Equine Assisted Psychotherapy: Can it Improve Self-Regulation and Social Skills in Children Diagnosed with Fetal Alcohol Spectrum Disorder?

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Abstract

Those who currently suffer with Fetal Alcohol Spectrum Disorder (FASD) find little relief as the development and implementation of intervention strategies are limited and have lagged behind (Astley, 2011; Paley & O’Connor, 2009; Warren, Hewitt, & Thomas, 2011). This literature review examines if equine assisted psychotherapy (EAP) is a viable behavioral intervention to improve self-regulation and social skills in children diagnosed with FASD. Quantitative EAP studies involving at-risk youth, as well as the only quantitative social skills study conducted with 100 children with FASD are compared, with the majority of studies showing significant, positive results (O’Connor et al., 2006; Schultz et al., 2007; Shultz, 2005; Trotter et al., 2008).

Information about the FASD population, diagnosis, prevalence data, and knowledge of professionals who work with this population is explored as it relates to interventions.
Acknowledgments

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Chapter 1: Introduction

Fetal Alcohol Spectrum Disorder (FASD) is avoidable if women do not drink during pregnancy yet the disorder is the leading cause of preventable birth defects, mental retardation and neurodevelopmental disorders in the United States (American Academy of Pediatrics: Committee on Substance Abuse and Committee on Children With Disabilities, 2000). The effects of alcohol have been long observed in children throughout history which has been documented in early literature. “Behold, thou shalt conceive and bear a son; and now drink no wine or strong drinks,” Judges 13.7. “Foolish, drunken and harebrained women most often bring forth children like unto themselves, morose and languid,” Aristotle. In the 18th Century, the London Gin Epidemic saw alcohol consumption increase to such a degree that it alarmed the entire country of Great Britain. Later, in 1834, the British House of Commons was established to investigate the upsurge of drinking. The evidence presented to the committee suggested that infants born to alcoholic women sometimes appeared starved, shriveled and imperfect (Jones & Steissguth, 2010). In 1899, Dr. William Sullivan examined alcoholic females in the Liverpool Prison and found that there was an increased frequency of early fetal death and infant immortality. Even though he clearly documented his findings about the possibilities of maternal use of alcohol during pregnancy, the medical community remained unconvinced and no serious actions were taken regarding this issue (Jones & Steissguth, 2010).

In 1973, a team of American physicians reported on the similar characteristics of children who were born to chronic, alcoholic women and coined the phrase, Fetal Alcohol Syndrome (Jones & Streissguth, 2010). Interest in this disability continued nationally and in 1981, the U.S. Surgeon General issued an advisory on alcohol and pregnancy. By 1989, bottle labeling of alcohol by law went into effect with the signing of the Anti-Drug Abuse Act of 1988 by Congress (S. Res. H.R. 5210, 1988). Even with mounting research and evidence of the effects of alcohol
during pregnancy, one out of eight women continued to drink while pregnant and one in fifty reported binge drinking while pregnant (Centers for Disease Control and Prevention, 2011). The World Health Organization has warned that Fetal Alcohol Spectrum Disorder is fast becoming a worldwide health epidemic (World Health Organization, 2011).

FASD has a multitude of behavioral phenotypes including difficulty modulating incoming stimuli and poor cause-and-effect reasoning, especially in social situations (Streissguth, 1997). The effects are life long and children who have been prenatally exposed to alcohol are more compromised interpersonally than other developmentally delayed children, which often leads to school and employment failures (O’Connor et al., 2006). This lack of skill repeats itself throughout a person’s entire lifetime in relationships and at work. Their vulnerability in social settings makes them easy targets for those who might take advantage of their trusting nature (Streissguth, 1997).

It is not clear how many are affected as Fetal Alcohol Spectrum Disorder covers a wide range of possible birth defects and cognitive delays. Many who have the disorder demonstrate the neurological and behavioral characteristics, but do not have the abnormal facial characteristics and therefore, are not diagnosed (Warren, Hewitt, & Thomas, 2011). The Centers for Disease Control and Prevention (CDC) admits that they really do not know how many people have FASD, but estimate that those with the characteristics of Fetal Alcohol Syndrome make up .2 to 1.5 cases for every 1000 live births (CDC 2011). Children who are included in prevalence studies have more severe symptoms of the disorder. Those who are classified as higher functioning within the spectrum are typically not included in empirical investigations as they may never be referred, examined, or diagnosed which complicates the accuracy of the data (May et al., 2009).

Diagnostic criteria for FASD are not fully agreed upon and the spectrum is not listed in the Diagnostic and Statistical Manual for Mental Disorders-IV (American Psychiatric
Many professionals may not know how to recognize, diagnose or effectively treat those with the disorder. Those who currently suffer with this disorder find little relief as the development and implementation of intervention strategies are limited. Even though some promising efforts to design and test interventions have occurred realization has fallen behind (Astley, 2011; Paley & O’Connor, 2009; Warren, Hewitt, & Thomas, 2011). This research is intended to explore the issues facing this population. It will also investigate the potential efficacy of an alternative behavioral intervention involving the use of horses to help children with FASD to improve self-regulation and social skills.

**Importance of the Study**

Fetal Alcohol Spectrum Disorder (FASD) affects children worldwide (May & Gossage, 2001). This review will examine if children with FASD diagnosis, specifically those at the higher end of the spectrum with IQs ≥ 90, will show improvement in self-regulation and social skills with an alternative intervention like equine assisted psychotherapy. It will provide insights as to why research has lagged behind in the development of behavioral interventions for this population. The conclusions of this research may be used in the future to seek funding for additional studies using EAP to ensure the efficacy of this method so it can be more widely available to families and the professionals who serve the FASD population.

**Research Question**

Is Equine Assisted Psychotherapy (EAP) a viable behavioral intervention to address self-regulation and social skills in children diagnosed with Fetal Alcohol Spectrum Disorder?

**Limitations**

1. The review does not intend to evaluate research associated with all categories within the spectrum of FASD, but specifically those at the high end of the spectrum with Intelligence Quotient (IQ) ≥90.
2. The review intends to only look at studies involving children and adolescents who receive EAP and does not include adults.

3. The review intends to only look at studies involving behaviors associated with self-regulation and social skills rather than all of the behavioral issues identified for the FASD population such as anxiety, depression, oppositional defiant disorder and sleep problems.

4. The review does not intend to study the behaviors of children in the future after they receive Equine Assisted Psychotherapy.

5. The review does not intend to investigate the effects of disrupted parenting, abuse or trauma in children diagnosed with FASD.

Bias

1. The researcher is the parent of a young adult with FASD.

2. The researcher has participated in state and federal advocacy activities to modify laws to improve access to services for the population.

3. The researcher has observed EAP sessions with the FASD population.

Definitions

EAP

Equine Assisted Psychotherapy

EAGALA

Equine Assisted Growth and Learning Association

FASD

Fetal Alcohol Spectrum Disorder; the umbrella term to describe the range of effects that can occur prenatally in an individual when the mother drinks alcohol during pregnancy. Diagnoses included under the FASD umbrella:
1. Fetal Alcohol Syndrome (FAS)

2. Partial Fetal Alcohol Syndrome (PFAS)

3. Alcohol Related Neurological Disorder (ARND)

4. Alcohol Related Birth Defects (ARBD)

**Self-regulation**

The ability for a child to modulate his or her own activities in accordance with social norms without assistance from caregivers.

**Chapter 2: Literature Review**

**FASD Population and Diagnosis**

In order to determine effective treatment and interventions, the client must be diagnosed accurately. However, the diagnostic criterion continues to evolve. In 1996, due to terminology issues, the Institute of Medicine (IOM) developed diagnostic guidelines and defined a five category system for FAS and Alcohol Related Effects as follows:

1. Fetal Alcohol Syndrome (FAS) with confirmed maternal alcohol exposure.

2. Fetal Alcohol Syndrome (FAS) without confirmed maternal alcohol exposure.

3. Partial Fetal Alcohol Syndrome (PFAS) with confirmed maternal alcohol exposure.

4. Alcohol Related Birth Defects (ARBD) with physical anomalies only.

5. Alcohol Related Neurodevelopmental Disorder (ARND) references people who manifest neurodevelopmental, cognitive or behavioral abnormalities attributable to alcohol exposure (Warren et al., 2011).

Several years later, in 2003, The National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol Effect, in collaboration with federal health agencies and the public, developed guidelines
for the diagnosis of FAS in order to promote consistency in the diagnosis which was called the
*Fetal Alcohol Syndrome: Guidelines for Referral and Diagnosis* (Centers for Disease Control and
Prevention; National Center on Birth Defects and Developmental Disabilities [CDC; NCBDDD],
2004). In 2004, to clarify the often confusing terminology associated with prenatal exposure, The
National Organization for Fetal Alcohol Syndrome assembled agencies and scientist in the fields
to develop a consensus statement on FASD that was accepted by The National Task Force on
Fetal Alcohol Syndrome and Fetal Alcohol Effect:

> Fetal Alcohol Spectrum Disorders (FASD) is an umbrella term describing the
> range of effects that can occur in an individual whose mother drank alcohol
during pregnancy. These effects may include physical, mental, behavioral, and/or
learning disabilities with possible lifelong implications. The term FASD is not
intended for use as a clinical diagnosis. (CDC; NCBDDD, 2004)

Even with the attempt to standardize the diagnostic criteria, several schemas are utilized: a) the 4-
Digit Code; revised criteria from the Institute of Medicine (IOM); b) the Canadian National Task
Force on FAS/FAE; and c) the Minnesota Diagnostic Criterion. The agreement on specific criteria
and characteristics varies, with the exception of FAS (Chudley et al., 2005; Fetal Alcohol
Diagnostic Program, [Diagnostic Consortium], 2006; Warren et al., 2011).

Another issue relating to diagnosis is that no part of the spectrum including Fetal Alcohol
Syndrome (FAS) appears in the DSM IV-TR. Even though attempts began in 2005 to include
FASD in the DSM V by The National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol
Effect, it is uncertain if any portion of the spectrum will be included in the revised DSM (CDC;
NCBDDD, 2004).

If FAS is diagnosed, it is placed on AXIS III, and is classified as a medical diagnosis
under the medical codes of the International Classification of Diseases (World Health
Organization, 2011). Also, a diagnosis for FASD is complex and requires a multi-disciplinary team including a physician trained on FASD, a psychologist, occupational therapist and speech-language pathologist (Chudley et al., 2005). The reason psychologists become involved is that many children affected by prenatal exposure only present frustrating behaviors. The children have no facial characteristics that are associated with other potential birth defects and the behaviors may not be linked to FASD by doctors, social workers, educators or other professionals.

In 1997, even before the diagnostic criteria were defined, behavioral phenotypes were identified for FASD through the collection of descriptions from parents about their child’s behavior. Such behavioral descriptors by parents refer to characteristics that exceed scores on performance tests, and as a group, do not seem characteristic of other childhood disorders (Streissguth, et al., 1998). While data for 78 of these characteristics was gathered, the list was eventually reduced to 36 items with the most common listed below. The behaviors typically cluster under two main categories and understanding them may assist in developing interventions. Some of these behaviors include:

**Difficulty Modulating Incoming Stimuli: Poor Habituation**

1. Gets overstimulated in social situations, as in a crowded room or amongst strangers.
2. Overreacts to situations with surprisingly strong emotional reactions.
3. Displays rapid mood swings set off by seemingly small events.
4. Possesses poor attention spans.
5. Has trouble completing tasks.
6. Tends to misplace things.
Poor Cause-and-Effect Reasoning: Especially in Social Situations

1. Seems unaware of the consequences of his or her behavior, especially the social consequences.
2. Shows poor judgment in whom to trust.
3. Interrupts with poor timing.
4. Cannot take a hint; needs strong, clear commands.
5. Loves to be the center of attention; draws attention to self. (Streissguth, 1997, pp. 126-127)

As identified in the above list, several of these behavioral issues contribute to difficulty in learning social skills which affects the lifelong development of positive relationships with peers as well as teachers or employers. It has been found that children with prenatal exposure to alcohol are more impaired interpersonally than other developmentally delayed children which often leads to failed academic and employment failures (O’Connor et al., 2006). This lack of skill repeats itself throughout his or her lifetime in workplace settings and when trying to maintain long lasting friendships. Due to the vulnerability of children with FASD in social settings, they may become easy targets for those who might take advantage of their trusting nature and entice them to give up money or possessions which can result in victimization (Streissguth, 1997). Even with this comprehensive list of behavioral phenotypes and complex diagnostic descriptions, FASD is not considered a medical diagnosis but a description of a hypothetical spectrum of results to exposure. At the present time no accepted standards exist to diagnose those who lack physical effects but are compromised neurologically (Coles, 2011).

