

Animal-assisted psychotherapy for young people with behavioural problems in residential care

Alexander Muela¹ | Nekane Balluerka^{2,4} | Nora Amiano³ | Miguel Angel Caldentey³ | Jone Aliri²

¹Department of Personality, Evaluation and Psychological Treatment, University of the Basque Country UPV/EHU, San Sebastián, Gipuzkoa, Spain

²Department of Social Psychology and Methodology of the Behavioural Sciences, University of the Basque Country UPV/EHU, San Sebastián, Spain

³ANOTHE, Association of Animal and Nature Assisted Therapy, Getxo, Bizkaia, Spain

⁴ Biodonostia Health Research Institute, Doctor Begiristain Kalea, San Sebastián, Gipuzkoa, Spain

Correspondence

Alexander Muela, Department of Personality, Evaluation and Psychological Treatment, University of the Basque Country UPV/EHU, Avenida de Tolosa, 70 20018 San Sebastián, Gipuzkoa, Spain.

Email: alexander.muela@ehu.eus

Abstract

The aim of this study was to evaluate the impact of an animal-assisted psychotherapy (AAP) programme on clinical symptoms, personal adjustment and adaptive skills in a group of adolescents in residential care who had experienced childhood trauma and who presented mental health problems and difficulties adapting to the care home environment. The 87 participants ($M_{age} = 15.17$, $SD = 1.53$) were divided into two groups: a treatment group (25 girls and 27 boys; $M_{age} = 15.00$, $SD = 1.55$) and a control group (9 girls and 26 boys; $M_{age} = 15.42$, $SD = 1.50$). The programme consisted of 34 sessions involving both group (23 sessions) and individual (11 sessions) AAP. The Behaviour Assessment System for Children (BASC) was used to evaluate clinical and adaptive dimensions of behaviour and personality. The results indicated that, in comparison with controls, the young people who took part in the AAP programme reported a significant improvement on two measures of internalising symptoms, namely depression and sense of inadequacy. Although no significant differences were observed in relation to externalising symptoms, the adolescents who received the AAP

programme showed improved social skills in terms of their ability to interact satisfactorily with peers and adults in the care home environment, as well as a more positive attitude towards teachers at school. These results suggest that AAP may be a promising treatment for young people who have experienced childhood trauma and who subsequently find it difficult to adapt to the residential care setting.

Key Practitioner Message:

- Many young people in residential care have psychological problems.
- Animal-assisted psychotherapy is a valuable resource in the field of clinical psychology.
- Animal-assisted psychotherapy may be a promising treatment for young people who present problems of adaptation in the residential care context.

Keywords: residential care, animal-assisted psychotherapy, mental health.

Many young people in residential care have psychological problems and difficulties adapting to the social, school and care home contexts (González-García et al., 2017; Muela, Balluerka, & Torres, 2013). It is therefore important that they are offered psychological treatment, as this has been shown to be associated with improved emotional wellbeing and better psychosocial adjustment among adolescents in care (Luke, Sinclair, Woolgar, & Sebba, 2014; James, Alemi, & Zepeda, 2013). However, a considerable number of these young people with mental health and behavioural problems either do not accept or drop out of traditional clinical treatments (Attar-Schwartz, 2013). These individuals generally have difficulties establishing attachments with care staff and therapists, and tend to show a strong resistance to exploring their past, high levels of emotional reactivity, cognitive rigidity and impulsive behaviour (Hughes, 2004). Consequently, there is a need to identify and promote alternative or complementary psychological treatments whose effectiveness has been demonstrated (Balluerka, Muela, Amiano, & Caldentey, 2015).

From the perspective of developmental psychopathology (Cicchetti & Toth, 2015) there are numerous factors that may influence a young person's adaptation while in care. Among the various socioemotional variables, research has focused especially on clinical symptoms, personal adjustment, adaptive skills and school adjustment.

