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Process Evaluation of Animal Assisted Therapies with Children: The Role of the Human-Animal Bond on the Therapeutic Alliance, Depth of Elaboration, and Smoothness of Sessions

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Abstract

Objective: The current study examined the change processes in three Animal Assisted Therapies (AATs) by assessing the relationship between the human-animal bond and the therapeutic alliance, depth of elaboration, and smoothness of treatment sessions.

Methods: This was a retrospective study assessing videotaped AATs conducted with three children aged from 7 to 9 years old from the observer perspective. The AATs were based on the Federico II Model of Healthcare Zooanthropology, and each consisted in 8 sessions. A one-way analysis of variance and linear regression models was performed.

Results: The human-animal bond, therapeutic alliance, depth of elaboration, and smoothness significantly improved during the sessions. Furthermore, the improvement in therapeutic dimensions proved to be a function of the increase in the human-animal bond.

Conclusions: The findings have provided empirical evidence of the change processes occurring during AATs with children, offering some limited but specific insights into the interspecific relationship as a central axis of such treatments.

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1. Introduction

Animal Assisted Interventions (AAIs) is an umbrella term encompassing any programmed intervention that takes advantage of the benefits of human–animal interaction (HAI). Specifically, AAIs are aimed at improving human emotional, social, and cognitive functions, through an interaction with an animal (López-Cepero, 2020). Among AAIs, Animal Assisted Therapies (AATs) are defined as goal-oriented, planned, and structured therapeutic interventions incorporating HAIs as a crucial part of the treatment process (International Association of Human Animal Interaction Organizations, 2018). The application of AATs is extensively documented in hospitals, rehabilitation centers, and nursing homes, where the use of animals is included in therapeutic programs for individuals with conditions within the autism spectrum, intellectual disabilities, neurodevelopmental disorders, and neurodegenerative diseases (Santaniello et al., 2020). A large body of research has reported the positive effect of AATs on human health and wellbeing, highlighting their significant impact on both symptoms and socio-emotional difficulties (Bert et al., 2016; Kamioka et al., 2014).

However, this field, notwithstanding the increasing levels of recognition and approval among professionals and the general population (Fine et al., 2019), suffers from conceptual confusion, a lack of structured research designs, a widespread variability in measurement methods, and an inappropriate heterogeneity of intervention protocols across the various studies (Santaniello et al., 2020). These aspects undermine the internal validity of AATs, leading to a difficulty in replicating protocols and in reaching a unanimous and consistent conclusion regarding their usefulness (López-Cepero, 2020; Rodriguez et al., 2021). In addition, the processes of change through which AATs lead to therapeutic benefits still remain largely unknown (López-Cepero, 2020).

Thus, in the current study we have aimed at examining the interactive mechanisms and relational processes through which an AAT intervention for children may produce change. Specifically, by conducting a planned observational evaluation, we have endeavored to gain an insight into the formation of the human-animal bond as a key process underlying the therapeutic changes taking place throughout AATs, assessing its relationship with the therapeutic alliance, depth of elaboration, and smoothness of the treatment sessions, all of which are dimensions related to the success of any therapeutic intervention (Martin et al., 2000; Stiles et al., 1994).

In the following paragraphs, first, a theoretical overview of AATs will be discussed and, secondly, the dimensions that are hypothesized as change processes will be presented.

1.1 Theoretical Overview of Animal Assisted Therapies

Considerable efforts have been devoted over the last few years to an identification of the mechanisms of action which are responsible for the observed benefits resulting from AATs. In particular, several psychological theoretical frameworks have been proposed in an attempt to explain how and why a HAI is potentially therapeutic (Beetz, 2017; Julius et al., 2013; Shen et al., 2018).

According to the *biophilia* hypothesis (Wilson, 1984), one of the most recurring theories in HAI research, humans have an innate affinity for other living organisms, including a keen interest in animals. Indeed, from an evolutionary perspective, monitoring the behavior of animals, in terms of their representing a signal of a safe environment, increased human chances of survival, with the result that humans have adapted to have an empathy with animal life in their environment. In this respect, biophilia has been suggested as a broad explanatory basis for the stress and anxiety reducing effect of HAIs (Crossman, 2017). In addition, the retention of juvenile features, called *neoteny* in evolutionary biology, in domesticated adult animals (e.g., a large eye to head ratio and playing behaviors), encourages social and nurturing behaviors on the part of humans. These theories are mainly focused on the animal's morphological and behavioral characteristics which can activate some basic psychological processes, such as attention, perception, and motivation. From this perspective, the mere presence of animals in clinical settings may provide valuable therapeutic opportunities, leading to important benefits (Beetz, 2017).

