

Implications of the Literature on Equine-Assisted Activities for Use as a Complementary Intervention in Social Work Practice with Children and Adolescents

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Abstract This article reviews the literature investigating psychosocial benefits of equine-assisted activities (EAA) for children and adolescents with physical, mental, and family challenges. It further analyzes implications for clinical social work practice in the use of EAA as complementary or adjunct interventions with these populations, thus addressing a gap in the literature on population-specific outcomes of EAA. As a contribution to methodology in future research, the conceptual analysis suggests that concurrent examination of complementary interventions across categories of special needs could add to the knowledge base concerning these children's psychosocial status. Cross-domain investigations could also assess the contribution of each challenge to the status of children with multiple conditions.

Keywords Children and adolescent social work practice · Children with special needs · Disabilities · Therapeutic horseback riding · Hippotherapy · Equine-facilitated psychotherapy · Complementary and adjunct therapies

Introduction

The bulk of human–animal studies focuses on the relationship between people and their pets and companion animals (Schneider 2005), as has the bulk of the literature on clinical practice involving animals or animal-assisted therapy (AAT; All et al. 1999). Reports of companion animals being involved in health care for people have been

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made as early as 1860, by Florence Nightingale (All et al. 1999), and in mental health care as early as the late eighteenth century (Netting et al. 1987), while psychosocial benefits among children with handicaps as an effect of horseback riding (specifically, improvement in self-confidence) have been reported anecdotally as long ago as 1970 (Harpoth 1970). Stimulated by these anecdotal reports and research into its physical rehabilitative effects, the bulk of the literature on equine activities has examined children and adolescents, with emerging adult literature on equine-facilitated psychotherapy (O' Rourke 2004; Selby 2009). The recent theoretical and empirical literature has suggested the following psychosocial effects for children and adolescents participating in equine-assisted activities (EAA): socialization and companionship, self-esteem enhancement, improvement in personal space/boundary issues and other attachment-related problems, reduction in emotional blunting and incongruence, and improvement in meta-cognition and reflectivity (Karol 2007; Roberts et al. 2004; Rothe et al. 2005; Schultz et al. 2007). Earlier literature suggested that EAA could have psychosocial benefits in the following areas, not specified by population: self-confidence, self-esteem, self-concept, interest in learning/motivation to participate in hippotherapy, improvement in attention span/concentration/listening skills, spatial awareness, and verbal skills (MacKinnon et al. 1995a, b).

Health and human service professionals from a variety of disciplines such as social work, psychology, nursing, marriage and family therapy, physical therapy, occupational therapy, special education, and rehabilitation have involved animals in their interventions and programs. Physical and occupational therapists, for example, have used therapeutic horseback riding and hippotherapy (terms defined below) to improve posture, balance, and muscle symmetry in children with cerebral palsy (e.g., Engel 1999; MacKinnon et al. 1995a, b), while special educators and school psychologists have used therapeutic horseback riding, unmounted activities, and vaulting to address issues of self-efficacy, verbal paucity, attentional shifting, cognitive sequencing, and impulse control in children with comorbid learning disabilities and emotional disturbance/disruptive behaviors (e.g., Roberts et al. 2004). Their decision to involve animals has been based either upon observation of the importance of animal companionship to humans in everyday life or on clinical experiences or research suggesting physical health or psychosocial benefits to humans of such involvement. For example, historical documents attest to clinical observations of the beneficial effects of riding for a variety of patients by physicians from the seventeenth century on (e.g., Hayden 2005; Mayberry 1978; Sloan 1987).