Because young people in residential care present several risk factors for psychopathology (e.g. insecure attachment style, low self-esteem, poor social skills, risk behaviours, difficulty integrating at school, childhood trauma, etc.) they have a high probability of developing mental health problems and poor social adjustment in adolescence and adulthood (Muela, Torres, & Balluerka, 2012; Luke et al., 2014). In this context, various studies have documented the high prevalence of mental health problems among youth in residential care, ranging between 44% and 96% (Jozefiak et al., 2016). These rates are higher than those reported for adolescents under other forms of child protection (Ford, Vostanis, Meltzer, & Goodman, 2007) and those in the general population (Muela et al., 2012). Recently, research has also described a shift in the clinical picture presented by young people in care, with high comorbidity of anxiety, depressive and behavioural disorders alongside internalising symptoms (Jozefiak et al., 2016), as well as increased substance use (Del Valle, Sainero, & Bravo, 2015; Schmid, Goldbeck, Nuetzel, & Fegert, 2008) and a notable incidence of suicidal behaviour (Heneghan et al., 2013), the latter generating conflict, interpersonal problems, distress and insecurity in care facilities. Mental health problems thus impact negatively on the young person's adaptation to the residential context and are one of the main challenges facing care providers (Del Valle et al., 2015).

A number of studies, both with and without a comparison group, have indicated that these young people see themselves as having difficulties with personal adjustment, characterised by low self-esteem, poorer physical health, less life satisfaction, and impaired social relations and coping strategies (Jozefiak & Sønnichsen Kayed, 2015; Muela et al., 2013). In addition, both care facility staff and teachers report that youth in residential care show poor social skills and a lack of leadership that undermines their ability to interact satisfactorily with peers and adults at home, school and in the community (Muela et al., 2013). In comparison with their peers in the general population or those under other forms of child protection, young people in residential care show low socialisation (Carrasco-Ortiz, Rodríguez-Testal, & Hesse, 2001; Muela et al., 2013), high social withdrawal and delinquent behaviour (Carrasco-Ortiz, et al., 2001; Ryan, Marshall, Herz, & Hernandez, 2008).

Finally, with regard to school adjustment, several studies have shown that these young people have difficulties in both the academic and social spheres (see, for example, the review by Trout, Hagaman, Casey, Reid, & Epstein, 2008), and that these problems are greater than those experienced by their peers in other forms of care (Flynn, Tessier, & Coulombe, 2013; Muela et al., 2013). This poor school adjustment has been associated with

an increased likelihood that they will experience marginalisation and social exclusion (Flynn et al., 2013).

Animal-assisted interventions (AAI) are structured activities in which animals are used with the aim of achieving therapeutic benefits such as improved health and wellbeing. Used in both educational and healthcare settings, examples of these interventions include animal-assisted education (AAE), animal-assisted activities (AAA) and animal-assisted therapy (AAT) (Fine, 2015).

In the child protection context, a number of initiatives have sought to implement AAI with children and adolescents in residential care. However, although these interventions are generally thought to have psychosocial benefits for the children and adolescents involved, very few programmes have undergone a rigorous evaluation in this respect, and only a small number have sought to apply what may be regarded as animal-assisted psychotherapy (Balluerka et al., 2015).

Animal-assisted psychotherapy can be considered a specific form of AAT. Several meta-analyses (Nimer & Lundahl, 2007; Souter & Miller, 2007) and systematic reviews (Kamioka et al., 2014; Kendall et al., 2015; Maujean, Pepping, & Kendall, 2015; Rossetti & King, 2010) have concluded that AAT is a valuable resource in the field of clinical psychology and psychiatry. More specifically, evidence from randomised controlled trials indicates that AAT has a positive effect on a wide range of psychological and social factors in patients with psychological disorders (Maujean et al., 2015).

Animal-assisted psychotherapy (AAP) is a structured form of psychological treatment, applied by a clinical psychologist or psychiatrist with training in the use of AAT, in which one or more animals that have been especially trained, or which have particular characteristics, are used to facilitate the therapeutic process. As in other psychotherapeutic procedures, the main aim of AAP is to reduce or eliminate clinical symptoms and to prevent their reoccurrence.

