast that parents of RD participants reported improvement in only one behavioral area on the BASC-PRS, which was Depression ( $p = 0.016$ ). These findings are reflective of how, from the parents' perspective, EAC was very effective in reducing internalizing and externalizing problem behaviors while also improving adaptive skills; whereas, RD was only effective in reducing depression.

A direct comparison of EAC with RD was accomplished using an ANCOVA of BASC-SRS and -PRS pre- and posttest scores. This analysis yielded superior results for the EAC group over the RD group on seven scales. The improvement on the Behavioral Symptom Index ( $p = 0.050$ ), which reflects an overall reduction in problem behaviors, indicates that after children and adolescents received EAC their ability to cope and adapt to new situations increased, whereas overall maladaptive behaviors decreased. The reduction in the Externalizing Problem Composite ( $p = 0.007$ ) is of importance in that a central characteristic of the externalizing behavior problems is the disruptive nature of a child's behavior. Such children disrupt the activities of both peers and adults and they often are unresponsive to adult direction (Reynolds & Kamphaus, 1992). This research finding is important because parents generally are less tolerant of externalizing behavior problems, and parents expend a significant amount of energy trying to change problematic behaviors. Furthermore, children and adolescents

exhibiting these behavior difficulties often have problems maintaining relationships with peers, family members, and teachers.

The statistically significant improvement on the Social Stress ( $p = 0.034$ ) and Self-Esteem ( $p = 0.024$ ) scales indicate that, on average, children and adolescents who received EAC performed more than three fourths of a standard deviation better than those who received RD. Improvement on Social Stress and Self-Esteem scales indicates that participants' self-satisfaction improved, participants' sense of identity increased, and participants' level of ego strength improved to appropriate levels after receiving EAC.

The reduction in Hyperactivity ( $p = 0.018$ ) is of importance because those children and adolescents who received EAC demonstrated a noticeable increase in their ability to focus, stay on task, and no longer be overactive; this includes two aspects of the ADHD symptom triad, hyperactivity, and impulsivity (Reynolds & Kamphaus, 1992). The reduction of Aggression behavior ( $p = 0.001$ ), both verbal and physical, demonstrates that EAC effectively reduced behaviors such as arguing, name calling, criticizing, verbally threatening others, hitting others, breaking others' possessions, and being cruel to animals. The reduction of Conduct Problems ( $p = 0.031$ ; cheating, lying, stealing, alcohol/drug use, and socially deviant and disruptive behaviors that are directed against others) is significant because conduct problem behaviors worsen with age, influenced by such factors as academic failure, poor parenting, and peer rejection. These factors, if gone untreated, can also lead to depression and suicide.

The EAC treatment results on the BASC showed statistically significant improvement at all scale levels: (a) indexes, (b) composites, and (c) individual scales. These results offer validation that EAC is a viable treatment for children and adolescents at risk for social and academic failure. The effect of EAC on internalizing problems as reported by the participants and their parents is particularly promising because it denotes a noticeable increase in participants' ability to internally cope with their problems and seem less lonely, less nervous, and less anxious. These findings are important because internalizing behavior problems often go unidentified and untreated in children and adolescents until they become serious, or even deadly. Typically, parents and other significant adults in children's lives have difficulty recognizing the subtle problem behaviors associated with anxiety, depression, and other internalized behaviors; parents and teachers may assume the child is shy or quiet, or they may attribute these behaviors to a phase the child will outgrow. With the growing trend of suicide among adolescents, identifying treatments that are proven

to be significantly effective with internalizing behavior problems is critical to the mental health and school communities. The BASC results also support EAC as effective for improving adaptive skills, such as leadership, adaptability, and social skills in children and adolescents. This is very important because adaptive skills in many ways are complete or exact opposites of problem behaviors and yet a lack of adaptive skills often goes undetected and untreated.

Additional efficacy of the EAC treatment is demonstrated by the results of the PSF instrument. The EAC participants improved in overall total social behavior, increased positive social behavior, and reduced negative social behavior. These findings are important because the PSF offers counselors and researchers a multifaceted tool for better monitoring and pinpointing client movement across treatment sessions. A great advantage of using the PSF is that the counselor or researcher can determine the proximity of any significant shifts in client behaviors and examine therapeutic interventions or significant occurrences that took place that may have influenced the client change.

### ***LIMITATIONS OF THE STUDY***

When interpreting the data analyses, the reader is offered the following limitations to the study. One, the RD comparison treatment, the Kid's Connection program, required only 1-hour weekly sessions, whereas the EAC treatment received weekly 2-hour sessions and there is no way to know how this time differential may have impacted the research results. Two, the sample size of the RD comparison treatment group was much smaller than the EAC treatment group and it is difficult to determine whether the differences in size of the two groups influenced the results of the study. Three, inter-rater reliability was not formally (statistically) established for the PSF instrument; rather, it was informally established by training therapy team assessors on how to assess participants using the PSF. Four, inherent to the design of this study, across a 12-week time period, exists the potential for participants' developmental changes in physical and emotional areas to influence the outcome of the research. Five, one of the instruments used to assess treatment effects, the PSF, needs further research to examine and establish its validity and reliability. Finally, six, the EAC and the RD treatments were performed in radically different environments: The former treatment was administered outdoor on an unfamiliar ranch, and the latter was administered

indoor in the participants' school. It is difficult to determine what the differential environmental impact may have been but it is likely that the outdoor, ranch environment was a substantial benefit. Finally, although reducing the chance of Type II error, the use of multiple *t*-tests may have impacted the results. This was a deliberate decision by the researchers because it was important to evaluate the clinical effectiveness of this type of therapy.

## CONCLUSION

This study demonstrated the effectiveness of Equine Assisted Counseling by comparing it to an existing and empirically supported award-winning school-based counseling intervention called Kids Connection (*Rainbow Days Inc.*, 1998, 2006). When taking into account that there are currently no previously published empirical findings regarding the effects of EAC on internalizing problem behaviors, externalizing problem behaviors, maladaptive and adaptive skills, and its comparison with an empirically supported treatment, the findings in this present study are particularly remarkable. Furthermore, because this study's EAC treatment intervention was structured, it can easily be replicated and can be included as an effective mental health component for school-age students, thus having the potential to impact large numbers of at-risk children and adolescents who might not otherwise respond to more passive types of mental health services. Further research should be applied to the area of equine intervention to verify the efficacy of the approach. Such research should consider the utilization of an equine-related placebo, i.e. horse-back riding with no treatment intervention, to determine if EAC effects were merely created by the novelty of the environment, such as being outside and around horses, or actually a result of the counseling intervention.

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