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Promoting psychosocial adaptation of youths in residential care through animal-assisted psychotherapy

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Abstract

The goal of this study was to examine the influence of animal-assisted psychotherapy (AAP) on the psychosocial adaptation of a group of adolescents in residential care who had suffered traumatic childhood experiences and who presented mental health problems. Participants were 63 youths (mean age = 15.27, *SD* = 1.63) divided into two groups: A treatment group of 39 youths (19 female and 20 male; mean age = 15.03, *SD* = 0.51) and a control group of 24 (5 female and 19 male; mean age = 15.67, *SD* = 1.63). The youths who underwent the AAP program had higher school adjustment than their peers who did not receive treatment. Their hyperactive behavior decreased and they showed better social skills, more leadership, and fewer attention problems. They also showed a more positive attitude toward their teachers than controls. No differences were observed in other variables associated with clinical symptoms or personal adjustment. These results suggest that AAP can be effective with teenagers who have suffered childhood traumas and who present problems of psychosocial adaptation.

Key words: residential care, psychosocial adaptation, animal-assisted psychotherapy

Introduction

Children and adolescents who have required input from child protection agencies due to traumatic experiences (such as child maltreatment), and who have been exposed to certain risk factors for psychopathology (insecure attachment style, low self-esteem, poor social skills and risky behavior, poor school integration, and so on) have a high probability of developing mental health problems and of showing poor psychosocial adjustment through into adulthood (Lawrence, Carlson, & Egeland, 2006; Luke, Sinclair, Woolgar, & Sebba, 2014; Van Beinum, 2008). Ensuring they receive adequate psychological treatment is therefore of particular importance, not least as such treatment has been shown to act as a protective factor, it being associated with improvements in emotional well-being and better psychosocial adjustment among these children and adolescents (Luke et al., 2014; James, Alemi, & Zepeda, 2013).

Residential Care and Psychosocial Adaptation

Various studies performed both with and without comparison groups have revealed a high prevalence of clinical symptoms among adolescents in residential care (Luke et al., 2014; Muela, Torres, & Balluerka, 2012; Van Beinum, 2008). In terms of their self-perceptions, these youths report poorer personal adjustment, characterized by a deficit in coping skills and low family and social support, and also regard themselves as being less successful and less satisfied in their relationships with others, including with their biological relatives (Lázaro & López, 2010; Bravo & Del Valle, 2003). In addition, these young people have less confidence in their ability to solve problems and make decisions, and generally report lower self-esteem (Lázaro & López, 2010; Muela, Balluerka, & Torres, 2013). Some authors also claim that youths in residential care, compared with children who are not in such facilities or who are under other protective measures, show low socialization (Carrasco, Rodríguez-Testal, & Hesse, 2001; Muela et al., 2013; Lázaro & López, 2010), high social withdrawal, and are more likely to commit criminal offenses related with these shortcomings (Carrasco et al., 2001; Ryan, Marshall, Herz, & Hernandez, 2008).

With respect to school adjustment, several studies have found that these youths have difficulties in both the academic and social spheres (see, for example, Trout, Hagaman, Casey, Reid, & Epstein, 2008), and that their problems are greater than those presented by young people under other child protection measures (Flynn, Tessier, & Coulombe, 2013; Muela et al., 2013).

Specifically, young people in residential care often show problems with attention and learning, poor relationships with peers and staff, aggressive behavior, a limited capacity to resolve conflicts, and a lack of maturity. Additionally, staff members often have a negative view of these youths' social behavior and interest in learning, and they frequently punish them (Attar-Schwartz, 2009; Martín, Muñoz de Bustillo, Rodríguez, & Pérez, 2008; Muela et al., 2013). In short, these youths exhibit behaviors that interfere with the proper development of academic activities.

It has also been noted that these young people are chosen less and are rejected more than are other students when it comes to involvement in academic activities. However, the relationships with other youths seem to be more appropriate when the setting in which they occur is more informal, that is, in leisure activities outside the classroom (Bravo & Del Valle, 2003; Martín et al., 2008). Regarding adaptive skills, research suggests that both care staff and teachers consider that youths in residential care show poor social and leadership skills that prevents them from interacting successfully with their peers and with adults in the home, school, and community (Muela et al., 2013).

Despite these difficulties, however, studies have also found that these youths make progress over time (Bravo & Del Valle, 2003; Little, Kohm, & Thompson, 2005). From this perspective it has been suggested that residential care can be a positive experience for some vulnerable youths because it provides a stable environment that meets their needs at the time (Kendrick, 2013). Positive changes include, for example, a reduction in clinical symptoms and in the number of youths arrested for juvenile delinquency, as well as improvements in academic performance (Knorth, Harder, Zandberg, & Kendrick, 2008; Little, Kohm, & Thompson, 2005).

Finally, it should be noted that a considerable body of research has examined the problems presented by young people subsequent to the experience of residential care. Authors such as Dixon (2008) and Stein (2004), for instance, claim that many of these youths go on to experience mental health problems, high levels of marginalization and poverty, increased exposure to risky situations, heavy dependence on social services, poor academic performance, unemployment, difficulties in achieving stable home lives, and early parenthood.

In any case, because of the correlational nature of the statistical analyses used in the studies cited it is not possible to establish whether the difficulties experienced by youths in

residential care are due to their presence there, or whether they are in care because of problems manifested previously.

Animal-Assisted Psychotherapy for Children and Adolescents in Residential Care

Animal-assisted therapy (AAT) is a therapeutic intervention carried out by health professionals and in which certain animals, especially selected for their therapeutic potential, form an integral part of treatment for an individual or group (Delta Society, 1996). The rationale for animal-assisted psychotherapy (AAP) derives from the improvements in physical and mental health that have been observed to result from the secure attachment that is established in the interaction between therapist, patient, and animals (Barlow, Hutchinson, Newton, Grover, & Ward. 2012; Zilcha-Mano, Mikulincer, & Shaver 2011).

