J Child Fam Stud (2014) 23:558–566
DOI 10.1007/s10826-013-9718-1

ORIGINAL PAPER

Equine Facilitated Therapy with Children and Adolescents Who Have Been Sexually Abused: A Program Evaluation Study

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Published online: 24 January 2013

Abstract Child sexual abuse (CSA) is a social problem that often inflicts long lasting psychological trauma and leads to psychopathology, behavioural problems and re-victimization. Treating young people who are presenting with the detrimental effects of CSA is often difficult because these effects off-set efforts at establishing a therapeutic bond. Animals have been found to facilitate the development of the therapeutic alliance between client and practitioner and therapies utilizing horses have the added bonus of empowering clients. This study aimed to evaluate an Equine Facilitated Program (EFT) run by Phoenix House, a sexual assault referral centre in Queensland, Australia. Participants were six boys and nine girls (aged 8–11 years) and 15 adolescent girls (aged 12–17 years). All participants provided several measures of data designed to establish levels of psychological distress at three points in time. That is, Time 1—intake into the service; Time 2—following approximately 6 weeks of in-clinic counselling and pre-EFT; and Time 3 post-EFT (9–10 week duration). Significant improvements in functioning were found between Time 2 and Time 3 assessment across all psychometric measures and for both age groups. No, or non-significant, improvements were found between Time 1 and Time 2 assessments. Overall the results show that EFT proved an effective therapeutic approach for the children and adolescents referred to the service. Of particular note was the finding that efficacy was similar across gender, age and Indigenous/non-Indigenous status. Implications of this and suggestions for further research are discussed.

Keywords Sexual abuse · Program evaluation · Animal assisted therapy · Equine facilitated therapy

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Introduction

Child sexual abuse (CSA) is a health and societal concern in Australia and worldwide. The number of substantiated child sexual abuse cases investigated by Australian Child Protection agencies in the financial year 2009–2010 was 5,880 (Australian Institute of Health and Welfare 2011). However, this figure does not represent the actual number of incidents of CSA which are considered to be under-reported (Richards 2011). In a national *Personal Safety Survey,* conducted by the Australian Bureau of Statistics (ABS), 12 percent of women and 4.5 percent of men in Australia were reported to have been sexually assaulted by the age of 15 (Australian Bureau of Statistics 2005). In an overview of studies on the prevalence of child sexual abuse, Price-Roberston et al. (2010) estimated that the prevalence of penetrative sexual abuse on males was 4–8 percent and 12–16 percent for non-penetrative abuse; 7–16 percent for female penetrative abuse and 23–36 percent for non-penetrative abuse.

Some of the long term psychosocial and mental health outcomes for victims of CSA include depression, anxiety, post-traumatic stress, feelings of guilt and powerlessness (Sánchez-Meca et al. 2011), anti-social behaviours, disassociative disorders, Axis II disorders, conduct problems,

eating disorders, suicide ideation, substance abuse and sexualized behaviours (Fleming et al. 1999; Kendall-Tackett 2002). Further, if untreated, the abused may develop maladaptive schema that contributes to adult re-victimization and psychopathology. A study by Cokor and McGinn (2006) revealed that in a sample of 48 clinically depressed women, those with a history of CSA had significantly higher levels of depression and maladaptive schema than those without a history of CSA. In other studies (e.g. Gibson and Leitenberg 2001; Ponce et al. 2004) this style of interpersonal schemata is associated with the acceptance of violence and maltreatment within adult relationships and thereby re-victimization and potential adult perpetration of child abuse (Merrill et al. 2005).

The fact that approximately 40 percent of reported perpetrators are family members and a further 45 percent are known and trusted by the child victim (AIHW 2011) creates unique complications for survivors in terms of trust, interpersonal styles, subsequent relationships, perpetration and re-victimization (Kendall-Tackett 2002). The extent of continued trauma suffered by CSA victims is largely influenced by factors such as individual resilience, the severity and duration of the abuse, relationship to the perpetrator and the extent of family dysfunction in terms of violence and child neglect (Belsky 1993; Gibb et al. 2003). In contrast, factors that may assist in the amelioration of trauma from CSA include social support from family, positive subsequent relationships (Corcoran and Pillai 2008) and successful completion of effective treatment and therapy (Draucker et al. 2011).

