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The Effectiveness of Equine-Facilitated Psychotherapy in Adolescents with Serious Emotional Disturbances

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ABSTRACT Adolescents with serious emotional disturbances (SED) are a particularly difficult population to treat owing to high comorbidity rates of anxiety, depression, post-traumatic stress, and behavioral conduct disorders. The current study compared the effectiveness of equine-facilitated psychotherapy (EFP) and traditional group therapy (TGT) on levels of positive and negative affect in adolescents with SED. We hypothesized that participants would have higher overall positive affect after EFP compared with TGT and that negative affect would be significantly lower after EFP compared with TGT. Adolescents with SED participated in EFP and TGT sessions once a week over an 8-week period in addition to normative treatment. The Positive and Negative Affect Scale was administered immediately before and after the sessions. Statistical analyses revealed that EFP was just as effective as TGT in increasing positive affect and decreasing negative affect. More importantly, participants had significantly higher positive affect before and after EFP compared with TGT. Even though positive affect scores improved in both therapies, participants arrived to and left EFP with significantly higher positive affect scores than those attending TGT. Owing to its effect on positive affect, EFP may be a beneficial alternative to traditional therapies for adolescents with SED.

Keywords: adolescents, equine therapy, human–animal interaction, positive affect, negative affect, serious emotional disturbances



Serious emotional disturbances (SED) are a rising mental health concern among adolescents (Brauner & Stephens, 2006). Individuals diagnosed with SED are adolescents with multiple mental health diagnoses such as anxiety, depression, and conduct disorders. Previous research found significant correlations between both positive and negative affect and comorbid diagnoses in youth with SED (Chin, Ebesutani, & Young, 2013). Without proper treatment, individuals with SED are more likely to drop out of high school, have higher unemployment rates, and are more likely to be arrested (Wagner, 1995). Not

only are SED becoming more common among adolescents, they are also difficult to treat. Individuals with SED often have below-average social, mental, and behavioral functioning which makes treating them extremely difficult owing to their low levels of functioning (Roberts, Jacobs, Puddy, Nyre, & Vernberg, 2003). People with SED are also likely to resist treatment or work poorly with mental health professionals, further hindering treatment effectiveness for this challenging population.

The SED population consists of adolescents under the age of 18 with one or more diagnosable mental health conditions (Marsh & Fristad, 2002). Individuals with SED often experience long-term negative consequences and distress on a daily basis from their mental conditions (APA, 2013). Common comorbid mental health conditions include disorders such as anxiety, depression, PTSD, conduct disorders, substance use, bipolar disorder, and developmental disorder (Marsh & Fristad, 2002). Positive and negative affect play a large role in some comorbid disorders for adolescents with SED.

Eisner, Johnson, and Carver (2009) found significant negative correlations between positive affect and depression. This suggests that the effective states of adolescents with SED could play an important role in their symptoms. The combination of these mental disorders results in negative effects, such as poor concentration, diminished emotion regulation, impulsivity, and poor social skills, which make daily life difficult for adolescents with SED. Several of these symptoms, such as social isolation and diminished motivation, have been correlated with a lack of positive affect (Forbes & Dahl, 2005). Additionally, adolescents with SED experience problems maintaining social relationships due to mercurial mood swings and incongruous social behaviors which also impede effective therapeutic treatment (Roberts et al., 2003). Affect has been shown to play a critical clinical role in these common symptoms and comorbid diagnoses within youth with SED.

Both positive and negative affect play a crucial role in adolescent mental health. Several studies have found correlations between affect, physiological arousal, anxiety, depression, impulsiveness, and conduct disorders (Chin et al., 2013; Laurent, Joiner, & Catazaro, 2011; McBurnett et al., 2005). For example, Laurent et al. (2011) found that adolescents receiving psychiatric inpatient treatment had overall significantly lower positive affect, higher negative affect, and higher levels of physiological arousal compared with a control group of adolescents without mental health diagnoses. Chin et al. (2013) found more specific correlations between affect and comorbid diagnoses within adolescents with conduct disorders. For example, they found a positive correlation between negative affect and anxiety and depression. Also, the authors reported that adolescents with anxiety were more likely to have higher negative affect and were more likely to externalize their behaviors (Chin et al., 2013).

