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Influence of Animal-Assisted Therapy (AAT) on the Attachment Representations of Youth in Residential Care

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Abstract

This study evaluates the influence of Animal-Assisted Therapy (AAT) on the attachment representations of a group of adolescents in residential care who suffered traumatic childhood experiences and exhibited mental health problems. The participants of this study were 46 teenagers (mean age= 15.41, *SD*= 1.65) divided into two groups: the intervention group of 21 youths (8 females and 13 males) (mean age = 15.19, *SD*= 1.69) and the control group of 25 (6 females and 19 males) (mean age= 15.60, *SD*= 1.63). The results of this research showed that the teenagers displayed a more secure attachment after undergoing AAT. Furthermore, in comparison with the control group, the intervention group showed higher scores in the secure attachment dimension and lower scores in the parental interference dimension, which is associated with preoccupied attachment. There were no differences in the other dimensions of attachment assessed. These results help to empirically validate AAT as an effective therapy for teenagers who have suffered childhood trauma and have mental health problems.

Key words: Residential care; Attachment; Animal-assisted therapy; Adolescence.

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1. Introduction

Animal-assisted therapy is a therapeutic intervention carried out by a team of health-care professionals, in which the participation of animals selected based on their therapeutic potential constitutes a fundamental part of the treatment of a person or a group of people (Delta Society, 1996).

This type of treatment is based on the improvements in physical and mental health gained as a result of the secure emotional connections established through the multiple interactions between the therapist, the patient and the animals (Barlow, Hutchinson, Newton, Grover, & Ward, 2012; Marcus et al., 2013; Nimer & Lundahl, 2007; Parish-Plass, 2008; Tsai, Friedman, & Thomas, 2010; Zilcha-Mano, Mikulincer, & Shaver, 2011b). Starting with the pioneering studies carried out by the child psychotherapist B.M. Levinson (1969), who described the benefits of the presence of domestic animals in the psychotherapy of children and teenagers, there has been a wealth of studies about the ways in which animals can enrich the therapeutic process and maximize its benefits (Kruger & Serpell, 2010). However, despite the long tradition of the use of the human-animal connection as a therapeutic instrument (Serpell, 2010), and despite the interest this type of intervention has awakened in the field of mental health, AAT is still considered more as a complementary technique than as a psychotherapeutic technique of proven effectiveness and validity (Kruger & Serpell, 2010).

Several authors (Beck & Madresh, 2008; Geist, 2011; Kurdek, 2008 and 2009; Miltiades & Shearer, 2011; Zilcha-Mano et al., 2011a and b) affirm that one of the keys to the success of AAT is that the human-animal connection meets the requirements of a bond of attachment. Bowlby (1969, 1973, 1980), the founder of attachment theory, described attachment as an emotional relationship characterized by closeness-seeking behavior, intimate interaction and a reference base and support in relationships with the physical and social worlds. Different studies carried out with owners of domestic animals have revealed that the owners feel that they have established close emotional ties with their pets, whether they search for close ties or enjoy close interaction (Archer & Ireland, 2011; Beck & Madresh, 2008; Bonas, McNichols, & Collis, 2000; Kurdek, 2008). In addition, they feel like the animals provide them with security and constitute a source of emotional support and wellbeing (Archer & Ireland, 2011; Bonas et al.,

2000; Kurdek, 2008; Zilcha-Mano et al., 2012), as well as a port of safe haven, security and relief in difficult times (Beck & Madresh, 2008; Kurdek, 2009; Zilcha-Mano et al., 2012). They also feel a strong desire to care for and protect their animals (Archer and Ireland 2011). It also frequently happens that the loss of an animal generates feelings of anguish, which generally entails the start of the mourning process (Archer & Ireland, 2011; Hunt, Al-Awadi, & Johnson, 2008; Kwong & Bartholomew, 2011; Stallones, 1994; Wrobel & Dye, 2003). Researchers have even found some connections between adult attachment style and the attachment style formed in the human-animal bond (Zilcha-Mano et al., 2011a).

