

Equine Facilitated Therapy and Trauma: Current Knowledge, Future Needs

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Abstract: *Equine-facilitated therapy (EFT) is a relatively new treatment for trauma and PTSD. EFT as well as animal assisted interventions in general have been introduced and implemented in mental health treatment for children and adults, though the research in support of these interventions has not kept up with practice. The purpose of this review is to examine the use of EFT for clients suffering from trauma/PTSD. Studies were included if PTSD/trauma was assessed and/or was measured as an outcome. A search of relevant databases resulted in nine peer-reviewed studies that met criteria. Studies are summarized and implications for future research are discussed. In general, findings suggest that EFT is a promising intervention for trauma/PTSD. Recommendations include a call for more research that includes veterans as well as for research that explicates the mechanisms by which EFT may be effective.*

Keywords: *Trauma; PTSD; equine therapy; EFT*

In recent years animal-assisted interventions (AAI) have been increasingly used as an adjunct to traditional mental health treatment. As is often the case with the introduction of new interventions, the research has lagged behind practice: that is, AAI's have been implemented without research evidence supporting their effectiveness. However, this is beginning to change, and studies with more rigorous designs are increasing (Hoagwood, Acri, Morrissey, & Peth-Pierce, 2016).

The use of horses in treatment is one type of AAI, and is often referred to as equine-facilitated therapy (EFT) or psychotherapy, or equine assisted counseling. Although the importance and relevance of humans interacting with animals has been noted for some time (Amiot & Bastian, 2015), it is only recently that horses have been integrated into mental health treatment. As is true with AAI's in general, literature is just beginning to emerge on EFT (Selby & Smith-Osborne, 2013).

Trotter (2012) describes three models of EFT, each of which has an accrediting body. The Certification Board for Equine Interaction Professionals (CBEIP) offers credentialing for mental health professionals who incorporate horses into their practice. The Professional Association of Therapeutic Horsemanship International (PATH Intl.) certifies equine specialists who partner with mental health professionals who use horses in treatment. In this model mental health professionals could also be credentialed as an equine specialist. The Equine Assisted Growth and Learning Association (EAGALA) requires co-facilitators, one being an EAGALA certified mental health professional and the other being an EAGALA certified equine specialist. EAGALA also requires that activities be non-mounted, with the client on the ground.

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Activities in counseling sessions using horses can vary widely, and include mounted and non-mounted exercises as well as caring for the horse (Meinersmann, Bradberry, & Bright Robers, 2008), and can occur in group or individual sessions. EFT is pan-theoretical and can be integrated into treatment no matter the theoretical orientation of the therapist. Most often it is complementary to or an adjunct to traditional therapy, though it can be a stand-alone treatment.

While reviews of EFT (Anestis, Anestis, Zawilinski, Hopkins, & Lilienfeld, 2014; Lentini & Knox, 2009, 2015; Selby & Smith-Osborne, 2013) and AAI for trauma (O'Haire, Guerin, & Kirkham, 2015) have been published, none have focused solely on EFT applied to trauma. Lentini and Knox (2009, 2015) conducted two reviews of EFT. Study samples in the first review included adults with psychiatric disabilities, bereaved children, "at-risk" youth, and women with PTSD. The authors (2009) concluded the literature was "possibly convincing on an individual basis," (p. 56), but called for more controlled, longitudinal, and larger studies. They also noted the need for studies with homogeneous and well described samples. Their updated review in 2015 focused on EFT with children and adolescents. The samples in the studies included youth with and without mental health diagnoses. Many of the youth had autism spectrum disorder or were described as "at-risk." Acknowledging that more research is needed, they described the overall findings as "promising with regard to the effectiveness of EFT for children and youth" (p. 300). Selby and Smith-Osborne (2013) also concluded that therapies involving equines show promise in increasing psychosocial outcomes for youth and adults with chronic health conditions or disabilities, but noted the need for more rigorous research designs. In contrast, Anestis et al. (2014), in a review of only experimental design studies, recommended that mental health programs not offer EFT, stating "there is negligible evidence that it offers benefits to individuals with mental disorders or other psychological difficulties" (p. 1129). Thus, reviews of EFT to date offer different conclusions, most likely based on the criteria used for study inclusion and the approach to conducting the review.