Therapies that are traditionally based on verbalisations between the therapist and client (e.g., Cognitive Behaviour Therapy) may not be efficacious for young people when age appropriate behavioural, cognitive and emotional abilities are off-set by negative CSA sequelae (e.g. hyper-arousal, distrust of adults and dissociation from trauma). Further, therapies that are mono-culturally biased and conducted in a clinical environment may be unsuited to some cultures, particularly to Indigenous clients. There is relatively little information available regarding the efficacy of therapeutic interventions with different ethnic and cultural groups (Lalor and McElvaney 2010). Cohen et al. (2001) mention that few treatment outcome studies examine the effect of ethnicity on treatment efficacy, or importantly consider accessibility/acceptability of treatment approaches for families of different ethnicities before embarking on treatment design. With respect to individuals from an Australian Indigenous heritage, Westerman (2010) suggests that cultural differences in regards to gender, engaging with a 'stranger' about family matters and the requirement to talk about feelings and emotions make it difficult to successfully engage Indigenous clients in therapy which, in turn, leads to high attrition.

The problems associated with engaging at risk and traumatised children and youths in the therapeutic process has forced clinicians to create new ways reach young clients. Extending from this creativity and stepping outside of realms of traditional talking therapy, are animal-assisted therapies (AAT). These methods are broadly described as the deliberate involvement of animals within a treatment to realise specific therapeutic goals (Nimer and Lundahl, 2007). AAT has become popular amongst some therapists who have utilized a number of species of animal; the most popular being dogs and horses (Serpell 2006). Studies have shown that animals are capable of providing unconditional positive regard without judgement, something that may not be present in the lives of abused children (Reichert 1998; Thompson and Gullone 2003). Animals have also been known to provide an important emotional bridge to therapeutic alliance, as a difficult to engage child may find it easier to engage with an animal and eventually transfer this alliance to the therapist (Geist 2011; Karol 2007). Medical and health research has portrayed contact with animals to be effective in lowering the arousal level of hyperactive children and also to alleviate hyper-vigilance in those suffering from PTSD (Morrison 2007). The arguably innate human interest and desire to interact with animals affords animals the ability to gain a young client's attention (Melson 2011), as well as promote pro-social, humane behaviours and empathy towards others (Thompson and Gullone 2003). It is important to acknowledge at this point the concerns of a growing number of authors regarding the need to ensure the wellbeing of the animal 'therapist' within AAT programs (e.g., Evans and Gray 2012) and the fundamental need to establish whether 'live' animals (as opposed to humane education and/or animal models) are crucial to AAT approaches (e.g., Marino 2012). Methodologically rigorous studies into the efficacy of AAT with specific groups of clients are required in order to establish for whom, and in what situations, AAT programs are warranted. Evans and Gray (2012) put it succinctly in their review "AAT, as an empirically driven practice tool, is still in its infancy" (p. 3).

Successful therapies utilizing horses can also be attributed to the empowerment of clients from learning to interact with, and control, such a large animal as well as learning skills and tasks related to the care of and working with horses. The largely non-verbal, practical application and natural setting of Equine Facilitated Therapy (EFT) also suggests that this type of therapy may be more suited to those who identify with an Indigenous culture. Qualitative literature (e.g., Bizub et al. 2003; Chardonnens 2009; Froeschle 2009) has reported participants' expressions of

heightened self-efficacy, coping abilities, self-esteem and social confidence following interaction with horses.

The very nature of horses as an animal of prey allows them to be instinctively attuned to the emotions and body language of other animals (including humans), as their survival relies on the ability to interpret such actions into intentions (Roberts et al. 2004). This ability ensures a carefully selected horse or pony can contribute to the client's experiential discovery of negative emotions from past trauma, as well as how these emotions can relate to an interpersonal style that is not conducive to positive interactions with others, or desirable relationship outcomes (Chardonnens 2009). In this manner, the horse facilitates the discovery and amelioration of maladaptive schema and emotions that are known to contribute to psychopathology and behavioural problems (Bizub et al. 2003).