However, experts also find important differences between the emotional bond established between a pet and its owner, and the bond that develops in a therapeutic space between a patient and an animal. In the first case, the bond is a complete emotional bond (Zilcha-Mano et al., 2011b). However, in the second case the strength of the bond is more questionable as the relationship with the animal is restricted to interaction in therapeutic sessions, making it difficult for patients to establish the same type of bond with regards to its consistency and magnitude. For this reason, it is more reasonable to think that in AAT, the animal principally fits the role of co-therapist (Mallon, 1994; Melson & Fine, 2010), actively collaborating to create a therapeutic space of trust, facilitating the therapeutic alliance and promoting a secure patient-therapist relationship, essential elements in a high-quality therapeutic process. According to Levinson (1969), animals possess attributes that make them unique for this task, namely, 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 characteristics help the patient's motivation during the therapeutic process (Lange, Cox, Bernert, & Jenkins, 2006/2007), help overcome defense mechanisms (Oren & Parish-Plass, 2013) and increase his/her ability to focus and pay attention during the sessions (Martin & Farnum, 2002). Likewise, they reduce feelings of rejection or stigmatization (Tedeschi, Fine, & Helgeson, 2010) and help the therapy focus more on one's abilities than on personal limitations (Tedeschi et al., 2010).

Children and adolescents who find themselves under any measure of substitute care, or who have been under protection during childhood, due to traumatic experiences (for example, child abuse) that they have undergone and also to certain psychopathological risk factors (such as emotional insecurity, low self-esteem, low social skills, risky behavior, or low school integration), have a high probability of developing mental health problems and low psychosocial adjustment in childhood, adolescence and adulthood (Attar-Schwartz, 2008; Li & Godinet, 2014; Moreno, García-Baamonde, Blázquez, & Guerrero, 2011; Muela, Balluerka, & Torres, 2013; Muela, Torres, & Balluerka, 2012; Rutter, 2000; Van Vugt, Lanctôt, Paquette, Collin-Vézima, & Lemieux, 2014). Therefore, the clinical application of the theory of attachment is particularly relevant in a residential care facility, as most of the adolescents under this protective measure have a history of experiences with negative attachment and frustration with their parents and other adult figures, and enter the residential centers with types of extremely insecure attachments, mainly of the disorganized type (Bailey, Moran, & Pederson, 2007; Zegers, Schuengel, Van Ijzendoorn, & Janssens, 2006, 2008). Due to being deprived of affection, the majority of these adolescents believe that they will never find help or support they can trust. Therefore, for these youth, the fact of establishing a bond of secure attachment during the residential stay, either with the educator of reference or in the therapeutic context, constitutes a proper emotional experience and an opportunity to build adaptive internal operative models (Hawkins-Rodgers, 2007; Maier, 1987; Moore, Moretti, & Holland, 1998; Schuengel & Van IJzendoorn, 2001).

However, trying to provide a secure base for these youth is a complicated task. Adolescents who have suffered serious child maltreatment usually demonstrate resistance in establishing attachment bonds with educators and therapists, because they have never been able to trust anyone before (Hawkins-Rodgers, 2007; Howe & Fearnley, 1999; Parish-Plass, 2008). However, many studies have found that institutionalized adolescents who establish a relationship of secure attachment with educators show better adjustment during the duration of their stay in the residential care (Schuengel & Van IJzendoorn, 2001). Moreover, they present lower levels of aggression, depression and behavioral problems (Born, Chevalier,

& Humblet, 1997; Fristsch & Goodrich, 1990; Shealy, 1995) and they experience positive changes in their attachment representations (Mikulincer & Shaver, 2007).

Currently, interventions that use AAT, both in its therapeutic and educational aspects, are widely used in various areas of health and education with children, adolescents, adults and the elderly. For example, it is applied in interventions with children and adolescents with learning problems and autism, people with serious diseases (HIV, multiple sclerosis, cancer, or those in palliative care), adolescents and adults with psychiatric problems, and people with disabilities, aphasia and language problems (Macauley, 2008; Skeath, Fine, & Berger, 2010; Velde, Cipriani, & Fisher, 2005). However, despite its potential to facilitate secure-attachment relationships during the therapeutic process (Parish-Plass, 2008) and to improve the mental health of children and youths who have suffered childhood traumas (Hamama et al., 2011; Schultz, Remick-Barlow, & Robbins, 2007), AAT does not have a big influence in the area of residential care. In fact, very few intervention programs have been subjected to rigorous evaluation in this field. Noteworthy among the proposals of which we are aware is the *Green Chimneys* program, which since 1970 has used AAT with children and adolescents with a significant history of child maltreatment, behavioral problems, and social, emotional, and school difficulties (Mallon, Ross, Klee, & Ross, 2010). Mention should likewise be made of the American Humane Association's recognition of the importance of animal interventions in residential settings through its *Therapy Animals Supporting Kids* (TASK) program, as well as of the innovative project *Bee Kind Garden* (Worsham & Goodvin, 2007). There are also interventions focusing exclusively on equine-facilitated psychotherapy (EFP) for youth at-risk or in residential care settings, for example, the program *Taking the Reins: Adaptive Horseback Riding for At-Risk Youth*, developed by the Healing Reins Therapeutic Riding Center. In the same context, the study by Bachi, Terkel, and Teichman (2012) found that EFP led to positive changes in the self-image, self-control, trust, and general life satisfaction of participants.