Further theories relating to the incorporation of animals in healthcare settings emphasize the idea that developing a relationship with an animal can lead to positive changes. Essentially, the benefits of HAIs and, specifically, the effectiveness of AATs would greatly depend on the formation of the human-animal bond (Menna, 2015; Menna et al., 2019b; Zilcha-Mano, 2011). According to the American Veterinary Medical Association (AVMA, 2016), the human-animal bond consists of a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors considered crucial to the health and well-being of both, including emotional, psychological, and physical interactions. From this perspective, when examining the potential benefits of AATs, it is the nature and strength of the interspecific relationship, rather than the presence of an animal per se, that is relevant. In this context, a strong basis for understanding the positive effects of the HAI has been found in both the social support theory (Cohen & Wills, 1985) and attachment theory (Bowlby, 1969). Indeed, companion animals can serve as attachment figures for humans, acting as a source of social support (Fine & Beck, 2010). It is worth noting that this tendency is largely independent of the internal working models

developed with the primary caregiver, which are not spontaneously transmitted to animals (Kurdek, 2009).

Moreover, animals naturally elicit caregiving behaviors, such as feeding, grooming, and providing protection, which may have positive effects similar to those resulting from receiving social support (Julius et al., 2013), including positive emotions, stress reduction, and an activation of the oxytocin system (Menna et al., 2019a). As argued by Beets (2017), an activation of the caregiving system in the context of an AAT provides unique advantages that cannot be found in the professional relationship with the therapist, where the roles of the caregiver and of the recipient of the caregiving are not exchangeable.

Although the existing evidence is disparate and does not allow for generalizations (Peacocket al., 2012; Rodriguez et al., 2021), the idea that the human-animal bond conveys health and well-being benefits has been widely supported. Some key features of the relationship with a companion animal, such as the provision of unconditional and non-judgmental affection, have been pointed out as mediators of the relationship between a long-term interaction with a pet and an increased wellbeing (Hutton, 2014). Opportunely guided within the AAT setting, interactions with animals may provide the opportunity of establishing a secure attachment relationship, even to those individuals with an insecure or disorganized attachment, who find it more difficult to benefit from human support when facing stressful circumstances (Beets, 2017; Beets et al., 2012). As shown in certain studies (Balluerka et al., 2014; Parish-Plass, 2008), AATs may exert an influence on the attachment representations of young clients with traumatic experiences and mental health problems, by providing a therapeutic space of security and trust which allows them to reconstruct their style of attachment and to build more adaptive internal operative models. Therefore, the social support theory and the attachment theory offer very useful frameworks to account for the psychological benefits of AATs, including the regulation of stress and negative emotions (Julius et al., 2013; Zilcha-Mano, 2011).

1.2 Mechanisms of Change in Therapeutic Processes

Within the broad literature of research on the therapeutic process, one of the most frequently studied factors is the therapeutic alliance, consistently recognized as an active ingredient of psychotherapy change, where alliance traditionally means the emotional relationship and mutual involvement between the client and therapist (Alexander & Luborsky, 1986; Gennaro et al., 2022; Pennella & Bignami, 2021; Somma et al., 2019; Visintini et al., 2020). The most popular and comprehensive model of the therapeutic alliance was developed by Bordin (1979), who proposed a pantheoretical framework that cut across all the different theoretical traditions,

describing the alliance as a multifaceted construct comprising (1) agreement on the goals of the therapy, (2) agreement on the change tasks necessary to achieve these goals, and (3) the development of a bond between the client and therapist that ensures and maintains a collaboration in the therapeutic work. Taking the extensive research into process in adult psychotherapy as its starting point, most definitions of the alliance in child psychotherapy focus on the affective and collaborative components of the client–therapist relationship highlighted in the conceptualization of Bordin (Elvins & Green, 2008; Shirk & Saiz, 1992). The relationship between the quality of the alliance and the therapeutic outcomes has been widely investigated, with a large body of research linking a stronger alliance with greater therapeutic success across a variety of psychotherapy approaches and outcome measures, in both adults (Ardito & Rabellino, 2011) and young people (McLeod, 2011).