Since the pioneering work carried out by the child psychotherapist Boris Levinson (1969), in which he described the value of pet animals being present during psychotherapy with children and adolescents, many researchers have examined the ways in which animals may enrich the therapeutic process and maximize its benefits. According to Levinson (1969), animals possess attributes that make them unique for the therapeutic process: they show spontaneous behavior, they are always available for interaction, they don't prejudge, they provide unconditional love, they are loyal and affectionate, and, in general, if treated appropriately, they don't appear threatening. These innate characteristic come together to create a therapeutic space of trust, strengthening the therapeutic alliance and promoting a secure patient-therapist relationship, all essential elements in a high-quality therapeutic process. The presence of the animal increases the patient's motivation (Lange, Cox, Bernert, & Jenkins, 2006/2007) and enhances his or her ability to focus and pay attention during the sessions (Martin & Farnum, 2002). It also, reduces feelings of rejection or stigmatization (Tedeschi, Fine, & Helgeson, 2010) and helps the therapy to focus more on abilities than on personal limitations (Tedeschi et al., 2010). The animal is a multisensorial medium, a transitional object and an object of projection, as a way to express patient’s inner world (Oren & Parish-Plass, 2013).

Whether for therapeutic or educational purposes, animals are now frequently used in various areas of the health and educational fields, not only with children and adolescents but also with adults and elders. Specifically, there are reports of animal-assisted interventions being applied to children and adolescents with learning difficulties or autism, to people with serious disease (HIV, multiple sclerosis, cancer, in palliative care units), to adolescents and adults with

psychiatric problems, to disabled people, and to people with aphasia and language disorders (Macauley, 2008; Skeath, Fine, & Berger 2010; Velde, Cipriani, & Fisher, 2005). However, despite its potential to promote secure attachments within and beyond the therapeutic process (Balluerka, Muela, Amiano, & Caldentey, 2014) and to improve the mental health of young people who have experienced childhood trauma (Hamama et al., 2011; Schultz, Remick-Barlow, & Robbins, 2007), AAP has not been widely used in the residential care setting. Most of the programs carried out in this setting have implemented animal-assisted activities (AAA) aimed at promoting socio-educational improvement, and only a few of them have been subjected to rigorous evaluation. Among animal-assisted activities that have been described in the literature, mention should be made of the Green Chimneys program, which since the 1970s has been using AAA with children and adolescents with a history of severe maltreatment, behavior problems, and difficulties with social, emotional, and school adjustment (Mallon, Ross, Klee, & Ross, 2010). Other noteworthy initiatives include the Therapy Animals Supporting Kids (TASK) Program, developed by the American Humane Association, the innovative Bee Kind Garden project (Worsham & Goodvin, 2007), and Taking the Reins: Adaptive Horseback Riding for At-Risk Youth, a program created by the Healing Reins Therapeutic Riding Center.

Among the few programs that have applied AAP with youths in residential care, Balluerka et al. (2014) found that participants displayed a more secure attachment after undergoing AAP. Equine-facilitated psychotherapy (EFP) is gaining growing support among practitioners. EPP uses horses in and around the natural surroundings of the stables. The psychotherapist works with an accredited equine professional and a suitable equine to treat mental health problems. EFP requires an ongoing therapeutic relationship with clearly established treatment goals and objectives developed by the psychotherapist and the patient (Bachi, Terkel, & Teichman, 2012). Recently, in a group of adolescents at a residential treatment facility who participated in EFP, Bachi et al. (2012) found positive changes in self-image, as well as greater self-control, confidence, and general life satisfaction.

Anecdotal evidence from these programs suggests that, for children and adolescents who have been in residential care, the inclusion of animals in the therapeutic context can help to promote social interaction, make therapy a less threatening experience, boost the therapeutic alliance, enhance motivation to engage with the therapeutic process, and encourage spontaneous communication. These initiatives also may increase the likelihood that, by means of AAP, these

young people will establish relationships with significant others in their present lives. As a result of such changes, a new attachment style and a different kind of social and emotional functioning may begin to emerge, thereby promoting better social adaptation and more resilient behavior (Bell, Romano, & Flynn, 2013).

In this context, the objective of the present study was to examine the influence of AAP on the psychosocial adaptation of a group of adolescents in residential care who had suffered traumatic childhood experiences and who present mental health problems, poor adaptation to the residential and school environments, and poor adaptive skills. It was hypothesized that after AAP these young people would show better psychosocial adjustment than a control group that did not receive this treatment. Specifically, youths undergoing AAP were expected to present fewer clinical symptoms and higher scores on personal adjustment, adaptive skills, and school adjustment.

Method

Participants

The initial sample comprised 67 young people (25 female and 42 male) ranging in age from 12 to 17 years old. They were all currently in residential childcare and had been made wards of state (by the Provincial Government of Guipúzcoa, Spain). They all presented mental health problems (e.g., behavior disorders, depressive or anxiety disorders), and a third required psychiatric medication. All of them presented severe difficulties in terms of adapting to the residential care facility.

The 67 participants were divided into two groups: A treatment group of 43 youths and a control group of 24 participants. Although random assignment could not be used to form the groups, we did seek to make the groups comparable by applying the following matching criteria: adolescents who presented difficulties adapting to the residential setting, who presented similar mental health problems, who had the same origin (Spanish national or foreign unaccompanied minors), who followed the same residential setting and care program (basic or specialized), who had a similar age (not more than a 36-month difference), and who were of the same gender. Both controls and members of the treatment group received individual psychotherapy before, during and after the AAP intervention. It should also be noted that participants in the control group followed the same routines as did their peers in the treatment group, except for the AAP. Specifically, the general running of the residential care facilities included the fulfillment of

everyday routines in relation to basic living standards and regular attendance at school and other after-school activities.