To guide the use of horses within a therapeutic environment and to maintain a professional standard, the Equine Assisted Growth and Learning Academy (EAGALA) was established in 1999. EAGALA is a non-profit organisation whose major goal is to promote the professional growth of equine-assisted therapies and to provide a standardization of practice supported by education and resources. The EAGALA model is closely related to Gestalt and existential therapies that are person-centred. The method aims to encourage client insight with the use of metaphors, problem solving activities and interaction with horses that have the ability to reflect back internal conflict to the client (EAGALA 2012).

While existing research into the efficacy of EFT has been promising, there is a need to be cautious given the limited number of published empirical studies. Only one study was located that reported insignificant results. Ewing et al. (2007) tested the efficacy of a relatively intensive 9 week (36 h) program with twenty-six 10–14 year olds with moderate to severe behavioural problems. However, this study was performed in an education setting with goals directed toward learning and behaviour management rather than therapy, so it is perhaps not surprising that measures of empathy, self-esteem, loneliness and depression showed no significant improvement following the EFT. In contrast, Schultz et al. (2007) used EAGALA methods to work with 63 children who had experienced intra-familial violence and who were diagnosed with a variety of disorders, including ADHD, post trauma stress, adjustment disorder, conduct and mood disorders. The authors tested the efficacy of the treatment by determining the difference between pre and post treatment Global Assessment of Functioning (GAF) scores. They found an overall significant improvement in GAF scores, which in turn were positively correlated with the number of sessions attended by the client. The greatest improvement was seen in younger clients and those who had experienced abuse and neglect (Schultz et al. 2007).

Trotter et al. (2008) also used EAGALA methods to improve the behavioural and psycho-social functioning of 126 children identified as 'at risk' due to behavioural, social and learning deficits. The children volunteered to embark on a 12 week, 2 h per week course in equine-assisted counselling (EAC) which also incorporated adventure based therapy activities. This treatment group was compared with a group of 38 children who participated in a more traditional group counselling program, Rainbow Days (RD) which was conducted during 1 h sessions over 12 weeks. The EAC group were found to have improved significantly in five behaviour areas in a self report and in 12 areas of the parent report. This is compared to the control group who showed improvement in four behaviour areas in the self report and only one area for parent report. The EAC group also showed significant improvement in the internalizing problems index on a self and parent report behaviour scale (Trotter et al. 2008). These results suggest the participants' gained improved coping abilities which other studies have found to be conducive to reduced levels of depression and anxiety (Daigneault et al. 2006). Although the Trotter et al. (2008) study is one of the few animal-assisted therapy studies that have employed the use of a control group, the disparity in group sizes and treatment time (1 h sessions for control group compared to two for the test group), as well as the lack of random allocation to the groups suggests that the between group results still need to be interpreted with some caution.

As highlighted earlier there is a call for methodologically rigorous evaluations of AAT and EFT interventions however the needs of the (human) client group must also be considered. This is a common problem within studies examining the efficacy of therapeutic approaches following abuse (e.g., Sánchez-Meca et al. 2011). Given the competing need for rigorous evaluation and ethical considerations regarding withholding services to an at-risk group a quasi-experimental, repeated measure, design was utilised. This approach has been utilised by other researchers assessing treatments for abused or at-risk children (e.g., Lanktree and Briere 1995; Tsai et al. 2010). Similar to these studies, changes between Time 1 (Intake into service) and Time 2 (Pre-EFT) scores were compared to those between Time 2 (Pre-EFT) and Time 3 (Post-EFT) to account for maturation, time since abuse cessation and/or other variables that may mask the actual efficacy of the EFT. Treatment effect sizes were calculated by comparing Time 2 and Time 3 mean scores divided by the standard deviation of the Time 3 scores for the entire cohort (Cooper et al. 2009).