Another dilemma in determining an accurate diagnosis is the ability to confirm maternal alcohol use during pregnancy. Since a large majority of children may have no observable, physical evidence, the confirmation of maternal drinking during pregnancy becomes important in
order to secure an accurate, early diagnosis. Without this confirmation, this population is not recognized until school behaviors warrant a diagnosis. Mothers who drink during pregnancy may be evasive about their behaviors and some socioeconomic differences may affect a women’s disclosure about alcohol consumption (O’Connor & Paley, 2009). This information is self-reported which can be unreliable and the utility of biomarkers are limited to detect drinking during pregnancy in order to provide a diagnosis (Bakhireva & Daniel, 2011). Early diagnosis and intervention in a biological family is often rare and adoptive parents, more frequently seek help. Many children with FASD diagnosis in this setting also suffer from complications of disruptive and traumatic childhoods prior to adoption, which confounds the issue. While ninety percent of those with FASD will develop secondary mental health issues, an accurate diagnosis must be made at an early age in order for therapeutic interventions to be effective (Streissguth, 1997).

**Professional skill and knowledge for treatment for FASD.** Many professionals state that interventions are critical at an early age for those diagnosed with FASD (Astley, 2011; Coles, 2011; Paley & O’Connor, 2011; Streissguth, 1997; Warren et al., 2011). Once a child is diagnosed, referral to a medical or mental health provider who is well versed on FASD poses a challenge. One study surveyed 494 medical doctors in Alaska including obstetricians, pediatricians and family physicians (Dewane, Brems, Johnson, Casto, & Corey, 2007). Even though the Surgeon General’s warning appears on all liquor products as of 1988, 26% of the professionals indicated that some portion of alcohol during pregnancy was safe. When the professionals were asked how they rated their knowledge about the diagnosis of FAS, 36 % of Pediatricians and OB/GYNs’ and 68% Family Physicians did not feel comfortable about their understanding (Dewane, et al., 2007).

An American Psychological Association (APA) study surveyed doctoral level, clinically active, APA members on their knowledge of FASD. The study was drawn from six states:
Missouri, Arkansas, Oklahoma, Kansas, Iowa, and Nebraska, with a sample size of 1,417 (American Psychological Association [APA], 2004). The overarching theme of the 447 psychologists who responded was that they felt inadequately trained to work with the FASD population. While 92% of those surveyed agreed that prenatal alcohol exposure was a significant risk for brain damage, 81% thought that alcohol withdrawal at birth was the worst consequence of prenatal exposure to alcohol (APA, 2004). Psychologists (71%) identified that lack of training was the greatest barrier to diagnosis (APA, 2004). While the respondents identified a desire to continue to learn more about this disability, over 65% felt somewhat or very unprepared to identify children who present with FAS and 82% felt unqualified to manage or coordinate the care of children with this diagnosis (APA, 2004; Wedding et al., 2007, p. 7-13). The Alaskan study and the APA study reveal the limited knowledge of professionals who come in contact with children with FASD and the need for standardized diagnostic criteria for the entire spectrum. These studies also demonstrate the need for FASD to be represented in the DSM in order that professionals are better trained to fully understand the disorder’s complexities.

**FASD prevalence data.** The difficulty in collecting prevalence data on FASD is another issue that impacts development of intervention strategies. Without accurate data it is difficult to advocate for necessary funding for diagnoses and treatment. Information about the size of this population, nationwide, continues to vary amongst researchers and government agencies. The Center for Disease Control and Prevention (CDC) states:

> We do not know exactly how many people have FASD. CDC studies have shown that 0.2 to 1.5 cases of fetal alcohol syndrome (FAS) occur for every 1,000 live births in certain areas of the United States. Other studies using different methods have estimated the rate of FAS at 0.5 to 2.0 cases per 1,000 live births. (CDC, 2011)
The Substance Abuse and Mental Health Services Administration (SAMHSA) published that prevalence rates are 10 in 10,000 births (SAMHSA, 2011). In an earlier study, Washington State found prevalence rates as high as 10-15 per 1000 births in high risk populations from the foster system (Astley, 2011). While CDC’s findings conclude that FASD prevalence in the general population of the United States is still unknown and under defined, an extensive review in 2009 showed a more significant impact on the general public (May et al., 2009). Findings suggest that a more realistic estimate of prevalence for mixed racial and socioeconomic status populations in the United States may be at least 2-7 per 1000 births which are greater than the published data by CDC (May et al., 2009). The prevalence is also higher than the 2001 estimate by the Institute of Medicine which was thought to be around 0.5-2.0 per 1000 births (May & Gossage, 2001).

One of the key issues of collecting the data is that different methods have strengths and limitations when investigating this particular disorder (May et al., 2009). For instance, clinical studies show lower rates than active case studies. Passive surveillance methods which government agencies use by averaging birth data show the lowest rates. Children within the spectrum who have less defined facial characteristics and higher functioning behaviors may never be referred or examined and go undiagnosed even though they are affected. Children who are the focus for most prevalence studies tend to be diagnosed with more severe symptoms of Fetal Alcohol Syndrome (FAS) and Partial Fetal Alcohol Syndrome (PFAS) versus Alcohol Related Neurological Disorder (ARND) and Alcohol Related Birth Defects (ARBD). Children with ARND and ARBD are typically not included in the prevalence studies, which further complicates the accuracy of the data (May et al., 2009).

**FASD interventions.** Interventions and treatment strategies for FASD are limited. While several studies for behavioral interventions have been conducted, most methodologies have not
generalized to community settings and are limited (Paley & O’Connor, 2011). The majority of medical interventions are in the beginning stages. Due to the unreliability of self-reporting maternal alcohol use, researchers are attempting to establish biomarkers to accurately detect alcohol use in pregnant women using maternal blood, serum or urine samples. More recently, researchers have investigated the use of other tissue types for alcohol biomarker detection that include hair, umbilical cord tissues, fingernails and newborn blood. Despite a great deal of research, the ability to detect lower levels of alcohol over longer intervals to assist with diagnosis or data collection, remains elusive (Bakhireva & Daniel, 2011).

Additional methods to medically minimize the effects of FASD include the exploration of pharmaceutical interventions during pregnancy to interrupt the damage of alcohol during gestation. However, challenges exist as it is unlikely that one agent can address all of the teratogenic mechanisms of alcohol and the pharmaceutical itself may adversely affect the fetus. One promising approach is the nutritional intervention of choline that decreases hyperactivity and improves spatial and working memory in rats (Warren et al., 2011).

Finally, one of the main strengths and characteristics of the brain is to adapt to change. This process, called neuronal plasticity, is the basis for lifelong learning. As researchers learn more about how pre-natal exposure influences neuronal plasticity, it is believed that pharmacological, nutritional and educational or behavioral interventions will follow (Warren et al., 2011).

Interventions for FASD are in their infancy. Scientific validation, especially for medical interventions such as pharmacological, neurological and nutritional, are years in the making. Behavioral and educational interventions may be a more productive area in the interim, in order to help those who are already affected.
Summary. Almost 40 years have passed since FAS gained recognition in the United States (Jones & Steissguth, 2010). Yet, treatment strategies for the FASD population are lacking, even though this population continues to be diagnosed with this disability. Also, professionals admit a lack of knowledge and difficulties exist with the collection of accurate prevalence data (Dewane et al., 2007; May et al., 2009; Wedding et al., 2007).

The diagnostic criteria should continue to be refined and systematized nationally to ensure that professionals are trained and have a similar diagnostic approach. Currently, medical or physical portions of the diagnosis have agreed upon standards, due to the rigor that was applied to standardizing the criteria for FAS (CDC; NCBDDD, 2004). This same rigor must be applied to those less likely to be identified. These include the children without facial characteristics who struggle with the lifelong implications of Alcohol Related Neurological Disorder (ARND) and are often not accurately diagnosed.

Secondly, FASD has a multitude of behavioral phenotypes and many in the behavioral sciences, according to research, have little knowledge or feel inadequate with managing or coordinating the care of children with FASD (Wedding et al., 2007). Because this diagnosis includes a battery of psychological testing, inclusion in the DSM is important in order to further research, refine behavioral criteria and influence the knowledge and education of professionals in the mental health arena.

Finally, the lack of accurate data about the number of people affected continues to shroud the FASD population in mystery. This deficiency affects its believability as well as funding for research that can lead to effective interventions. Determining best practices for the collection of consistent, reliable prevalence data, including all categories of the spectrum, should be a goal of the government agencies who are currently compiling this data. Emphasis in these three areas
will help to further fuel public and professional interest in order to develop viable treatment strategies that can help those who are already affected.

**EAGALA Model and Equine Assisted Psychotherapy**

**Overview.** Equine Assisted Psychotherapy (EAP) is a new and growing field. Prior to 2001, quantitative studies on its effectiveness were almost nonexistent. Most therapy of this type included use of horses along with the therapists’ collection of techniques and theoretical framework. Current research conducted reveals EAP has great potential for lasting effects in building confidence, improving communication and providing personal insights to those who receive the therapy (Ewing, MacDonald, Taylor, & Bowers, 2007; Klontz, Bivans, Leinart, & Klontz, 2007; Schultz, Barlow, & Robbins, 2007; Trotter, Chandler, Goodwin-Bond, & Casey, 2008).

The EAGALA (Equine Assisted Growth and Learning Association) model for Equine Assisted Psychotherapy (EAP) was developed in order to address resources, education and professionalism in accordance to therapy with horses (*Fundamentals of EAGALA Model Practice*, 2006). This model is based on the work of Greg Kersten and Linda Thomas, who worked with residential youth programs using horses, and decided to formalize a certified training program for Equine Assisted Psychotherapy (EAP) in 1998. The following year they expanded this work by developing the EAGALA association in order to professionalize and validate the field. The model consists of a solution focused, team approach and is bound by a strict code of ethics. EAGALA has grown to over 3,500 members world-wide in thirty-eight countries (EAGALA, 2010). Regional coordinators support members and networking groups in Europe, Middle East, Africa, Latin America, US and Canada (EAGALA, 2010; *Fundamentals of EAGALA Model Practice*, 2006).
Philosophy of EAP and the EAGALA model. EAP based on the EAGALA model is a unique approach as it encourages clients to experiment with risk, problem-solve, employ creativity and find the solutions that work the best for themselves (EAGALA, 2010; Fundamentals of EAGALA Model Practice, 2006; Klontz et al., 2007; Mann, 2001 Schultz et al., 2007; Trotter et al., 2008). The model can be summarized in four statements: a) team approach, b) focus on the ground, c) solution-oriented, and d) code of ethics (Fundamentals of EAGALA Model Practice, 2006). The model incorporates experiential education learning practices as defined by the Association for Experiential Education (Fundamentals of EAGALA Model Practice, 2006). Experiential education or learning is described as a philosophy and methodology where educators or facilitators purposefully engage participants in a direct experience to allow focused reflection in order to increase knowledge, develop skills and clarify values (Association for Experiential Learning, 2011). The twelve principles of experiential learning occur when:

1. Carefully chosen experiences are supported by reflection, critical analysis and synthesis;
2. The client is required to take the initiative, make decisions and be accountable for the results;
3. Active engagement of the client requires them to pose questions, solve problems, apply creativity;
4. Engagement of the client is authentic, intellectually, emotionally, socially, soulfully and or physically;
5. Results of the learning are personal and form the basis for future experience and learning;
6. Client relationships are developed and nurtured to self, others and to the world;

7. The outcomes of the experiences cannot be totally predicted and the client may experience success, failure, adventure, risk-taking and uncertainty;

8. Facilitators set suitable experiences and boundaries, support clients, ensure physical and emotional safety;

9. Opportunities are nurtured to explore and examine personal values;

10. Facilitators strive to be aware of biases, judgments, preconceptions and how these influence the client;

11. Facilitators recognize and encourage spontaneous opportunities for learning;

12. Design of experience includes possibility to learn from natural consequences, mistakes and successes. (*Fundamentals of EAGALA Model Practice*, 2006 pp. 13-14)

While these principles are often used in the classroom, rope courses, adventure and wilderness training, EAP is unique as it uses the techniques with the aid of horses and its experiential nature allows hands-on participation in structured activities with the horse. Even if clients do not know anything about horses, there is no fear of making mistakes as they realize that how they show up with the horse is how they show up in the world (Jarrell, 2005). This active approach awakens coping behaviors versus defensive behavior and participants develop a sense of responsibility for their own actions and how their actions affect others. Participants have the opportunity to explore fears and build trust in themselves and others. The exercises are a combination of mental problem solving and physical challenges which incorporates the concept of mind, body and spirit (*Fundamentals of EAGALA Model Practice*, 2006; Mandrell, 2006).
Framework and structure of the EAGALA model. The EAGALA model differs from horsemanship or riding lessons or hippotherapy, which is often associated with occupational or speech therapy (Fundamentals of EAGALA Model Practice, 2006; Shultz, 2005). EAP conducts activities on the ground with the focus on human skills versus horse skills. The EAGALA model provides a framework for EAP and offers many opportunities for therapists to incorporate their own creativity and adaptability (Fundamentals of EAGALA Model Practice, 2006). Typically in EAP, therapists integrate a broader theoretical framework into the equine activities (Klontz et al., 2007). While any theory may be a foundation for Equine Assisted Psychotherapy, the five main theories of therapy widely applied to EAP include: Cognitive Behavior Therapy (REBT); Reality or Control Theory; Gestalt; Brief Therapy; and Systems Theory (Mandrell, 2006; Shultz, 2005).