Affect has also been correlated with impulse and conduct-related disorders. For example, Smyth et al. (2007) found that individuals with bulimia nervosa experience significant increases in negative affect and decreases in positive affect immediately before engaging in binge and purge behaviors. Similarly, increases in behavioral conduct problems correlated with increases in negative affect and decreases in positive affect (McBurnett et al., 2005). Changes in affect continue to impact adolescents with SED and in turn also can make treatment more difficult.

Affect has been shown to influence the therapeutic process. Chin et al. (2013) suggest that because it plays such a large role in various disorders, treatment should be approached by an emotion theory viewpoint. Several studies found that immediate changes in mood greatly impact clients' perspectives, cognition, and social judgements (Chui et al., 2016; Lothmann, Holmes, Chan, & Lau, 2011). For example, Lothmann et al. (2011) found that positive

cognitive-bias modification training immediately decreased participants' negative affect as well as increased their positive interpretations of ambiguous events. Conversely, negative cognitive-bias modification training immediately decreased participants' positive affect while also making their interpretations of ambiguous events more negative (Lothmann et al., 2011). A more specific study identified the relationship between mood and how it can affect both the client and therapist within the therapeutic setting. For example, clients' negative affect before a therapeutic session predicted the therapists' increase in negative affect throughout the session (Chui, Hill, Kline, Kuo, & Mohr, 2016). Therapists tended to experience increases in negative affect during sessions with difficult clients which in turn caused the clients to report the session as less productive (Chui et al., 2016). The crucial role that mood has in the therapeutic process could have important implications in treating adolescents with SED.

Treating individuals with SED remains complex and is not entirely effective (Roberts et al., 2003). Since these people can have an extremely wide range of symptoms and comorbid disorders, generally a multimodal treatment approach is used (Huffine, 2002; Roberts et al., 2003). Methods such as talk therapy, cognitive behavior therapy, family therapy, and medication interventions have been used to treat people with SED (Roberts et al., 2003). The difficulty in treating them successfully is owing to high treatment dropout rates and a lack of client participation during therapy (Marsh & Fristad, 2002). Also, high comorbidity rates make measuring clients' treatment progress difficult. Overall, treating people with SED is complicated because of their diverse symptoms, poor emotion regulation, and disengagement during therapy. Successful treatment might require therapists to create an engaging and inviting therapeutic modality, such as equine-facilitated psychotherapy.

Equine-facilitated psychotherapy (EFP) offers a unique and engaging therapeutic environment that could benefit people with SED. EFP is defined as a dynamic interaction between patient, mental health professional, and equine as therapeutic treatment for a diagnosed illness (EAGALA, 2009). For example, Ewing, MacDonald, Taylor, and Bowers (2007) show that equine therapy offers opportunities to ignite discussions, build trust, and create a buffer between clients and therapists. Additionally, using horses has been shown to increase clients' participation in therapy (Chui et al., 2016). The engaging, nonjudgmental environment that EFP provides might be more effective in facilitating psychological improvements in people with SED.

EFP has many features which can help improve the therapeutic engagement of adolescents with SED. The environment, presence of the horse, and nonjudgmental interactive social dynamics are distinctive features of EFP which might prove beneficial to treating clients with SED. Previous research shows that when clients are comfortable in the environment they are more likely to engage in the therapeutic process as well as report the interaction positively (Chui et al., 2016). Also, the large size and powerful presence of the horse may evoke strong emotions that adolescents with SED often suppress, such as vulnerability (Kirby, 2010). Mandrell (2014) highlights that horses, as herd animals, have a keen social awareness that allows them to provide people with immediate feedback in social situations. Human-horse interactions differ from human-human interactions because of the horse's guileless reactions (Kirby, 2010). Social interaction remains a difficult part of the treatment of clients with SED because their symptoms often isolate them from others. EFP offers clients with SED the opportunity to practice social skills without the interference of human judgement and social rejection. However, the field of EFP is a new and innovative therapeutic model that requires more empirical research (Klontz, Bivens, Leinart, & Klontz, 2007).