Given the issues raised in the extant literature it was hypothesised that, compared to the data collected at Time 1 and 2, psychometric data collected at the completion of EFT (Time 3) would reveal significantly fewer symptoms

of trauma, internal and externalized behaviours (as measured by Child Behavior Checklist (child cohort) and Trauma Symptom Checklist (adolescent cohort) scores), and lower scores on measures of depression and anxiety (Children's Depression Inventory (child cohort) and Beck Depression and Anxiety Inventories (adolescent cohort). It was also hypothesized that participants' change-scores from Time 2 to Time 3 will depict significant improvements compared to change-scores from Time 1 to Time 2.

Method

Participants

The participants were 15 children and 15 adolescents who were referred to Phoenix House for treatment for sexual abuse; some were also victims of neglect and/or physical abuse. The 'child' group consisted of 9 females and 6 males aged eight to 11 years ($M = 9.8$ years, $SD = 1.3$), three identified as Indigenous (i.e., Aboriginal and/or Torres Strait Islander) and 9 were non-Indigenous. The 15 adolescents were all females, aged 12 and 17 years (M = 15.5 years, $SD = 0.8$). Five adolescents identified as Indigenous and ten as non-Indigenous. All took part in an EFT program with Phoenix House between March 2010 and September 2011. Specific details of abuse were not available to the researchers. All participants agreed to take part in the EFT program as well as the research and the current guardians of the participants also signed consent forms. Ethical approval to evaluate the archival data gathered during the EFT program was granted by CQ University.

Procedure

All participants were assessed at three points in time: upon intake and prior to in-clinic counselling (Time 1), prior to commencing EFT but after in-clinic counselling (Time 2) and upon completion of EFT (Time 3). After the first assessment, the participants were engaged with in-clinic individual counselling once a week for the average of 6.6 weeks (SD 10 days) for the 'child' group and 6.4 weeks (SD 15.7 days) for the 'adolescent' group. If the participant and guardian agreed to take part in an EFT group program, the participants attended for 90 min once per week for 9–10 weeks. The 'Trails of Discovery' EFT program is based on EAGALA principles and experiential learning with the help of horses. The therapeutic team consists of two counsellors and four horses. All activities are ground based and incorporate learning basic horsemanship skills, such as backing up a horse, asking a horse yield his hind or front quarters, desensitizing a horse, asking a horse to circle around a person, jump over obstacles either on a loose rope or at liberty. Other activities are designed to create a metaphor between what occurs in the arena and the participant's every-day life and again are performed at liberty. What emerges during these activities are patterns of thinking, reactions/responses to different situations and outcomes, and reactions to dynamics within the family group or within the group of participants. Each exercise is designed to address issues such as: trust, communication, boundaries, observation, body language, attitude and self-perception and all activities are dynamic, not static, to accommodate the needs of each group of participants, be it their age, developmental stage, disability, current mental health status or their cultural background. Further details of EFT activities are available from the corresponding author.

Measures

Different measures were used for the children and adolescents in order to ensure the use of appropriate psychological tools. Scales utilized to measure trauma symptoms/psychopathology for the 'child' participants were the Children's Depression Inventory and the Child Behaviour Checklist. The 'adolescent' group were assessed using the Trauma Symptom Checklist, the Beck Depression Inventory and the Beck Anxiety Inventory. Archival data with code names only were supplied to the researcher to protect the identities of the participants and their families.

Children's Depression Inventory (CDI)

The CDI (Kovacs 2003) was created from the Beck Depression Inventory with 21 items adjusted semantically for age appropriateness and another five items added to account for school and peer functioning. Total scores range from 0 to 54 with higher scores denoting depressive symptomatology. A longitudinal study by Cole and Martin (2005) found that the child self-report scale (used in the current study) measured state depressive symptoms. Test–retest reliability co-efficients fall in the mid .70 s for retest intervals up to 4 weeks.