These proposals have shown that for these young people, the presence of animals in the therapeutic environment is a catalyzing element in their social interaction, through which the therapy becomes less threatening, and the therapeutic alliance and spontaneous communication are improved

(Bachi et al., 2012; Parish-Plass, 2008). However, as Nimer & Lundahl (2007) conclude in their meta-analysis carried out to examine the validity of AAT, in spite of having demonstrated its effectiveness, more research is required to examine in which situations, which populations and under which conditions AAT can be beneficial for patients' health.

In this context, the goal of this study is rooted in examining the influence of AAT with regards to the attachment representations in a group of adolescents who have suffered traumatic childhood experiences and who have been placed in a residential care facility. It is hoped that after undergoing ATT, the youths will show changes in their attachment representations. Specifically, we expect a better score in the dimension of attachment security and a lower score in dimensions of insecure attachment. Moreover, it is hoped that such young people will obtain a better score than young people not undergoing similar treatment, in the dimensions of attachment security, and a lower score in the areas of insecure attachment.

2. Method

2.1. Participants

This research started with 58 youths (19 females and 39 males) ranging in age from 12 to 17 years old. The participants were under protective residential childcare, and are wards of the competent public administration (the provincial government of Guipúzcoa, Spain). They all presented mental health problems (such as behavior disorders or depressive anxiety disorders) and one-third was on psychiatric medication. They also presented severe adaptation difficulties to the residential care facility.

Out of 58 initial participants, two did not finish the intervention because they were moved to special treatment care centers, another one decided to drop out, a fourth one was expelled for not following the established rules, and eight other subjects didn’t complete the post-test, citing that it upset them or was too taxing to reflect on the questions.

The final research sample consisted of 46 adolescents (mean age=15.41, *SD*= 1.65). The 63% of the adolescents were from the Basque Country and 37% were Foreign Unaccompanied Minors (FUM) from the North of Africa. Furthermore, 74% became from a basic residential care program, and 26% from

a specialized care program. Regarding educational level, 39% were studying Compulsory Secondary Education, 52% were attending to Vocational Training courses, and 9% were not studying. The sample was divided into two groups. The intervention group comprised 21 youths (8 females and 13 males; mean age=15.19, *SD*=1.69), while the remaining 25 participants (6 females and 19 males; mean age=15.60, *SD*=1.63) formed the control group. Although random assignment could not be used to form groups, we did seek to make the groups comparable by applying the following matching criteria: adolescents who presented adaptive difficulties in the residential environment; who presented similar mental health problems; who had the same origin (native or foreign unaccompanied minor); and who followed the same residential care program (basic or specialized). It should also be noted that subjects in the control group performed the same routines as the treatment group, except with regard to AAT. In this respect, the general running of the residential care setting included the assumption of everyday routines in basic living standards and regular attendance at school and other after-school activities.

2.2. Instruments

Reduced version of the CaMir questionnaire for the evaluation of attachment (CaMir-R; Balluerka, Lacasa, Gorostiaga, Muela, & Pierrehumbert, 2011). In order to assess attachment, a reduced version of the CaMir questionnaire was used (CaMir-R; Balluerka et al., 2011). CaMir measures subjects' mental representations of attachment and their views about family functioning. This reduced version comprises 32 items that have to be answered following a 5-point Likert-type scale (1=totally in disagreement, 5=totally in agreement). Its application time is approximately 15-20 minutes, and it includes five attachment factors and two factors related to views about family functioning. "Security: availability and support from the attachment figures" factors (seven items) refer to the perception of having been loved by the attachment figures, trusting them, and knowing that the attachment figures were available when needed. "Family concern" factor (six items) refers to an intense anxiety perception when separated from the loved ones and to an excessive concern for the attachment figures. "Parental interference" factor (four items) refers to memories of having been overprotected, fearful, and worried about the possibility of

being abandoned during childhood. “Self-sufficiency and resentment toward parents” factor (four items) describes the rejection of one’s dependency and emotional reciprocity feelings, and the resentment toward the loved ones. “Childhood trauma” factor (five items) refers to memories of having suffered lack of availability, violence and threats from parents during childhood. Dimension 1 refers to secure attachment, dimensions 2 and 3 to preoccupied attachment, dimension 4 to avoidant attachment, and dimension 5 to disorganized attachment.