There is limited research on the effects of EFP on SED or at-risk adolescents and the results are mixed for empirically supporting its therapeutic effectiveness. For example, Ewing et al. (2007) hypothesized that EFP would increase empathy and internal locus of control in patients with SED, while decreasing depression and aggression. Their results showed trends supporting the hypothesis but they were not statistically significant (Ewing et al., 2007). Similarly, Bachi, Terkel, and Teichman (2012) reported that EFP improved aspects of trust, personal image, and overall life satisfaction in at-risk youth, but the improvements were, again, not statistically significant. In contrast, other studies have found significant results using EFP as treatment for at-risk adolescents. For example, one study found that EFP significantly decreased negative external behaviors, increased positive external behaviors, improved social stress, and decreased aggression in at-risk youth (Trotter, Chandler, Goodwin-Bond, & Casey, 2008). Also, Pendry and Roeter (2013) found that children who participated in an equine-assisted activities program displayed significantly improved social competence compared with a control group. Clients have anecdotally displayed and reported feeling immediate changes in affect during equine therapy, but no study has systematically investigated changes in affect.

Because of the clinical implications that affect has on SED symptoms and treatment, this study focused on examining the immediate effects that EFP and traditional therapy have on changes in affect in adolescents with SED. Affect has been correlated with a variety of disorders that include many commonly expressed in patients with SED, such as depression, anxiety, impulsiveness, heightened physiological arousal, and conduct disorders (Chin et al., 2013; Laurent et al., 2011; McBurnett et al., 2005). Also, EFP has been shown to decrease aggressive behaviors while increasing positive behaviors, such as lessened social stress as well as improved social skills (Pendry & Roeter, 2013; Trotter et al., 2008). In conjunction, affect has also been shown to improve therapeutic outcomes (Chui et al., 2016). However, no studies have examined the role of affect when comparing EFP and traditional group therapy. Since anecdotal improvements in affect have been observed and reported during EFP, this therapy could potentially have a unique, immediate impact on affect.

The current study aimed to examine the immediate effects that equine therapy and traditional group therapy have on adolescents with SED. Because of the benefits that horses add to the therapeutic environment, we hypothesized that EFP would significantly increase positive affect more than would traditional group therapy. Also, we predicted that EFP would significantly decrease negative affect more than would traditional therapy.

Methods

Participants

The study included 37 adolescents between the ages of 12 and 17 years. Twenty-five (73.5%) were male and nine (24.32%) were female. The average age of the participants was 15.1 years (male = 15.1; female = 15.0). All participants fit the diagnosis of SED and were participating in therapeutic group home treatment. Diagnoses were assessed by the licensed therapist at the therapeutic group home using criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013). There was a wide range of diagnoses, including ADHD, anxiety, depression, PTSD, and defiance disorders (see Table I). The most common disorder category was trauma and stress-related disorders (82%, $n = 28$), followed by conduct disorders (61%, $n = 21$), and depressive disorders (41%, $n = 14$).

All clients in the therapeutic group home were included in the study. Only one participant was excluded from participating in the equine therapy session in the eighth week owing to

Table 1. Participants' demographics.

Characteristic	Frequency (%)	Total Number (n = 34)
Male	73.5%	25
Female	26.5%	9
Age 12–13 years	14.7%	5
Age 14–15 years	38.2%	13
Age 16–17 years	47.2%	16
Neurodevelopmental Disorder	41.2%	14
Bipolar and Related Disorders	8.8 %	3
Depressive Disorder	41.2%	14
Anxiety Disorder	23.5%	8
Trauma and Stress-Related Disorders	82.4%	28
Disruptive, Impulse Control, and Conduct Disorder	61.8%	21
Substance-Related and Addictive Disorders	29.4%	10
Paraphilic Disorder	11.8%	4

extremely unsafe behavioral outbursts. The decision to exclude the participant was judged by the therapist and group home manager. Also, those who did not participate in the study for more than two weeks ($n = 3$) were excluded. Ninety-one percent ($n = 34$) of the participants were in the study for six or more weeks. Informed consent was obtained from all participants and their legal guardians. All procedures were approved by both the Institutional Review Board as well as the clinical director at the therapeutic group home. The study's IRB approval number is 16S4HR.