Notwithstanding the general consensus on the value of the alliance to therapeutic success, this topic has so far received little attention within the field of AATs. A number of reports have documented examples of the ability of the animals to act as a bridge for the client–therapist relationship, serving as a non-verbal mediator of their interactions and strengthening the therapeutic connection (Parish-Plass, 2008). However, very few studies have adopted a scientifically based research design, while the majority rely on anecdotal observations and limited or poor empirical data.

The relative scarcity of studies in this area appears to suggest that incorporating trained animals within the treatment program might help therapists to build better working environments, facilitating the development of a therapeutic alliance (Chandler, 2005). AATs have been found to reduce attrition and enhance client compliance in psychotherapy, particularly with respect to clients who show a greater reluctance to engage in the treatment and to attend therapy sessions consistently (Flynnet al., 2021). Other studies have indicated that the presence of animals can enhance the client's motivation to participate in the treatment program and to endorse the therapeutic goals, resulting in a higher retention rate and in an increase in the efficacy of the intervention (Prothmann et al., 2005). In a randomized control study conducted with an adult residential population being treated for substance abuse in group therapy, Wesley et al. (2009) demonstrated that the therapeutic alliance is enhanced with the addition of a therapy dog, with the AAT group rating the therapeutic alliance as more positive than the control group.

Although the few existing studies appear to suggest the functional value of the animal in shaping the client's commitment to the process of change, it is important to observe that the available

findings concern adults exclusively, and thus there is a lack of empirical evidence on the effect of the HAI on the therapeutic alliance within the domain of child psychotherapy.

Two other dimensions were considered in the current work, namely the depth of the elaboration and the smoothness of the treatment sessions (Stiles et al., 1990). Depth and smoothness are two aspects of the quality of a psychotherapy session which seem to be significantly related to different outcomes, including a decrease in the psychopathology symptoms and distress (Pesale et al., 2012; Rodda et al., 2016).

Specifically, depth refers to perceptions of the value and the power of a clinical session, whereas smoothness concerns the perceptions of comfort, safety, and level (Stiles, 1980; Stiles & Snow, 1984). In other words, the depth consists in the degree to which the clinical session process is able to move and stir the clients leading them to disclose their inner thoughts and feelings, that is, the extent to which the client and therapist touch on emotionally charged content rather than exchange information regarding concrete facts or circumstances. Smoothness, on the other hand, corresponds to the perceived ease with which the client and clinician tend to interact during the session.

Some AAT characteristics seem to recall both the depth of the elaboration and the smoothness of the treatment sessions. Indeed, previous studies have suggested that the involvement of a trained animal in the treatment has the potential to reduce the client's agitation and facilitate the interaction with the clinician, enhancing the feelings of ease during the therapeutic experience and the perception of positive acceptance (Fine & Beck, 2010; Parish-Plass, 2008). Furthermore, it has been demonstrated that the presence of a companion animal increases the clients' willingness to disclose their deepest personal information, especially among individuals who were previously reluctant to disclose in therapy (Schneider & Harley, 2006). Across the studies, a consistent finding is that the presence of an animal can affect the individual's attitude toward emotional self-disclosure (Evans-Wilday et al., 2018), and that the effect seems to be strongest with respect to individuals with difficulties in authentic emotional expression, for whom an animal may provide a less threatening and distressing alternative focus for any disclosure about an emotional topic (Bryan et al., 2014).

Although many authors have speculated that AAT can be used as a tool to create a safe environment and to increase the willingness of the client to engage in emotional disclosure, no previous studies have directly assessed the effect of HAI on these dimensions. However, investigating how the human-animal bond interacts with these dimensions, which have proved

to be effective in psychotherapy, could improve our understanding of the therapeutic benefits of AATs.