The child psychotherapist, Boris Levinson (1969), made considerable efforts to promote the clinical application of AAP. Basing his ideas on the unique characteristics of human-pet relationships (Zilcha-Mano, Mikulincer, & Shaver 2011) he argued that the innate qualities of animals, such as dogs, cats and other pets can facilitate the benefits of the psychotherapeutic process. Animals show spontaneous behaviour, are always available for interaction, do not prejudge, offer unconditional love, are loyal and affectionate, do not generally threaten humans and possess multisensory qualities that make them ideally suited for interventions with children and adolescents who have suffered traumatic experiences

(Parish-Plass, 2013). These innate aspects can promote a safe and trusting therapeutic climate and favour the establishment of a positive bond between client and therapist (Lange, Cox, Bernert, & Jenkins, 2007). In addition, they encourage spontaneous communication and motivate the patient to engage with the therapeutic process, as well as reducing feelings of rejection and stigmatisation (Skeath, Jenkins, McCullough, Fine, & Berger, 2015), all of which are key elements of a good quality therapeutic relationship.

As regards the application of AAP in the residential care context, studies have found that it boosts psychosocial adaptation and encourages resilient behaviour (Bachi, Terkel, & Teichman, 2012; Balluerka et al., 2015), as well as promoting more secure attachment (Balluerka, Muela, Amiano, & Caldentey, 2014). However, it should be noted that very few studies have applied AAP with young people in residential care who also present mental health problems, and hence there is a need for further research that can provide clinical evidence of its effectiveness in this context.

With this in mind, the present study aimed to examine the impact of an AAP programme on clinical symptoms, personal adjustment and adaptive skills in a group of adolescents in residential care who had experienced childhood trauma and who presented mental health problems and difficulties of adaptation in the social, school and care home contexts. It was hypothesised that following their participation in the AAP programme, these young people would show a reduction in clinical symptoms and an improvement in both adaptive skills and personal and school adjustment.

Method

Participants

The initial sample comprised 95 young people (36 girls and 59 boys) aged between 12 and 17 years, all of whom were in residential care as wards of state (Provincial Government of Guipúzcoa, Spain). They all had mental health problems. A third of them ($n = 32$) had a diagnosis of anxiety-depressive disorder comorbid with a trauma- and stress-related disorder, and they required psychiatric medication (anxiolytics, antidepressants and, in some cases, antipsychotics). These young people had been assessed by psychiatrists and psychologists from the child and adolescent mental health team in Guipúzcoa (Spain). The mental health status of the remaining participants was assessed by staff of the corresponding residential care facilities using a self-report instrument (Youth Self-Report, YSR; Achenbach & Rescorla, 2001) and behavioural observation in the care home context (Child Behaviour Checklist, CBCL; Achenbach & Rescorla, 2001). These assessments revealed high levels of both

internalising and externalising symptoms. All participants also presented severe difficulties of adaptation to the residential care setting.

The 95 participants were divided into two groups: a treatment group ($n = 60$) and a control group ($n = 35$). As random assignment could not be used to form these groups, we sought to ensure that they were comparable by matching them on the following criteria: difficulties adapting to residential care, similar mental health problems, place of origin (Spanish nationals or unaccompanied asylum seekers), subject to the same residential care programme (basic or specialised), similar age (difference of no more than 36 months) and gender. The young people in both groups (treatment and control) received individual psychotherapy before, during and after the AAP programme. The majority (51.58%) received cognitive-behavioural therapy, while the remainder received either humanistic-experiential psychotherapy (21.05%), individual systemic therapy (16.84%) or focal psychodynamic therapy (10.53%). In order to determine whether the sample distribution of the treatment and control groups differed according to the type of psychotherapy received and whether or not pharmacological therapy was prescribed we calculated the χ^2 statistic. The values obtained for the two comparisons ($\chi^2 (3) = 0.344$; $p = .952$ and $\chi^2 (1) = 0.009$; $p = .925$, respectively) were not statistically significant. It should also be noted that with the exception of the AAP programme, adolescents in the control group took part in the same activities and followed the same routines as their peers in the treatment group. Specifically, the general running of the care facilities in which the intervention was implemented involved a series of everyday routines related to basic rules of communal life, as well as regular attendance at both school and out-of-school activities.

The inclusion criteria were children aged between 12 and 17 years old in residential care and presenting mental health problems and difficulties adapting to the care facility. Exclusion criteria were serious antisocial disorder with aggression toward people or animals, psychotic disorders, substance addictions and aversion to animals. Fulfilment of these criteria was verified by a member of the research team.