O'Haire and colleagues (2015) conducted a systematic review of AAI for trauma. They too concluded that AAI's show promise as complementary treatments to traditional services, but also called for more rigorous research. Their review included what are referred to as "at-risk" samples in other reviews, and PTSD/trauma either was not measured or was not present in some of the study samples. Of the ten articles included in their review, seven of the AAI's used dogs or a combination of animals.

To the best of our knowledge, no review has focused on the use of equines in working specifically with individuals with PTSD and/or trauma symptoms. Thus, the purpose of our study is to examine the peer-reviewed literature to ascertain what is known about EFT with individuals who have PTSD/trauma symptoms.

Method

We conducted a database search for studies that addressed the use of EFT for individuals who had experienced trauma. We did not restrict the search based on years, because the literature in the field is recent; nor did we restrict the search to a certain type of study design. Initially we conducted a wide search. For example, we included studies

that provided EFT to students at-risk, or to individuals with bereavement issues. Our thinking was that some individuals in these study samples would have experienced trauma. However, it became difficult to decide which studies to include or exclude, and ultimately we included only studies that measured for trauma at assessment and/or included a measure of trauma as an outcome variable.

The data bases searched were Social Work Abstracts, Scopus, CINAHL, ERIC, Web of Science, PsychArticles, PsychInfo, and Google Scholar. We also examined the references of articles found through the database search for additional relevant articles. The search terms used were [(equine therapy) OR (equine assisted) OR (equine facilitated) OR (therapeutic riding) OR (therapeutic horseback) OR (equine-facilitated) OR (equine-assisted) OR (equine psychotherapy)] AND [(PTSD) OR (trauma)].

Inclusion criteria were: 1) the study was published in a peer-reviewed journal; 2) the intervention used horses as the primary treatment or as an adjunct to traditional treatment; and 3) the sample consisted of individuals who were assessed for PTSD/trauma, and/or PTSD/trauma was measured as an outcome. At each stage of the search each of the authors read the abstract and then met to discuss which articles to include, and when a decision could not be made based on the abstract we obtained and read the full article to make a final decision. This process resulted in nine articles being included in the review.

Results

Table 1 shows highlights of the nine studies, wherein five consisted of adults and four consisted of youth. Studies are presented in order of rigor (in terms of control for threats to internal validity) of the studies, from least (qualitative) to most rigorous (group comparison design). Table 1 shows that standardized assessment or outcome for trauma was not included in the study by Schroeder and Stroud (2015). However, all the women were recruited from a domestic violence organization, in collaboration with their mental health services coordinator, and an inclusion criterion was the presence of PTSD symptoms. In addition, the treatment of trauma was the major aim of the group. Table 1 also shows that studies of EFT for trauma have all been published within the past seven years. The studies are summarized first for youth, then for adults.

Youth

Of the four studies with youth, one was a correlational single system study and three were intervention studies. Yorke et al. (2013) recruited children 8 to 10 years of age from child welfare agencies, a woman's shelter, and counseling agencies. Children met the criteria for PTSD based on the Child PTSD Symptom Scale. The purpose of the study was to ascertain whether children's and horses' heart and cortisol levels would fluctuate in tandem. Using an ABCBA design across four children, correlation was found between child-horse pairs after a 12 day intervention where the children rode or otherwise interacted with their horse. The authors suggested that EFT may be especially beneficial to children who are neurophysiologically deregulated. They also recommended more research on the process of EFT, as increased understanding of the mechanism by which EFT works can lead to improved EFT programming.