1.3 The Current Study

Based on these premises, in this study we have aimed to assess the change processes in three AAT interventions conducted according to the Federico II Model of Healthcare Zooanthropology (FMHZ). Specifically, we assessed the changes observed during the AAT sessions in relation to the human-animal bond, therapeutic alliance, depth of elaboration, and smoothness of the treatment sessions. We hypothesized that the human-animal bond, therapeutic alliance, depth of elaboration, and smoothness of the sessions would improve significantly during the intervention. To ascertain that the therapeutic alliance, depth, and smoothness improve with respect to the FMHZ-based AAT interventions, we also tested the hypothesis that the improvement of these dimensions would be a function of the increase in the effectiveness of the human-animal bond.

2. Materials and Methods

2.1 Participants and Procedures

Three male children who participated in an FMHZ-based AAT intervention were included in the study. Two of the boys had been diagnosed with Attention-Deficit/Hyperactivity Disorder and one with Oppositional Defiant Disorder in accordance with the criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The children were aged 8, 7 and 9, respectively.

The inclusion criteria were: (a) an age between 7 and 10; (b) a positive behavioral response of the animal while interacting with the children; and (c) an inability or refusal to benefit from other non-pharmacological rehabilitation activities. The exclusion criteria, instead, included: (a) an allergy to dogs; (b) manifestations of aversion, rejection and/or phobia with respect to dogs; (c) a prior reported history of animal abuse; and (d) an unwillingness to be videotaped.

The children were referred for treatment by a local affiliated health facility, which requested the intervention by sending an e-mail to the scientific manager of the team. A preliminary evaluation session was organized to determine if the child was eligible for the treatment in accordance with the inclusion and exclusion criteria. In the first meeting, which involved the child's psychologist and parents, the team met the child and introduced the dog. At the end of the meeting, the child was left free to play with the dog for fifteen minutes. Once the child was considered eligible,

his/her psychologist met the team to discuss the case and define an AAT protocol addressed to the child and specifying the objectives of the intervention.

The intervention was carried out within an affiliated health facility and involved eight sessions, each lasting approximately one hour. It consisted of structured activities and games with the dog designed by the psychotherapist and the zootherapist veterinarian. The general purpose of these activities was to create an atmosphere of trust, respect, and acceptance, which fostered the free circulation of emotions. The child was helped to reflect on mental and emotional content emerging from the activities with the dog and was encouraged to read the animal's behavior in order to promote his better understanding of his own experiences, attitudes, resources and limitations.

Each session was videotaped with informed consent and the material was examined during weekly supervision meetings aimed at monitoring the progress of the therapy, the dynamics materializing within the setting and the team's work. All the data were collected in accordance with the Italian Law on Privacy and Data Protection 196/2003 and the European Union Regulation 2016/679 "General Data Protection Regulation," and became the property of the Department of Veterinary Medicine and Animal Production of the University of Naples Federico II. To preserve the anonymity of the participants, the video recordings were stored in a database accessible only to the Principal Investigator. Once the children eligibility had been established, an informed consent was obtained and signed by their parents before the intervention. The study was approved by the ethical committee of the University of Naples Federico II (protocol number: 188/19; date: 8 July 2019).

2.2 The FMHZ-Based AAT Intervention

FMHZ is a theoretical-methodological approach which has shown promising heuristic and applicative potentialities, both in clinical and educational settings (Dicé et al., 2017; Menna, 2015; Scandurra et al., 2021b). Based on the theory of complexity (Morin, 1992), FMHZ assumes a holistic and systemic perspective, conceptualizing the AAI setting as a dynamic, evolving, complex system which encompasses many interdependent variables whose relationships might be non-linear. The change processes which take place within the AAI intervention are considered as emergent and spontaneous properties which, being functions of the system as a whole, cannot be explained only on the basis of its specific constituent parts. In other words, this perspective emphasizes the mutualistic relationships among the elements within the AAI intervention, which are more significant than the specific characteristics of the individual parts.

FMHZ consists of an interdisciplinary approach implying the involvement of a multidisciplinary team, composed of various professional figures who contribute, each with his/her own skills, to the design and implementation of the intervention, working in close collaboration and synergy. The therapeutic system requires the presence of: (1) a zootherapist veterinarian, the animal's handler, responsible for the legal and health status of the animal, with the task of controlling the health and behavioral aspects related to the client's interaction with the animal; (2) a psychotherapist expert in the interspecific relationship, with the task of structuring the zootherapeutic intervention, defining the objectives and the assessment tools and managing the psychological aspects underlying the interspecific relationships within the intervention; and (3) a co-therapist animal, actively engaged as a catalyst of the treatment process. The animals involved in the interventions currently under examination are dogs.