Socratic methods are also fundamental to EAP (Fundamentals of EAGALA Model Practice, 2006; Mandrell, 2006). For instance, outside of demonstrating basic techniques in order to ensure safety when brushing the horse or harnessing, directive teaching about the horses or horsemanship is not incorporated, as horse knowledge is not the goal or purpose of EAP. Sessions are facilitated with questions, and observations in order for the client to process the experience while utilizing horse techniques (Fundamentals of EAGALA Model Practice, 2006; Mandrell, 2006). It is about clients being themselves rather than learning about specific skills for the horse. Through processing with the client, EAP is designed to create metaphors for real situations by applying the metaphorical learning in the field to home, school, and work. Therapists must ensure that the focus is on the process and not allow the session to become a horse only task. They must be able to let go of control and trust the process when observing failures, frustrations, discouragements and successes of the client and horse, rather than trying to provide answers (Fundamentals of EAGALA Model Practice, 2006).
This model may be an asset for children with FASD as they tend to learn more effectively through visual and kinesthetic means, which are attributes of this type of therapy. The overall hands-on approach of EAP provides a forum to experience social learning in a trusted environment with an animal versus a person. The fear of rejection is lessened as the child realizes that the horse is more forgiving with social mistakes than peers. It becomes the therapist’s role to help the child connect the dots from metaphors in the field to real life which creates a strong visual for learning.

Professional team. The EAGLA Model requires a team of professionals to facilitate the EAP sessions. This includes the Horse, Equine Specialist (ES), and a Licensed Mental Health Professional (LMHP). The role of the ES is to: a) develop activities with the mental health specialist; b) log horse behaviors in session; c) be vigilant of safety and welfare of clients, horses, and team members; and d) make observations of potential metaphors. It is important that the ES has sufficient equine experience and background about the behavior and psychology of horses, as the horse is free to choose its own behavior. The ES must demonstrate and understand the horse’s natural responses in order to ensure professional outcomes and safety. The horse is considered a professional part of the team, is respected and able to respond freely throughout the sessions (Fundamentals of EAGALA Model Practice, 2006).

The LMHP is responsible for treatment planning, facilitating the overall processing of the client experience and documenting the sessions to ensure ethical practices. The LMHP also assists the ES in bringing metaphoric and therapeutic relevance to the learning sessions. The team approach improves both physical and emotional safety. Even though the sessions are conducted in natural surroundings and a seemingly open structure, specific treatment goals, objectives and interventions are identified and documented with the purpose of the sessions to address the reasons the client has come to therapy (EAGALA, 2010; Mandrell, 2006). It is the
role of the ES to help the client change undesirable behavior in order to solicit a more positive behavior from the horse. The LMHP’s role is to help the client transfer learning from the field to life’s situations (Shultz, 2005).

**The use of horses.** EAP differs from other types of animal assisted therapy due to the fact that a horse is a prey animal versus a predator. For instance, dogs and cats, which can be used in animal assisted therapy, are predatory animals that have been domesticated. However, if threatened, they will attack or become aggressive. Conversely, horse behavior is more similar to human behavior, because if threatened, horses will run away or take flight, much like humans. They are social, have defined roles with the herd, and distinct personalities demonstrating stubbornness, defiance, and playfulness. Horses command respect due to their size and require the client to be engaged both physically and mentally when caring or working with them (Mandrell, 2006).

Horses are sensitive to nonverbal communication and can respond to messages from clients. For instance, when clients complain that a horse is stubborn, the lesson to be learned may be that they change their approach in order for the horse to respond differently (*Fundamentals of EAGALA Model Practice*, 2006). Horses are masters at relationships and naturally find balance between independence and cohesion with others. They also desire peace in relationships, just like humans (Mandrell, 2006). Horses have the capacity to read their environments and provide accurate, unbiased feedback mirroring both the physical and emotional states of the participant during the exercise. The horse’s ability raises the client’s awareness of corresponding feelings and behaviors (Klontz, Bivans, Leinart, & Klontz, 2007).

Children with FASD have difficulty with self-regulation, which is the ability to modulate their own activities in accordance with social norms without assistance from caregivers. The horse’s natural skill at reading and mirroring both the physical and emotional states helps
children see themselves differently. In actual social settings with peers or family, the behaviors associated with FASD are typically not allowed. Children have very little opportunity to see how they are seen by others and the chance to do something differently in order to build relationships. The horse allows this nonjudgmental reflection. Through trial and error, the children learn how to navigate relationships by practicing the appropriate feelings and behaviors.

**Efficacy of EAP.** Previous counseling literature for EAP consisted of more qualitative versus quantitative analysis (Schultz et al., 2007; Shultz, 2005; Trotter et al., 2008). Recent research demonstrates quantitative evidence of the efficacy of EAP which offers an intriguing alternative for populations of at-risk youth. Trotter’s study (2008) looked at 164 at-risk adolescents and participants who were divided into two groups to receive twelve weeks, of two hour sessions of therapy (Trotter et al., 2008). Of the 164 participants, 86 attended elementary school and 78 attended middle school. One group (126 participants) received Equine Assisted Psychotherapy (EAP) and the other group (38 participants) received therapy via a school-based counseling program that was conducted in-class. Behavior instruments were used to assess and evaluate functioning at the beginning and end of treatment. The assessments included the Behavioral Assessment System for Children (BASC), Self-Rating Scale (SRS) and Parent-Rating Scale (PRS). The researchers of this study sought to determine if the unique setting for therapy, like EAP, would more positively impact children who were at-risk for academic and social failure. They also were seeking to discover if EAP was more effective than a traditional in-class, school-based program (Trotter et al., 2008). Throughout the twelve weeks, the participants completed a variety of exercises that focused on practicing communication skills, forming healthy relationships, developing problem solving techniques and searching for creative solutions (Trotter et al., 2008).
Participants in the EAP program demonstrated significant decreases in negative behaviors. According to the post-tests results, using the BASC-SRS, improvements in five areas were reported: a) Emotional Symptom Index (p = .0027); b) Clinical Maladjustment Composite (p = 0.30); c) Atypical Scale (p = 0.002); d) Sense of Inadequacy Scale (p = 0.004); and e) Relationship with Parents Scale (p = 0.018). Improvements were found in twelve areas including social skills, aggression, depression and conduct problems. In comparison, the adolescents who attended the classroom program improved in four categories, but only had one significant decrease in negative behavior (Trotter et al., 2008). The results of the BASC-PRS validated that EAP is a viable treatment alternative as parents reported improvement in the following behavioral and emotional areas: a) Behavioral Index (p = 0.000); b) Externalizing Problems Composite (p = 0.000); c) Adaptive Skills Composite (p = 0.0003); d) Hyperactivity (p = 0.000); e) Aggression (p = 0.000); f) Conduct Problems (p = 0.0001); g) Anxiety (p = 0.000); h) Depression (p = 0.001); Somatization (p = 0.036); j) Adaptability (p = 0.0003); and Social Skills (p = 0.010) (Trotter et al., 2008, p. 278-279). It was concluded that, based on the results of the BASC, statistically significant improvement on all scale levels occurred and that EAP was a viable treatment for children and adolescents at risk for social and academic failure (Trotter et al., 2008).

Another study involving EAP included sixty-three children who experienced intra-family violence (Schultz et al., 2007). The purpose of the study was to test the efficacy of EAP pre and post therapy to see if Global Assessment of Functioning (GAF) scores improved in a cross sectional group of children who had been referred by a psychotherapist for behavioral and mental health issues. The study was conducted over an eighteen month period with children ranging in ages from 4-16 with a variety of disorders including ADHD, PTSD, adjustment disorder, and
disruptive disorder. In the study, forty-nine children completed six or more sessions (Schultz et al., 2007).

The study concluded that improvement in GAF scores in all children who participated in EAP with various DSM IV diagnoses, showed effects that were positive and rapid with younger children demonstrating the greatest improvement (Schultz et al., 2007). The researchers indicated, while it was difficult to attribute change to a single intervention, all children in the study showed that EAP produced improvement in the GAF scores and that EAP needs to be carefully considered as a viable therapy. They also concluded that using the GAF score as the only outcome measure restricted the ability to fully understand the effects of EAP and that further research would be needed (Schultz et al., 2007).

Another investigation evaluated the effectiveness of a nine-week equine assisted learning program with adolescents with severe emotional disorders (Ewing et al., 2007). This study was different from the previous studies as it involved horseback riding versus the EAGALA method. Ewing (2007) suggested that many of the studies with EAP and children were conducted within residential treatment facilities where the challenge of children returning home to interact with the family was not present. This research was conducted with 28 participants with IQ’s ≥86 in a special purpose school who presented the challenge of inconsistent family life. It was predicted that the program would improve the adolescents’ sense of self-worth, self-esteem, interpersonal empathy and internal locus of control as well as decrease feelings of depression and loneliness (Ewing et al., 2007).

Ewing (2007) used several self-reporting instruments that were administered both pre and post test to measure a variety of issues in order to test the hypotheses of the study including the Self-Perception Profile for Children, Locus of Control Scale, Children’s Depression Inventory, and the Children’s Loneliness Questionnaire (Ewing et al., 2007).
Ewing (2007) found no significant differences and the hypotheses were not supported that issues of self-worth, empathy, locus of control, depression, and feelings of loneliness would improve. The results were surprising and may have been due to the use of self-reporting instruments with low functioning students, low self-esteem of participants and volatile changes in family life that some of the participants experienced during the program (Ewing et al., 2007).

Even with these concerns, Ewing (2007) concluded that EAP is a viable program and more research is needed as equine therapy is still in its infancy. Ewing also acknowledged that early interventions are important (ages 10-13) when the child has not passed the openness to learn. This finding coincides with Schultz (2007): that younger children show the greatest improvements and supports the importance of early interventions. Ewing (2007) concluded that more time in the program, especially when a child has significant emotional issues, would be of benefit. A positive adult role model taking an active interest in a child in the program who has been abused or neglected can be the turning point in the program. EAP offers the chance for the child to develop trust, which can be further fortified by incorporating the equine theme into the classroom (Ewing et al., 2007).

Shultz (2005) study used the EAGALA model. The purpose of the study was to fill a quantitative research gap by examining the therapeutic outcomes of EAP in treating at-risk adolescents ages 12-18. This study was to determine if those participating in EAP would have more positive outcomes than those who do not participate (Shultz, 2005).

The researcher used a self-report instrument Youth Outcome self-report (Y-OQ-SR) and the Youth Outcome parent report (Y-OQ-PR) for the study. These questionnaires are designed to collect data regarding the effectiveness of youth therapies and have been used to measure the efficacy of wilderness therapy programs, which are experiential in nature like EAP (Shultz, 2005). Each test consists of six subscales: interpersonal distress; somatic; interpersonal relations:
critical items; social problems; and behavior dysfunction. Twenty-nine adolescents participated in the study (15 in the treatment group and 14 in the control group). Within each group, two types of youth were identified: those who lived in residential care and those who did not. Both types were recognized in the research as an attempt to determine if the results could be better generalized to other at-risk adolescent groups (Shultz, 2005).