The first AAP treatment took place with a group of six participants in spring 2010. The year after, the second (n = 8) and third (n = 7) interventions were carried out. In 2012, two interventions were completed with six participants each. Finally, in 2013 and 2014, the final two interventions were carried out with four and six participants, respectively. Of the 67 initial participants, two did not complete the intervention because they were moved to special treatment care centers, one chose to stop attending the treatment sessions, and one was expelled for not following the established rules. The final study sample therefore consisted of 63 youths (mean age = 15.27, *SD* = 1.63). A treatment group of 39 youths (19 female and 20 male; mean age = 15.03, *SD* = 0.51) and a control group of 24 participants (5 female and 19 male; mean age = 15.67, *SD* = 1.63), 68.3% of whom were from the Basque Country and 31.7% were foreign unaccompanied minors (FUM) from northern Africa. In terms of their residential care, 71.4% were involved in a basic care program and 28.6% in a specialized program. The basic care program was designed for children and young people aged between 4 and 18, and was implemented in residential facilities with a maximum capacity of 10 people per center. The specialized program was designed for young people over the age of 13 who could not be treated on the basic program because of their disruptive behavior. A maximum of 12 children were treated per unit. Regarding educational level, 42.9% were enrolled in compulsory secondary education, 47.6% were attending vocational training courses, and 9.5% were not studying.

Measures

Spanish version of the Behavior Assessment System for Children (BASC; González, Fernández, Pérez, & Santamaría, 2004; original version by Reynolds & Kamphaus, 1992). The BASC is a multimethod, multidimensional system used to evaluate indicators of psychosocial adaptation (clinical symptoms, personal adjustment, adaptive skills, and school adjustment). It includes parent (PRS) and teacher (TRS) rating scales, as well as a self-report of personality (SRP). The PRS can be used to measure both adaptive and problem behaviors in the community and residential settings, the TRS to measure adaptive and problem behaviors in the school setting, and the SRP to enable the young person to describe his or her emotions and self-perceptions.

The scales that in the present study were completed by residential care staff (PRS) and teachers (TRS) include descriptors of behaviors whose frequency must be rated on a four-point

scale (ranging from "Never" to "Almost always"). These scales take approximately 10-20 minutes to complete. The TRS comprises 123 items distributed across 21 scales: 3 control scales and 18 scales grouped into clinical, adaptive, and composite scales. The PRS has 137 items distributed across 18 scales: 3 control scales and 15 scales grouped into clinical, adaptive, and composite scales. Finally, the SRP consists of 185 statements that require a "True" or "False" response, with around 30 minutes being required to complete the scale. The 185 items are spread across 23 scales: 5 control scales and 18 scales grouped into clinical, adaptive, and composite scales.

All three BASC scales (TRS, PRS, and SRP) have high internal consistency (Cronbach's alpha between 0.70 and 0.90) and adequate temporal stability over a three-month period (average value of the medians = 0.84, 0.81, and 0.76 for the TRS, PRS, and SRP, respectively). The psychometric properties of the three Spanish versions of these BASC scales (analysis of factor structure, criterion validity, and the study of the profiles of adolescents with different clinical disorders) have been examined and shown to be adequate (González et al., 2004).

The presence of clinical symptoms was determined based on the *T*-score obtained in the Behavioral Symptom Index of the PRS and TRS and through the *T*-score corresponding to the Clinical Maladjustment composite in the SRP. The Behavioral Symptom Index of the PRS and TRS comprises the subscales Aggression, Hyperactivity, Attention Problems, Atypicality, Depression and Anxiety. The Clinical Maladjustment composite in the SRP comprises subscales labeled Atypicality, Locus of control, Somatization and Anxiety. Table 1 shows the definitions of the subscales.

Table 1

Definitions of the subscales (taken from González et al., 2004, p. 54 and p. 66).

Subscale	**Definition**
Aggression rated by teachers (TRS) and residential care staff (PRS)	Tendency to act in a hostile and threatening manner either verbally or physically
Hyperactivity rated by teachers (TRS) and residential care staff (PRS)	Tendency to be overly active, to rush work and other activities, and to act without thinking.
Attention problems rated by teachers (TRS) and residential care staff (PRS)	Tendency to be easily distracted and unable to concentrate for a long period of time.

Atypicality rated by teachers (TRS) and residential care staff (PRS)	Tendency to display immature or odd behavior, or behavior commonly associated with psychosis.
Depression rated by teachers (TRS) and residential care staff (PRS)	Feelings of unhappiness, sadness and stress that can result in an inability to perform daily activities (autonomic symptoms) or can lead to suicidal thoughts.
Anxiety rated by teachers (TRS) and residential care staff (PRS)	Tendency to be nervous frightened or worried about real or imagined problems.
Atypicality self-rated by the young person (SRP)	Tendency to have mood swings, strange ideas, unusual experiences or obsessive-compulsive thoughts and behaviors considered odd.
Locus of control self-rated by the young person (SRP)	Belief that rewards and punishments are controlled by external events or by others.
Somatization self-rated by the young person (SRP)	Tendency to be overly sensitive and to complain about relatively minor physical problems and discomfort.
Anxiety self-rated by the young person (SRP)	Feelings of anxiety, worry and fear; tendency to feel overwhelmed by problems

Personal adjustment, which refers to the coping strategies used by youth and the social and family support available to them, was determined from the *T*-score obtained in the Personal Adjustment composite scale of the SRP, which consists of subscales labeled Interpersonal Relations, Relations with Parents, Self-Reliance, and Self-Esteem. The Interpersonal Relations subscale refers to the perception of having good social relationships and friendships with peers. The Relations with Parents subscale assesses positive attitudes toward parents and the feeling of being loved. The Self-Reliance subscale examines the confidence in one's ability to solve problems, the belief in one's own independence and the ability to decide for oneself. Finally, the Self-Esteem subscale reflects feelings of self-worth, self-respect and self-acceptance (González et al., 2004).

Adaptive skills were assessed based on the score obtained in the Adaptive Skills composite of the PRS and the TRS, which includes Social Skills and Leadership subscales. The Social Skills subscale reflects the skills needed to interact successfully with peers and adults in the areas of home, school and community. The Leadership subscale evaluates skills associated with achieving academic, social or community goals, including, in particular, the ability to work well with others (González et al., 2004).