Finally, “value of parental authority” and “parental permissiveness” factors, with three items each, refer to mental representations of the family structure. These two factors were not included in the present study.

The CaMir-R showed adequate internal consistency in a large sample with similar characteristics to the sample used in the present study. Cronbach's α values for the five attachment factors ranged from 0.60 to 0.85, which can be considered acceptable values for a scale with fewer than eight items. On the other hand, test-retest correlations were higher than 0.56 in all factors. CaMir-R also has adequate factorial, convergent, and decision validities (Balluerka et al., 2011). In the present sample, Cronbach's α values ranged from 0.63 to 0.83 except for the scales including only four items, “parental interference” and “self-sufficiency and resentment toward parents”, whose values were 0.39 and 0.47, respectively.

2.3. Procedure

The research was carried out in three stages. During the first stage, after getting participants’ consent and permission from child protective services in order to carry out the study, researchers gathered participants’ socio-demographic data. Once the inclusion criteria (children between 12 and 17 years old in residential care with mental health problems and adaptation difficulties to the care facility) and the exclusion criteria (serious antisocial disorders with aggression to people or animals, psychotic disorders, substance addictions, and aversion to animals) were confirmed, child protective services assigned the participants to the intervention and control groups, taking into account the matching criteria specified

previously. Next, participants were asked to complete the pre-test to assess their mental attachment representations.

In the second stage, the AAT intervention program took place at a farm over 12 weeks. The teenagers spent two consecutive days each week staying overnight at a "*caserío*" (a typical farm in the Basque region of northern Spain). The intervention consisted of 24 sessions in which group therapy (23 sessions) and individual therapy (11 sessions) were combined. A dog and nine horses (5 adults and 4 colts) were used as therapy animals. Additionally, guided interactions were developed using cats and farm animals such as sheep, goats, chickens and pigs.

In developing and planning the intervention 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 (Parish-Plass, 2013).

In terms of its theoretical model the intervention was based on the five tasks of attachment-based psychotherapy, as defined by Bowlby (1988). First, participants were provided with a secure base from which they could explore painful relational experiences in their past and present life. This requires the establishment of a good therapeutic alliance. Thus, the aim of the first individual sessions was to enable participants to become familiar with the different animals and the professionals involved, and also to establish the framework and the rules of conduct; these latter aspects bring constancy and predictability to the therapeutic process, which is necessary for young victims of childhood trauma (Pearce & Pezzot-Pearce, 1994).

In this initial stage participants were allowed to choose an animal with which they would work in a more continuous and individualized way (the "sponsored" animal). This choice was agreed with the therapist. In these early sessions, the participant approached the animal spontaneously, thereby allowing the therapist to observe his/her relational style and to gain an idea of his/her internal working models and defensive tendencies. Young people who have been maltreated in childhood expect to be treated in the same way in new relationships, and they therefore adopt coping strategies similar to those used in these

traumatic relationships, interpreting the actions of the new attachment figures as hostile and negative (Pearce & Pezzot-Pearce, 1994).

Alongside the individual work the animal-assisted group psychotherapy (Harel, 2013) was also introduced in this first step of the intervention. Group psychotherapy is a suitable therapeutic tool for these young people as it enables therapists to take advantage not only of the mutual dependency and emotional connection between group members, but also of the powerful influence of peer relationships during adolescence (Chaffin et al., 1996). The objective of the first group sessions was to create a social microcosm of security within which the group members could act naturally, a microcosm that would also serve for the analysis of their interpersonal behavior in the social world outside the group (Harel, 2013).

Once this first step was completed, the participants' past and present relationships were explored, including their expectations, feelings, and behaviors. In this process they were encouraged to reflect upon the ways in which they engaged in relationships with significant figures in their current life, what their expectations were regarding their own feelings and behavior and those of other people, and what unconscious biases they may bring with them when choosing a person with whom they hope to have an intimate relationship, or when creating situations that turn out badly (Bowlby, 1988).