Shultz (2005) demonstrated that EAP positively affects the psychosocial functioning. According to the primary caregiver or parent report (Y-OQ-PR), there were statistically significant changes (15.77 and 32.11 points greater) for those participating in EAP versus those not participating, with a 95% confidence interval between the control and experimental group (Shultz, 2005, p. 54-55). The adolescent’s scores on the self-reporting questionnaire (Y-OQ-SR) also demonstrated statistically significant change with the average between 8.49 and 33.80 points greater than those who did not participate. The results of the study validated that EAP is a viable therapy for at-risk youth (Shultz, 2005).

**Summary.** The EAGALA Model for Equine Assisted Psychotherapy (EAP) was developed in 1999 to address resources, education and professionalism and to provide an alternative approach to therapy (*Fundamentals of EAGALA Model Practice*, 2006). EAP using the EAGALA Model, does not involve riding horses, but rather, is conducted on the ground. It requires a team approach including the horse, an equine specialist who is well versed in horse behavior, and a licensed mental health professional who is responsible for treatment planning and overall processing with the client. While EAGALA has been a formal model for over ten years, empirical research is limited. Most research was completed between 2002 and 2007. Several important studies suggest that at-risk youth, at a minimum, improve in the areas of social skills, aggression and conduct issues, anxiety, adaptive skills, interpersonal skills, and behavior dysfunction with the use of EAP (Shultz, 2005; Schultz et al., 2007; Trotter et al., 2008).
While this therapy shows positive outcomes, there are some limitations that were identified within the studies. For instance, the studies that confirmed significant results, involved children who were in some type of special residential setting (Shultz, 2005; Schultz et al., 2007; Trotter et al., 2008). It is not known the impact of this setting on behaviors and how the therapy might generalize to a more typical family setting. Shultz (2007) attempted to include children from residential and family situations. The research did not clearly segregate the difference between the two groups in the findings (Shultz, 2005). Ewing (2007), acknowledged that much of the research is done in residential settings and attempted to offer EAP to children with inconsistent family life. Even though researchers were interested in including children outside of controlled settings, they contributed volatile home life to the lack of significant improvements. This may mean that no matter how efficacious a therapy, offering therapy to only one member of a family system will not yield lasting change. Ewing (2007) found that there was a positive effect if a caregiver or interested adult role model was included in the EAP with the child, as this additional interest was often a turning point in the therapy (Ewing et al., 2007).

The review determined that types of assessments used to identify behavioral concerns should at least include parent or caregiver assessments. While Shultz (2005), Schultz (2007), and Trotter (2008) used both self-report and parent report, Ewing (2007) used self-reporting assessments only and had difficulty with the administration, which the researchers identified as a contributor to poor outcomes. Shultz (2005) study identified that, while parents and children were similar on most subscales, in some areas significant differences resulted between parent and adolescent data. For instance, adolescent self-report instruments showed significant positive results for Somatic issues, but parent reports showed no change. The researcher surmised that adolescents might not discuss physical issues and parents may be unaware, so therefore, parents did not identify that changes occurred (Shultz, 2005).
This review determined that EAP shows promise as an alternate approach for at-risk youth, but its major limitation may be one of structural nature. In order to conduct EAP under the EAGALA model, the therapist must have access to a horse and an equine specialist (Fundamentals of EAGALA Model Practice, 2006). Therefore, EAP is very specialized and limited in terms of its use. This limitation may also ensure that its structure and high ethical standards are maintained, as only those who are truly qualified or interested will attempt it.

This review found that EAP is considered a powerful, effective therapeutic approach which impacts individuals, youth, and families. Most of the studies reviewed showed positive outcomes for improving behaviors for youth at-risk. The researchers acknowledged that EAP has been known to address a variety of other mental health issues including behavioral, attention deficit behavior, substance abuse, eating disorders, abuse issues, depression, anxiety, relationship problems and communication needs (Fundamentals of EAGALA Model Practice, 2006; Schultz et al., 2007; Shultz, 2005: Trotter et al., 2008;). While EAP studies were not found that relate directly to children with FASD, the results are promising, as children with this diagnosis have similar behavioral phenotypes as at-risk youth and may benefit from EAP interventions.

Social Skills and Self-Regulation

Overview. Social skills and self-regulation are critical in the ability for children to monitor their own behavior later in life. Self-regulation is a complex construct and is defined as:

The ability to comply with a request, to initiate and cease activities according to the situational demands, to modulate the intensity, frequency, and duration of verbal and motor acts in social and educational settings, to postpone acting upon a desired object or goal, and to generate socially approved behavior in the absence of external monitors. (Kopp, 1982, pp.199-200)
Self-regulation is the ability for children to modulate their own activities in accordance with social norms without assistance from caregivers. It is generally agreed that self-regulation demands awareness of socially approved behaviors and represents a significant aspect of the socialization of children (Kopp, 1982). This regulation involves the direct influence of maternal limit-setting and is tied to cognitive and behavioral development of the emerging self-concept. (Houck & LeCuyer-Maus, 2002)

**Social skills and self-regulation and the FASD population.** One of the consequences of prenatal exposure to alcohol is difficulty to self-regulate which impedes the development of social interactions or social skills (O’Connor et al., 2006; Schonfeld, et al., 2009; Streissguth, 1997). Self-control and self-regulation are linked conceptually because both depend on the development and use of abstract thinking and recall memory (Kopp, 1982). When children’s brains are affected by FASD, both abstract thinking and recall memory are impacted which compromises the ability to develop relationships. This is exhibited by failure to consider the consequences of action, inability to understand social cues, and indiscriminant social behavior. The difficulty to communicate in social contexts with their peers as well as teachers, parents or employers cause children with prenatal exposure to alcohol to be more impaired interpersonally than other developmentally delayed children (O’Connor et al., 2006).

**Social skills training.** Fred Frankel, Ph. D., a professor of medical psychology of the UCLA Department of Psychiatry, developed the UCLA Children’ Friendship Program along with Robert Myatt, Ph.D., Director of Clinical Training at the Life Skills Treatment Program in San Fernando California. The Children’s Friendship Training (CFT) is a manualized program that encompasses over twelve years of research on comprehensive social skills training (Frankel & Myatt, 2003). This published study focused on homogenous groups, was field tested and was shown to be effective on over 1000 children with Autism Spectrum Disorder; Attention Deficit
Hyperactivity Disorder (ADHD); and Oppositional Defiant Disorder (ODD) (Laugeson et al., 2007).

**Description of the CFT training model.** The model for CFT focuses on: (a) the effects of children’s reputations with peer groups and their intrusive and inappropriate behaviors; (b) providing skills to reduce rejection by the peer group and expanding peer networks; (c) instructing parents to work together to promote successful play dates; (d) and helping the child to “lay low” in rejecting peer groups, improving the child’s competence with nonaggressive responses in conflicts with peers and adults. Topics covered include:

- Rules of a group
- How to exchange information
- How to join a group already at play
- How to be a good sport
- Rules of a good host
- How to handle teasing
- How to handle unjustified accusations
- How to be a good winner
- Bullies and conflicts. (Frankel & Myatt, 2003)

The structured approach is conducted over a twelve week timeframe, meeting once per week for sixty minutes. The interesting component of this intervention is that parents are also required to attend separate, but congruent training in order to help their child with parent assisted homework (Frankel & Myatt, 2003). This is similar in methodology to Adlerian Play Therapy which requires parental involvement throughout the therapeutic process (Kottman & Ashby, 1999). The involvement of parents in the structure of both the Frankel (2003) and Kottman (1999) formats support the positive effects Ewing (2007) found in equine therapy when parents
or caregivers were included and is an important structural attribute in working with children who have FASD (O’Connor et al., 2006).

**FASD social skills study.** O’Connor et al. (2006) conducted the first study of the implementation of social skills for children with FASD that included a randomized controlled sample of children who were between the ages of six and twelve and screened to verify pre-natal exposure to alcohol. Frankel & Myatt’s (2003) Children’s Friendship Training was used as the model for the social skills study. In order to further determine eligibility these children had measurable social skills deficits (> -1 standard deviation below the mean) on the Socialization domain of the Vineland Adaptive Behavior Scale and verbal IQ of ≥70 on the Kaufman Brief Intelligence Test. Both parents and teachers evaluated the social skills of the child by completing the Social Skills Rating System (SSRS). Of the 183 children who applied for the training, a total of one hundred children were initially accepted and ninety six completed the study (O’Connor et al., 2006).

**Adaptations for FASD.** Typical social skills training does not produce meaningful, long-term or generalized social competencies for individuals with developmental disabilities (Laugeson et al., 2007). Hypotheses for the lack of success may be due to omission of parents as an integral part of the intervention, not teaching valid social skills, and not including homework assignments and homework review as part of the sessions (Laugeson et al., 2007). Frankel & Myatt’s (2003) work addresses these issues, but does not take into account the accommodations that may need to be implemented for specific developmental disabilities like FASD, even though the efficacy of Children’s Friendship Training (CFT) is sound (Table 1). O’Connor et al. (2006) incorporated the accommodations for the learning difficulties and cognitive deficits of the FASD population into the CFT training. These accommodations are outlined below:
Table 1

_FASD accommodations added to the Children’s Friendship Training program (CFT)._ 

<table>
<thead>
<tr>
<th>Issue</th>
<th>Accommodation</th>
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<tbody>
<tr>
<td><strong>Language and learning.</strong></td>
<td>• Break down material into simpler components.</td>
</tr>
<tr>
<td>Difficulties in expressive and receptive</td>
<td>• Increase opportunities for exposure to and rehearsal of new material.</td>
</tr>
<tr>
<td>language, verbal learning and memory issues, several steps are taken to promote comprehension of the materials.</td>
<td>• Present information in multiple formats.</td>
</tr>
<tr>
<td></td>
<td>• Use of Buzzwords.</td>
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<tr>
<td></td>
<td>• Summarize the child’s response.</td>
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<tr>
<td></td>
<td>• Use of simple language.</td>
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<tr>
<td><strong>Memory and executive functioning.</strong></td>
<td>• Increase use of verbal prompts.</td>
</tr>
<tr>
<td>Difficulties refer to working memory,</td>
<td>• Use of Role-plays.</td>
</tr>
<tr>
<td>planning and sequencing, flexibility,</td>
<td>• Homework rehearsal and review.</td>
</tr>
<tr>
<td>inhibition and task initiation.</td>
<td></td>
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<tr>
<td><strong>Behavioral</strong></td>
<td>• Regular review of clear and explicit rules.</td>
</tr>
<tr>
<td>Use of structural and behavioral</td>
<td>• Positive reinforcement techniques.</td>
</tr>
<tr>
<td>modifications to minimize impulsivity,</td>
<td>• Individualizing the program for the</td>
</tr>
<tr>
<td>response inhibition and understanding</td>
<td></td>
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<tr>
<td>contingencies is</td>
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incorporated into the program

<table>
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<tr>
<th>Improvement of inadequate play skills and peer networks.</th>
<th>behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Game playing deficits.</td>
<td></td>
</tr>
<tr>
<td>• Lack of peer networks</td>
<td></td>
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</table>

(Laugeson et al., 2007, p. 61-65)

**Results of the study.**

Children with FASD who participated in the social skills research showed improvement in their knowledge of appropriate behavior post-treatment and the improvement was retained over a three month follow-up period (O’Connor et al., 2006). Parents reported an increase in social skills and a decrease in behavioral issues, but may have overestimated the changes simply due to the fact that they were involved in the treatment (O’Connor et al., 2006). Parent involvement is considered by some to be part of the success of the program and is a prerequisite in the original design (Frankel & Myatt, 2003). O’Conner et al. (2006) demonstrated that the CFT program with accommodations is a promising intervention, but acknowledged that it was performed in a highly controlled university setting and needs more implementation in a community environment in order to determine its true effectiveness (Laugeson et al., 2007). The successful accommodations integrated by O’Connor et al. (2006) into a highly manualized approach like CFT, may provide insight into modifications that would be beneficial in other therapies like Equine Assisted Therapy.

**Additional studies.** Following O’Connor et al. (2006), researchers sought to examine the role of executive functioning as a predictor of treatment response using Children’s Friendship Training (Schonfeld et al., 2009). It was demonstrated by Schonfeld et al. (2009) that the behavioral regulation deficits predicted the effectiveness of social skills training for children with FASD, regardless of general intellectual functioning. The ability to control impulses, flexibly solve problems and monitor emotional responses significantly predicted improvement in social
skills and a small reduction in problem behaviors following the social skills training (Schonfeld et al., 2009). This finding is important as behavioral functioning has been identified as deficient in children with FASD. Poor behavior regulation is predictive of future social difficulties, poor-quality relationships and rejections from peers (Schonfeld et al., 2009). Finally, this study provided an important key in program development by identifying that the behavioral regulation aspect of executive functioning is related to change in social competence outcomes following treatment and that executive functioning should be considered in program design. For instance, the use of verbal prompts, modeling, role playing, regular review of clear and explicit rules and homework rehearsal are important examples of adaptations in order to facilitate learning in children with FASD (Laugeson et al., 2007).