Child Behavior Checklist (CBCL)

The CBCL is a caregiver report for children and adolescents aged 6–18 years which measures maladaptive social, emotional and overt behaviours (Achenbach 1991). Items are scored by computer software which compares the scores to normative data. Scores for internalized (covert, anxious depressive behavioural symptoms) and externalized (overt, non-compliance, hyperactive, aggressive) scales were used within this study, along with the Total

behaviour scores. Test–retest and inter-rater reliabilities of .90 to .93 have been reported (Achenbach and Rescorla 2001).

Trauma Symptom Checklist (TSCC)

The TSCC is a 54 item questionnaire developed using a large Australian normative sample. It is designed to assess post trauma symptomatology in children and adolescents. TSCC is scored on a four point Likert scale with higher scores depicting higher states of trauma. For ease of interpretation and comparisons to normative data, raw scores are transcribed into *T* scores with a mean of 50 and a *SD* of 10. The TSCC includes six clinical scales: Depression, anxiety, posttraumatic stress, sexual concerns, dissociation, anger (Mackler 2012). While the TSCC is recommended for children to 16 years studies have shown it to be a valid measure for 17 year olds with the exception of the Anger scale (Mackler 2012), given this the Anger scale was not utlised. In a standardization sample of 3,008 children, five of the clinical scales returned high internal validity (alpha range from .82 to .89) with the sexual concerns scale having a slightly lower alpha reading of .77 (Strand et al. 2005).

Beck Depression Inventory (BDI)

The BDI measures levels of depression in adults and adolescents. All 21 items are measured on a 4 point Likert scale and higher scores represent more severe levels of depression (Carlson 2012). The BDI has been found to have sound predictive validity and good 2 week test retest reliability ($r = .72$; Beck et al. 1996).

Beck Anxiety Inventory (BAI)

The BAI is a 21 item questionnaire measured on a four point Likert scale indicating the severity of anxiety symptoms. The self-report questionnaire requires the participants to answer "not at all", "mildly but it didn't bother me", "moderately—it wasn't pleasant at times" and "severely—it bothered me a lot". All items are summed to give a total score for the inventory. The BAI has been found to be a valid measure of state anxiety and internal reliability ranges from .84 to .94 (Dowd 2012).

Results

Data Analysis for Child Participants

Although this group consisted of mixed genders and ethnicities, a multivariate analysis of the variances of change-scores from Time 1 to Time 2 and Time 2 to Time 3 did not find any significant difference between genders or ethnicity groups (Indigenous or non-Indigenous), thus the following analyses are presented for each age cohort and these groups were treated as the 'analysis unit' as suggested by Cooper et al. (2009).

CDI

To test the hypothesis that the EFT program was effective in treating the participants for psychological trauma, a repeated measures analysis of variance of the three temporal CDI measures was utilized. The assumption of sphericity was violated, so the degrees of freedom were adjusted using the Greenhouse-Geisser test. Results showed a significant overall effect $F(1.13, 15.86) = 36.155, p < .001$, effect size = .721. Importantly, tests of within subject contrasts showed that there was no significant change in reported symptoms of depression between data collected at Time 1 ($M = 15.73$, SD = 6.72) and Time 2 ($M = 15.6$, $SD = 8.1$), $F(1, 14) = .051$, *ns.* In contrast, CDI scores from Time 3 ($M = 4.33$, $SD = 3.37$) were significantly lower than those at Time 2, $F(1,14) = 33.5$, $p < .001$, effect size = .705, indicating a significant improvement in reported depressive symptoms.

CBCL

Assumption testing showed that the CBCL dependent variables did not represent a normal distribution so raw scores were transformed into new variables using a square root conversion (Field 2009). The transformed data, which resulted in a normal distribution, were then used to analyse the data using repeated measures analysis of variance (ANOVA). However as the same results were obtained in regards to significance testing when ANOVAs were performed using the original, non-transformed data for simplicity and ease of translation/replication, analysis of the raw data are reported here.