The AAP programme was initially applied with a group of six participants during the spring of 2010. During the following year, it was applied on two separate occasions with groups of eight and seven young people, respectively. In 2012, a further two groups of six participants each received the intervention. The sixth ($n = 4$) and seventh ($n = 6$) applications took place in 2013 and 2014, respectively. Finally, in 2015 and 2016 the programme was implemented with groups comprising eight and nine participants, respectively. Of the 95 young people included in the initial sample, two did not complete the AAP programme because they were transferred to special treatment care centres, five dropped out and one was

expelled for refusing to accept the rules established for participation. The final sample therefore comprised 87 young people ($M_{\text{age}} = 15.17$, $SD = 1.53$) divided into two groups: a treatment group (25 girls and 27 boys; $M_{\text{age}} = 15.00$, $SD = 1.55$) and a control group (9 girls and 26 boys; $M_{\text{age}} = 15.42$, $SD = 1.50$). With regard to origin, 63.6% were from the Basque Country (Spain) and 36.4% were unaccompanied asylum seekers from northern Africa. The latter had a sufficient command of Spanish to enable them to participate in the study. In terms of their residential care, 64.8% were involved in a basic care programme and 35.2% in a specialised programme. The basic programme was designed for children and adolescents aged between 4 and 18 years who were living in residential care units housing a maximum of 10 young people. The specialised programme was a specific resource targeted at adolescents over the age of 13 who, due to their disruptive behaviour, could not be managed under the basic programme. No more than 12 adolescents lived in any of the care units. Regarding educational level, 36.4% were enrolled in compulsory secondary education, 53.4% were attending vocational training courses and 10.2% were not studying.

Instruments

Spanish version of the Behaviour 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 assess a wide array of behaviours that represent both problems and strengths, including internalising or externalising problems, issues at school, and adaptive skills. It includes both a Parent Rating Scale (PRS) and a Self-Report of Personality (SRP). The PRS can be used to measure both adaptive and problem behaviours in the community and residential settings, while the SRP enables the young person to describe his or her emotions and self-perceptions.

The PRS, which in the present study was completed by residential care staff, includes descriptors of behaviours whose frequency must be rated on a four-point scale (ranging from 'Never' to 'Almost always'). The 137 items are distributed across 18 scales: 3 control scales and 15 scales grouped into clinical, adaptive and composite scales. This instrument takes approximately 10-20 minutes to complete. The SRP consists of 185 statements that require a response of 'True' or 'False', 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.

The two BASC scales (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 = 0.81 and 0.76 for the PRS and SRP, respectively). The

psychometric properties of the Spanish version of the BASC (analysis of factor structure, criterion validity and 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 on the clinical scales of both the SRP and PRS: Atypicality, Locus of Control, Somatisation, Social Stress, Anxiety, Depression, Sensation Seeking and Sense of Inadequacy from the SRP, and Aggression, Hyperactivity, Conduct Problems, Atypicality, Depression, Anxiety, Withdrawal and Somatisation from the PRS.

The measure of adaptive skills was the score obtained on the Social Skills and Leadership scales of the PRS. The former focuses on interpersonal aspects of social adaptation, while the latter assesses a range of skills related to successful adaptation to the community and school.

Personal adjustment was determined based on the T score obtained on the Interpersonal Relations, Relations with Parents, Self-Reliance and Self-Esteem scales of the SRP.

As a measure of school adjustment we used the T score obtained on the Attitude to School and Attitude to Teachers scales of the SRP.

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 and exclusion criteria had been checked, the child protection services assigned the 95 participants to the treatment and control groups, taking into account the previously specified matching criteria. The PRS and SRP were then completed by care staff and the youths, respectively.

The second phase involved implementation of the AAP programme 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 programme 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 programme the following psychotherapeutic models were taken into consideration: psychotherapy for young victims of childhood trauma (Cloitre, Cohen, & Koenen, 2006), attachment-based psychotherapy (Bowlby, 1988) and animal-assisted psychotherapy (Parish-Plass, 2013). The treatment consisted of six modules

(see Table 1): (1) Establishing a secure base, (2) Identification, understanding and verbalisation of emotions, (3) Emotion regulation, (4) Interpersonal relationships, (5) Self-esteem and self-competence, and (6) Close.