The importance of improving social interactions of those with FASD was further supported in a study that compared children with FASD in school settings with their peers who did not have FASD. Twelve pairs of children, ages 7 to 12 years were observed in this study and IQ scores were no more than 1.0 SD below the mean (SD≥85) on the Kaufman Brief Intelligence Test. The participants’ performance was in the clinical range on the Problem Behaviors subscale (i.e., standard score >115 of the Social Skills Rating Systems (SSRS) teacher form. For comparison, children with FASD were matched to a peer who was considered nonclinical and enrolled in the same class. The study was conducted twenty minutes per day, over four days, for two weeks with observations conducted in the classroom (Olswang, Svensson, & Susan, 2010).

The results of this study validate other research indicating that children with FASD are characterized by problems with social interaction (Laugeson et al., 2007; O’Connor & Paley, 2009; Streissguth, 1997). During the observation phase of the study, children with FASD demonstrated predominantly prosocial and engaged behavior during classroom activities that was greater than typical peers. The difference identified was the length of time that the FASD
population was able to engage in these behaviors. For instance, even though all children act inappropriate, passive and disengaged during the school day, children with FASD did so more often and the period of time lasted longer than their peers. This is important, as even though children with FASD can appear to be like their peers, they are different in regard to the length of time they can exhibit prosocial behaviors. This documented performance is one that may call attention to themselves and perhaps be perceived as attention seeking, disruptive or counterproductive in the classroom (Olswang et al., 2010). This study may identify why children with FASD who appear to be similar to their peers are labeled with problem behaviors in the classroom. It was found that these children did not engage in as many hostile, coercive or assertive behaviors as was reported in other literature. This may be due to the structured classroom environment (Olswang et al., 2010).

**Summary.** Self-regulation significantly impacts the development of social skills. Earlier research demonstrates that self-regulation, itself, does not develop naturally, but is tied to maternal limit setting and also requires the cognitive skills of abstract thinking and memory recall (Kopp, 1982). Unfortunately, those suffering from brain damage due to prenatal exposure to alcohol are compromised in various ways such as abstract thinking and recall memory which impedes the ability to develop relationships. This deficit shows up in: a) the inability to consider the consequences of action; b) understand social cues; c) haphazard social behavior; and d) the difficulty to communicate in social contexts with their peers as well as teachers, parents or employers (O’Connor et al., 2006, p. 639).

Secondly, children with FASD may also suffer from disrupted parenting due to alcohol abuse and placement in foster care. For instance, it is estimated that the risk of FASD in this population is likely to be as high as 75% (Astley, Stachowiak, Clarren, & Clausen, 2002). Without effective maternal limit setting and damage to cognition due to prenatal exposure to
alcohol, the development of self-regulation and social skills poses a difficult challenge for this population. Olswang et al. (2010) compared the differences in regard to social communication between children at the higher end of the spectrum who have been mainstreamed in a school setting and those without FASD. This evaluation is important as it identifies nuances that educators overlook with this population such as sustaining attention, longer bouts of passive and disengaged behaviors, and disruptive, attention seeking behaviors. Children with FASD may stand out in a negative way amongst their peers in regard to their inability to interact (Olswang et al., 2010).

The evidence based Children’s Friendship Training (CFT) with the inclusion of adaptations for children with FASD is encouraging and shows promise for this population even though more research needs to be conducted in order determine if this training can be generalized to the community (O’Connor et al., 2006). The adaptations that were incorporated into the training and the suggestions from the classroom study are indicative of the need for educators and therapists to be aware of the subtle differences of those with FASD in order to address off-task behaviors (Olswang et al., 2010). These studies support that children with FASD are capable to learn self-regulation and social skills that can assist them in developing more positive futures. It also provides an insight into the complexities of those who are diagnosed with FASD and how focusing on improving self-regulation and social skills may be an important behavioral intervention for this population.

**Summary of Major Findings**

The purpose of this literature review was to examine if equine assisted psychotherapy (EAP) is a viable behavioral intervention to address self-regulation and social skills in children diagnosed with Fetal Alcohol Spectrum Disorder. Although no studies exist that demonstrate the efficacy of EAP with the FASD population, research suggests these children share similar
behavioral issues with at-risk youth who have shown significant improvements with EAP (Ewing et al., 2007; Schultz et al., 2007; Shultz, 2005; Trotter et al., 2008). In addition, for comparison, the O’Connor et al. (2006) study used a tested social skills training program that was adapted to the specific learning deficits of the FASD population and demonstrated statistical significance. Although CFT is manualized and a highly structured approach, it shares similarities to EAP in the following ways. First, the children or youth participating in the study had similar behavioral concerns. Both programs were taught in groups, with techniques to enhance self-awareness, how to join others and establish personal relationships, and to be aware of nonverbal cues (O’Connor et al., 2006). Secondly, most of the EAP and CFT studies involved parent or adult role-model participation which researchers identified as an important factor in the success of the program (Ewing et al., 2007; Frankel & Myatt, 2003; O’Connor et al., 2006; Shultz, 2005; Trotter et al., 2008). Thirdly, the EAP and CFT studies used similar pre and post testing instruments such as the BASC, Social Skills Rating System, and Y-OQ, that ensured reliability and validity of test results (Ewing et al., 2007; Frankel & Myatt, 2003; O’Connor et al., 2006; Shultz, 2005; Trotter et al., 2008). Fourth, both EAP and CFT use a hands–on approach which plays to the strength of children with FASD who are visual and kinesthetic learners. Fifth, both EAP and CFT studies identified sustained improvements after the sessions were completed. Finally, both EAP and CFT methods are flexible, in that adaptations can be incorporated into the activities without adversely affecting the efficacy of the program. For instance, incorporating the use of verbal prompts, modeling, role playing, regular review of clear and explicit rules and homework rehearsal in order to facilitate learning in children with FASD, was successfully completed using adaptations to specifically address the deficits of this population (Laugeson et al., 2007). Researchers in both EAP and CFT acknowledged that conducting the studies in controlled settings was a major limitation which may impede the generalization of the same success in the community.
Therefore, additional research is warranted in order to determine the viability in less restrictive settings.

Given the positive results of the research in both equine assisted psychotherapy (EAP) and the Children Friendship Training (CFT), a probability exists that children at the higher end of the spectrum may be able to successfully learn self-regulation and social skills, provided the program is adapted to their needs. Furthermore, it is likely with the research conducted with at-risk youth, EAP using the EAGALA model may be a viable method for developing these skills in children with FASD provided that adaptations are included.

Disappointingly, studies depicting interventions for children with FASD are scant as was found by the researcher. Furthermore, FASD experts agree that those who currently suffer with Fetal Alcohol Spectrum Disorder will find little relief as the development and implementation of intervention strategies are limited, even though some promising efforts to design and test interventions has occurred (Astley, 2011; Paley & O’Connor, 2009; Warren et al., 2011). Gaps were found in the literature relating to FASD in the past decade. One of the vast releases of articles recently occurred in 2011, in the Alcohol Research & Health journal that is linked to the (National Institute of Alcohol Abuse and Alcoholism Coles, 2011; Paley et al., 2011; Warren et al., 2011). The recent articles may have been written in order to build a case for inclusion of FASD in the DSM V, as the articles appeared to cover information that has been published in the past.

Conducting more research on how to improve self-regulation and social skills may substantially help the FASD population. Unfortunately, because prenatal exposure causes permanent brain damage, subsequent questions may be raised as to the importance of addressing only two of the many identified behavioral phenotypes of this population. However, the issue of self-regulation impedes the development of social interactions or social skills which are critical
in order for the child to monitor their behavior later in life (O’Connor et al., 2006; Schonfeld et al., 2009; Streissguth, 1997).

It is estimated that the risk of FASD in children in the foster care may be as high as 75% (Astley et al., 2002). Children who have been prenatally exposed to alcohol, not only suffer from permanent brain damage, but also may experience disrupted parenting due to alcohol abuse and placement in foster care. This means that maternal limit setting may have been absent from early childhood, further complicating efforts to study prenatal exposure.

Throughout the course of this review, EAP, using the EAGALA model, was found to be an effective therapy which was formerly introduced as a therapeutic approach for children in 1999 (Fundamentals of EAGALA Model Practice, 2006). While the research is limited, studies exist that demonstrate the success of this treatment modality with at-risk youth (Ewing et al., 2007; Schultz et al., 2007; Shultz, 2005; Trotter et al., 2008). This is important as the behaviors exhibited by at-risk youth such as social skills deficits, impulsivity, adaptive skills, hyperactivity, conduct problems and anxiety are similar in nature to behavioral phenotypes identified in children with FASD (Streissguth, 1997).

Current research reveals that EAP using the EAGALA model has great potential for lasting effects in building confidence, improving communication and providing personal insights for participants (Klontz et al., 2007; Ewing et al., 2007; Schultz et al., 2007; Trotter et al., 2008). It provides a unique approach because it encourages clients to take risks, experiment, problem-solve, employ creativity and find the solutions that work the best for themselves (EAGALA, 2010; Fundamentals of EAGALA Model Practice, 2006; Klontz et al., 2007; Mann, 2001; Schultz et al., 2007; Trotter et al., 2008). The hands-on approach of EAP supports the visual and kinesthetic learning style of the FASD population.
Finally, due to the horses’ uncanny ability to read their environments, they provide accurate and unbiased feedback; mirroring both the physical and emotional states of the participant during the exercise which in turn, raises the client’s awareness and practice of congruency between feelings and behaviors (Klontz et al., 2007). The mirroring ability of the horse may challenge and exercise the skills of social interaction, which could be of a benefit for children with FASD to assist in their ability to respond to social cueing.

In comparison, children with FASD who participated in the social skills research (CFT program) showed clear evidence of improvement in their knowledge of appropriate behaviors post-treatment, and these improvements were retained over a three month follow-up period. Also, parents reported an increase in social skills and a decrease in behavioral issues (O’Connor et al., 2006). The results of O’Connor’s et al., study are important as this suggests that children with FASD are capable of sustained learning of skills that could improve their futures. It is imperative that more research be devoted to developing interventions to address behavioral concerns.

Despite the adverse effects of prenatal exposure which were identified close to forty years ago, the disorder is not widely recognized by medical or mental health professionals, partially, because FASD does not appear in the DSM IV-TR (Jones & Steissguth, 2010; 4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000). While attempts began in 2005 to include FASD in the DSM V by The National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol Effect, it is unknown if any or parts of the spectrum, such as Alcohol Related Neurological Disorders (ARND), will be included in the DSM V (CDC; NCBDDD, 2004).

In two different studies in the United States, it was shown that obstetricians, pediatricians, family doctors, and psychologists were not comfortable in treating this population. When asked how they rated their own professional knowledge about the diagnosis of FAS, 36 %
of pediatricians and obstetricians, and 68% of family physicians did not feel comfortable about their knowledge. (Dewane et al., 2007). Psychologists (71%) identified that lack of training was the greatest barrier to diagnosis (Wedding et al., 2007; APA, 2004). While the respondents identified desire to continue to learn more about this disability, over 65% felt somewhat or very unprepared to diagnose children who present with FAS, and 82% felt unqualified to manage or coordinate the care of children with this diagnosis (Wedding et al., 2007, p. 7-13; APA, 2004).

Another issue that impedes the development of interventions is unstandardized diagnostic criteria. In order to determine effective treatment and interventions, the client must be diagnosed accurately. Even with an attempt to standardize the diagnostic criteria, several schemas are utilized (Warren et al., 2011). Phenotypes for FASD, such as impulsive behavior, memory issues, difficulty generalizing information, social cues, anxiety and boundary issues were identified several years ago (Streissguth, 1997). Yet, even with this comprehensive list, no accepted standards exist to diagnose those who lack physical effects but are compromised neurologically (Coles, 2011). Without a consensus on diagnostic criteria, interest in developing broadly applied interventions seems remote.