The social work profession has been prominent in this regard, and in contributing to this literature, particularly on animal-assisted therapies with mental health clients (Netting et al. 1987; Frame 2006). Reports in the social work literature on the practice relevance of the animal-human bond date back to 1975, and a unique social work department within a veterinary hospital was developed in 1978 to address psychosocial aspects of the human-animal interaction and bond relevant to the treatment of diseases in companion and work animals and to provide relationship and bereavement counseling for the animals' human carers (Netting et al. 1987). Social workers have participated in clinical work involving companion animals, farm animals, and equines (Frame 2006; Gilligan 1999; Muschel 1984; Netting et al. 1987; Reichert 1998). In 2005, there were 277 mental health professionals

employed at North American Riding for the Handicapped Association (NARHA) member centers, with the majority of them—135—being social workers (NARHA, n.d.). Social work and other disciplines have also been involved in research in this area, with social work and other human service disciplines addressing predominantly the lived experience and psychosocial aspects of EAA, while the allied health disciplines have addressed primarily the physical health effects and secondarily the psychological and social effects of EAA.

This review of the literature examines both the published and the empirical “gray” literature (i.e., in this review, dissertations and theses), of relevance to social work practice involving equines; a species which has received less attention in the social work literature than the companion animals. Further, the review will focus on psychosocial outcomes reported in the literature on EAA across diagnostic categories for children and adolescents facing physical, mental, or family challenges, and involved in health, mental health, and child welfare service delivery systems. Authors in this field (Mackinnon et al. 1995a, b; Mallon 1992; Mason 1989; Reichert 1998) have previously identified a gap in the literature on research examining psychosocial outcomes in specific and comparative populations. In fact, in an earlier review of the therapeutic riding literature, Mackinnon et al. (1995a, b) found only two studies which investigated psychosocial outcomes for children as a specific population. This focus on investigating comparative psychosocial effects of EAA across diagnostic categories has been selected with a view toward: showing how this research area has developed over time, identifying future directions for needed research, and clarifying how EAA could be considered as an adjunct, complementary intervention in the comprehensive treatment of children, particularly those with comorbid conditions/disabilities and trauma experiences.

Definition of Terms

The overall term “equine-assisted activities” (EAA) includes a range of activities and interventions, and definitions of key terms have evolved over time as the types of activities and service populations have expanded, and as professional and accreditation organizations have standardized their terminology. Additionally, in both the mental health and child welfare fields, authors have addressed the psychosocial benefits of horseback riding both in the context of leisure and recreational rehabilitation (Gilligan 1999; Mayberry 1978; Rudnick 2005) and in the clinical context. Therefore, it is helpful to preface the review with the establishment of common terminology.

NARHA’s Health and Education Committee has adopted common definitions describing the range of equine-assisted activities, which incorporate the terminology of the American Hippotherapy Association (AHA). This terminology and related standards have now been adopted internationally as well. Under this terminology, therapeutic riding refers to mounted activities with people with disabilities or diverse needs and involves learning traditional or adaptive equestrian skills. Hippotherapy refers to a physical, occupational, or speech therapy treatment strategy benefiting from equine movement (NARHA, n.d.). Equine facilitated or assisted learning (EFL)

involves unmounted and mounted lessons, or equine/human interaction in an educational format, conducted by a NARHA certified instructor, an educator, or a licensed therapist (NARHA, n.d.). Equine facilitated mental health (EFMH) is the inclusive term for EAA which focus on mental health issues (NARHA, n.d.) and describes the alliance between a licensed mental health professional and a professional horseman or horsewoman, according to Moreau and McDaniel (2000): “in which the experience and knowledge of both are used to foster mental health in their students and clients” (p. 2). Equine facilitated psychotherapy (EFP) is “experiential psychotherapy that includes equine(s)” (NARHA, n.d.), delivered by a licensed mental health professional in conjunction with a credentialed equine professional. Typically, EFP is implemented in mounted and unmounted sessions “provided by a trained and licensed mental health professional, holding a current degree such as Master in Social Work, Master in Counseling, or Doctor of Psychology or M.D. [who] is also a trained, licensed riding instructor” (Moreau and McDaniel 2000, p. 2). Thus, EFP may include a range of EAA, such as handling, grooming, lunging (i.e., an unmounted activity; exercising/training a riderless equine on a lunge line), riding, driving, and vaulting (movements around, on, and off a horse or barrel, including gymnastic positions on the back of the horse).