In this context, the therapist and the animal function as therapeutic tools whose purpose is to maximize the ability of the young person to develop good attachment relationships, not only within the therapeutic triangle (therapist-client-animal) but also with his/her current caregivers from the residential care setting, with his/her friends, and in the emerging romantic relationships that are typical of adolescence. To achieve this goal, both the individual therapy and the group therapy began by working on the young person's capacity for identification, understanding, and emotional regulation, since emotional regulation is one of the major shortcomings of these young people (Muela et al., 2012). Then, through non-verbal communication and body experience with the animal, more adaptive relational styles, characterized by sensitivity, empathy, self-control, and trust were promoted. A final aim of these sessions was that the young person would make his/her first successful approaches to the animal and carry out the first exercises of care (brushing, petting, etc.).

The third step focused on the attachment relationship that had developed between the participant, the therapist, and the animal, and we examined how it may relate to experiences or relationships formed by the young person outside the therapeutic context (Bowlby, 1988). Subsequently, in a fourth step, we sought to help participants become aware of how their current relationship experiences may be closely related to events and situations faced during childhood (Bowlby, 1988). Both in handling horses (e.g., learning to lead it with a rope) and in dog training, new exercises of increasing difficulty were proposed. Through these exercises the child is confronted with his/her own relational strategies, which are also closely connected with his/her upbringing and the current relational parenting style he or she is experiencing. Thus, with the guidance of the therapist and group therapy, young people learned the most appropriate strategies for handling the animal, and had the opportunity to implement them.

Finally, and in accordance with attachment-based psychotherapy (Bowlby, 1988), the intervention ended by helping participants to think, feel, and act in new ways that were different to those they had used in past relationships. In order to achieve this goal, it was pointed out that their current relationships could be modified positively by building secure relationships involving synchrony, reciprocity, trust and mutual support, empathy, and sincerity, relationships of the kind that they had been able to develop with the sponsored animal and the therapist. Based on this observation, participants were guided to reshape the relational style of their interpersonal interactions (with friends, partners), with attention being paid to different contexts of social interaction, such as the residential care setting (key worker) or school (teachers), in which they could establish new potential attachment relationships (Pearce & Pezzot-Pearce, 1994).

The professional intervention team was formed by a psychologist specialized in AAT, 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 of the clinical work performed.

The selection of the animals was carried out by the ethologist. With the goal of minimizing as much as possible the risks to the participants, two animals (one horse and a dog) were excluded for

showing unpredictable and aggressive behavior before the intervention began. It is important to note that all of the animals didn't receive training beforehand, following the plan of the intervention program. In the case of the adult horses, they had been trained using natural breaking-in techniques by a horse-breaker and qualified veterinarian. Also used were four colts, whose breaking-in was carried out during the intervention program with the active participation of the adolescents, under the direction of the horse-breaker and the supervision of the ethologist. On the other hand, the dog was trained as a therapy dog using positive reinforcement techniques by canine educators and ethologist at the Autonomous University of Barcelona. It should be noted that at all times, all necessary measures were taken to safeguard the well-being 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 and play behavior, or in their behavior regarding comfort and hygiene; symptoms of organic pathology, or changes in their interaction patterns.) In the case of the therapy dog that lived with the adolescents, it was allowed to separate itself from the group and rest in a living area inaccessible to the participants.

To ensure the well-being of the participants, all of the animals were subject to prophylactic veterinary treatments prior to the interventions through vaccinations and external and internal de-worming to avoid zoonotic risks. In addition, all of the interactions were supervised by the professional interventionists.

Finally, in the third stage, all participants in the study were asked to complete the post-test to assess their mental attachment representations two weeks after finishing the intervention.

This process was replicated under the same conditions five times with different groups between 2010 and 2012. The first intervention 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. Finally, in 2012 two final interventions were completed with six participants each.

2.4. Data Analysis

With the goal of examining whether AAT exerts an influence on the attachment representations, we first compared the mean scores obtained by the treatment group in the post-test with the scores presented by the same group in the pre-test. As control and treatment groups did not were created randomly, instead of comparing the posttest scores of the two groups, we compared the scores of change (differences between the post- and pre-test scores) of the control group with the scores of change of the treatment group. After verifying that the statistical assumptions were fulfilled, the Student's *t* index was utilized to examine if there were statistically significant differences among treatment and control groups in the different criteria variables. We considered it appropriate to estimate the effect size associated with the differences in averages because the statistical power of the Student's *t* could be influenced by the reduced sample size of the current study (Balluerka, Gómez, & Hidalgo, 2005; Balluerka, Vergara, & Arnau, 2009). The effect size was calculated using Cohen's *d*.