Many interventions currently being pursued are in the beginning stages of research, are medical in nature and involve the use of pharmaceuticals. This includes the exploration of pharmaceutical interventions during pregnancy to interrupt the damage of alcohol during gestation, the nutritional intervention of Choline that decreases hyperactivity and improves spatial and working memory in rats, and the study of the brain to adapt to change or neuronal plasticity. As researchers learn more about how pre-natal exposure influences neuronal plasticity, pharmacological, nutritional and educational or behavioral interventions will follow (Warren et al., 2011, p. 12). Unfortunately, research of this nature takes time and will not help the many who currently struggle with the effects of prenatal exposure. Finally, another issue that plagues
the acceptance of this disorder is the difficulty in collecting prevalence data. Without accurate data, it is challenging to advocate for necessary funding for diagnoses and treatment.

From the Adlerian paradigm, children with FASD might be viewed as having organ inferiority, which instills greater feelings of inadequacy. Because they may strive to compensate and move from a perceived minus to a perceived plus, they may become more selfish, inconsiderate, lack social interest, self-confidence and courage. These behaviors may result in: a) lack of occupational success; b) lack of the development of relationships in love or marriage; b) not considering their own welfare; and c) sometimes turning to crime (Ansbacher & Ansbacher, 1956). In addition to this deficit, many feel unwanted or displaced due to abuse, trauma or out-of-home placements such as foster care (Astley et al., 2002). Unwanted children may become cruel, try to suppress others, reject social interest and many become criminals, neurotics or commit suicide (Ansbacher & Ansbacher, 1956). These issues further increase the demands of these children for their basic universal needs, such as safety, belonging and significance.

FASD behaviors parallel those identified by Adler as a combination of organ inferiority, the pampered child and the unwanted child. For instance, as children with FASD enter adolescence, the risk for substance abuse and involvement with the corrections system increases dramatically and may impact as many as 60% of those with this diagnosis (Burd, Fast, Conry, & Williams, 2010). Many of the challenges facing adolescents with FASD continue and adults with FASD often reach an awareness of their own complications and desperately want to succeed and feel the pain of social banishment. Therefore, it is not surprising that depression was found to be the most typical mental health issue in more than 50% of adolescents and 40% of adults with FASD. Suicide threats may be as high as 40% in both adolescents and adults (Streissguth, 1997, p. 140). Consequently, the correlation between Adler’s knowledge of the
implications of organ inferiority, pampered children and unwanted children fits the overall scope of behaviors and common outcomes for those who suffer from FASD.

Adlerian methodologies focus on the movement of the client which plays to the strengths of EAP. EAP’s experiential nature addresses the three life tasks: community, work, and love, by allowing the client to interact and care for a horse which serves others beyond themselves. It allows for the development of a relationship with the horse which helps to build on the love task. The care of the horse, such as harnessing, brushing promotes the work task and being together in the field with a common task develops the sense of community. Rudolph Dreikurs (1964) work pertaining to parenting and understanding goals of misbehavior are critical for those who raise children with FASD, as authoritarian styles of parenting may exacerbate the tendency of this population to engage in attention seeking behaviors that can quickly give way to power struggles and revenge (Dreikurs, 1964). Due to the many behavioral deficits, children with FASD may be more likely to become discouraged, leading to depression, low self-esteem and eventually the misbehavior of inadequacy or lack of motivation.

Encouragement from the parents or caregiver becomes vital in order for a child with FASD to develop a sense of self-respect and a sense of accomplishment.

Due to the complexities of FASD, it is unlikely that one type of intervention will solve the many issues that children face with this disability. More empirical studies are needed in order to address behavioral interventions to prevent the predicted, negative outcomes for these children. It is recognized, even in EAP studies, that behaviors experienced by at-risk youth only worsen with age and if left untreated, can lead to other mental health issues such as depression, suicide, or serious adult psychopathologies (Ewing et al., 2007; Trotter et al., 2008). This parallels the concerns many experts maintain about the FASD population: that if left untreated, ninety percent will develop secondary mental health issues and that early interventions are
critical (Astley, 2011; Coles, 2011; Paley & O’Connor, 2011; Streissguth, 1997; Warren et al., 2011).

**Chapter 3: Methodology**

**Overview**

The current literature suggests that the likely outcome for Equine Assisted Psychotherapy (EAP) for at-risk children has a positive affect (Schultz et al., 2007; Shultz, 2005; Trotter et al., 2008). Due to similar behaviors, it is expected that the same result will occur with children who have been diagnosed with Fetal Alcohol Spectrum Disorder (FASD). The EAP study conducted with children with FASD was a one-group, pre-test/post-test design using the on-line Behavior Assessment System for Children-2 Parent Rating Scale (BASC 2 PRS) (Reynolds & Kamphaus, 2010). The on-line assessments were accessed through email by the parents. The therapists in the program disseminated and collected the completed assessments and de-identified the parent child information by assigning identification numbers. Treatment outcomes were assessed by comparing the pre and post-tests results, by observation and video recording of the sessions in the field.

The program provided two hours of EAP in a group therapy format for a 10 week period. Due to the number of families, horses, and physical size of the field, the participants were divided into two groups based on age, with six children under age 12 and seven adolescents over age 12 and their parents comprising the groups. The purpose of collecting the data was to determine if a program like equine assisted therapy can improve self-regulation and social skills in children diagnosed with FASD.

**Pilot Program**

Prior to the program, 10 pilot sessions were conducted to ensure that the accommodations for children with FASD represented in previous research seemed reasonable and appropriate for
this study (Laugeson et al., 2007). Five children and five parents were initially screened for the pilot and one team dropped midway through the program due to an injury outside of the sessions. The pilot included the use of the same initial screening tool, BASC-2 PRS pre and post testing, and the post program review after each session. Upon conclusion of the pilot, minimal modifications were made for the study that included: a) limiting discussions in group settings; b) providing simple, concrete instructions; and c) ensuring that hands-on activities provided a larger percent of engagement in the time spent within the sessions.

Both the pilot and the final study were entirely voluntary and participants could terminate at any time without negative repercussions. Parents who wanted their child to participate and met the requirements were asked to join their child in 10 weekly sessions, provide transportation to and from the farm, and be willing to complete the pre and post-test assessments. All the necessary permissions were received and signed by the parents prior to EAP. The pre-test was completed on-line by the parent prior to the sessions and the post-test completed on-line within ten days after the end date of the program.

**Parent participants.** Parent participation in the sessions was an important part of the intervention. The participation enhanced their own learning about parenting a child with FASD by observing the difficulties their child faces when trying to self-regulate. Parents were encouraged to attend a preliminary parent session prior to the start of the program for the purposes of educating them about equine assisted therapy and to experience a sample of the type of activities that the participants would be involved in during the 10 weeks. The parent session offered an opportunity to ask questions about experiential therapy and to also lay a foundation of how to coach their child between sessions.

**Screening process.** The parents were contacted initially by telephone using a screening tool to ensure that specific criterion was met. This criterion included:
1. Child should have a formal diagnosis within the FASD spectrum.

2. IQ $\geq$90.

3. Permanent placement in the family (adopted or birth children). No foster or children living in residential treatment facilities were accepted.

4. No significant psychopathologies, medical diagnoses or academic issues that are considered beyond those typically associated with FASD behaviors such as schizophrenia, animal abuse, fire setting.

5. No issues with independence of movement or physical problems that might impede mobility in a pasture.

6. No significant allergies to hay grasses, insects, animals including cats, dogs, horses, and chickens.

7. One parent must be in attendance with the child.

**Professional team.** Equine Assisted Psychotherapy (EAP) using the Equine Assisted Growth and Learning Association (EAGALA) model requires a team of professionals to facilitate the sessions. This includes Horses, an Equine Specialist (ES) and a Licensed Mental Health Professional (LMHP). In this study, other team members included two interns who were graduate students at local universities and an additional staff member trained on horse care and behaviors. The team worked together in the field and conducted post session discussions about participant behavior, safety issues and responses of the participants during the activities. These discussions provided a forum to determine if the participants were ready to move to the next level of activity or if the particular exercise needed to be repeated. If any participant had difficulty demonstrating safe behaviors in the field, team members were alerted to ensure that a staff member stayed within close proximity of the participant.
General process of the treatment design. The 10-week EAP sessions using the EAGALA model was conducted at a horse farm. In this particular model, no riding of the horses was done and the therapy consisted of on-the-ground horse sessions and group interactions prior to and after the fieldwork. The program was structured to address social skills and self-regulation issues typically experienced by those with FASD. The program incorporated concepts or adaptations found to be useful by other researchers (O’Connor et al., 2006; O’Connor & Paley, 2009). These adaptations included:

1. The development of “buzz” words such as the HORSE acronym provided a common language for the facilitators and parents in order to communicate and provide feedback.

2. Multiple formats which included “make it stick reminders” and homework assignments.

3. Instructions divided into simple steps, recapping steps and summarizing the participant’s responses.

4. Regular review of clear and explicit rules.

5. Management of transitional issues by first introducing the participants to their surroundings with simple activities in order to lessen anxiety about a new situation and incorporating the use of red flags when the activity was to change course or to warn of potential safety issues.

6. Positive reinforcement by ending each session with a review of the activity in the field and mini celebrations.

Children with FASD have brain damage due to prenatal exposure to alcohol and struggle with memory issues that impact cognitive skills such as generalization of information and rules (O’Connor et al., 2006; Schonfeld et al., 2009; Streissguth, 1997). The program was structured to
evoke visual, auditory and kinesthetic learning styles and avoided presenting abstract ideas or concepts that might be difficult to understand. The goal of the experiential method was to increase the child’s awareness in order to practice congruency between feeling and behaviors. Four repetitive strategies that incorporated touching, feeling and thinking were used to create habits relating to social skills and self-regulation.

First, the HORSE acronym was developed and used in discussions throughout the therapy, before and after interactions with the horses in the field. In the repetitive design, each letter of HORSE represented a specific skill:

H= Helpful
O = Open to listen and learn
R = Respect for self, parents, teachers, peers and others
S = Safety and self-care
E = Empathy for others

HORSE was posted on the wall in large colorful letters and the meanings were written above to further visual learning. To ensure the repetition of the lessons, at the end of each session, children and parents were asked to identify HORSE behaviors they saw in the field, either in themselves or others. A large cut-out of a horse with no mane or tail was given colored ribbons that matched the color of the letters of HORSE for each behavior that was noticed by the participants.

Secondly, homework assignments for both child and parent were distributed at the end of each session that reminded the participants about HORSE behaviors and how they might demonstrate these behaviors or witness others using the behaviors during the week at home, school and in social situations.
Thirdly, three additional steps were incorporated to help the child and parent regroup and move toward positive HORSE behaviors when negative behaviors erupted. These steps were: a) stop action; b) ask what is so hard; and c) what can be done differently. These steps were used along with the HORSE acronym and provided simple steps to foster self-regulation. These steps along with the HORSE acronym appeared on large tags that all participants wore so that the information would be easily accessible in the field to accommodate memory issues.

Finally at the end of each session, “make-it-stick” tokens were distributed. For instance, stickers containing the three self-regulation steps were distributed so that they could be placed on objects where difficult behaviors may take place (back packs, lunch bags for school, pillows for bedtime) as a reminder to stop action and regulate behavior. Another reminder was a horse keychain that could be attached to a backpack to remind the participants about HORSE behaviors.

**Basic structure of the specific sessions.** EAP is based on experiential framework, meaning that the therapy is experienced and each person receives the therapy from their perspective. Each two hour session began in a circle and the HORSE acronym was reviewed. After the review, participants shared how they demonstrated or observed HORSE behavior at home or school. Parents also were asked to share how they demonstrated HORSE.

An example of activities in the field with the horses over the 10-week period included: a) developing rapport with the horse, brushing, harnessing; b) walking through an obstacle course that represented the HORSE acronym so that participants could interact with each other and explain how they used the various behaviors in the past week; or c) building a physical structure in the field that represented what they learned. Parents were expected to join their child in the field and participate in the activities. Depending on the advancement of the skill, some of the
activities could be repeated. For instance, if the group was experiencing difficulty developing rapport with the horses, the activity would be repeated before adding a new experience.

Safe practices in the field were reviewed such as: a) how to approach a horse and where to stand by a horse, b) implementation of safety zones and when to use them, d) use of the flags in the field for transition and safety, and e) the three points for self-regulation: stop action; what is hard; and what will help.

In the field, the group formed a circle for their instructions. For ease of understanding, activities were broken down into simple, concrete steps. For instance:

1. Find a horse you feel you are connecting with or feel comfortable with.
2. At the completion of step one, the staff raised flags to signify a transition and the group assembled in a circle for the next instruction.
3. Questions were asked of participants. Examples included: What behavior did you notice from your horse today? Did your horse stay by you, walk away? Have you ever had something similar happen with a friend?
4. The next instruction might be to take a brush into the field and brush the horse that the participant felt a connection.
5. After this activity, flags were raised to signal a transition and the group reassembled into a circle and discussed their experience.
6. After the field experience, the group was asked to reassemble in the stable room where the HORSE cut-out was used to discuss the behaviors the participants noticed in the field that related to HORSE. Ribbons were tied to the cut-out for each response.
7. “Make it stick” tokens were passed out, along with homework for both the child and parent.
8. The session culminated with snacks in celebration.