Each intervention is multi-strategic, targeting the client's emotional, cognitive, and psychomotor functions, through the use of different stimulation techniques. The intervention is generally aimed at improving the relational, emotional, and cognitive skills of the clients. More specific objectives (e.g., enhancing emotion regulation skills or supporting personal autonomy) are configured for each client, on the basis of his/her specific needs and difficulties.

2.3 Measures

Human-animal bond. The human-animal bond was measured through the Observation of Human Animal Interaction for Research (OHAIRE–Version 3; Guérin et al., 2018), a timed interval coding system specifically designed to quantify human–animal interaction and social communication. The OHAIRE focuses on 10-second intervals within 1-minute video segments, totaling six 10-second intervals per minute. This system uses an interval behavior coding (i.e., the one-zero method) to note the presence or absence of a behavior during the 10-second interval. The observable behaviors categories captured by the OHAIRE Coding System include: (1) Interactive Behaviors (six different categories of social and communication behaviors directed to adults and animals, namely talking, looking, gesturing, touching, showing affection, and being prosocial); (2) Emotional Display (facial expression and/or verbal content on the part of the child); and (3) Interfering Behaviors (behaviors that may impair the child's ability to participate in the intervention activities and benefit from them, including aggression, overactivity and isolation). However, for the purposes of the current study, only the total score relating to the human-animal bond was considered. This scale was calculated within the "interactive behaviors" category and obtained by rating the presence or absence of any social interactive behaviors displayed toward the animal. The scale ranges from 1 to 6, with higher

scores indicating a greater human-animal bond. With respect to the coding procedure, each session was divided into three equal parts (i.e., the beginning, middle, and end of the session) and 1-minute video segments were randomly selected from each third by using a random numbers generator. After the segmentation of the sessions, two reliable coders rated the extracted video in accordance with the OHAIRE coding procedure. This coding system demonstrated an excellent inter-rater reliability ($\varkappa = 0.81$) and reliability (Guérin et al., 2018).

Therapeutic Alliance. The Therapeutic Process Observational Coding System for Child Psychotherapy–Alliance Scale (TPOCS-A; McLeod & Weisz, 2005) is a 9-item observer-rated measure designed to assess the client–therapist alliance in youth psychotherapy. The TPOCS–A evaluates two components of the alliance consistently identified as crucial to the success of child therapy (Shirk & Saiz, 1992) namely, the bond (i.e., the affective aspects of the client-therapist relationship) and the task (i.e., the degree of child engagement in therapeutic activities). Each item is rated on a 6-point Likert scale ranging from 1 ("not at all") to 6 ("a great deal"), with higher scores indicating a greater therapeutic alliance. The TPOCS-A was slightly adapted to the intervention model of the current study, by asking the coders to rate the quality of the alliance taking into consideration the system as a whole rather than the relationship between the child and the therapist. The α coefficient for the current sample was 0.93.

Depth and Smoothness of the Sessions. The Depth and Smoothness Scales of the Session Evaluation Questionnaire (SEQ –Version 4; Stiles & Snow, 1984; Italian version by Rocco et al., 2017) were used to assess the depth and smoothness of the sessions from an external rater's perspective. The two scales consist of a list of bipolar adjectives presented in a semantic differential format and rated on a 7-point Likert scale, with higher scores indicating a greater depth and smoothness of the sessions. The items belonging to the Depth Scale of the SEQ are: "deep–shallow", "special–ordinary", "powerful–weak", "full–empty", "valuable–worthless," and "good–bad". Instead, the items belonging to the Smoothness Scale are: "relaxed–tense", "comfortable–uncomfortable", "smooth–rough", "easy–difficult", "pleasant–unpleasant," and "safe–dangerous". The α coefficient for the current sample was 0.97.

Coding System

This is a retrospective study assessing videotaped FMHZ-based AAT interventions from the observer perspective. The coding team consisted of two clinical psychologists (one male and one female), who were attending training courses in dynamic and systemic psychotherapy, and one psychodynamic psychotherapist.