Insert Table 1 here

The first module comprised six individual and four group sessions. Its purpose was to establish the therapeutic setting, build a positive bond with the therapist and establish a secure base from which to explore the traumatic experiences and current problems of the young people involved. The second module, called 'Identification, understanding and verbalisation of emotions', comprised four group sessions and one individual session. The main aim here was to encourage the recognition and expression of both positive and negative emotions. The third module also consisted of four group sessions and one individual session. Its main aim was to develop the young person's skills of emotion regulation, as well as his or her social skills in relation to coping and problem solving. The aim of the fourth module was to provide restorative experiences of good treatment, to promote resilience and to improve interpersonal relationships. Module 5 comprised two group sessions and one individual session and its aim was to improve self-esteem and enhance the sense of self-worth. Finally, module six consisted of one individual and two group sessions, the aim of which was to bring the therapeutic process to a close.

All the animals used in this programme were chosen by an ethologist. In order to minimise as far as possible the risks to participants, two animals (one horse and a dog) were excluded for showing unpredictable and aggressive behaviour 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 programme. 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 programme 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 behaviour (such as changes in diet, in their exploratory, play, and interactive behaviour, or in their behaviour 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 wellbeing of participants, all the animals were subject to prophylactic veterinary treatments prior to the AAP programme (vaccinations and external and internal deworming to avoid zoonotic risks). In addition, all the interactions were supervised by the intervention staff.

In the third and final phase of the research, all the participants and their care staff were asked to complete the post-test measures (PRS and SRP) two weeks after the programme ended. As care staff at the residential units did not know which group (treatment or control) they were evaluating, the objectivity of the assessment was ensured.

Data Analysis

Data were analysed using SPSS v24.0 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 pre- and post-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. 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, Vergara, & Arnau, 2009).

Results

Table 2 shows the change in scores (post- vs. pre-test), Student's *t* values, statistical significance and effect sizes for clinical symptoms self-rated by the young person (SRP).

Insert Table 2 here

It can be seen in the table that the treatment and control groups differed significantly with respect to the change in score (post- vs. pre-test) on two clinical variables, depression and sense of inadequacy. The corresponding effect sizes were moderate, indicating that the treatment group showed a reduction in self-rated symptoms of depression and sense of inadequacy following the intervention. No statistically significant differences were found on the other scales and the effect sizes for the mean differences were small.

Table 3 shows the change in scores (post- vs. pre-test), Student's *t* values, statistical significance and effect sizes for clinical symptoms rated by residential care staff (PRS).

Insert Table 3 here

The results show that the treatment and control groups differed significantly with respect to the change in score (post- vs. pre-test) on the Somatisation scale. The corresponding effect size was moderate, indicating that somatic complaints decreased in frequency among the treatment group following the intervention. No statistically significant differences were found on the other scales and the effect sizes for the mean differences were small.

Table 4 shows the change in scores (post- vs. pre-test), Student's *t* values, statistical significance and effect sizes for personal adjustment, adaptive skills and school maladjustment in both the treatment and control groups.

Insert Table 4 here

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

By contrast, the ratings given by residential care staff on the adaptive skills scales of the PRS revealed statistically significant differences between the treatment and control groups for Social Skills, the effect size for this difference being moderate. The difference between the treatment and control groups on the Leadership subscale, as rated by residential care staff, was not, however, statistically significant and the effect size associated with this mean difference was small. These results indicate that the treatment group had better social skills but not greater leadership than the control group.

Finally, the results in Table 4 also show a significant difference between the treatment and control groups with regard to the change in score on the self-rated scale referring to a negative Attitude to Teachers. The corresponding effect size was moderate, indicating that young people in the treatment group had a more positive attitude towards teachers following the intervention.

Discussion

The results indicated that, in comparison with controls, the young people who took part in the AAP programme reported a significant reduction on two measures of internalising

symptoms, namely depression and sense of inadequacy. In other words, these young people reported less intense feelings of sadness and discouragement, and an enhanced belief in their ability to achieve their life goals. In addition, the residential care staff considered that among the young people who had participated in the AAP programme there had been a reduction in somatic complaints of the kind that had previously caused them distress or interfered with their normal daily life. In this context, it is important to note that research with adolescents has documented a positive association between symptoms of depression and a tendency towards suicidal ideation, self-harm behaviour and attempted (or completed) suicide (May & Klonsky, 2016; Vander Stoep et al., 2011), especially among young people who have experienced childhood trauma (Stewart et al., 2015). Indeed, suicide is one of the main causes of death in adolescence (Horwitz, Czyz, & King, 2015) and it is an issue of particular concern for child protection services, due to the high rates of suicide among adolescents in residential care who present symptoms of depression alongside behavioural problems (Anderson, 2011; Del Valle et al., 2015). Given that the co-occurrence of depression and conduct problems in adolescence is known to increase the risk of suicide (Horwitz et al., 2015; Vander Stoep et al., 2011), the results of this study suggest that AAP may be a useful intervention for young people in residential care who present problems of adaptation.