Measurements

Participants' change in mood was measured using the Positive and Negative Affect Scale (PANAS). This is a 20-item scale with a 5-point Likert response format that measures immediate positive affect and negative affect (Watson, Clark, & Tellegen, 1988). The PANAS was developed to examine positive and negative affect separately from one another while maintaining good validity and reliability (Watson et al., 1988). Ten items represent positive affect while the remaining ten items represent negative affect. For example, participants are asked to rate the extent in which they feel things such as interested, excited, inspired, irritable, distressed, or guilty. Participants who feel eager and lively would have higher positive affect scores, whereas those who are languid and unhappy would have lower positive affect scores. Distressed and anxious participants would have higher negative affect scores, whereas those who are calm and content would have lower negative affect scores. The PANAS is both valid, with variance coefficients ranging from 0.69 to 0.95, and reliable, with Cronbach's alpha coefficients ranging from 0.84 to 0.90 (Watson et al., 1988). Scores from the ten positive affect items were summed to give a score of positive affect, while scores from the ten negative items were summed to give a score of negative affect. The total scores were averaged across all weeks both before and after each therapy.

Procedure

Participants received both traditional group therapy and group equine therapy once a week over a period of eight weeks as part of the requirement for the therapeutic group home

treatment. They were divided into four separate units by the organization and each unit had eight clients. The units received both types of therapy individually. EFP and traditional group therapy were received at least 48 hours apart from one another. For example, unit A would receive equine therapy on Monday and then receive traditional group therapy on Wednesday. Both the traditional group and EFP sessions followed a trauma focused-cognitive behavioral therapy (TF-CBT) model which is an evidence-based treatment for trauma and trauma symptoms. Both the equine and traditional group therapies focused on one TF-CBT sequence each week; the order was psychoeducation, stress management, affect expression/modulation, cognitive coping, cognitive processing, behavior management, and trauma narrative.

Traditional group therapy sessions were held in each unit's group home. Materials for the sessions included items used in therapy, such as paper, coloring utensils, crafting material, journals, and TF-CBT worksheets or handouts. The materials were used in a therapeutic way to better facilitate group TF-CBT. The sessions were led by each unit's licensed therapist. The PANAS was filled out by participants immediately before and after each session.

EFP sessions were held at the group home and equine center. Materials used included horses, carrot sticks, barrels, equestrian tack, helmets, and brushes. The sessions were led by a riding instructor certified through the Professional Association of Therapeutic Horsemanship (PATH) which is a non-profit organization focused on providing safe and ethical equine therapy-related services to those with special needs. Each horse was safety screened prior to the study and used in sessions according to the guidelines and regulations established by PATH. Equine therapy sessions were led by a licensed therapist and a licensed PATH therapeutic riding instructor accompanied by equine specialists. Participants were transported once a week for equine therapy by group home staff. Participants filled out the PANAS once they arrived at the equine center. Following that the participants were divided into two groups. One group participated in EFP for 45 to 60 minutes, while the other group participated in barn chores for 45 to 60 minutes. Then the groups switched so all that participants did both EFP and barn chores. Participants filled out the PANAS immediately after equine therapy.

Data Analysis

The positive and negative subscale scores from the PANAS were submitted separately to two repeated measures ANOVAs to evaluate the main effects of therapy (equine, group) and time (before, after). We wanted to compare overall changes in positive and negative affect between the two different therapies. All alpha levels were set at 0.05.

Results

The results do not support the hypothesis that participants would show significantly greater increases in positive affect after EFP than after traditional group therapy: there was no significant interaction between therapy and time for positive affect ($F_{(1,33)} = 1.253, p = 0.271$). Positive PANAS scores showed a significant main effect of time ($F_{(1,33)} = 22.988, p < 0.001$): participants had significant increases in positive affect after therapy compared with before therapy, regardless of therapy type (Figure 1). Additionally, the results revealed an unexpected finding: scores from the positive PANAS ANOVA showed a significant main effect of therapy ($F_{(1,33)} = 29.439, p < 0.001$) indicating greater positive affect ratings before and after EFP sessions compared with group therapy (Figure 2). The finding indicates that participants'