Table 1. *Results of Articles Reviewed: Ranked by Design*

Study	Population		Study design	Standardized Trauma Measures Used	
	Child & Adolescent, Adults	Trauma		Assessment	Outcomes
Schroeder & Stroud (2015)	Adults	Trauma, interpersonal violence	One group, Qualitative	No	No
Nevins, Finch, Hickling, & Barnett (2012)	Adult	War	Case study, pre-/posttest with multiple follow-up	Yes	Yes
Yorke et al. (2013)	C&A	Abuse, general	Case studies, Multiple baseline (ABCBA)	Yes	No
Earles, Vernon, & Yetz (2015)	Adults	Trauma, life events	Pre-/posttest	Yes	Yes
McCullough, Risley-Curtiss, & Rorke (2015)	C&A	Abuse/neglect, physical, sexual, or emotional	Pre-, mid-, and posttest	Yes	Yes
Shambo, Seely, & Vonderfecht (2010)	Adults	Trauma, interpersonal violence	Pre-, mid-, and posttest with follow-up	Yes	Yes
Goodkind, LaNoue, Lee, Freeland, & Freund (2012)	C&A	Trauma, historical	Pre-/posttest with multiple follow-up; Mixed methods	Yes	No
Kemp, Signal, Botros, Taylor, Prentice (2014)	C&A	Abuse, sexual (all), neglect and/or physical (some)	Pre-, mid-, and posttest within group comparison	Yes	Yes

Goodkind and colleagues (2012) reported on a project to develop, implement, and test an intervention for American Indian tribal youth and their families. The community based intervention was based on the premise that historical trauma must be acknowledged and addressed in intervention programs. The study was open to youth aged 7-17 years. Of 18 participants, 11 had clinically significant levels of exposure to violence and PTSD symptoms. Trauma symptoms were not measured after the program. However, improvements were found in cultural identity, coping strategies, quality of life, and social adjustment. The 27 session multi-component psychoeducational group intervention included six equine sessions.

Two of the intervention studies focused on children who had experienced maltreatment or sexual abuse. McCullough and colleagues (2015) examined the outcomes of eight weekly outpatient equine facilitated psychotherapy sessions (for 1 ½ to 2 hours each) with eleven youth ages 10-18 who had experienced maltreatment and had posttraumatic stress symptoms, as measured by the Children's Revised Inventory of Events Scales (CRIES-13). In order to be included in the study, youth had to score a minimum baseline score of 12 points out of a possible 60 on the CRIES-13 or at least four questions answered at Level 3, or "sometimes." The equine sessions were structured using object relations theory and reality therapy. Nine of the 11 youth had significantly decreased PTSD symptomatology scores at post-test, compared to the pre-test.

Possibly the strongest intervention study was conducted by Kemp et al. (2014). The sample consisted of 15 children, 9 males and 6 females, ages 8 to 11 years, and 15 female adolescents, ages 12 to 17 years, all of whom were referred because of sexual abuse. Assessment occurred at three time points: intake, after in-clinic individual counseling of an unspecified therapeutic modality (once weekly for about 6.5 weeks) but prior to EFT, and after completion of EFT. The EFT was based on the EAGALA model and took place weekly for 9-10 weeks. Different measures were used for the children and adolescents (see Table 2). Significant improvements were found for children on depression, internalizing, externalizing and total behavior Child Behavior Checklist (CBCL) scores from Time 2 to Time 3, but not from Time 1 to Time 2. For the adolescents, significant improvements were shown from Time 1 to Time 2 for all measures except depression, and significant improvements from Time 2 to Time 3 were found across all measures. Notably, the change scores from Time 2 to Time 3 were significantly greater than the change scores from Time 1 to Time 2. The findings suggest EFT, although helpful for both groups, may be especially helpful for children.

Adults

Five studies were conducted with adults (Table 3) including one qualitative design, one case study and three intervention studies. Two studies consisted of samples with combat-related trauma and three had samples with non-combat related trauma. Sample sizes were small, ranging from one to 16, and all studies used purposive sampling. Combat trauma is unique as compared to other types of trauma and so the results are presented separately for combat and non-combat related trauma.