The coders had passed the OHAIRE course obtaining the user license. Regarding the other measures, the coders were trained by studying the coding manuals, participating in weekly discussions meetings, reviewing videotapes of specific randomly assigned sessions and practicing coding sessions to achieve the appropriate reliability standards. To test the reliability of the evaluators and track their progress, continuous and repeated assessments were carried out. To minimize the risk of coding bias, the raters were blind to the aims and hypotheses of the study, the children's diagnoses, and the order of the sessions, which were coded in a random order.

In accordance with the OHAIRE coding procedure (Guérin et al., 2018) and in order to calculate the inter-rater reliability with the Cohen's kappa (Cohen, 1960), one primary coder was designated to code the full set of videos, while a second was tasked with coding 20% of the videos. These last videos were randomly selected. The inter-rater reliability for the human-animal bond was 0.87, indicating strong agreement.

2.4 Statistical Analyses

The statistical analyses were performed using IBM SPSS Statistics 27. The results of the statistical tests were considered to be significant if p was <0.05.

First, bivariate correlations between the main variables of the study were calculated using the Pearson's coefficient.

Next, the change during the sessions of the main variables of the current study (i.e., the human-animal bond, therapeutic alliance, and depth and smoothness of the sessions) was assessed through a one-way analysis of variance (ANOVA). Cohen's η^2 was used as a measure of the effect size, with $\eta^2 = 0.01$, $\eta^2 = 0.06$, and $\eta^2 = 0.14$ representing small, medium, and large effect sizes, respectively (Cohen, 1988).

Finally, the improvements in the therapeutic alliance, depth, and smoothness as a function of the increase of the human-animal bond were assessed through three linear regression models in which the human-animal bond was considered as an independent variable and all the other dimensions as dependent variables. Cohen's f^2 was used as a measure of the effect size, with $f^2 = 0.02$, $f^2 = 0.15$ and $f^2 = 0.35$ representing small, medium, and large effect sizes, respectively (Cohen, 1988).

3. Results

As shown in Table 1, all the variables considered in the current study were strongly and positively correlated with each other. Specifically, the more the human-animal bond increases, the more the therapeutic alliance, depth, and smoothness of the sessions increase.

Table 1. Correlations between the Human-Animal Bond, Therapeutic Alliance, Depth of Elaboration, and Smoothness

	1	2	3	4	*M*	*SD*
1. Human-animal bond	1				3.58	0.94
2. Therapeutic alliance	0.77***	1			3.59	0.74
3. Depth	0.80***	0.78***	1		3.48	0.84
4. Smoothness	0.74***	0.52*	0.64**	1	3.25	0.94

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

M = Mean; *SD* = Standard deviation.

Regarding the first hypothesis of the current study, the one-way ANOVA revealed significant improvements during the AAT sessions in all the dimensions considered with large effect sizes (Table 2). Specifically, human-animal bond, therapeutic alliance, depth, and smoothness significantly increased along the sessions, demonstrating that AATs are effective in improving these dimensions.

Table 2. Means Comparison between AAT Sessions in Relation to the Human-Animal Bond, Therapeutic Alliance, Depth of Elaboration, and Smoothness

	Human-animal bond	Therapeutic alliance	Depth	Smoothness
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
Session				
1	2.55 (0.39)	2.52 (0.32)	2.55 (0.69)	2.33 (0.58)
2	2.67 (0.88)	3.26 (0.48)	3.15 (1.18)	2.53 (0.84)
3	3.56 (1.02)	3.82 (0.63)	3.82 (0.88)	3.12 (0.78)
4	4.11 (0.51)	3.52 (0.87)	3.46 (1.02)	3.15 (0.99)
5	4.00 (0.01)	4.35 (0.21)	3.90 (0.14)	4.25 (0.35)
6	4.65 (0.50)	4.40 (0.14)	4.02 (0.35)	4.15 (0.21)
7	4.00 (0.15)	3.80 (0.19)	3.90 (0.17)	4.30 (0.16)
8	4.50 (0.07)	4.90 (0.13)	4.00 (0.11)	4.00 (0.08)
	$F = 3.09$*; $\eta^2 = 0.73$	$F = 3.33$*; $\eta^2 = 0.74$	$F = 1.81$*; $\eta^2 = 0.44$	$F = 2.46$*; $\eta^2 = 0.68$

*$p < 0.05$.