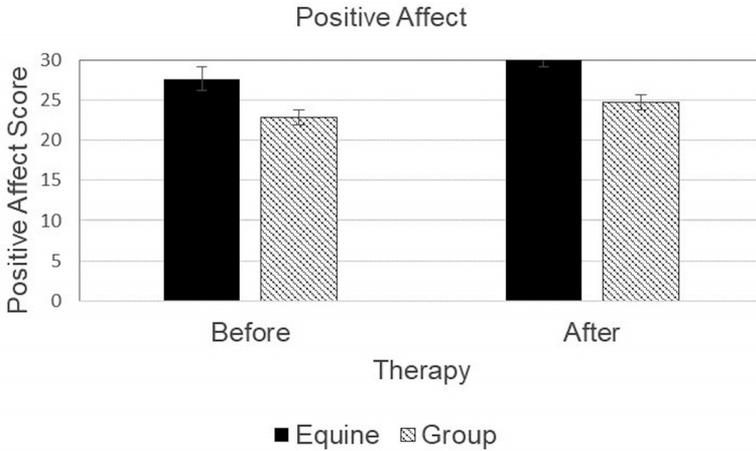


Figure 1. Change in mean positive affect scores of adolescents with serious emotional disturbances before and after equine therapy and group therapy. Equine therapy was rated with significantly higher levels of positive affect compared with group therapy ($p < 0.001$), and all participants had higher positive affect after therapy compared with before therapy ($p < 0.001$). Error bars indicate standard error.

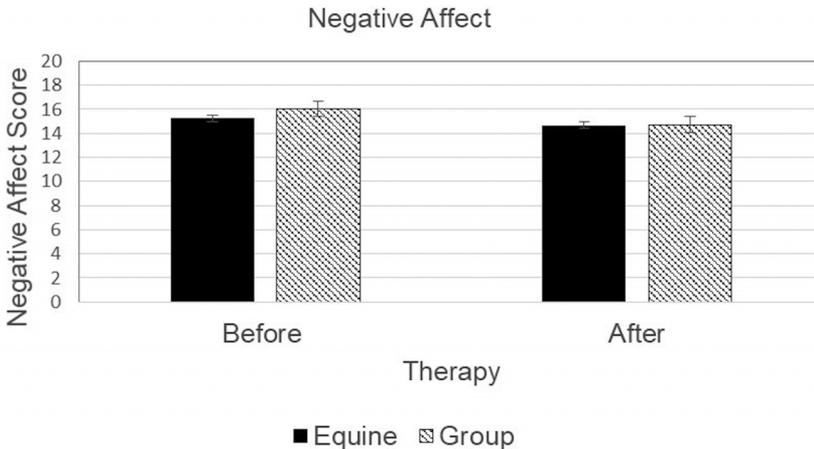


Figure 2. Change in mean negative affect scores of adolescents with serious emotional disturbances before and after equine therapy and group therapy. Participants rated themselves as feeling less negativity after therapy compared with before ($p = 0.024$). There were no significant differences between the types of therapy. Error bars indicate standard error.

positive affect increased, even before engaging in EFP, significantly more than before group therapy. As participants engaged in both EFP and group therapy, they started and ended EFP with significantly higher positive affect than they did in traditional group therapy.

Negative affect did not significantly decrease after EFP compared with traditional group therapy: there was no significant main effect of therapy ($F_{(1,33)} = 1.362, p = 0.252$) or interaction

of therapy and time ($F_{(1,33)} = 0.910$, $p = 0.347$) for negative affect (Figure 2). However, scores for negative affect revealed a significant main effect of time ($F_{(1,33)} = 5.85$, $p = 0.024$): participants rated feeling less negativity after therapy compared with before, regardless of therapy type (Figure 2).

Discussion

The results do not support the hypotheses that EFP would reduce negative affect and increase positive affect significantly more than would traditional group therapy. However, the results indicate that participants experienced significant increases in positive affect and decreases in negative affect in both EFP and group therapy. This result suggests that EFP is similarly effective at increasing positive mood and decreasing negative mood as traditional group therapy. These findings provide evidence that EFP is a beneficial complementary treatment for adolescents with SED. The finding that positive affect was higher before and after EFP than before and after group therapy was unexpected. This indicates that participants showed heightened positivity in anticipation of engaging in EFP. Even though there were not significant improvement differences between EFP and group therapy, participants showed up to EFP with higher affect than when they showed up to group therapy. And even though participants showed similar improvements in both therapies, participants left EFP with higher levels of positive affect than when they left group therapy.