School maladjustment refers to a lack of adaptation to school and academic problems, including problems of motivation, attention, learning, and cognition. In the present study the level of school maladjustment was determined by both the *T*-score obtained on the School Problems composite scale of the TRS, comprising the Attention Problems and Learning Problems subscales, and the *T*-score on the School Maladjustment composite of the SRP, which consists of subscales measuring Negative Attitudes toward school and teachers and Sensation-Seeking. The Attention Problems subscale assesses the inability to maintain attention and the tendency to be easily distracted. The Learning Disabilities subscale collects information from teachers on different educational areas such as reading, writing and mathematics in order to detect learning difficulties. The Negative Attitude to School subscale reflects feelings of alienation, hostility and dissatisfaction with the school. The Negative Attitude to Teachers subscale examines the feelings of resentment and antipathy towards teachers, i.e., the belief that teachers are unfair, do not pay attention to their students, are excessively demanding or are not motivated to help. Finally, the Sensation Seeking subscale assesses the need for new, varied sensations and experiences and the willingness to take physical and social risks to achieve these experiences (González et al., 2004).

Procedure

The research involved three phases. During the first phase, and after obtaining participants' consent and permission from the corresponding child protection services to carry out the study, we gathered sociodemographic data from the participants. Once the inclusion criteria (children aged between 12 and 17 years old in residential care and presenting mental health problems and difficulties adapting to the care facility) and exclusion criteria (serious antisocial disorder with aggression toward people or animals, psychotic disorders, substance addictions, and aversion to animals) had been checked, the child protection services assigned the 67 participants to the treatment and control groups, taking into account the previously specified matching criteria. The TRS, PRS, and SRP were then completed by teachers, care staff, and the youths, respectively.

The second phase involved implementation of the AAP program over a 12-week period at a farm. The teenagers spent two consecutive days each week staying overnight at a "*caserío*" (a typical farm in the Basque region of northern Spain). The program consisted of 34 sessions involving both group (23 sessions) and individual (11 sessions) AAP. A dog and nine horses (5

adults and 4 colts) were used as therapy animals. Guided interactions also took place using cats and farm animals such as sheep, goats, chickens, and pigs.

In developing and planning the treatment program the following psychotherapeutic models were taken into consideration: psychotherapy for young victims of childhood trauma (Chaffin, Bonner, Worley, & Lawson, 1996), attachment-based psychotherapy (Bowlby, 1988), and animal-assisted psychotherapy (Coletta, 2010; Parish-Plass, 2013). The treatment consisted of six thematic blocks (see Table 2): (1) Establishing a secure base, (2) Identification, understanding and verbalization of emotions, (3) Emotional regulation, (4) Interpersonal relationships, (5) Self-esteem and self-competence, and (6) Close.

Table 2

Summary of animal-assisted psychotherapy.

Week	Session	Type	Thematic block	Objectives
1	1	Individual	Establishing a secure base	• To establish the therapeutic setting. • To build a positive therapeutic alliance. • To establish a secure base for the intervention.
	2	Group		
	3	Group		
2	4	Individual		
	5	Individual		
	6	Group		
3	7	Individual		
	8	Individual		
	9	Group		
4	10	Individual	Identification, understanding and verbalization of emotions	• To promote recognition of the positive and negative emotions.
	11	Group		
	12	Group		
5	13	Group		
	14	Group		
6	15	Individual		
	16	Group		
	17	Group		
7	18	Individual	Emotional regulation	• To improve the skills of emotional regulation and social coping.
	19	Group		
	20	Group		
8	21	Individual	Interpersonal relationships	• To provide restorative experiences of good treatment. • To promote resilience. • To improve relationships.
	22	Group		
	23	Group		
9	24	Group		
	25	Group		
10	26	Group		

	27	Group		
	28	Group		
	29	Individual	Self-esteem and self-competence	• To improve self-esteem and promote a sense of personal worth.
11	30	Group		
	31	Group		
	32	Individual		
12	33	Group	Close	• To conclude the treatment process.
	34	Group		

The first block was designed to establish the therapeutic setting, build a positive therapeutic alliance and consolidate a secure base from which to explore the painful experiences of the past and present of the young person's life. It comprised six individual sessions and four group sessions. In the first individual session, the therapeutic framework was established with the patient, discussing aspects such as the frequency and duration of sessions, the work to be carried out in the sessions and outside, and the patient's expectations. The confidential nature of the treatment was emphasized, and the concept of AAP was introduced. Each participant received an individual notebook in which to carry out the written exercises, record their impressions, the commitments acquired over the course of the treatment, to make a note of homework, and so on. After the individual or group therapy session, the notebook was kept at the center. At the end of the treatment, the patient took it home.

In the first group session, the framework for the group work was also determined. In addition, participants gave a presentation of themselves, their personal tastes and interests, and various group dynamic practical exercises were conducted in order to foster mutual understanding, to integrate members in the group, to reduce tensions and to create an atmosphere of trust. In both the first individual session and the first group session a therapy dog was present. In the third session, in which the therapy dog was also present, there was a group discussion in which participants talked about their experience of pets. Group members who had never had pets were asked what kind of pet they would like to have or would have liked to have at some point in their lives.

In the fourth and fifth sessions, which were both individual, the focus was on strengthening the therapeutic alliance. To do so, the youths interacted with the therapy dog in a free, unstructured manner. At first the therapist did not participate in the play unless invited to do so. The natural

environment in which the intervention took place also generated a sense of security, since the atmosphere was relaxed and non-threatening, away from stressful urban environment where the young people resided.

In the sixth session, the notion of "sponsored animal" was introduced. As a group, the participants were told that they were going to spend time with a number of horses and that they should choose one of them. They would then be that horse's primary caregiver; they would work with the animal in a continuous, individualized way throughout the treatment. The choice of animal was made by consensus between all members of the group and the therapist.

In the seventh and eighth sessions the youths made their first contact with the horses they had chosen. They did so in a spontaneous, undirected way, which allowed the therapist to observe their relational style and get an idea of their internal working models and defense mechanisms. Youths who have been maltreated in childhood expect to be treated in the same way in new relationships; therefore they adopt coping strategies similar to those they have used in these traumatic relationships, interpreting the actions of new attachment figures as hostile and negative (Balluerka et al, 2014). The animal, in response to these relational styles, reacted spontaneously, avoiding or resisting these first contacts. The figure of the therapist is important at this stage, because he or she offers the participant guidance and suggests new approach strategies in order to foster a close relationship with the animal. The ninth session was a group session in which participants discussed their experience so far.