Bearing in mind the heterogeneous nature of depression we believe that the reduction in depressive symptoms may be attributed to certain factors associated with the clinical application of attachment theory in the framework of AAP for young people who have experienced childhood trauma. First, an insecure attachment style is known to be strongly associated with symptoms of depression in adolescents who have experienced stressful life events (Allen, Porter, MacFarland, McElhaney, & Marsh, 2007; Pinquart, Feußner, & Ahnert, 2013). Among the various factors that may mediate the relationship between stressful life events and depression, secure attachments would appear to play an important role, since they are closely linked to feelings of self-confidence, stability and self-esteem in the young person, as well as to the ability to regulate emotion in social interactions (Allen & Miga, 2010; Hankin, 2006). Within this framework, attachment-based treatment programmes have been shown to be effective at reducing depressive symptoms and suicidal ideation among adolescents (Ewing, Diamond, & Levy, 2015; Kobak & Kerig, 2015). This leads us to make two points regarding the therapeutic approach used in the present study: first, it is derived primarily from attachment-based interventions, and second, the same approach was used with a similar population in the study by Balluerka et al. (2014), who found that AAP improved the security of attachments. It is therefore reasonable to assume that our AAP programme had a positive impact on the security of attachments among these adolescents, which in turn

favoured a reduction in depressive symptoms, although this hypothesis would need to be corroborated in future studies.

The picture is somewhat different in relation to anxiety. Although adolescents in the treatment group showed a greater reduction in anxiety symptoms than did their peers in the control group the differences were smaller than expected (58% of young people in the AAP programme achieved a rating of anxiety that was better than the average in the control group). Given the results of recent evidence-based treatment programmes that have highlighted the importance of including unified and transdiagnostic interventions for comorbid anxiety and depressive disorders (Farchione et al., 2012) we believe that the therapeutic programme used in the present study could be improved by incorporating standard cognitive-behavioural techniques such as exposure or skills training to counter cognitive and behavioural avoidance (Barlow et al., 2010).

With respect to the reports of care staff regarding externalising symptoms, the results revealed no significant differences between the treatment and control groups, although the former did show less aggression and fewer conduct problems following the AAP programme. We conclude, therefore, that the self-reported improvement in internalising symptoms was not clearly reflected in a concomitant improvement in the wider residential context, at least not according to the reports of care staff.

The results also show that, in comparison with controls, those young people who took part in the AAP programme showed improved adaptive skills. Specifically, care staff considered that these adolescents now had better social skills when it came to interacting satisfactorily with peers and adults in the care home environment. A number of studies have indicated that a positive adolescent-staff relationship is a key factor that predicts better adaptation by the young person to the residential care environment (Harder, Knorth, & Kalverboer, 2013). Although the majority of studies have focused more on the care and communication skills of staff (Harder et al., 2013), we believe that the adaptive skills of adolescents themselves also play an important role with respect to the quality of this relationship. In our view, if adolescents have the social skills required to express their needs and wishes in an appropriate way, and are able to ask for things, make suggestions and defend their point of view, then this will have a positive impact on their relationship with both staff and peers in the care home environment.

In terms of the factors that might have contributed to the ability of the AAP programme to improve the adolescents' social skills, mention should be made of the importance that the capacity for emotional regulation has in the treatment of young people who have experienced traumatic events. Emotion regulation is crucial both for the

development of adaptive behaviour and for preventing stressful levels of negative emotions (Cicchetti & Toth, 2015). In this regard, a recent study by Moreno-Manso, García-Baamonde, Guerrero-Barona, and Pozueco-Romero (2017) found a close association between the social skills and emotional competence of young people in residential care who had suffered maltreatment. Specifically, those with better social skills were also more competent at understanding and regulating their emotions, and vice-versa.