Table 2. Summary of Child and Adolescent Studies

Authors	Year	Participants			Trauma Assessment	Intervention	Study design	Primary outcomes
		n	Age (Years)	Gender (% Female)				
Yorke, Nugent, Strand, Bolen, New, & Davis	2013	4, purposive sample	8 to 10	unknown	PTSD: met criteria per Child Post Traumatic Stress Disorder Symptom Scale (CPSS)	12-day riding/grooming Human-Animal Bond (HAI) intervention to study cortisol levels in child-horse pairs	Multiple baseline, ABCBA single case design. Pilot study.	Meta-analysis of SCD data: examined weighted-mean cross-correlation for each child/horse cortisol level during riding phase***
McCullough, Risley-Curtiss, & Rorke	2015	11, purposive sample	10 to 18	45.5	Childhood maltreatment (physical, sexual, or emotional abuse or neglect) with PTSD symptomatology	Equine-facilitated psychotherapy (EFP); 8 weekly sessions (1.5 - 2 hours each), delivered by therapist.	One group, quantitative, quasi-experimental, repeated measures (pre, midpoint, post). Pilot study.	↓Children's revised Inventory of Events Scale (CRIES-13)* ↑Human Animal Bonding (HABS)*
Goodkind, LaNoue, Lee, Freeland, & Freund	2012	18 American-Indian youth (13 families), convenience sample	7-17 (M = 11.1, SD = 3.2)	78	Historical trauma assumed for recruitment purposes. Trauma assessed by Recent Exposure to Violence Scale and Childhood PTSD Symptoms Scale	Our Life, a 6-month community-based mental health intervention based on 4 components: heal historical trauma,; reconnect to culture; build parenting/social skills; strengthen family relationships through equine-assisted activities. Families met 3 evenings/week for components 1-3. 6 sessions (1x/month) equine-assisted activities to build relationships, develop self-awareness and trust.	One group, quasi experimental: mixed methods within-group longitudinal design (5 time points over 18 months)	↑Native American Enculturation Scale*** ↑Harter Self-Perception Profile for Children*** ↑Rosenberg Self-Esteem Scale*** ↑Children's Coping Strategies Checklist*** ↑Multidimensional Student's Life Satisfaction Scale (MSLSS)*** ↑Social Adjustment Inventory for children and Adolescents (SAICA)***
Kemp, Signal, Botros, Taylor, Prentice	2014	30 purposive (8 Indigenous, 22 non-Indigenous) referred to sexual abuse agency	8 to 11 (15 subjects); 12 to 17 (15 subjects)	80	All victims of sexual abuse; some also neglect and/or physical abuse.	Equine Facilitated Program (EFT) as adjunct therapy. In-clinic counseling for 6-7 weeks, followed by EFT, 9-10 weeks, 90-minutes each. Delivered by counselors.	One-group, repeated measures (Time 1 (pre-counseling), Time 2 (post-counseling, pre-EFT), Time 3 (post-EFT). Program Evaluation.	Child results for Time 2 to Time 3. ↓Child Depression Inventory (CDI)*** ↓Child Behavior Checklist (CBCL)- Int.* ↓Child Behavior Checklist (CBCL)- Ext.* ↓Child Behavior Checklist (CBCL)- Total***. Adolescent results. ↓Beck Depression Inventory (BDI)*** ↓Beck Anxiety Inventory (BAI)*** ↓Trauma Symptom Checklist (TSCC)*** for each subscale (Anxiety, Depression, Dissociation, PTSD, Sexual Concerns). All subjects, change-score comparison. All change scores (all measures) from time 2 to Time 3 were significantly greater*** than those from Time 1 to time 2

PTSD, Posttraumatic Stress Disorder; -, not reported; Pre-post, simple pre-test and post-test only; AB, waitlist + treatment; ↓, decrease; ↑, increase; *p < 0.10; **p < 0.05; ***p < 0.01; ****p < 0.001;

Combat

Nevins et al. (2012) conducted an AB single system case study with a 52 year-old combat medic. The intervention focused on natural horsemanship instead of psychotherapy but was delivered by a licensed mental health professional. It was a 5-part intervention covered in 4 daily sessions, totaling about 12 hours. From pre- to 12-week follow-up, the veteran's PTSD symptoms improved dramatically as did his depression and other symptoms (see Table 3).

Non-combat Trauma

Each of the three non-combat related studies used EFT delivered by mental health professionals. The qualitative study (Schroeder & Stroud, 2015) and one of the intervention studies (Shambo et al., 2010) addressed interpersonal violence (IPV) with female-only groups. Schroeder and Stroud (2015) developed an 18-hour, 2 hours per session, mindfulness- and CBT-based here-and-now intervention for women with posttraumatic symptoms and a history of IPV. Based on self-report and observation, the four women improved in mindfulness and competence and demonstrated genuine communication with their horses as well as with each other and the facilitators. The authors attributed the use of regular here-and-now processing (as opposed to reliving trauma) as key to the success of the group. Although the women had symptoms of posttraumatic stress, PTSD outcomes were not examined through self-report or observation.