3. Results

The mean scores and the standard deviations of the treatment group in the pre-test and pos-test, in the dimensions that measure attachment representation are shown in Table 1.

Table 1
Average scores and typical deviations of the treatment group in the dimensions of representative attachment before and after the intervention.

Dimension	*Evaluation*	*Average*	*Typical deviation*	*N*
Security: availability and support of attachment figures	Pretest	34.57	14.7	21
	Posttest	41.42	12.59	21
Family preoccupation	Pretest	54.85	11.83	21
	Posttest	52.32	9.48	21
Parental interference	Pretest	62.20	11.22	21
	Posttest	58.41	12.64	21
Self-sufficiency and resentment	Pretest	51.64	11.98	21

toward parents	Posttest	53.61	8.48	21
Childhood trauma	Pretest	67.99	15.70	21
	Posttest	67.54	14.79	21

Regarding the change that occurred between the pre- and post-tests in the treatment groups, the results reveal that AAT exerts a statistically significant improvement regarding the dimension of attachment security (t (20) = -2.236; p = 0.037). In line with this result, the effect size associated with the difference in averages between the pre- and post-tests reached a high value (Cohen'n d = 0.69). However, in the other dimensions of attachment, no statistically significant differences were found, and the effect sizes were of low magnitude.

In Table 2 we present the scores of change of the treatment group and of the control group in the attachment representation dimensions.

Table 2
Scores of change of the treatment group and the control group in the dimensions of attachment representations.

Variable	**Group**	*Score of change*	*N*
Security: availability and support of attachment figures	Treatment group	6.86	21
	Control group	0.61	25
Family preoccupation	Treatment group	-2.53	21
	Control group	0.95	25
Parental interference	Treatment group	-3.79	21
	Control group	2.49	25
Self-sufficiency and resentment toward parents	Treatment group	1.98	21
	Control group	-0.50	25
Childhood trauma	Treatment group	-0.45	21
	Control group	0.73	25

With respect to the comparison between the treatment group and the control group in scores of change, it could signify that no statistically significant differences were observed. However, the effect size linked to the difference between such scores in the dimensions of attachment security and parental interference was of moderate magnitude (Cohen's d = 0.43 and 0.46, respectively). In the remaining dimensions of attachment, the effect size was of small magnitude.

4. Discussion and Conclusions

The goal of the research was to examine the influence of AAT on the attachment representations of a group of adolescents with traumatic childhood experiences and mental health problems, who were in a residential care.

The results revealed that, after undergoing AAT, the youths showed a better security with respect to attachment. Moreover, compared with the youths who hadn't received the same treatment, they scored better in the dimension of attachment security and worse in the area of parental interference, which is associated with the style of preoccupied attachment. However, no differences were found in the other evaluated dimensions of attachment.

To be able to adequately value and interpret these results, we consider it necessary to conduct an analysis of psychotherapy process based on attachment theory. According to Bowlby (1969), in infancy, variations in caregiver responses to the attached person's attempts at proximity and demands for protection produce lasting changes and influences on the functioning of his or her system of attachment. Bowlby (1973) considered that these changes, in the long term, can explain why the mental representations of the significant relationships with attachment figures are stored in the associative memory networks. These mental representations include recalled episodes of concrete or specific interactions with attachment figures, beliefs or attitudes concerning oneself and the relationships with others, conceptions about the attachment relationships, as well as the way of regulating emotions and emotional behavior in intimate relationships (Bretherton & Munholland, 1999; Waters & Waters, 2006).

Youths who have experienced childhood trauma develop mental representations of attachment figures with expectations of mistrust about the accessibility and care, a model of themselves as unable to give protection and affection, and a view of the world as an unpredictable and unsafe place (Cyr, Euser, Bakermans-Kranenburg, & van IJzendoorn, 2010). Given that these representations serve as guides of one's feelings, thoughts and conduct in relationships outside the family, they influence the psychological adjustment and the quality of later relationships (Bowlby, 1988; Sroufe, 2005). Therefore, the main therapeutic goal sought with these patients is that they explore their own representative models of themselves and of their attachment figures in order to then evaluate and re-structure them (Wright, Crawford, & Del Castillo, 2008). To achieve this goal, Bowlby (1988) described a process that includes several phases. In the first phase, the therapeutic process must focus on providing the patient with a secure base from which to explore the painful aspects of his/her life, both past and present. This aspect is fundamental, since it determines if the patient can continue on to the next phase, namely by helping the patient in his or her exploration of his or her mental representations.