**Instrument**

The Behavior Assessment System for Children, Second Edition, Parent Rating Scale (Reynolds & Kamphaus, 2010) was selected for use at the beginning and end of the study to determine if EAP is a viable behavioral intervention to address self-regulation and social skills in children diagnosed with FASD. BASC-2 is an integrated system designed to facilitate the differential diagnosis and classification of a variety of emotional and behavioral disorders in children and to aid in the design of treatment plans (Reynolds & Kamphaus, 2004). The assessment is based on 160 questions and was scored by the parent using the BASC-2 Parent Rating Scales form. The BASC-2 PRS is tailored to age group. Both the child (ages 8-11) and adolescent (ages 12-21) assessments were administered to match the age of the participant. The assessment uses a 4-point response format (N for Never, S for Sometimes, O for Often, or A for Almost Always). The form was administered on-line prior to the equine assisted therapy and within 10 days after the therapy was completed. The pre and post test results were compared to determine if improvements occurred.

The BASC-2 Parent Rating Scales (PRS) is a valid and reliable instrument (Reynolds & Kamphaus, 2010). The composite reliabilities are very high, in the .90s for Adaptive Skills and Behavioral Symptoms index and in the middle .80s to middle .90s for Externalizing Problems and Internalizing Problems. The individual scale reliability is also high, with the median values ranging from .83 to .87. The Standard Errors of Measurement (SEMs) for the general norm sample for composites range from 2.0-3.9 T-score points and for Individual scales the median SEM is 4 T-score points (Reynolds & Kamphaus, 2004, p. 169).

The BASC-2 PRS measures behaviors independently: a) clinical (maladaptive behavior); b) adaptive (positive behaviors); and c) collectively as composite scores. Content scales are
considered optional and may be used in conjunction with clinical scales. The clinical and adaptive subscales can pinpoint specific behaviors while the composite scores allow for the determination of broad conclusions about different types of adaptive and maladaptive behavior. The item responses or subscales can be valuable in the assessment of behavioral and emotional problems (Reynolds & Kamphaus, 2004). Because the study was to determine if self-regulation and social skills would improve with participation in a particular program, it was important to identify the item responses or subscales within the clinical, adaptive and content scales that related to these specific behaviors (see Appendix A).

The narratives and scales classifications are based on T-scores obtained using norms (Reynolds & Kamphaus, 2010). The results of the assessments scored for the EAP study were placed into norm group one, general, combined sex. This means that the children who participated in the study were compared against the average population, with both male and females in their age range.

The average T-Score range for two-thirds of the general population is between 41-59 (Table 2). Scores in the at-risk range indicate significant issues that require treatment and monitoring, but may not necessitate a formal diagnosis. The at-risk range on the adaptive scale is between 31-40 and on the clinical scale between 60-69. Scores in the clinically significant range indicate a level of maladaptive behavior or absence of adaptive behavior and warrant follow-up (Reynolds & Kamphaus, 2004). The on-line assessment generates a report that provides a narrative identifying whether or not the child’s T-Scores indicate clinically significant; at risk; or average for each subscale.
Table 2

*Score Classification for the BASC-2*

<table>
<thead>
<tr>
<th>Adaptive Scales</th>
<th>Clinical Scales</th>
<th>T-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td>Clinically Significant</td>
<td>70 and above</td>
</tr>
<tr>
<td>Low</td>
<td>At-Risk</td>
<td>60-69</td>
</tr>
<tr>
<td>Average</td>
<td>Average</td>
<td>41-59</td>
</tr>
<tr>
<td>At-Risk</td>
<td>Low</td>
<td>31-40</td>
</tr>
<tr>
<td>Clinically Significant</td>
<td>Very Low</td>
<td>30 and below</td>
</tr>
</tbody>
</table>

(Reynolds & Kamphaus, 2004, p. 16)

Composite scales were reviewed along with the individual scales in order to look at the broader picture of behaviors before and after the program to determine if children with FASD improved self-regulation and social skills. The individual subscales were more useful in pinpointing specific behavioral issues and strengths associated with social skills and self-regulation and were valuable in assessing the degree of change between the pre and post test phase of the program. It was also useful to determine if improvement in scores demonstrated changes in classification, as the majority of the pretest, subscale scores were in the clinically significant and at-risk ranges.

**Chapter 4: Results**

The results of the study indicated that Equine Assisted Psychotherapy (EAP) helped to improve self-regulation and social skills in children diagnosed with FASD. This program included 28 participants consisting of 14 students, ages 8-17, and 14 parents. One family dropped from the program after the first two weeks due to the child’s refusal to attend. Thirteen parents and thirteen children, a total or 26 participants, completed the 10 week program. Data
was collected for the thirteen children using the BASC-2 PRS. The mean age of the children was 11.8 years with 5 males and 8 females completing the program.

Initial screening was administered prior to attendance to identify whether or not the child met the program criteria. Of the children participating, 100% had IQ’s of ≥90, 100% were adopted, 100% attended school, and 92% had individualized education plans (IEP). A formal diagnosis of FASD was reported for 92% of the children and one child had a suspected diagnosis.

The scores of the BASC-2 PRS assessment showed that behaviors were predominately classified as at-risk or clinically significant. This supports other research that children who are prenatally exposed are more impaired interpersonally than other developmentally delayed children (O’Connor et al., 2006). This study was unique from other studies cited in the literature review, as all children were in permanent placements versus residential or clinical settings.

The one difficulty in the program was the inconsistency in attendance. Participants averaged 7.5 sessions versus 10 sessions. Reasons cited by the participants for not attending the program included, illness and conflicts in schedules. Because the activities generated group cohesion, initial concern of the EAGALA team was consistency of learning if participants were absent. It is possible that the scores were impacted by absenteeism. However, participants who missed sessions achieved improvements comparable to those who attended all sessions.

The results of the BASC-2 PRS were analyzed by subtracting T-Scores from both the pre and post-test from the mid-point 50, subtracting the pre and post test results by subcategory and averaging those scores to determine the greatest percentage of change within each scale and composite scale. T-scores are standardized scores on each dimension for each type and a score of 50 represents the mean. A difference of 10 from the mean indicates a difference of one standard
deviation. Thus, a score of 60 is one standard deviation above the mean, while a score of 30 is two standard deviations below the mean.

The BASC-2 PRS measures 21 subscales of behavior and 13 of the subscales measure behaviors relating to self-regulation and social skills (see Appendix A). The researcher examined both composites and individual scales and found that all individual scale scores relating to self-regulation and social skills showed modest to significant improvement (Figure 1). The scores were also analyzed in the context of whether or not they represented average, at-risk or clinically significant behaviors. Even though some behaviors still remained in the clinically significant or at-risk categories after the program, all scores indicated an improvement. It is possible with additional EAP programming, that the behaviors would continue to show positive trends. The results were compiled by composite and individual subscales. The average combined scores for pre and post-test, percent of change of both youth and adolescents, as well as total percent of change combined were investigated (See Appendices B and C for complete scores).

**Findings**

<table>
<thead>
<tr>
<th>Clinical Scales</th>
<th>Content Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperactivity 10.8%</td>
<td>81.5</td>
</tr>
<tr>
<td>Atypicality 11.1%</td>
<td>72.7</td>
</tr>
<tr>
<td>Withdrawal 3.5%</td>
<td>63.7</td>
</tr>
<tr>
<td>Anger Control 9.4%</td>
<td>56.6</td>
</tr>
<tr>
<td>Dev. Social Disorders 8.8%</td>
<td>66.5</td>
</tr>
<tr>
<td>Emotional Self Control 7.2%</td>
<td>64.2</td>
</tr>
<tr>
<td>Exec. Functioning 10.7%</td>
<td>74.5</td>
</tr>
<tr>
<td>Negative Emotionality 12.7%</td>
<td>67.5</td>
</tr>
</tbody>
</table>

*Figure 1.* Pre and post-test comparison of clinical and content scale scores that relate to self-regulation and social skills and percent of change.
Hyperactivity scale assesses hyperactive behavior and impulsivity typically found in those with ADHD, which is distinguishable from attention-problems in ADHD. Item behaviors focus on interrupting others, poor-control, acting without thinking and being unable to wait one’s turn in a group activity, which is a commonly found behavior in children with FASD (Streissguth, 1997). Research demonstrates that children with hyperactivity and attention issues typically have problems with social skills (Reynolds & Kamphaus, 2004). While the participants’ scores remained in the clinically significant range, the Hyperactivity clinical scale showed a 10.8% improvement.

Atypicality clinical scale showed an 11.1% improvement between pre and post test scores. While this sub scale measures the tendency to behave in ways that are considered odd or commonly associated with psychosis, it also points to immaturity and developmental delays. An elevated scale can be interpreted as an indicator of hyperactive and impulsive behaviors (Reynolds & Kamphaus, 2004). Given the nature of behaviors associated with FASD, it is likely that the scores for Atypicality were indicators of impulsivity and developmental delays. Because the participants demonstrated hyperactivity in the clinically significant range, it is probable that the elevated Atypicality scores were also reflective of this measure and therefore, the improvement in the Atypicality score coincides with the improvements in hyperactivity.

The Withdrawal clinical scale is associated with pro-social behaviors and may be a symptom of depression. Overall, the participants improved at a minimum of 3.5% and remained within the at-risk range. High Withdrawal scores indicate an inability to make contact in social settings, avoidance of others, refusal to join groups, and feelings of being rejected by peers (Reynolds & Kamphaus, 2004). Even though children with FASD struggle with social cuing and other social skills, based on the observations in this study by the researcher, the participants did not appear to avoid or refuse to engage with one another. The Withdrawal scores appear to be in
alignment with the observations in the field. Withdrawal for these children may be a symptom of frustration in how to successfully engage rather than caused by depression or some other pathology.

Anger Control and Emotional Self-Control content scale relate to self-regulation, conflict management and executive functioning. Improvements were achieved in both Anger Control (9.4%) and Emotional Self-Control (7.2%). These improvements coincided with the improvements in Executive Functioning (10.7%) which measures frontal lobe activity and is associated with the ability to plan, control behavior, react appropriately, and anticipate. The behaviors in these three areas appear to be related to hyperactivity. This is an important connection as a symptom of the inability to self-regulate may show up in school or home as hyperactivity, impulsiveness, and aggressive-like behaviors, which are treated as socially unacceptable behaviors rather than as a deficit due to brain damage caused by prenatal exposure. Therefore, implementing consequences by caregivers, teachers or other authority figures becomes the focus rather than looking at ways to help children improve the ability to self-regulate.

The Negative Emotionality content scale, showed a 12.7% decrease. Children who score high in this category typically have few friends and may be described as ridged and easily irritated. Temperament literature suggests that negative emotionality may be identified at birth and that the condition may lay the groundwork for emotional and self-regulation issues later in life (Reynolds & Kamphaus, 2004). The participants moved from the clinically significant range to at-risk and the improvements coincide with the improvements in hyperactivity, atypicality as well as adaptability, functional communication, and resiliency. As the participants mastered the tasks in the field, they appeared to gain a more positive outlook and ability to self-regulate, which improved their capacity to wait one’s turn, by not interrupting others and thinking before
acting. This was observed in the field as the participants approached the horses more carefully versus running through the field, taking turns speaking in groups, and helping one another with activities. The participants were less frustrated or angry if a horse did not cooperate and tended to approach staff more often for help.

The scores relating to Social Skills adaptive scale showed an overall improvement of 11.5% (Figure 2). The definition of Social Skills adaptive scale in the BASC-2 PRS emphasizes the interpersonal aspects of social adaptation including behaviors such as encouraging others, saying please and thank-you, and offering assistance (Reynolds & Kamphaus, 2004).

The youth group demonstrated 17.0% improvement versus adolescents at 6.8%, which may demonstrate that the adolescent group’s basic skills were more developed, thus did not show as significant of an improvement as the younger participants (See Appendices B and C for complete scores).

The Developmental Social Disorders content scale showed 8.8% improvement and summarizes behaviors characterized by deficits in social skills, communication, interests, and activities. The youth group scores moved from at-risk to average with a 7.6% improvement, while the teen group moved from clinically significant to at-risk with a 9.7% improvement.