Search Methods

Electronic data bases were searched using the search terms of equine-assisted activities, therapeutic horseback riding, horseback riding, therapeutic riding, hippotherapy, equine facilitated mental health, and equine facilitated psychotherapy. The databases selected were Academic Search Complete, ProQuest, Social Work Abstracts, CINAHL, PsycInfo, PubMed, and Medline. Reference lists from retrieved abstracts and bibliographies from NARHA, therapeutic riding facilities’ websites, and other websites identified through search using Google were reviewed for additional citations, which were obtained electronically or interlibrary loan. One hundred and fifty-three abstracts were reviewed, and full text articles, dissertations, theses, and manuscripts were obtained for the 15 abstracts which met the following a priori inclusion criteria: meta-analyses, systematic reviews, and qualitative or quantitative studies performed and reported in English (a few studies were found that were originally written in French, Spanish, or other languages; if these were available in translation to English, they met the inclusion criteria) within the past 25 years (1983–2008) which include findings on psychosocial effects of EAA for children and/or adolescents. Included studies, in chronological order, may be found in Table 1. Samples used in these included studies consisted of children and/or adolescents with severe health conditions, mental health, behavioral, and cognitive conditions, and severe family disruptions (e.g., removal due to abuse and neglect, witnessing domestic violence), and children and/or adolescents with more than one of these conditions. No studies meeting the inclusion criteria were found which reported effects of EAA for children and adolescents with health conditions such as obesity, or for healthy children and adolescents with life transition issues or family disruptions such as separation and divorce, or death/disability of a parent or sibling

Table 1 Summary of EAA studies showing qualitative or statistically significant quantitative psychosocial findings

Author (pub. yr.)	Research aim	Sample	Independent variables	Dependent variable	Psychosocial measures	Psychosocial findings
Dismuke (1984)	Effect of hippotherapy	<i>N</i> = 30 children ages 6–10, language and learning disabilities and mild physical diagnosis (dx)	Hippotherapy	Self-esteem	Piers Harris Self-Concept Scale	↑ Self-esteem
Fox et al. (1984)	Effect of therapeutic riding	<i>N</i> = 19 children ages 7–14, THR mixed disabilities	THR	Measurement accuracy of test device	None for psychosocial	Qualitative: self-confidence, social skills
Bertoi (1988)	Effect of therapeutic riding	<i>N</i> = 11 children ages 2–9 with cerebral palsy	THR	Muscle symmetry	None for psychosocial	Qualitative: ↓ fear of movement
Cawley et al. (1994)	Effect of therapeutic riding	<i>N</i> = 29 youth ages 11–17 in special education (ed)	THR	Self-concept	Piers Harris Self-Concept Scale	↑ Behavior cluster score
Mackinnon et al. (1995a, b)	Effect of therapeutic riding	<i>N</i> = 19 children with cerebral palsy	THR	Self-confidence, social skills	Vineland, Harter Self-Perception Scale	Qualitative: self-confidence, social skills, ↑ aggression, no stat. significant benefits
Greenwald (2001)	Effect of therapeutic riding	<i>N</i> = 81 male children in residential treatment (tx) for emotional disturbance	THR/EAA	Scale scores on self-esteem, depression, anxiety, ext. behaviors	Achenbach CBCL, Rosenberg Self-Esteem, Youth-Equine Bonding Scale	No stat. significant decrease in DVs of depression/anxiety symptoms (sx)
MacDonald and Cappel (2003)	Effect of equine assisted activities	<i>N</i> = 7 at-risk youth	THR/EAA	Scale scores on self-esteem, aggression, competence, locus of control	Harter Perceived Competence Scale, Strickland Locus of Control Scale, Aggression Questionnaire, Self-Esteem Index	↑ Self-esteem and internal locus of control