Results showed a significant variation between the three measures for the CBCL internalized behaviours $F(2, 28) = 19.59$, $p < .001$, effect size = .583. Whilst average scores collected at Time 2 ($M = 12.4$, $SD = 8.84$) were lower to those collected at Time 1 ($M = 14$, $SD = 9.16$), a test of within-subject contrasts showed a non-significant difference between variances, $F(1, 14) = 1.19$, *ns.* Conversely, data collected at Time 3 ($M = 4.47$, $SD = 3.54$) showed a significant improvement in reported internalized behaviours when compared to data collected at Time 2 ($M = 12.4$, $SD = 8.84$, $F(1, 14) = 25.57$, $p < .001$, effect size = .646.

The same analysis was carried out for the scores for externalized behaviours on the CBCL and a similar result

was found. A significant overall difference was evident between scores from the three temporal measures, $F = (2, 28)$ 25.57, $p < .001$ effect size = .646. Further analysis found no significant variation between data collected at Time 1 ($M = 14$, $SD = 8.3$) and Time 2 ($M = 12.13$, $SD = 5.73$), $F(1, 14) = 2.26$, *ns.* There was, however a significant improvement of scores from data provided at Time 3 ($M = 4.67$, $SD = 3.72$) compared to the scores for the same participants provided at Time 2 ($M = 12.4$, $SD = 3.54$), $F(1, 14) = 32.37$, $p < .001$, effect size = .698. This result indicates a significant reduction in participant's externalized behaviours as reported by caregivers after participants took part in the EFT program, compared to the two measurements prior to the program.

Similarly, CBCL total behavioural scores were significantly different for the three temporal measurement points, $F(2, 28) = 48.5$, $p < .001$ effect size = .776. Tests of within subject contrasts show a non-significant reduction of scores between Time 1 ($M = 50.53$, $SD = 21.99$) and Time 2 ($M = 46.07$, $SD = 17.58$), $F(1, 14) = 1.69$, *ns.* In contrast, a significant decrease in total scores ($M = 17.27$, $SD = 7.9$), $F(1, 14) = 103$, $p < .001$, effect size = .88 was seen at Time 3. Paired sample t tests were used to analyse the difference between the means of the change-scores between Time 1 and Time 2 and from Time 2 to Time 3. Results showed that the change-scores between Time 2 (Pre-EFT) and Time 3 (Post-EFT) were significantly greater than the change-scores from Time 1 (Intake) to Time 2 (Pre-EFT). Presented in Table 1 are the means, standard deviations, t scores and significance values for all measures.

Data Analysis for Adolescent Participants

Similar to the analysis of the 'child' cohort data, ANOVAs were used to explore the differences between scores from data collected at Time 1, Time 2 and Time 3 for the all-female adolescent group. There was no main effect for age or ethnicity.

Table 1 Child group t test results for dependent variables showing the differences between means of change-scores from Time 1 to Time 2 and Time 2 to Time 3

	Time 1 to Time 2	Time 2 to Time 3		
	M (*SD*)		*df*	*t*
CDI	−0.133 (2.30)	−11.27 (7.54)	14	4.83**
CBCL (Int)	−1.60 (5.68)	−7.93 (6.08)	14	2.62*
CBCL (Ext)	−1.93 (4.98)	−7.47 (5.08)	14	2.66*
CBCL (Tot)	−4.47 (13.3)	−28.8 (10.98)	14	5.56**

* $p = < .05$, ** $p = < .001$

TSCC

To test the hypothesis that the EFT program is effective in treating trauma in youths that have been sexually abused, a series of repeated measures ANOVAs were performed. Results of the main effect of time are as follows (note that some have adjusted degrees of freedom using the Greenhous-Geisser test as the Mauchley's test of sphericity was violated). TSCC(anxiety): $F(1.25, 17.5) = 61.52$, $p < .001$; TSCC (depression): $F(1.35, 18.85) = 50.6$, $p = < .001$; TSCC (dissociation): $F(2, 28) = 62.8$, $p = < .001$; TSCC(post-traumatic stress): $F(1.2, 17.2) = 87$, $p = < .001$; TSCC (sexual concerns): $F(1.4, 19.7) = 83.1, p = < .001$. Tests of within subject contrasts showed that there was a significant difference between all measures of time (i.e. Time 1 to Time 2 and Time 2 to Time 3). Table 2 presents the results of the within subject contrasts between temporal measures, all differences were significant and for all subscales, change-scores from Time 2 to Time 3 were significantly ($p = 0.001$) greater than those from Time 1 to Time 2.