Our results also indicated that, in comparison with controls, the young people who took part in the AAP programme showed small improvements on some dimensions of personal adjustment (interpersonal relationships and self-esteem). However, no differences were found with respect to self-confidence or relationships with parents. With respect to the latter, it should be noted that most young people in residential care have experienced maltreatment at the hands of a parent, and the small numbers who maintain contact with their parents generally have a very poor relationship with them. Consequently, one would not expect to observe an improvement in the relationship with parents.

Finally, as regards adjustment to the school context, participation in the programme was associated with a significant improvement in attitudes towards teachers. In other studies conducted in residential care settings, a more positive attitude towards teachers has been linked to a reduction in conduct problems at school and increased motivation and attention in the classroom (Balluerka et al., 2015; Bryderup & Trentel, 2013). We believe that these improvements in the school context are closely related to the improved social skills achieved as a result of the AAP programme. Balluerka et al. (2015), who applied the same AAP programme to a group of young people in residential care, found that the teachers they interviewed associated improved school adjustment with the progress that the young people in the treatment group had made in terms of social skills, both those related to interacting with classmates and teachers, and those required for working in groups.

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 of generalising the results obtained. We did, however, seek to address this problem by calculating effect sizes rather than simply relying on null hypothesis significance tests. Another task for future studies would be to extend the assessment of school adjustment by including teachers' observations of the young people's behaviour, rather than rely solely on self-reports as we did here. It is

also worth considering whether the relatively short duration of the treatment (11 individual and 23 group sessions) may have limited the possibility of achieving more ambitious goals. A further point to bear in mind is that young people in residential care who have mental health problems often receive different psychotherapeutic and pharmacological treatments. Future studies should therefore examine more specifically whether the type of treatment received has an influence on the outcome variables considered here, although doing so would require a larger sample size than that used in the present study.

Finally, it should be noted that the nature of the AAP programme meant that young people in the treatment group made a number of overnight stays outside the residential care unit, which was not the case for their peers in the control group. Future studies should therefore 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 suggest that AAP may be a promising psychological treatment for young people in residential care, specifically in terms of reducing their internalising symptoms of depression, somatisation and sense of inadequacy, and for improving their adaptive skills. As noted in the introduction, mental health problems have a negative impact on the ability of young people to adapt to the residential care environment, and they are one of the major challenges facing care providers (Del Valle et al., 2015). Residential care staff, who generally come from a social services background, have considerable experience when it comes to promoting positive interpersonal relationships and creating a safe and caring environment that seeks to meet the developmental needs of young people, but they are not trained to deal with severe mental health problems, hence the need for effective, evidence-based psychological treatments in this context. Ways of addressing these gaps in service provision have recently been the subject of an international initiative that seeks to promote what is referred to as therapeutic residential care (Whittaker, Del Valle, & Holmes, 2015). In this respect, the results of the present study suggest that AAP could be a useful addition to psychological treatment programmes for young people in residential care.

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Table 1. Summary of the animal-assisted psychotherapy programme.

Week	Session	Type	Module	Objectives
	1	Individual		
1	2	Group		
	3	Group		<ul style="list-style-type: none"> To establish the therapeutic setting
	4	Individual		
2	5	Individual	Establishing a secure base	<ul style="list-style-type: none"> To build a positive therapeutic alliance
	6	Group		
	7	Individual		<ul style="list-style-type: none"> To establish a secure base for the intervention
3	8	Individual		
	9	Group		
	10	Individual		
4	11	Group	Identification, understanding and verbalisation of emotions	
	12	Group		<ul style="list-style-type: none"> To promote recognition of positive and negative emotions
	13	Group		
5	14	Group		
	15	Individual		
6	16	Group		
	17	Group		<ul style="list-style-type: none"> To improve the skills of emotion regulation and social coping
	18	Individual	Emotion regulation	
7	19	Group		
	20	Group		
	21	Individual		
8	22	Group		
	23	Group		<ul style="list-style-type: none"> To provide restorative experiences of good treatment
9	24	Group	Interpersonal relationships	<ul style="list-style-type: none"> To promote resilience
	25	Group		<ul style="list-style-type: none"> To improve relationships
	26	Group		
10	27	Group		
	28	Group		
	29	Individual	Self-esteem and self-competence	<ul style="list-style-type: none"> To improve self-esteem and promote a sense of personal worth
11	30	Group		
	31	Group		
	32	Individual		
12	33	Group	Close	<ul style="list-style-type: none"> To conclude the treatment process
	34	Group		

Table 2. Change in scores (difference between pre- and post-test), Student's *t* values, statistical significance (*p*) and effect sizes (Cohen's *d*) for clinical symptoms self-rated by the young person (SRP) in the treatment and control groups.