To the best of our knowledge, this is the first study to quantitatively measure the effects of EFP on positive and negative affect. Studying patients' emotional affect before and after a specific therapy has several advantages. Previous studies have found that changes in mood, comparing before versus after therapy, can significantly influence cognitive performance and decisions (Chui et al., 2016; Lothmann, Holmes, Chan, & Lau, 2011). Adolescents with emotional disturbances are a difficult population to treat and focusing on immediate changes in affect has important implications for therapy. Chin et al. (2013) highlight the significant interactions between affect, depression, and anxiety in adolescents with SED. For example, positive affect has significant negative correlations with disorders such as depression (Eisner et al., 2009). As positive affect is strongly negatively related to anxiety and depression, which are common comorbid disorders in people with SED, treatment focusing on positive affect might benefit people with SED. Behaviors such as social engagement, reward seeking, and motivation are strongly associated with positive affect (Forbes & Dahl, 2005). Conversely, depressive symptoms are characterized by opposite behaviors, such as decreased motivation, anhedonia, and social isolation (Forbes & Dahl, 2005). This finding supports why depression is positively correlated with lower positive affect, especially in adolescents with SED. Chin et al. (2013) examined the relationship between affect, depression, and anxiety in adolescents with SED. They found significant negative correlations between positive affect and depression, as well as positive correlations between anxiety and negative affect (Chin et al., 2013). Therefore, improving positive affect has crucial clinical implications especially in adolescents with SED.

EFP offers opportunities for clients to participate in positive approach behaviors such as socializing with the horses. Participating in EFP opposes negative symptoms common in adolescents with SED, including social isolation, which could explain why it has significantly higher positive affect compared with traditional group therapy. Past research shows that EFP significantly increases social competence and positive social behaviors and decreases negative social behaviors and depression in at-risk adolescent populations (Bowers & McDonald, 2001;

Pendry & Roeter, 2013; Trotter et al., 2008). Those improvements parallel behavioral improvements with higher levels of positive affect, such as enhanced social engagement and increased motivation (Forbes & Dahl, 2005). Past research findings could be because of an increase in positive affect owing to interacting with horses in a nonjudgmental relationship. The current study's results support past research by suggesting that EFP has a positive impact on affect.

The higher levels of positive affect in anticipation of EFP could be because of the non-judgmental social interactions that horses offer. Having a nonjudgmental social environment could improve positive affect by encouraging social approach behaviors. As positive affect is positively related to social interactions and reward behaviors, an increase in positive affect could increase socialization by enhancing overall motivation or vice versa. Mueller and McCullough (2017) found that adolescent participants reported consistently elevated feelings of a human-animal bond with the horses during EFP; they immediately developed a strong relationship with the horses that was maintained over time (Mueller & McCullough, 2017). Developing a strong bond with the horses could increase social motivation and positive affect. Future research would benefit by studying the relationship between positive affect and positive social interactions during EFP.

The finding that EFP produced similar improvements to those from group therapy in increasing positive affect and decreasing negative affect is not surprising. CBT has been shown to be successful in treating people with SED (Roberts et al., 2003). Jensen et al. (2014) found that trauma-focused CBT improves depressive and other psychological symptoms in adolescents more than does typical treatment. It seems plausible that there would be similar PANAS improvements since both therapies were structured after a trauma-focused CBT model. Therefore, we see an improvement in mood following both EFP and group therapy.

The finding that EFP did not significantly decrease negative affect was unexpected. Anecdotally, clients have been observed to have less external anxiety and appear calmer during EFP which is why it was hypothesized that it would significantly decrease negative affect. This result could be explained by the fact that EFP offers more improvements in positive affect than it does in negative affect. Previous findings suggest that positive and negative affect are fairly independent of one another (Watson et al., 1988). Hughes and Kendall (2009) found a negative correlation between positive affect and depression; individuals with higher depression had less positive affect rather than higher negative affect. Previous research suggesting that EFP decreases depression could then be explained by an increase in positive affect rather than by a decrease in negative affect. It could be that the benefits of EFP are more related to approach and prosocial behaviors which increase positive affect rather than reducing negative affect. This might explain why we found that EFP causes significantly higher overall positive affect than does traditional therapy.