In the tenth session, in order to strengthen the relationship created with the animal and to stimulate patients' expression of their inner lives, they were asked to have imaginary conversations with the sponsored animal. Teens who have suffered maltreatment in childhood respond particularly favorably to this approach because it does not require direct contact with the therapist and they also find it new and exciting.

In the next two sessions, both group sessions, the next block began, involving the identification, understanding and verbalization of feelings. The aim of this stage was to promote the recognition of emotions. First, participants discussed their early experiences with the sponsored animal. The emphasis was placed on the emotions that contact with the horse elicited and on the difficulties encountered in the first approaches. Then, in sessions 13, 14 and 15, the therapy focused on bodily experience with the animal. Patients were encouraged to share the emotions they felt

when touching the horse and to imagine the emotions the animal felt on being touched. This action introduces the concepts of reciprocity and synchrony. Further work on positive and negative emotions was also carried out.

Between sessions 16 and 20, in the third thematic block, strategies of coping and emotional regulation were developed in order to improve skills of emotional regulation and social coping. Starting from the life experiences associated with negative emotions which emerged in the exercises in the second thematic block, participants were asked about the strategies they use to manage negative emotions. With the aim of equipping them with new skills to cope with negative emotions, first, they were asked how they think their sponsored animals would deal with negative emotions. Subsequently, on the basis of individual experiences, in the group work new ways of coping were agreed upon. Finally, at this stage training in arousal control techniques was also given in the form of progressive muscle relaxation, breathing and guided imagination.

The aims of Block 4 were to provide restorative experiences of good treatment, promote resilience and dispel feelings of victimization, and improve interpersonal relationships. In the first part of the block, through non-verbal communication and body experience with the animal, participants experienced relational styles characterized by sensitivity, empathy, reciprocity and trust (sessions 21 and 22). The horse acted as a mirror of the person's emotions and behaviors, and so it was necessary to establish a progressive relationship, adapted to the pace and needs of the animal. Following the therapist's instructions, the youths now approached the horse in a totally different way: the more impulsive among them learned to stay at a safe distance so as not to startle the animal and patiently waited for the horse to approach on its own initiative. The youths with an avoidant profile gradually learned to interact with the horse in a more self-confident way, with trust and reciprocity. These were ideal moments for dialog; while participants waited and watched the horse grazing, they discussed the emotions that arise in interpersonal relationships, such as fear, mistrust, impatience and frustration.

In the second part of Block 4, from session 23 to session 28, the participant's past and present relationships were explored. In session 23, a group session, work began on the notion of animal care. Group members were encouraged to compare their expectations regarding the care of the horses, the challenges that this task would pose and how they thought they would cope with them. These discussions helped to produce a motivating environment for the sharing of experiences of care received in the present but especially in childhood. In session 24 the first care tasks were

carried out (brushing, feeding, cleaning the stables, etc.). In the following sessions in this block, as the care tasks were performed, the youths were encouraged to reflect on the ways in which they build relationships with significant figures in their present life. In this process, the therapist and the animal acted as therapeutic tools working together to help the youths to develop attachment relationships not just inside the therapeutic triangle (therapist-client-animal), but with their current caregivers at the residential care facility, at their school, with friends and in the emerging romantic relationships that characterize adolescence.

In Block 5, which comprised sessions 29 to 31, the aim was to improve self-esteem and promote a sense of self-worth. First participants were encouraged to carry out various exercises with the horse. Response to success and failure in the task was analyzed and the emphasis at all times was placed on self-improvement. In this block participants were also encouraged to share the knowledge they had gained during treatment. In pairs, each participant taught his/her partner to perform the tasks of caring for the sponsored animal. The aim was to make them feel competent in transmitting good treatment.

Finally, in Block 6, the treatment process was brought to an end. The last sessions were carried out at individual and group level, in which participants said goodbye to their sponsored animal, the therapist, other members of the group, assistants, and the natural environment in which the intervention had been carried out.

The treatment team comprised a psychologist specializing in AAP and handler of the animals, who was supported by a veterinary ethologist and a veterinary expert with experience as a natural horse-breaker, both of whom were trained in animal-assisted interventions. Throughout the treatment the therapist received supervision for the clinical work performed.

The selection of animals was carried out by the ethologist. In order to minimize as far as possible the risks to participants, two animals (one horse and a dog) were excluded for showing unpredictable and aggressive behavior before the treatment began. It is important to note that in accordance with the treatment protocol, all of the animals received training prior to being used in the program. In the case of the adult horses, they had been trained using natural breaking-in techniques by a horse-breaker and qualified veterinarian. As for the four colts, their breaking-in was carried out during the treatment program with the active participation of the adolescents, under the direction of the horse-breaker and the supervision of the ethologist. The dog was trained as a therapy dog using positive reinforcement techniques by canine educators and

ethologists at the Autonomous University of Barcelona (Spain). It should be noted that at all times, all necessary measures were taken to safeguard the welfare of the animals. To this end, they were monitored for possible signs of stress in their behavior (such as changes in diet, in their exploratory, play, and interactive behavior, or in their behavior regarding comfort and hygiene), as well as for symptoms of organic pathology. In the case of the therapy dog that lived with the adolescents, this animal was allowed to separate itself from the group and rest in a living area inaccessible to the participants.

To ensure the well-being of participants, all the animals were subject to prophylactic veterinary treatments prior to the AAP program (vaccinations and external and internal de-worming to avoid zoonotic risks). In addition, all the interactions were supervised by the intervention staff.

In the third and final stage of the research, all the participants were asked to complete the post-test measures (TRS, PRS, and SRP) two weeks after finishing the treatment. As teachers and caregivers at the residential center did not know which group they were evaluating, the objectivity of the evaluation was guaranteed.

Data Analysis

Data were analyzed using SPSS v21.0 for Windows.