Table 1 continued

Author (pub. yr.)	Research aim	Sample	Independent variables	Dependent variable	Psychosocial measures	Psychosocial findings
Kaiser et al. (2004)	Effect of therapeutic riding	<i>N</i> = 16 able-bodied children ages 7–17 with no diagnoses	Brief THR	Scale scores on anger, mood, quality of life, self-perception	Children's Inventory of Anger, Peds Quality of Life, Self-Perception Profile for Children	↓ Anger, except for frustration subscale
Roberts et al. (2004)	Effect of EFP	<i>N</i> not given; children ages 6–16 with ADHD and other mixed dx, some special education	EFP	Observed therapeutic benefits	None	Qualitative: ↑ verbal/behavioral congruence, behavioral control
Hayden (2005)	Effect of EFP	<i>N</i> = 10 at risk adolescents (ages 11–18)	EFP	Perceived therapeutic experiences	None	Qualitative: perceived improvement in tx effectiveness
Frame (2006)	Effect of EFP	<i>N</i> = 15 EFP clinicians serving adolescents	EFP	Perceived therapeutic benefits	None	Qualitative: ↓ depression, anxiety sx.
Kaiser et al. (2006)	Effect of therapeutic riding	<i>N</i> = 17 at risk (ages 8–13)/ <i>N</i> = 14 special ed serviced (ages 10–18) children/adolescents and their parents	THR	Scale scores on anger, mood, perceptions, coordination	Children's Inventory of Anger, State-Trait Anxiety/Curiosity Inventory, Connors-Wells Self Report Scale, Connors Parent Scale	↓ Anger, ↓ externalizing sx for males in special education and their parents
Ewing et al. (2007)	Effect of EFP	<i>N</i> = 28 youths (ages 10–13) with severe externalizing behavior, low IQ, learning disabilities	EFP	Scale scores on self-esteem, empathy, locus of control, depression, loneliness	Strickland Locus of Control Scale, Self-Perception Profile, Child Depression Inventory, Child Loneliness Questionnaire	Qualitative: ↓ externalizing sx; no stat. significant psychosocial benefits
Karol (2007)	Effect of EFP	<i>N</i> not given; children, adolescents, adults with mixed dx, in psychotherapy	EFP	Engagement in therapy	None	Qualitative: ↑ therapeutic/verbal engagement & reflectivity

Table 1 continued

Author (pub. yr.)	Research aim	Sample	Independent variables	Dependent variable	Psychosocial measures	Psychosocial findings
Schultz et al. (2007)	Effect of EFP	N = 63 children, ages 4–16, mixed dx, incl. children with abuse/neglect, referred for psychotherapy	EFP	DSM IV GAF scores	DSM IV GAF scores	Psychosocial benefits: ↑ GAF, especially for younger clients and clients who had been sexually/physically abused
Snider et al. (2007)	Systematic review: effect of horseback riding (non-recreational)	N = 9 studies of children ages 4–12 with cerebral palsy	Hippotherapy and THR	Scale scores Pediatric Evaluation of Disability Index, Gross Motor Functional Measure, any participation outcomes	None found	No studies found which measured participation

within an intact family. Therefore, findings have been organized within the three domains of health challenges, mental challenges (inclusive of behavioral and cognitive issues, consistent with the DSM-IV-TR diagnostic system), and family challenges, with consideration of cross-domain applications included in the “[Discussion](#)” section.