The aim of this study was to measure immediate changes in affect before and after therapy instead of measuring improvements over extended periods of time. Examining the immediate effects of EFP on clients might explain contributing factors to previous findings that showed significant improvements over long periods of time. For example, research shows that EFP significantly improves depression, anxiety, social behaviors, and self-worth (Trotter et al., 2008; Lentini & Knox, 2009; Bowers & MacDonald, 2001). The current study's findings of EFP's immediate impact on positive affect could explain some long-term benefits of this therapy, such as reduced depression and anxiety. We found that EFP had an impact on positive affect which shows promise for the future of equine therapy.

The current findings need to be viewed in the light of several limitations. Firstly, we were unable to conclude whether EFP or group therapy played a more significant role in treating the clinical symptoms of SED owing to the fact that the participants received both types of therapy each week. The PANAS only measures immediate changes in affect rather than long-term changes. Participants received both treatment conditions within each week; however, the two therapy sessions were never less than 48 hours apart. Owing to the participants receiving both therapies, we were unable to completely remove potential crossover effects. Future research would benefit from having the participants receive traditional and EFP therapy at separate times. Comparing different blocks of treatment would measure the efficacy of each treatment, not just the immediate changes in mood.

Secondly, the wide range of clinical diagnoses within the population also hinder the application of the results. For example, the participants had a variety of comorbid diagnoses, but this study only implemented one measurement tool. Although affect has various implications in a wide range of disorders, future research would benefit from adding more specific clinical measurements, such as anxiety, depression, and behavioral measurements to evaluate the effectiveness and impact of specific therapies on different psychological measures.

Despite these limitations, participants arrived at and left EFP with significantly higher positive affect scores than they did during group therapy. This study is the first known quantitative investigation of the effects of EFP on positive and negative affect in adolescents with SED. We were able to support anecdotal reports of higher affect following EFP sessions by showing that, overall, adolescents with SED had more positive affect in anticipation of EFP than in anticipation of traditional group therapy. The heightened positive affect before therapy could be beneficial for adolescents with SED by improving their attitudes toward therapy. The higher positive affect before and after EFP could explain previous findings such as improved social behavior and reduced depression. Most importantly, this study provides evidence that EFP is a potentially beneficial treatment for adolescents with SED.

EFP could be an effective complementary treatment for people with SED to improve their attitudes toward therapy. People with SED are difficult to treat owing to their negative or ambivalent attitudes toward therapy. EFP offers a therapeutic outlet that possibly enhances social approach behaviors which in turn could make therapy more interactive and enjoyable. EFP is more beneficial than group therapy in improving baseline and after-treatment levels of positive affect. This study shows that EFP influences positive affect before clients even begin the therapy session; the knowledge of participating in equine therapy is enough to improve positive affect. This study suggests that EFP could be beneficial in treating adolescents with SED.