In order to examine whether AAP had an influence on the criterion variables, we first compared the differences between the treatment and control groups. As the control and treatment groups were not created randomly, we compared the change in score (difference between the post- and pre-test scores) for the control group with that of the treatment group, rather than simply comparing the post-test scores of the two groups. After verifying that the statistical assumptions were fulfilled, the Student's *t* test was used to determine whether there were statistically significant differences between the treatment and control groups on the different criterion variables. In addition to the previous analyses, we also compared the mean post-test and pre-test scores obtained by the treatment group. The effect size (Cohen's *d*) associated with the differences in means was also calculated because the statistical power of the Student's *t* test could be influenced by the sample size of the present study (Balluerka, Gómez, & Hidalgo 2005; Balluerka, Vergara, & Arnau 2009).

Results

The main results regarding the variables of clinical symptoms, personal adjustment, social adjustment and school maladjustment are presented below for the treatment group and the control group.

Table 3 shows the change in scores (pre- versus post-test), statistical significance and effect sizes for clinical symptoms in both the treatment and control groups.

Table 3

Change in scores (difference between pre- and post-test), statistical significance and effect sizes for clinical symptoms in the treatment and control groups.

Variable	Group	Change in score	*N*	*p*	*ES*
Clinical maladjustment self-rated by the young person (SRP)	Treatment group	-3.33	39	.87	0.04
	Control group	-2.92	24		
Behavioral symptoms rated by teachers (TRS)	Treatment group	-1.53	17	.55	0.19
	Control group	-0.14	21		
Behavioral symptoms rated by residential care staff (PRS)	Treatment group	-4.33	27	.87	0.04
	Control group	-3.68	22		

Note: Effect sizes (ES) are calculated using Cohen's *d*.

When comparing the treatment and control groups in terms of the change in symptom scores between pre- and post-test, no statistically significant differences were observed. Moreover, the effect size linked to the observed differences was small.

The differences between the treatment group and the control group with regard to specific clinical symptoms were examined in the corresponding subscales. Statistically significant differences were found in teachers' ratings of their students' hyperactivity (t (36) = -3; p = 0.005). The effect size related to the difference between these scores was large (Cohen's d = 0.98). Therefore, the treatment group presented fewer hyperactivity symptoms than the control group. On the other scales the differences were not statistically significant, and the effect sizes associated with these mean differences were small.

Table 4 shows the change in scores (pre- versus post-test), statistical significance and effect sizes for personal adjustment, adaptive skills, and school maladjustment in both the treatment and control groups.

Table 4

Change in scores (difference between pre- and post-test), statistical significance and effect sizes for personal adjustment, adaptive skills, and school maladjustment in the treatment and control groups.

Variable	Group	Change in score	*N*	*p*	*ES*
Personal adjustment self-rated by the young person (SRP)	Treatment group	2.84	39	.73	0.09
	Control group	1.96	24		
Adaptive skills rated by teachers (TRS)	Treatment group	4.88	17	.009*	0.91
	Control group	-1.00	21		
Adaptive skills rated by residential care staff (PRS)	Treatment group	3.52	27	.38	0.25
	Control group	1.18	22		
School maladjustment self-rated by the young person (SRP)	Treatment group	-2.13	39	.80	0.07
	Control group	-1.50	24		
School maladjustment rated by teachers (TRS)	Treatment group	-2.71	17	.10	0.54
	Control group	0.48	21		

Note: Statistically significant effects are indicated with asterisk. Effect sizes (ES) are calculated using Cohen's *d*.

The change in the personal adjustment score did not differ significantly between the treatment and control groups. Moreover, the effect size linked to the difference was very small (Cohen's $d = 0.09$).

By contrast, the change in teacher ratings of the young people's adaptive skills did differ significantly between the treatment and control groups (t (36) = 2.775; $p = .009$), and the associated effect size was large (Cohen's $d = 0.91$). Thus, greater adaptive skills were observed in the treatment group than in the control group. This was not the case, however, for the change in residential care staff ratings of adaptive skills, which did not differ significantly between the two groups, with the effect size being small (Cohen's $d = 0.25$).

Finally, no statistically significant differences were observed between the treatment and control groups in terms of the change in school maladjustment scores. However, it should be noted that the effect size associated with the change in teacher ratings of school maladjustment was moderate (Cohen's $d = 0.54$), indicating that teachers perceived an improvement among young people in the treatment group. This contrasted with the small effect size (Cohen's $d = 0.07$) that was observed for differences between the treatment and control groups when young people rated their own school maladjustment.

The differences between the treatment group and the control group with regard to personal adjustment, adaptive skills and school maladjustment were examined in the corresponding subscales. No statistically significant differences were found in the changes on the personal adjustment subscales as rated by the participants in the two groups, and the effect size for the difference between these scores was small.

However, the ratings given by teachers and educators at the residential facility on the personal adjustment subscales revealed statistically significant differences between the treatment and control groups for Social Skills (t (36) = 2.747, $p = 0.009$). The effect size for this difference was large (Cohen's $d = 0.90$). In addition, although the difference on the Leadership subscale between the treatment and control groups as rated by teachers was not statistically significant, the effect size associated with this mean difference was moderate (Cohen's $d = 0.62$). These results indicate that the treatment group had better social adaptation and higher leadership than the control group.

On the rest of the subscales the differences were not statistically significant and the effect sizes for the mean differences were small.

Finally, the difference between the scores of the treatment and control groups on the School maladjustment subscale was not statistically significant. However, on the Attention Problems subscale as rated by teachers and the Negative attitude toward Teachers subscale, the effect sizes for the mean differences were moderate (Cohen's $d = 0.48$ for both), suggesting fewer attention problems and a more positive view of teachers in the treatment group than in controls.

To complement the comparison between the treatment group and the control group, which represents the main reference for evaluating the effectiveness of the AAP intervention, the results obtained in the treatment group before and after the intervention were also compared. Only results in which the differences observed were higher than those recorded in the control group (even if they

did not reach statistical significance) are presented. This second set of results should be taken as complementary.

The mean scores, standard deviations, statistical significance and effect sizes for clinical symptoms in the treatment group at pre-test and post-test are shown in Table 5.

Table 5

Mean scores, standard deviations, statistical significance and effect sizes for clinical symptoms in the treatment group before and after treatment.