Variable	Group	Change in score	<i>N</i>	<i>t</i>	df	<i>p</i>	Cohen's <i>d</i>
Atypicality	Treatment group	-4.17	52	-1.092	85	.278	0.24
	Control group	-1.71	35				
Locus of Control	Treatment group	-3.33	52	-0.364	85	.717	0.08
	Control group	-2.54	35				
Somatisation	Treatment group	-2.96	52	-0.966	85	.337	0.21
	Control group	-0.74	35				
Social Stress	Treatment group	-2.15	52	-0.218	85	.828	0.05
	Control group	-1.71	35				
Anxiety	Treatment group	-0.29	52	0.934	85	.353	0.20
	Control group	-1.91	35				
Depression	Treatment group	-6.75	52	-2.184	85	.032*	0.48
	Control group	-1.37	35				
Sensation	Treatment group	0.42	52	0.572	85	.569	0.13
Seeking	Control group	-0.63	35				
Sense of Inadequacy	Treatment group	-5.29	52	-2.512	85	.014*	0.55
	Control group	0.06	35				

Note: Statistically significant effects are indicated with asterisk.

Table 3. Change in scores (difference between pre- and post-test), Student's *t* values, statistical significance (*p*) and effect sizes (Cohen's *d*) for clinical symptoms rated by residential care staff (PRS) in the treatment and control groups.

Variable	Group	Change in score	<i>N</i>	<i>t</i>	df	<i>p</i>	Cohen's <i>d</i>
Aggression	Treatment group	-2.08	38	-1.208	65	.232	0.30
	Control group	3.41	29				
Hyperactivity	Treatment group	-2.68	38	-0.421	65	.675	0.10
	Control group	-1.31	29				
Conduct Problems	Treatment group	-1.08	38	-0.412	65	.681	0.10
	Control group	0.90	29				
Atypicality	Treatment group	-2.24	38	0.365	65	.716	0.09
	Control group	-4.34	29				
Depression	Treatment group	-3.66	38	-0.117	65	.907	0.03
	Control group	-3.34	29				
Anxiety	Treatment group	-0.55	38	0.833	65	.408	0.21
	Control group	-2.28	29				
Withdrawal	Treatment group	-0.24	38	0.204	65	.839	0.05
	Control group	-0.83	29				
Somatisation	Treatment group	-6.39	38	-2.328	65	.023*	0.57
	Control group	1.24	29				

Note: Statistically significant effects are indicated with asterisk.

Table 4. Change in scores (difference between pre- and post-test), Student's *t* values, statistical significance (*p*) and effect sizes (Cohen's *d*) for personal adjustment, adaptive skills and school maladjustment in the treatment and control groups

Variable	Group	Change in score	<i>N</i>	<i>t</i>	df	<i>P</i>	Cohen's <i>d</i>
Interpersonal Relations	Treatment group	4.33	52	1.162	85	.248	0.25
	Control group	1.63	35				
Relations with Parents	Treatment group	2.21	52	0.630	85	.531	0.14
	Control group	0.26	35				
Self-Reliance	Treatment group	2.02	52	0.537	85	.593	0.13
	Control group	0.91	35				
Self-Esteem	Treatment group	4.48	52	1.122	85	.265	0.25
	Control group	2.03	35				
Social Skills	Treatment group	4.79	38	2.130	65	.037*	0.53
	Control group	-0.55	29				
Leadership	Treatment group	2.82	38	0.554	65	.582	0.14
	Control group	1.62	29				
Attitude to School (negative)	Treatment group	-2.29	52	-0.014	85	.989	0.00
	Control group	-2.26	35				
Attitude to Teachers (negative)	Treatment group	-4.60	52	-2.582	85	.012*	0.56
	Control group	1.91	35				

Note: Statistically significant effects are indicated with asterisk.