In light of the results obtained in our study, AAT fundamentally affects the first phase of the process. As numerous researchers have shown (Melson & Fine, 2010; Parish-Plass, 2008), AAT seems to generate a therapeutic space of trust, facilitating the therapeutic alliance and promoting a secure therapist-patient relationship. Moreover, the fact that the youths who received AAT positively altered their perceptions of feeling loved by their current attachment figures, and of being able to trust them and know that they were available whenever needed, allows us to conclude that AAT helps the phase of exploration of the models that underlie the thoughts, feelings and actions associated with the search for intimate emotional relationships of trust and security. Without a doubt, this is a very positive and encouraging result because it suggests that AAT is effective in the exploration and reconsideration of the ways in which these youths develop relationships with significant figures in their present lives. This competency is fundamental for youths who have suffered infantile trauma, and it gives them the opportunity to construct what has recently been termed a "secure base script" (Dykas, Euser, Bakermans-Kranenburg, &

van IJzendoorn, 2006), from which they can reformulate their style of attachment and social and emotional functioning.

However, contrary to our hopes, in the attachment representations of preoccupation, avoidance and infant trauma, hardly any differences have been found between the treatment and control groups. The only exception is the dimension "interference of parents" associated with the preoccupied attachment style, in which the treatment group presented a lower score.

There are many explanations that could justify these results. On one hand, we have showed that due to the history of negative experiences of attachment and frustration with their parents and other adult figures, these youths enter residential centers with extremely insecure attachment styles, mainly of the disorganized type (Bailey, Moran, & Pederson 2007; Zegers et al., 2006, 2008), and often show a great resistance to establishing a connection of attachment with the educators and therapists. Moreover, many of them present a high dropout rate from the therapeutic treatment and leave the residential center (Attar-Schwartz, 2013), as well as a strong resistance to exploring their personal histories, high emotional reactivity, cognitive rigidity and impulsive behavior (Hughes, 2004). Therefore, in spite of the therapeutic benefits of AAT, with these youths it might not have the desired effect because their representations, however maladaptive, are deep-rooted and resistant to change. In addition, the short duration of the therapeutic treatment (11 individual session and 23 group sessions) might also have limited the achievement of more ambitious goals.

Despite having empirically verified the influence of AAT on the representations of attachment, the present study has some limitations. The first of these limitations is the difficulty to conclude that the differences observed between the groups were only an outcome of the intervention and did not were influenced by the fact of the treatment group being outside the residential facility and on a farm for two consecutive days. The second limitation is related to the inability to use random assignment to form the treatment and control groups, given that Child Protective Services decided which subjects should receive the treatment. Although this reduces the internal validity of the study, we utilized different matching criteria with the goal of creating comparable groups and we compared the scores of change of the two

groups. Additionally, the non-random allocation of study participants and the sample size might have diminished the external validity of the research. However, although we consider that in the future we will have to replicate the study with a larger number of subjects, we must point out the difficulty of gaining access to the type of subjects used in this study. On the other hand, we also consider it appropriate to measure the attachment representations with complementary tools, such as the Adult Attachment Interview (AAI; George, Kaplan, & Main 1985), The Experiences in Close Relationship Scale-Revised (ECR-S, Alonso-Arbiol, Balluerka, & Shaver 2007) or The Inventory Parent and Peer Attachment (IPPA, Armsden & Greemberg, 1987), which allows the evaluation of different components of representations regarding attachment (Roisman, Holland, Fortuna, Fraley, Clausell, & Clarke, 2007).

In spite of these limitations, the results obtained in this study allow us to affirm that AAT is a very effective type of therapy for youths in residential care who have suffered childhood traumas, and are experiencing mental health problems. Many researchers advocate a renewed vision of the residential care facility as a place which positively contributes to patients´ psychosocial development, especially for youths who present externalized behavior problems (Knort, Harder, Zandberg, & Kendrick, 2008). We consider that having a safe and secure therapeutic context, like that offered by AAT, to develop positive models of oneself and others, and to promote the exploration of a relational style, is fundamental for an adequate psychological development of the subjects of this study.

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