Shambo et al. (2010) also studied women with a history of IPV. The six women presented with symptoms of or diagnosis of PTSD and/or Borderline Personality Disorder. All were in psychotherapy but not showing clinical improvement. The 20-hour group mutual-aid intervention included both EFT and psycho-education, and was delivered over 10 weeks. The model, based on Kohanov (2003), was eclectic, and included somatic awareness and modulation, CBT, and assertiveness and boundary setting. From pre-test to the four-month follow-up, improvements were found for depression and dissociative symptoms.

Earles and colleagues (2015) examined the effectiveness of Equine Partnering Naturally© (Yetz, 2011), a 12 hour intervention provided over six weeks. The sample consisted of 12 women and 4 men who had experienced a traumatic life event, such as rape or a serious accident, and had PTSD symptoms. PTSD, anxiety, depression, and mindfulness had improved by the post-test.

Table 3. Summary of Adult Studies

Authors	Year	Participants			Trauma Assessment	Intervention	Study design	Primary outcomes
		n	Age (Years)	Gender (% Female)				
Schroeder, & Stroud	2015	4, purposive sample	mid-20s to early 60s	100	Symptoms of posttraumatic stress and history of interpersonal violence victimization	Equine-facilitated psychotherapy (EFP) with here-and-now, mindfulness focus. 9-weeks, 2 hours per session plus post-group debrief. Co-facilitated by master's level counselor and master's counseling intern.	One-group descriptive study: observational and reflective. Pilot study.	Observations: all members interactive (authentic disclosures among member-to-member, member to facilitator, and member to horse). Reflections by subjects: ↑being mindful and aware of selves and in relation to others; ↑feeling capable and competent
Nevins et al.	2012	1 veteran, twice-deployed combat medic, Operation Iraqi Freedom (OIF) -	52	0	Assessed for PTSD and depression	Connection methodology -- uses nonhippotherapy, non-psychotherapeutic, natural horsemanship principles, delivered by licensed mental health professional. 4 hours of educational classes followed by 5-part intervention covered in 4 daily sessions, totaling about 12 hours.	Case study, quantitative, repeated measures (pre, post, follow-up at 2, 4, 6, and 12 week follow-up)	Pre- to follow-up Results: 58%↓PCL-C (Post-traumatic disorder checklist); 44%↓BDI-II (Beck Depression Inventory), from 25 to 14; 44%↑RSES (Response to Stressful Event Scale); 68%↑MSSS (Modified Social Support Scale); QOLI(Quality of Life Index): 5%↓ Happiness, 247%↑Satisfied, 10%↓Dissatisfied
Earles et al.	2015	16, recruited through mental health practitioners	33-62 (M = 51.25, SD = 9.99)	75	Assessed: Trauma life events and PTSD	Equine Partnering Naturally© program (Yetz, 2011). Equine therapy delivered by Yetz. 2-hour sessions for 6 weeks.	One-group, pre-/post-test. Each group consisted of 5-6 subjects.	↓PTSD Checklist (PCL-S)*** ↓Trauma Emotion Questionnaire* ↓Generalized Anxiety Disorder Scale** ↓Patient Health Questionnaire (PHQ-9) * ↓Alcohol Use Disorders Identification Test (AUDIT)* ↑Five Facet Mindfulness Questionnaire ***
Shambo et al.	2010	6, purposive sample currently in psychotherapy without satisfactory results	18 yrs or older	100	History of traumatic interpersonal violence; DSM-IV symptoms and/or diagnosis of PTSD or BPD	Equine-facilitated psychotherapy (EFP) and psychoeducation group. 10 weeks, 2-hour sessions. Co-facilitated by mental health therapists	One-group, repeated measures (pre-, mid-, post-, and 4 month follow-up). Pilot study.	Pre- to follow-up Results: ↓Hamilton Rating Scale for Depression (HAMD)** ↓Beck Anxiety Inventory (BIA) n.s. ↓Dissociative Experiences Scale (DES)* ↓Outcome Questionnaire-45.2 (overall treatment effectiveness)*

PTSD, Posttraumatic Stress Disorder; -, not reported; Pre-post, simple pre-test and psot-test only; AB, waitlist + treatment; ↓, decrease; ↑, increase; †p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001;