Clinical symptoms	*Assessment*	*Mean*	*SD*	*N*	*p*	*ES*
Clinical maladjustment self-rated by the young person (SRP)	Pretest	57.15	11.84	39	.06	0.44
	Post-test	53.82	10.49	39		
Behavioral symptoms rated by teachers (TRS)	Pretest	63.41	12.90	17	.42	0.28
	Post-test	61.88	10.18	17		
Behavioral symptoms rated by residential care staff (PRS)	Pretest	67.33	12.36	27	0.09	0.48
	Post-test	63	10.59	27		

Note: Effect sizes (ES) are calculated using Cohen's *d*.

No statistically significant differences were observed in the treatment group between the two assessment points. However, the effect size was moderate for the difference between pre-and post-test scores on two of the three scales, namely the SRP (youth self-ratings of clinical maladjustment) and the PRS (behavioral symptoms rated by residential care staff) (Cohen's d = 0.44 and 0.48, respectively.) In both cases, symptoms were reduced after treatment. In the case of the TRS (behavioral symptoms rated by teachers) the effect size was small (Cohen's d = 0.28).

The differences between pre-test and post-test measurements for the clinical symptoms were examined in the corresponding subscales.

Statistically significant differences were observed on subjects' own ratings of the Atypicality subscale (t (38) = 2.064; p = 0.04) and on residential center caregivers' ratings of depressive symptoms (t (26) = 3.164, p = 0.004). The effect size for the difference between these scores was moderate in the first case (Cohen's d = 0.47) and large in the second (Cohen's d = 0.86), showing that atypical symptoms and depression decreased after the intervention.

As regards the other subscales, although no statistically significant differences were found, the effect sizes for the difference between the pre- and post-intervention scores for the symptoms of aggressiveness, hyperactivity, attention problems and atypicality as rated by teachers in the school context were moderate. Finally, with respect to the residential center caregivers' ratings of the symptoms of atypicality and attention problems, the effect sizes for the difference between the pre and post-intervention assessment scores were also moderate (Cohen's d = 0.47 and 0.39, respectively). In both cases, the symptoms decreased after the intervention.

Table 6 presents the mean pre- and post-test scores, standard deviations, statistical significance and effect sizes for the treatment group on the measures of personal adjustment, adaptive skills, and school maladjustment.

Table 6

Mean scores, standard deviations, statistical significance and effect sizes for personal adjustment, adaptive skills, and school maladjustment in the treatment group before and after treatment

Variable	*Assessment*	*Mean*	*SD*	*N*	*p*	*ES*
Personal adjustment self-rated by the young person (SRP)	Pretest	43.33	12.25	39	.09	0.39
	Post-test	46.18	11.63	39		
Adaptive skills rated by teachers (TRS)	Pretest	42.29	11.51	17	.002*	0.87
	Post-test	47.18	10.87	17		
Adaptive skills rated by residential care staff (PRS)	Pretest	36.52	11.43	27	.041*	0.59
	Post-test	40.04	9.30	27		
School maladjustment self-rated by the young person (SRP)	Pretest	56.54	11.63	39	.13	0.34
	Post-test	54.41	11.41	39		
School maladjustment rated by teachers (TRS)	Pretest	58.59	12.34	17	.09	0.61
	Post-test	55.88	9.79	17		

Note: Statistically significant effects are indicated with asterisk. Effect sizes (ES) are calculated using Cohen's *d*.

The change between pre- and post-test scores on self-rated personal adjustment was not statistically significant. However, the effect size for the difference in scores was moderate (Cohen's d = 0.39), indicating that personal adjustment improved following the treatment program.

The results also revealed that AAP produced a statistically significant improvement in the young people's adaptive skills, as rated by both teachers (t (16) = -2.544; p = .022) and residential care staff (t (26) = -2.155; p = .041). In line with these results, the effect sizes associated with the mean difference between pre- and post-test scores were high for both measures (Cohen's d = 0.87 and 0.59, respectively).

Finally, no statistically significant differences in school maladjustment were observed. However, for teacher ratings of this variable (TRS) the effect size associated with the difference between pre- and post-test scores was moderate (Cohen's d = 0.61), indicating that teachers perceived less maladjustment after the treatment program. The effect size was low (Cohen's d = 0.34) for the difference in young people's self-ratings of school maladjustment.

The differences between pre-test and post-test evaluations of personal adjustment variables, adaptive skills and school maladjustment were examined in the corresponding subscales.

Statistically significant differences in the treatment group after the implementation of the AAP were found in social skills as rated by teachers (t (16) = 2394, p = 0.029) and in the negative attitude toward teachers as rated by the subjects themselves (t (38) = 2.360; p = 0.024). The effect size for the difference between these scores was large in the first case (Cohen's d = 0.82) and moderate in the second (Cohen's d = 0.53), suggesting an improvement in social skills and a decrease in the negative perceptions of teachers among the participants.

No statistically significant differences were found on the other subscales, but the effect sizes for the mean differences on interpersonal relationships and self-esteem as rated by the subjects themselves were moderate (Cohen's d = 0.39 and 0.34, respectively). Other improvements in the school and home environments were also found: the Leadership scores as rated by teachers and residential center caregivers, the Attention Problems and Learning Problems scores as rated by teachers, and the Social Skills scores as rated by caregivers presented moderate effect sizes for the mean differences (Cohen's d = 0.66, 0.38, 0.45 and 0.49, respectively).

Discussion

The goal of this research was to examine the influence of AAP on the psychosocial adaptation of a group of adolescents who were in residential care following childhood trauma and who presented mental health problems, poor adaptive skills, and poor adaptation to both the residential environment and school.

The results showed that young people who underwent AAP showed a higher school adjustment than those who did not. Although the youths continued to present clinical symptoms and behavior problems after treatment, the teachers nonetheless considered that they had made progress in their school adjustment, since they showed greater motivation and increased attention toward classroom learning. Furthermore, compared with controls, members of the treatment group scored higher on adaptive skills at school, with improved scores on social skills for interacting with peers and teachers and on the skills needed to work within a group. This finding is consistent with the results of a recent study by Bryderup and Trentel (2013) of young people in either residential or foster care, since the youths who had greater social skills also showed better school adjustment.