Children and Adolescents with Health Challenges

Physical benefits of EAA for children with health challenges and physical disabilities in general have been well documented in the literature (All et al. 1999; Biery and Kauffman 1989; Fox et al. 1984; Griffith 1992; Hedrickson 1971; MacKay-Lyons et al. 1988; Potter 1994), and particularly for those with cerebral palsy (Benda et al. 2003; Bertoti 1988; Cherng et al. 2004; Engsburg and Shurtleff 2008; Haskin et al. 1982; Hinkley 1999; Mason 1989; Snider et al. 2007). Improvements reported after hippotherapy with this population include those in gross motor function, muscle symmetry, balance, and sensory integration. Bertoti’s study (1988) of therapeutic riding with young children with cerebral palsy reported qualitative psychosocial findings of decreased fear of movement. One well-controlled study of therapeutic riding with children with cerebral palsy by Mackinnon et al. (1995b) did not find statistically significant physical or psychosocial benefits (psychosocial outcomes were measured using the Vineland socialization subscale and the Harter Self-Perception Scale), but found qualitative reports of such psychosocial outcomes as improved self-confidence, cooperation, and tolerance for novelty among participants with mild cerebral palsy. One qualitative finding of increased aggression was also reported for this sub-group, and was reported to increase concomitantly with self-confidence, leading the investigator to suggest that the increase in self-confidence may have facilitated aggressive acting out among children who continued to experience deficits in impulse- and language-mediated means of affective expression. An earlier study of therapeutic riding (Fox et al. 1984) reported similar qualitative reports of psychosocial outcomes of improved self-confidence and increased social interaction for children and adolescents across diagnostic categories, including cerebral palsy, spina bifida, and sensory impairments. Dismuke’s (1984) study of hippotherapy with young school-aged children with language, motor, and sensory integration disorders reported increased self-esteem in the experimental group, as measured by the Piers Harris Self-Concept Scale. These findings are consistent with literature suggesting that increased self-esteem may be associated with increased opportunities for mastery and successful development of new skills, such as horseback riding. Such opportunities tend to be scarce for children with multiple disabilities.

Children and Adolescents with Mental Challenges

As discussed in the “[Introduction](#)” section, the literature has been largely descriptive or anecdotal and is still relatively sparse in empirical studies (qualitative

or quantitative) showing the psychosocial benefits of the horse–human relationship. Yet it is becoming increasingly apparent that EAA may be beneficial psychosocially as well as physically not only for those manifesting developmental or physical disabilities, but also for those with other types of conditions.

Involving Animals as Adjuncts to Psychotherapy: Rationales from the Literature

Bonding or interacting with companion animals has been shown to be a useful treatment tool or adjunct for people experiencing distress associated with loss, alienation, trauma and other forms of disequilibrium (Carlson 1983; Christian 2005; Eggiman 2006; Ewing et al. 2007; Fine 2000; Frame 2006; Gilligan 1999; Greenwald 2001; Hayden 2005; Karol 2007; Kruger et al. 2004; Reichert 1998; Roberts et al. 2004; Russell-Martin 2006; Rothe et al. 2005; Schultz et al. 2007; Vidrine et al. 2002; Yorke 1997). A recent meta-analysis of research on animal-assisted therapy (Souter and Miller 2007) found that it was associated with decreased depressive symptoms across five studies. The bulk of this research has been completed with children and adolescents.

Animals, including equines, can be direct and honest in exchanges whereas humans may confuse and change the rules of social interactions through verbal communication (Russell-Martin 2006). Treatment which concentrates on the social dynamics of in vivo animal behavior has been found to help individuals recognize and solve their own parallel issues in relationships (Russell-Martin). An animal can communicate effectively and nonverbally the message that “It might not be as bad as it must seem” (Fine 2000), which helps to put situations into a different perspective.

The involvement of the smaller companion animals in mental health treatment offers advantages of easy access, portability, and suitability to the office space and context when compared to equines, and hence has been more prevalent in clinical practice and research. The literature pertaining to EAA in the recreational and clinical domains identifies other advantages of involving equines when working with persons receiving services from mental health delivery systems, such as exposure to a novel milieu, a unique opportunity to develop mastery and cooperation, and a low-verbal demand interactive relationship (Bizub et al. 2003).

Involving Equines as Adjuncts to Psychotherapy: Rationales from the Literature

Qualitative studies have demonstrated the psychosocial effectiveness of therapeutic riding for adults with psychiatric disability (Bizub et al. 2003) and adults with trauma-induced physical disability associated with post-traumatic psychological symptoms (Yorke 1997). In response to these effects of therapeutic riding in the mental health domain, EFP has been developed as an innovative psychotherapy, and has been gathering attention in the therapeutic community, and inquiry into the effectiveness of this mode of therapy is being undertaken. The literature now includes detailed clinical descriptions of group (Vidrine et al. 2002) and individual (Karol 2007; Rothe et al. 2005; Schultz et al. 2007) EFP practice applications to child and adolescent populations. However, because EFP is just emerging as a