Discussion

The purpose of this review was to focus on the use of EFT for PTSD and trauma. Four studies included youth (Goodkind et al., 2012; Kemp et al., 2014; McCullough et al., 2015; Yorke et al., 2013). Children who had experienced sexual abuse or maltreatment showed improvement in PTSD after EFT, as well as in depression, anxiety, and internalizing/externalizing behaviors. Historical trauma experienced by American Indians and other groups is often overlooked in the trauma literature, but youth who participated in a multi-component intervention that included EFT showed improvement in cultural identity, coping strategies, quality of life and social adjustment (Goodkind et al., 2012). Of the five studies with samples of adults, one included veterans (Nevins et al., 2012) two included women who had experienced interpersonal violence (Schroeder & Stroud, 2015; Shambo et al., 2010), and one included men and women with various traumatic events (Earles et al., 2015). Improvement was found in PTSD symptoms, mindfulness, depression, dissociative symptoms, anxiety, and depression. Even though the review included only nine studies, each with limitations, the findings suggest that EFT may be a useful intervention for youth and adults with PTSD and trauma symptoms as a result of child maltreatment and sexual abuse, combat, interpersonal violence, and other traumatic events. As discussed below, some of the studies also explored the mechanisms by which EFT has effects.

A limitation of our review is that we did not include theses, dissertations, or otherwise search for gray material. Also, our review was limited to studies of EFT where trauma symptoms were assessed and/or included as an outcome. This limiting of our search can be both a limitation and strength. As a limitation, studies that included samples of individuals who had been exposed to potentially traumatic experiences, but trauma itself was not explicitly assessed, were not included. Inevitably some of the participants in these studies may have had trauma symptoms/PTSD. Limiting studies in our review to those that measured trauma symptoms increases understanding about whether EFT is effective in addressing trauma and PTSD symptoms, as well as how those with trauma experience EFT.

As many reviews of studies do, recommendations for more studies of increased rigor (increased sample sizes, explicit assessment for trauma, stronger designs, monitoring for treatment integrity, etc.) can be made. Qualitative studies that address the acceptability of EFT, including the perspectives of both clients and providers, as well as ascertaining the barriers and facilitators to EFT implementation, are also needed. Going beyond this, a number of recommendations can be made for future research.

First, on a national level, more and more attention is being paid to the mental health needs of veterans. However, veterans do not always seek out traditional mental health services (Nevins et al., 2012). Only two studies were included in this review that focused on veterans, and one of the studies with veterans was quite non-traditional, focusing on telepathic communication between the horses and veterans. The acceptability and effectiveness of EFT for veterans is a field ripe for future research. It seems plausible that EFT could increase access to mental health services for veterans, but research is needed to test whether this is so.

Second, research is needed that further confirms, or sheds light on, the mechanisms by which EFT leads to improved outcomes. Some of the studies in this review touched upon this. For example, Schroeder and Stroud (2015) reported that group members remarked that the calm dispositions of the horses provided safety in relationship with their horse. Moreover, increased effective interactions with other group members and the group facilitators were observed. The bond between horse and youth was measured by McCullough and colleagues (2015) and then correlated with change in PTSD symptoms, and findings partially supported this relationship. A suggestion for future research is to incorporate measures of the working alliance between the clinician and client and examine changes as horses are introduced into treatment.

Third, research is needed regarding when equine therapy may be contraindicated, as well as termination issues. If indeed the connection between the horse and client is central in the healing process, how is termination dealt with? Are there any negative implications of developing a strong relationship with a horse during EFT and then no longer having access to the horse?

Fourth, a challenge for researchers is to isolate the effects of EFT from other treatment components. Kemp et al. (2014) attempted to do that by administering measures after traditional counseling but prior to EFT, then administering the measures again after EFT. More studies like this are needed, as well as qualitative studies that gather the impressions of clients and treatment providers regarding the stand alone and interactive effects of traditional treatment and EFT.

Finally, EFT is a relatively new modality that offers promise for treating trauma/PTSD symptoms. As EFT becomes more integrated into traditional mental health treatment, schools of social work (and of other helping disciplines) will need to address whether, how and where to implement it into the curriculum. Although much remains to be learned, and more gaps in knowledge exist than those we have mentioned, the studies in this review provide a base upon which to build.

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