Although the relationships with teachers improved for the youths who had received AAP, there remained a widespread sense of unease with the school and the educational system. This perception was similar to that reported by the youths who did not receive treatment. These results highlight the importance of efforts to promote positive school experiences and to reduce the risk of school failure for young people in residential care (Liabo, Gray, & Mulcahy, 2013; Trout et al., 2008). Indeed, in the absence of such efforts, it is likely that these youths will fail to achieve any qualifications, have limited access to higher education, and, ultimately, enter the labor market at a severe disadvantage (Flynn et al., 2013).

With regard to clinical symptoms, members of the treatment group presented reductions in symptoms of hyperactive behavior compared with the control group, as rated by the teachers. Although no differences in symptoms of depression, anxiety or atypicality were observed between the treatment group and controls, reductions in these clinical symptoms in the pre- and post-test comparisons were found in the youths who underwent AAP. The youths perceived themselves to be less likely to have sudden mood changes, to be less impulsive in their behavior, and to show less atypical thinking, characterized by experiences of feeling strange, paranoid, or losing control. These perceptions were endorsed by care staff, despite the fact that the youths continued to show emotional and behavioral problems after the AAP program. Specifically, the care staff considered that the youths presented fewer symptoms of depression, as well as less atypical behavior in the residential care setting. Closely related to this reduction in clinical symptoms, residential care staff highlighted improvements in adaptive skills, including those involving interaction both with peers and caregivers, as well as greater social competence.

With respect to these results, various studies have shown that a positive relationship between residents and caregivers is a key factor that predicts better adaptation to the residential setting among youths (Harder, Knorth, & Kalverboer, 2013). In this sense, we consider there to be a feedback mechanism between the set of variables to which we have referred. Thus, the decrease in clinical symptoms and the increase in adaptive skills among young people produce a substantial improvement in their relationship with caregivers, which in turn reduces stress and improves their interactions with one another. As a result, caregivers become more positively predisposed toward the young people, and closer emotional ties are established. This emotional bonding is associated, in turn, with lower levels of aggression, depression, and behavioral problems. It should be noted that a history of behavior problems during time spent in residential care predicts psychosocial adaptation problems and delinquency upon leaving care (Lee, Chmelka, & Thompson, 2010). For all these reasons, we believe that AAP may be a useful strategy for breaking this pathological cycle.

Finally, the youths who participated in AAP showed improvements in some, but not all, aspects of personal adjustment. Specifically, they considered that their social relationships had improved, although they continued to view the relationship with their biological family in a negative light. In addition, they scored higher on self-esteem and self-reliance following the program. In this regard, it should be noted that various studies of children and adolescents who have grown up in adverse contexts of poverty, violence, or family dysfunction have shown that positive expectations for the future and perceptions of self-worth and self-reliance predict, so long as they are realistic, better psychosocial adjustment (Wyman, 2003). It is important to bear in mind that these youths will soon be required to live as independent adults, a change that, unlike in the case of many other young people, will occur prematurely and with few economic resources and little family support (Stein, 2006). Given that after passing through residential care many of these young people present problems of psychosocial adjustment and high risk exposure (Dixon, 2008; Stein, 2004, 2006), all of which increases the likelihood of their becoming marginalized, socially excluded, and dependent on social services, early intervention is vital to ensure that they acquire the skills needed to make the transition into adulthood, not least in terms of planning for the future and the promotion of self-esteem and self-efficacy.

In general, these results suggest that AAP may be a useful approach for improving the psychosocial adaptation of youths in residential care who have suffered childhood trauma and

who present psychosocial problems. We consider that this result can be explained through reference to the phenomenon of resilience, as follows. The first point to consider is that these youths have grown up in contexts of adversity in which they have suffered childhood traumas such as violence, neglect, and abandonment by their primary caregivers, all of which undermine their psychological development. It should also be noted that being in care does not exempt these youths from risks and stressors during their development. Indeed, several authors have argued that residential care does not provide a context for optimal development among children and adolescents (for a review, see Dozier et al., 2014). In fact, these youths generally find it very difficult to establish stable attachments due to the constant rotation of the care staff whose role it is to provide support and guidance (Dozier, Zeanah, Wallin, & Shauffer, 2012). Related to the latter issue, the high turnover of residents in care facilities also makes it difficult to establish close and enduring bonds with peers. In addition, personal autonomy may not develop adequately in these settings due to the application of rigid rules and procedures that are not tailored to the idiosyncrasies of individual youths. A further problem is the high incidence of behavior problems and delinquency among residents, as well as the shortage of boys and girls whose adapted functioning acts a role model of positive coping (Ryan et al., 2008). Finally, high rates of physical and sexual abuse and peer bullying are known to occur in residential care (Attar-Schwartz & Khoury-Kassabri, 2015; Euser, Alink, Tharner, van IJzendoorn, & Bakermans-Kranenburg, 2013, 2014). It is in relation to all these aspects that AAP may promote psychosocial resilience in these young people, due, among other factors, to its ability to promote more secure attachments (Balluerka et al., 2014) and to equip these youth with the personal resources required to cope with the demands of their environment. Resilience in this context is conceptualized as a pattern of positive adaptation in the context of adversity that results from interactions between individuals and the different systems or developmental niches in which the subject is nested (Ungar, 2013; Wright, Masten, & Narayan, 2013).

The present study has a number of limitations. The first relates to the fact that random assignment could not be used to form the treatment and control groups, since the decision as to which children would receive treatment was made by the child protection services. Although this reduces the internal validity of the study, we did apply several matching criteria with the aim of creating comparable groups. The second limitation concerns the relatively small sample size, which reduces statistical power and the possibility to generalize the results obtained. We did,

however, seek to address this problem by calculating effect sizes rather than simply relying on null hypothesis significance tests. In addition, the short duration of the treatment (11 individual session and 23 group sessions) may also have limited the achievement of more ambitious goals. Finally, we should also mention the fact that members of the treatment group, but not members of the control group, made a number of overnight stays outside the residential center. We believe that future studies should consider the option of offering overnight stays to the control group as well, even though they do not receive AAP.

Despite these limitations, the results obtained allow us to affirm that AAP may be an effective way of promoting psychosocial competences and resilient behavior in youths in residential care who have suffered childhood trauma and who present mental health problems.

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