BDI

To test the hypothesis that participants would report significantly less symptoms of depression after completion of the EFT program, a repeated measures ANOVA was conducted using the three temporal measures as dependent variables. Results showed that there was a significant overall difference across the three measurements of BDI, $F(2, 28) = 33$, $p = < .001$. A within subjects contrast showed that the slight improvement in scores seen between Time 1 ($M = 28.6$, $SD = 11.2$) and Time 2 ($M = 27.9$, $SD = 10.8$) was non-significant. However, there was a significant improvement in scores between Time 2 and Time 3 ($M = 13$, $SD = 11.9$), $F(1, 14) = 50.9, p = < .001$, effect size = .784. Additionally change-scores from Time 2 to Time 3 ($M = -14.8$, $SD = 8$) indicated a significantly greater improvement than

Table 2 Results of within subject contrasts for the three temporal measures across TSCC subscales

Measure	Time of measure (*M, SD*)	*F* (1,14)	Effect size
TSCC (ANX)	T1 (11.3, 3.8) to T2 (9.3, 3.0)	23.8	0.630
	T2 to T3 (3.9, 1.1)	62.7	0.818
TSCC (DEP)	T1 (12.5, 4.4) to T2 (9.7, 3.2)	12.6	0.474
	T2 to T3 (3.0, 1.4)	73.8	0.841
TSCC (DISC)	T1 (25.2, 9.9) to T2 (20.7, 8.2)	8.7	0.383
	T2 to T3 (5.3, 1.90)	72.7	0.839
TSCC (PTSD)	T1 (16.3, 4.3) to T2 (14.4, 3.5)	16.7	0.544
	T2 to T3 (2.9, 2.6)	105	0.822
TSCC (SC)	T1 (15.7, 6.4) to T2 (13.1, 4.3)	9.6	0.407
	T2 to T3 (2.9, 2.6)	133.3	0.905

change-scores from Time 1 to Time 2 ($M = -7.3$, $SD = 6.6$), $t(14) = 5$, $p = < .001$.

BAI

It was hypothesised that the participants' reported levels of anxiety would decrease whilst participating in the therapy. A repeated measures ANOVA was performed on the three temporal measures to test this hypothesis. Results showed a significant overall effect for time. The assumption of sphericity was violated, thus the degrees of freedom were adjusted using the Greenhouse-Geisser test $F(1.39, 19.4) = 53.99$, $p = < .001$, effect size = .794. Further analysis showed that there were a significantly less reported symptoms of anxiety from Time 1 ($M = 28.4$, $SD = 11.5$) to Time 2 ($M = 25.7$, $SD = 10.8$), $F(1,14) = 4.99$, $p = .042$, effect size = .263. There was also a significant reduction in reported anxiety symptoms from Time 2 to Time 3 ($M = 8.9$, $SD = 5.3$), $F(1, 14) = 55.4$, $p = < .001$, effect size = .798.

A paired sample *t* test was conducted to test the hypothesis that participants would show a significant improvement in symptoms of anxiety after completing the EFT program, compared to after completing individual counselling alone. Change-scores from Time 2 to Time 3 ($M = -16.8$, $SD = 8.7$) were significantly higher than change-scores from Time 1 to Time 2 ($M = -2.7$, $SD = 8$), indicating a significant difference in improvement, $t(14) = 5.27$ $p = < .001$.