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Conflicts of Interest

These authors declare that they have no conflicts of interest.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Bachi, K., Terkel, J., & Teichman, M. (2012). Equine-facilitated psychotherapy for at-risk adolescents: The influence on self-image, self-control and trust. *Clinical Child Psychology and Psychiatry, 17*, 298–312.
- Bowers, M., & MacDonald, P. (2001). The effectiveness of equine-facilitated psychotherapy with at-risk adolescents. *Journal of Psychology and Behavioural Sciences, 15*, 62–76.
- Brauner, C. B., & Stephens, C. B. (2006). Estimating the prevalence of early childhood serious emotional/behavioral disorders: Challenges and recommendations. *Public Health Reports, 121*, 303–310.
- Chin, E. G., Ebesutani, C., & Young, J. (2013). Application of the tripartite model to a complicated sample of residential youth with externalizing problems. *Child Psychiatry & Human Development, 44*, 469–478.
- Chui, H., Hill, C., Kline, K., Kuo, P., & Mohr, J. (2016). Are you in the mood? Therapist affect and psychotherapy process. *Journal of Counseling Psychology, 63*, 405–418.
- EAGALA (Ed). (2009). *Fundamentals of EGALA model practice training manual* (6th ed.). Santaquin, UT: EAGALA.
- Eisner, L. R., Johnson, S. L., & Carver, C. S. (2009). Positive affect regulation in anxiety disorders. *Journal of Anxiety Disorders, 23*, 645–649.
- Ewing, C. A., MacDonald, P. M., Taylor, M., & Bowers, M. J. (2007). Equine-facilitated learning for youths with severe emotional disorders: A quantitative and qualitative study. *Child and Youth Care Forum, 36*, 59–72.
- Forbes, E. E., & Dahl, R. E. (2005). Neural systems of Positive Affect: Relevance to understanding child and adolescent depression? *Development and Psychopathology, 17*, 827–850.
- Huffine, C. (2002). Child & adolescent psychiatry: Current trends in the community treatment of seriously emotionally disturbed youths. *Child and Adolescent Psychiatry, 53*, 809–811.
- Hughes, A. A., & Kendall, P. C. (2009). Psychometric properties of the Positive and Negative Affect Scale for Children (PANAS-C) in children with anxiety disorders. *Child Psychiatry and Human Development, 40*, 343–352.
- Jensen, T. K., Holt, T., Ormhaug, S. M., Egeland, K., Granly, L., Hoaas, L. C., & Wentzel-Larsen, T. (2014). A randomized effectiveness study comparing trauma-focused cognitive behavioral therapy with therapy as usual for youth. *Journal of Clinical Child & Adolescent Psychology, 43*, 356–369.
- Kirby, M. (2010). Gestalt equine psychotherapy. *Gestalt Journal of Australia and New Zealand, 6*, 60–68.
- Klontz, B. T., Bivens, A., Leinart, D., & Klontz, T. (2007). The effectiveness of equine-assisted experiential therapy: Results of an open clinical trial. *Society & Animals, 15*, 257–267.
- Laurent, J., Joiner Jr, T., & Catanzaro, S. (2011). Positive affect, negative affect, and physiological hyperarousal among referred and nonreferred youths. *Psychological Assessment, 23*(4), 1–13.
- Lentini, J. A., & Knox, M. (2009). A qualitative and quantitative review of equine facilitated psychotherapy (EFP) with children and adolescents. *The Open Complementary Medicine Journal, 1*, 51–57.
- Lothmann, C., Holmes, E., Chan, S., & Lau, J. (2011). Cognitive bias modification training in adolescents: Effects on interpretation biases and mood. *Journal of Child Psychology and Psychiatry, 52*, 24–32.
- Mandrell, P. (2014). *Introduction to equine-assisted psychotherapy: A comprehensive overview* (2nd ed). (n.p.).
- Marsh, D. T., & Fristad, M. A. (2002). *Handbook of serious emotional disturbance in children and adolescents*. New York, NY: John Wiley & Sons.
- McBurnett, K., Raine, A., Stouthamer-Loeber, M., Loeber, R., Kumar, A. M., Kumar, M., & Lahey, B. B. (2005). Mood and hormone responses to psychological challenge in adolescent males with conduct problems. *Biological Psychiatry, 57*(10), 1109–1116.
- Mueller, M., & McCullough, L. (2017). Effects of equine-facilitated psychotherapy on post-traumatic stress symptoms in youth. *Journal of Child and Family Studies, 26*, 1164–1172.
- Pendry, P., & Roeter, S. (2013). Experimental trial demonstrates positive effects of equine facilitated learning on child social competence. *Human-Animal Interaction Bulletin, 1*, 1–19.
- Roberts, M. C., Jacobs, A. K., Puddy, R. W., Nyre, J. E., & Vernberg, E. M. (2003). Treating children with serious emotional disturbances in schools and community: The intensive mental health program. *Professional Psychology: Research and Practice, 34*, 519–526.
- Smyth, J., Heron, K., Sliwinski, M., Wonderlich, S., Crosby, R., Mitchell, J., & Engel, S. (2007). Daily and momentary mood and stress are associated with binge eating and vomiting in bulimia nervosa patients in the natural environment. *Journal of Counseling and Clinical Psychology, 75*, 629–638.

- Trotter, K. S., Chandler, C. K., Goodwin-Bond, D., & Casey, J. (2008). A comparative study of the efficacy of group equine assisted counseling with at-risk children and adolescents. *Journal of Creativity in Mental Health, 3*, 254–284.
- Wagner, M. M. (1995). Outcomes for youths with serious emotional disturbance in secondary school and early adulthood. *The Future of Children, 5*, 90–112.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.