viable adjunct to traditional psychotherapeutic techniques, the theoretical foundations of why and how it works are still in the early stages of formulation (Roberts et al. 2004). Some of the attributes that horses and other equines have been found to bring to the therapeutic environment are those of cooperation, patience, willingness, receptiveness, and, after millennia of domestication, an orientation toward people similar to that of companion animals (Ewing et al. 2007; Hayden 2005; Karol 2007; McDaniel 1998; Vidrine et al. 2002). The equine's demands in interactions with humans are relatively simple and uncomplicated (Fine 2000). Horse–human interactions differ from the typical companion animal–human interaction in that horses are not predatory by nature as are dogs and cats, but are rather prey animals themselves. Consequently, by their nature, they offer unique opportunities in the therapeutic process which might not otherwise be available. Because horses are prey animals, their survival depends on their extreme sensitivity to the environment. They are essentially living biofeedback mechanisms with the ability to mirror or respond to the behavior, emotions, and internal states of those around them, rather than verbal content or paucity which may be incongruent with behavior or emotions (McDaniel 1998).

Psychosocial Outcomes

Communication

Thus, in one recent study, Roberts et al. (2004) found a psychosocial benefit of increased congruence between their words and actions among their child clients participating in EFP. Karol's descriptive report (2007) of EFP with children, adolescents, and adults with a variety of mental health diagnoses in a private practice setting reported improvement in engagement in therapy, reflectivity, and verbal engagement.

Level of Symptoms

Schultz et al. (2007) found significantly improved scores in the DSM-IV Global Assessment of Functioning (GAF) for children with a range of diagnoses (including mood disorders, Attention Deficit Disorder, and Posttraumatic Stress Disorder) who received EFP, with a significant association between longer period of participation and percentage of improvement in scores; younger children showed the greatest improvement. This study also analyzed data for children who had experienced abuse and neglect, and these data will be discussed in the following section. As in the study of Mackinnon et al., a recent study of EFP for young adolescents with severe externalizing behavior disorders and learning disabilities (Ewing et al. 2007) showed positive qualitative results in decreasing externalizing behaviors, but did not find significant changes in any of the psychosocial outcomes measured. One qualitative study from the gray literature found reductions in depressive and anxiety symptoms among adolescents receiving EFP (Frame 2006). In contrast, Greenwald's (2001) dissertation study of therapeutic riding found no improved psychosocial outcomes of anxiety and depression for a sample of institutionalized

boys with emotional disturbance. The investigator suggested lack of significant findings may have been due to methodological limitations or that this type of EAA may be unlikely to benefit this population with severe range mental health symptoms.

Self-Concept/Self-Esteem

Cawley et al. (1994) found improved self-concept as a psychosocial outcome in their study of therapeutic riding with adolescents with learning disabilities and cognitive difficulties requiring special education. Kaiser et al. (2004) found that children participating in as little as a week long program of therapeutic riding showed lower scores on anger and higher scores on quality of life and self-esteem measures. Hayden's qualitative dissertation study (2005) found perceived improvement in treatment effectiveness, as observed in coping and communication skills, behavior, and perceived self-efficacy, for adolescents involved in EFP.

Children with Family Challenges

Some characteristics of animal-assisted and equine-facilitated therapy have more recently caught the attention of professionals who work with children who have experienced abuse and neglect, and who have been served by the child welfare service delivery system (Schultz et al. 2007). For example, EFP practitioners have observed that, as herd prey animals, horses are social animals which depend on reciprocal communication and behaviors to guard their space from attack from predators as well as to find food (Frame 2006). Thus, they have the capacity to teach social and relational skills since they depend on these for survival. The dynamic interchange which occurs between clients and horses offers a dimension to clinical work which is not possible within the traditional confines of the office setting. Clients who do not understand boundaries and move too close to the horse discover that the horse will take care to protect its space (Carlson 1983; Frame 2006). Therapeutic horseback riding facilities are receiving referrals from child welfare agencies to provide services to children in non-therapeutic foster care who are not diagnosed with a psychiatric or physical condition (R. Kinsel, personal communication, August, 2007). Thus, this distinct population may need to receive more attention in the literature in this area.