Discussion

The aim of the current study was to evaluate the efficacy of an Equine Facilitated Program used as an adjunct therapy to treat children and youths who have experienced sexual abuse. It was hypothesised that participants would show significant reduction in symptoms of depression, anxiety, undesirable behaviours and trauma after completing the EFT program. The results supported this hypothesis with both children and adolescents, regardless of gender or ethnicity, showing a significant improvement in data collected post-EFT compared to scores collected prior to commencing the program. These results were also quite robust with effect sizes ranging from .583 to .880 for the children's data and .702–.905 for the adolescent data.

The 'child' participants showed significant improvements in behaviour and symptoms of depression after taking part in the EFT program when compared to the data collected prior to the program and after taking part in approximately 6 weeks of in-clinic counselling. While participants' mean scores on the measures at Time 2 were lower than those at Time 1, the difference was not statistically significant. Further, the results showed that change-scores from Time 2 to Time 3 were significantly larger than the change-scores from Time 1 to Time 2. Some caution does need to be taken when interpreting the findings presented here given the quasi-experimental design utilised. However, treating each cohort as the 'analysis unit' as suggested by Cooper et al. (2009), allows a fairly rigorous assessment of the efficacy of the EFT program. That is, while individual participants may have experienced advantageous changes (maturation, altered living arrangements etc.) that contributed towards improvement in symptomology it is unlikely the entire cohort would have. Thus, these robust cohort level results are promising and indicate an overall improvement in functioning, in line with previous research utilising EFT and the EAGALA model (e.g., Shultz et al. 2007; Trotter et al. 2008), and they certainly underscore the need for further research. Moreover, future research needs to be not only methodologically robust but ethically sound. To that end, it may be that we need to develop new techniques for data measurement and capture which do not rest upon the need for a group denied particular therapies. We may also wish to consider broadening the research to consider impact of the therapeutic work on the animals involved and, indeed, evaluations of the need for the presence of live animals in the first place.

Results for the 'adolescent' participant group were similar to that of the 'child' group, with one important difference. Unlike the younger cohort, the adolescents did show a significant improvement from Time 1 to Time 2 in all measures except the BDI. This result may be attributed to the age of the participants with adolescents possessing sufficient maturity to respond well to in-clinic counselling. While it is also feasible that some of the improvements seen within the adolescent cohort can be attributed to extraneous factors such as maturation researchers have suggested that sexualised behaviour may be particularly resistant to short-term treatment (e.g., Lanktree and Briere 1995) and persist across time. The effect sizes seen here in reduction of sexualised concerns (TSCC) following standard therapy (i.e., Time 1 to Time 2) are similar to those presented in the meta-analysis conducted by Sanchez-Meca et al. (2011) indicating that the in-clinic counseling is at least as effective as that presented elsewhere. In contrast, the effect size following EFT (Time 2 to Time 3) is significantly larger (0.9 vs 0.4) suggesting that much greater improvements in sexualised concerns occurred following participation in EFT.

Interestingly, unlike other studies of AAT, there were no gender- or age-related differences in efficacy. While the relatively small number of boys in the current study may have contributed to the lack of a gender-effect, previous research has indicated that younger children may benefit more from an EFT program than older youths (e.g., Schultz et al. 2007). The efficacy of EFT programs across a range of ages (including adult survivors of abuse) warrants further investigation. Equally the efficacy and appropriateness of AAT (and particularly EFT) approaches for individuals

of Indigenous descent have yet to be rigorously explored. The current study does however suggest that EFT was at least equally effective for Indigenous and non-Indigenous participants. This result is important as previous research has suggested that mono-cultural therapies may not be as effective for Indigenous people for a number of reasons (Westerman 2010). Further studies should examine the effect of ethnicity on therapeutic alliance and attrition rates as it may be that EFT programs prove more suited to some cultures (particularly collective or Indigenous cultures), than traditional therapy based on verbalizations. Longitudinal studies would also be valuable to gauge if improvements are sustained long-term regardless of ethnicity.

Overall, the current study has demonstrated that Equine Therapy using EAGALA methods is an effective therapeutic approach when working to alleviate trauma symptoms for children and adolescents who have been sexually abused. While this study adds to the existing literature, further research is needed to establish for whom it is most effective and if the results are sustained over time.

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