![Figure 2. Comparison of Adaptability Scale Pre and Post Scores and Percent of Change](image-url)
The Adaptive Skills adaptability scale showed an overall 29.8% improvement and measured a number of temperament variables including attention or distractibility. It assesses the ability to move from one task to another and to share toys or possessions with others. Research shows that low adaptability scores warrant other psychological and educational evaluation due to the increased risk of poor outcomes (Reynolds & Kamphaus, 2004). Low scores also can indicate a child’s tendency toward negative emotionality and poor emotional self-control. In Equine Assisted Psychotherapy (EAP), as the participants practiced transitions in the field and mastered these skills, they were observed as developing more self-esteem, cooperation with each other, and thus, self-regulation. Mastery of skills and improved self-confidence surrounding transitions may explain why children who typically do poorly with transitions increased their scores after participating in EAP.

The Leadership adaptability scale improved 7.7%. Leadership measures items closely related to social skills including the ability to join groups and participate with others. It also refers to cognitive skills in problem solving. As the program progressed, children were observed as demonstrating more problem solving skills when building obstacles in the field, harnessing the horses, or offering assistance to others. The activities in EAP challenged the participants to solve problems in the field and to work with others, which may have resulted in the increased performance in terms of leadership.

Functional Communication adaptability scale showed an overall 18.1% improvement and involves skills such as responding appropriately to questions, giving one’s name as well as rudimentary and advanced expressive communication skills (Reynolds & Kamphaus, 2004). These proficiencies are linked to necessary attributes in carrying-out socially acceptable behaviors. Throughout the course of the program, it was observed that the participants increased
in their level of sharing personal insights and asking more questions about how to carry out tasks.

The Resiliency content scale, which is intended to be a measure of adaptive strength, showed an overall improvement of 27.8%. Resiliency measures the ability to access both internal and external support, to alleviate stress, and overcome adversity. Individuals with high scores in this area tend to do well in short-term, focused therapeutic approaches and generally possess positive mental well-being (Reynolds & Kamphaus, 2004). The improvements in this area may have resulted from the participants gaining a sense of mastery, thus improving self-esteem and overall positive mental health. As the participants became more familiar with the horses, they were observed asking more questions and demonstrating a greater level of confidence. Because this scale also measures the ability to do well in short-term, targeted therapeutic interventions, it may indicate that when EAP is tailored specifically to meet the needs of children with FASD with adaptations, as in O’Connor’s social skill study, success for this population is possible.

Finally, even though Activities of Daily Living does not specifically measure self-regulation and social skills, the scores showed considerable improvement of 24.6%. Daily Living is meant to notify the examiner to any additional differential diagnoses due to lower levels of cognitive functioning. It is sometimes used to determine placement. In the more skilled child it assesses behaviors related to acting in a safe manner and performing simple daily and organizational tasks (Reynolds & Kamphaus, 2004). Because the EAP program was structured to include safety and self-care as part of HORSE behavior, it is probable that the repetitive lessons helped to improve the participants’ understanding of safety and care for themselves. This is an important additional benefit, as children with FASD typically engage in risky behaviors making them vulnerable to being taken advantage of due to their trusting nature (Streissguth, 1997).
Understanding and responding to repetitive, hands-on lessons on safety may have helped the children to generalize safe behaviors at home and school.

**Discussion and Conclusions**

Self-regulation and social skills are critical in the ability children to monitor their own behavior. The lack of these skills is prognostic of social difficulties and poor relationships later in life (Kopp, 1982; O’Connor et al., 2006; Schonfeld et al., 2009). As was hypothesized, children who participated in this study using EAP showed improvement in self-regulation and social skills. Parents believed that the behavioral problems their child experienced prior to the program declined upon completion of the program. This finding was similar to the FASD social skills study conducted by O’Connor et al. (2006) who reported clear evidence of improvement in appropriate behavior post treatment as well as parental reporting of improved social skills and decreases in behavioral issues.

The self-regulation issues of this population have been determined by past research (O’Connor et al., 2006; O’Connor & Paley, 2009; Streissguth, 1997). Yet it is not clear how frequently self-regulation is focused upon as a component of education or therapeutic programing when teaching social skills. Research suggests that typical social skills training does not produce meaningful, long-term or generalized social competencies for individuals with developmental disabilities (Laugeson et al., 2007). Prior research also proposes that the inability to self-regulate is a detrimental factor in the ability to demonstrate acceptable social skills (Kopp, 1982). The improvements resulting from this EAP study in the areas of hyperactivity, atypicality, anger control, emotional self-control, executive functioning, adaptability, negative emotionality, and resiliency demonstrate significant promise for children with FASD, as these are measures of behaviors associated with self-regulation that showed improvement in this investigation.
Based on the findings of this research and others cited in the literature review, it is reasonable to conclude that if children cannot self-regulate, they will have difficulty with socially approved behaviors, which will have long term affects into adulthood (Kopp, 1982; O’Connor et al., 2006). It is also reasonable to conclude that the measures relating specifically to social skills may not take into account the absence of the ability to self-regulate. Behaviors associated with self-regulation deficits may be treated as conduct issues versus the inability to function. Therefore, without specifically understanding the issues of self-regulation and addressing ways to improve these deficits in children with FASD, only training them on the aspects of social skills may not have the long term effects on self-esteem and successful social adjustment. When educational and mental health professionals begin to understand the connection between self-regulation and the ability to learn social skills, it will have a positive effect on the future development of successful strategies and behavioral interventions for children with FASD.

This review and data analysis determined that including parents in the horse sessions helped parents be aware of the content of the sessions in order to support lessons with their child outside of the field experience. Research indicates that lack of success in programs may be due to the omission of parents as an integral part of the intervention, not teaching valid social skills, not including homework assignments, and reviews as part of the sessions (Laugeson et al., 2007). The positive results in this study are reflective of findings in other research that a more positive effect is achieved if the caregiver or interested adult role model is included in the EAP sessions with the child (Ewing et al., 2007).

Another important finding relates to research that indicates expert agreement about the implementation of early intervention in order to prevent secondary disabilities and ensure behavioral improvement (Astley, 2011; Coles, 2011; Paley & O’Connor, 2011; Streissguth, 1997; Warren et al., 2011). This indicates that in order for children with FASD to improve
behaviorally, they must receive interventions at an early age. While children are typically more receptive to learning at an earlier age, an unexpected result found in this study was that the adolescents showed significant improvement in the areas of hyperactivity, executive functioning, functional communication, adaptability, negative emotionality, and resiliency (see Appendices B and C for complete scores). The commonality between these subscales is that they identify strengths and weaknesses in self-regulation and social skills. This finding may indicate that older children with FASD can improve with this intervention. It may be logical to conclude that children who are diagnosed or receive therapeutic interventions later in their development may still be able to achieve positive outcomes as do younger participants, which provides tremendous hope to families who may consider a later diagnosis to be ineffectual.

While more studies should be conducted to further explore the validity of this intervention, the gains that were demonstrated in the scores between the pre and post-test assessments gives reason to believe that equine assisted psychotherapy (EAP) improves self-regulation which impacts social skill development. These findings are consistent with other equine studies with at-risk children and O’Connor’s social skills study, which similarly demonstrated that children with at-risk behaviors and those with FASD are capable of behavioral improvements (O’Connor et al., 2006; Schultz et al., 2007; Shultz, 2005; Trotter et al., 2008).

**Recommendations**

Research of behavioral interventions for those with FASD must become a priority for professionals who work with this population as well as government agencies that supply funding and grants for research. This study provided a snapshot of the potential of children with FASD and their ability to improve self-regulation and social skills using methods fortified with accommodations that play to their visual and kinesthetic learning style. When using EAP with the FASD population, therapists should continue to measure results in order to collect data that
validates the use of the EAGALA model. As more data is collected, it will ascertain the importance of this type of therapy with the FASD population. The use of measurements may also pinpoint whether it would be advantageous to lengthen the program or to incorporate more challenging activities that would continue the momentum of mastery and develop additional skills such as problem solving, organization, and time management. Accommodations for the FASD population that have been identified in this study and the O’Connor (2006) study should be continued in future work.

The use of assessments for the program should be expanded to include teachers and self-assessments. This would offer additional data as to how the child’s behavior is perceived to improve at home and in school. It may also provide insights into children’s perceptions of themselves and how it may differ from teacher or parent assessments. This data may provide information that could be useful in planning program activities to address specific behavior concerns. Post program measures using teacher and parent assessment a few months after the conclusion of EAP sessions are also recommended to determine the sustainability of the intervention.

Further research should be conducted using a pre and post-test control group design by comparing the results of average students to students with FASD. This may help to provide more insight as to why the changes take place with EAP and if the changes are unique to the FASD population or children in general. Differences or similarities between these two groups may provide more knowledge about the types of accommodations that would be useful for those with FASD, which can be transferred to home and school environments.

Programming should include the parents within the sessions. The importance of parent or caregiver support was identified throughout this study. This area could be strengthened by incorporating specific parent skill sessions throughout the program that follow the HORSE
acronym from the parents’ perspective. For instance, when responding to a child with FASD, how does a parent become more open to listening and learning? What are ways the parent can encourage a child with FASD? How can parents initiate self-care when parenting a child with FASD? These skills could be discussed and practiced in the field during the sessions with the child.

Finally, FASD needs to be considered for inclusion in the DSM. This recognition would ensure that this disorder is formally accepted so that behavioral interventions like EAP would be considered for funded research. The establishment of FASD as a recognized disorder would ensure that best practices are determined and implemented when working with this population. Standardized, diagnostic criteria for the entire spectrum would also assure that medical and mental health professionals, social workers and teachers are better trained and equipped to work with this population.

The effects of prenatal exposure have been known for centuries and action must be taken to address interventions for this devastating disorder. While researchers continue the scientific exploration of pharmaceuticals, many years will lapse and those suffering from this disorder will not gain the benefit. Therefore, more time and resources must be allocated immediately to studies that result in the development of behavioral interventions such as EAP, in order to help those who are already affected.
References


Fetal Alcohol Diagnostic Program, Duluth; Mayo Clinic, Rochester; University of Minnesota, Minneapolis. (2006, October 31). *Diagnostic criteria for FASD evaluations in Minnesota.* Minnesota: Diagnostic Consortium.


Appendix A

BASC-2 PRS Sub-Scales That Identify Behaviors Associated with

Self-Regulation and Social Skills

<table>
<thead>
<tr>
<th>Sub-Scales</th>
<th>Self - Regulation</th>
<th>Impulsivity</th>
<th>Social Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperactivity</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Atypicality</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Withdrawal</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Adaptability</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Skills</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Functional Communication</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Anger Control</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development Social Disorders</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Emotional Self Control</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive Functioning</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Emotionality</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resiliency</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Appendix B

*Percent of Change Post Scores by Scale, Age Group and Composite*

<table>
<thead>
<tr>
<th>Clinical, Adaptive and Content Scales</th>
<th>% Change Youth (Ages 8-12)</th>
<th>% Change Adolescent (Ages13-17)</th>
<th>% Change Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperactivity</td>
<td>8.1 %</td>
<td>13.2%</td>
<td>10.8%</td>
</tr>
<tr>
<td>Atypicality</td>
<td>5.3%</td>
<td>12.1%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>5.3%</td>
<td>1.6%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Adaptability</td>
<td>31.0%</td>
<td>28.2%</td>
<td>29.8%</td>
</tr>
<tr>
<td>Social Skills</td>
<td>17.0%</td>
<td>6.8%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Leadership</td>
<td>7.4%</td>
<td>9.7%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Functional Communication</td>
<td>7.5%</td>
<td>29.4%</td>
<td>18.1%</td>
</tr>
<tr>
<td>Anger Control</td>
<td>7.6%</td>
<td>10.7%</td>
<td>9.4%</td>
</tr>
<tr>
<td>Development Social Disorders</td>
<td>7.6%</td>
<td>9.7%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Emotional Self Control</td>
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<td>6.9%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Executive Functioning</td>
<td>8.4%</td>
<td>13.1%</td>
<td>10.7%</td>
</tr>
<tr>
<td>Negative Emotionality</td>
<td>11.9%</td>
<td>11.8%</td>
<td>12.7%</td>
</tr>
<tr>
<td>Resiliency</td>
<td>35.3%</td>
<td>20.9%</td>
<td>27.8%</td>
</tr>
<tr>
<td>Daily Living</td>
<td>20.3%</td>
<td>28.1%</td>
<td>24.6%</td>
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