In their study of children referred for psychotherapy, Schultz et al. (2007) had hypothesized that those children who had experienced abuse and/or neglect would show greater improvement in General Adaptive Function (GAF) scores after participating in EFP. Their hypothesis was based on the possibility that these children may be troubled by issues relating to attachment, personal boundaries, and verbal-behavioral congruence, issues with which equines may be well-suited to be involved due to their innate species traits. Their study findings did support this hypothesis. This study was the only empirical literature found in this search which completed a separate analysis of the psychosocial effects of EAA for this population of children.

Discussion

Most of the literature on EAA has focused on physical outcomes for children and adolescents with physical handicaps, although there is a literature on equine-facilitated psychotherapy for adults (Selby 2009). A previous review of this literature (Mackinnon et al. 1995a, b) found two empirical studies which examined the psychosocial effects of EAA on children and adolescents. The current review updated and expanded that earlier review by including the gray literature and qualitative psychosocial findings of studies focused on physical effects. This updated review found four reports of psychosocial effects for children with health challenges, nine reports of effects for children with mental challenges, and one report of effects for children with family challenges. Consistent with the earlier review, this review found that research quality is mixed due to small sample sizes, low quality designs in the quantitative studies (e.g., lack of control groups), samples with mixed diagnoses and ranges of severity, and varying intervention dosages. Research in the field does appear to have improved in standardization and specificity of definitions of intervention types and dosage ranges. Findings continue to be mixed in this population, with qualitative studies and four well-controlled quantitative studies (Cawley et al. 1994; Dismuke 1984; Roberts et al. 2004; Schultz et al. 2007) showing psychosocial benefits in several domains and the remaining studies showing no effect. This field of research has developed beyond anecdotal and descriptive accounts to begin to include more mixed method and qualitative studies, as well as well-controlled quantitative studies, investigating psychosocial outcomes of EAA for children and adolescents. With reference to populations studied, the field of research has grown to include populations with mental health diagnoses and symptoms, learning disabilities, and experiences of abuse and neglect.

Implications for Social Work Practice and Research

The literature suggests possible benefits of expanded social work practice utilizing the range of EAA in working with child and adolescent clients. Psychosocial benefits were identified for children with health challenges, cognitive and psychiatric challenges, and family challenges. The development of standards for delivery of EAA and definitions of types of EAA have progressed to the point where social work practitioners can locate and refer to, or work collaboratively with, certified EAA facilities and practitioners, in addition to providing the EAA themselves if they are jointly certified/licensed in the social work and EAA fields, as was the predominant model in the past. The first author of this review has routinely referred child and adolescent clients from both her urban and rural clinical practice for both leisure horseback riding lessons [due to the observed rehabilitative effects of recreation and community participation as discussed by Snider et al. (2007), Gilligan (1999), and Rudnick (2005)] and for therapeutic horseback riding. These clients have included those with early onset mental disorders, reactive attachment disorders, learning disabilities with sensory integration and proprioceptive

impairments, ADHD, and developmental delays (including PDD spectrum disorders). This clinical experience has generally supported the psychosocial benefits found in the literature. Parents of these clients have identified additional advantages of EAA. They see EAA as offering their child opportunities to meet other children with common interests and challenges, as making interactions with animals possible in a controlled and safe way that would not be possible in their own homes, and as exposing their child to an activity that combines the benefits of a leisure activity, a sport, and a chance to care for another living being in a therapeutic and developmentally appropriate environment. Current evidence-based options for social work practice using EAA, including referral criteria, are shown in Table 2.

This review suggests a continued need for continued intervention research into the psychosocial effects of EAA for children and adolescents, with attention to increased rigor in study design to investigate comparative psychosocial effects of

Table 2 Evidence-based options for social work practice using EAA with children and adolescents

EAA	Referral criteria	Role of social worker
Recreational riding lessons	Young children (5–8 years old) with mild-moderate social skills deficits, provisional or r/o ADHD, low level special education services, mild sensory integration issues, early stage bullying or anger issues, mild motor coordination delays/deficits (e.g., cannot ride bike independently w/o training wheels by 5 years old)	Early childhood educator (ed)/head start/school social worker (sw) or prevention/child find coordinator or private practitioner or community advocate refers parent
THR	Children with moderate–severe social skills deficits, ADHD, low-moderate level special education services, receiving occupational therapy services for sensory integration or motor issues, externalizing behavior disorders, motor coordination disorder, cerebral palsy, mixed language/learning disabilities, other motor disabilities	Sw psychotherapist/private practitioner/school social worker refers parent and includes as complementary therapy in IEP/intervention plan; licensed sw refers and provides psychotherapy at riding facility concurrently with NARHA teacher; NARHA certified licensed sw provides THR and psychotherapy conjointly
Hippotherapy	Children with comorbid language/learning disabilities and mild physical impairments, cerebral palsy, receiving occupational and/or physical therapy, severe motor coordination disorder, moderate–severe level special education services	Sw psychotherapist/private practitioner/school sw refers and includes as complementary therapy in IEP/intervention plan; licensed sw refers and provides psychotherapy at riding facility concurrently with NARHA certified OT/PT; NARHA certified, licensed sw provides EAA and psychotherapy with OT/PT consult
EFP	Younger children with mixed dx, younger clients who have been sexually/physically abused, male youths with moderate–severe special education services, youths with anger issues, youths with mild-moderate externalizing behavior disorders	Sw psychotherapist/private practitioner/school sw refers and includes as complementary therapy in IEP/intervention plan; licensed sw refers and provides psychotherapy at riding facility concurrently with complementary licensed EFP provider; licensed sw/EFP provider provides EFP

EAA across diagnostic categories. As pointed out in the systematic review of hippotherapy and THR by Snider et al. (2007), future research must consider community participation and the associated reduction in social isolation as one of the psychosocial benefits of both recreational riding and therapeutic EAA for children and adolescents in each of these domains, and with multiple domain challenges. They suggest that a standardized measure, The Children's Assessment of Participation and Enjoyment and Preferences for Activities of Children, could be suitable for investigating this psychosocial outcome (p. 20). The World Health Organization (WHO) has stated that community participation is an important component of health and functioning, including this element in its International Classification of Function, Disability, and Health (WHO 2001). The practice goal of enhancement of community participation of vulnerable and marginalized groups is certainly consistent with social work values and ethics (NASW Code of Ethics), suggesting further rationale for consideration of EAA as a complementary, adjunct intervention by social workers for child and adolescent clients. Increased attention in the literature must be paid to issues of cost effectiveness as part of this consideration of EAA availability to broader populations of vulnerable and marginalized children. The extant literature suggests that EAA are currently available to low-income children when provided as part of institutional and agency-sponsored programs, and that parent across socioeconomic strata are paying out of pocket for EAA for their children due to the perceived benefits. To date, the literature has not examined whether EAA have higher utilization in geographic regions where riding stables are more prevalent and whether costs are lower in those regions.

In addition, studies which utilize concurrent examination of distinct samples within these three categories of special needs will add to the knowledge base concerning these children's general psychosocial status and the contribution of each challenge to the status of children with multiple conditions and diagnoses, while reducing confounders (such as samples with mixed ranges of severity and primary presenting issue) which may have led to null findings in past studies. Subsequent studies could then more precisely address populations with multiple diagnoses, the most common participants in EAA, to tease out the relative contribution of EAA interventions across domains. Investigation of EAA with children served by the child welfare system is in its infancy, and requires additional work to determine the overall psychosocial effects in varying subgroups, and specific effects regarding attachment, relationship, and identity issues such as self-confidence and self-concept.

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