M = Mean; *SD* = Standard deviation; *F* = F-test; η^2 = Cohen's η^2.

Figure 1 shows in a graphical format that all the dimensions increased as the AAT process progressed.

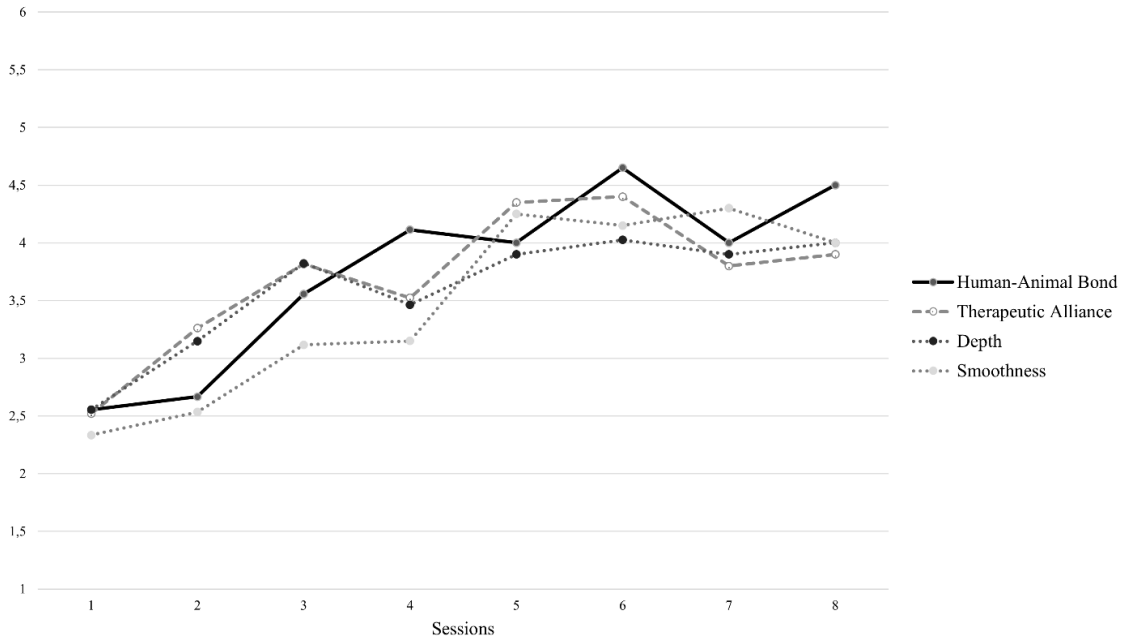

Figure 1. Growth Analysis of the Human-Animal Bond, Therapeutic Alliance, Depth, and Smoothness during the AAT Sessions

Finally, regarding the second hypothesis, the results of the linear regression analyses indicated that the human-animal bond was positively associated with all the dependent variables and with large effect sizes, as follows: therapeutic alliance ($R^2 = 0.60$, $F(1, 16) = 24.20$, $t = 4.92$, $p < 0.001$, $f^2 = 1.50$), depth ($R^2 = 0.65$, $F(1, 16) = 29.22$, $t = 5.41$, $p < 0.001$, $f^2 = 1.86$), and smoothness ($R^2 = 0.54$, $F(1, 16) = 18.93$, $t = 4.35$, $p < 0.001$, $f^2 = 1.17$). Thus, as hypothesized, elevated levels of the human-animal bond result in an increase in the likelihood of the sessions having a greater therapeutic alliance and being experienced as deep and smooth.

4. Discussion

In the current study we have aimed to assess the changes, observed during AAT sessions conducted with three children, in the human-animal bond, therapeutic alliance, depth of elaboration, and smoothness. We have found that all these dimensions significantly improved during the sessions and that the improvement in the therapeutic dimensions is a function of the increase in the human-animal bond. To the best of our knowledge, this is the first study using standardized observation methods to investigate change processes during AATs with children, providing certain insights into the therapeutic mechanisms which might lead to the beneficial AAT outcomes.

In support of our first hypothesis, our findings seem to confirm that clients may form an affectional bond with an animal which they see regularly every week during the AAT (Ng & Fine, 2019). Moreover, by revealing an increase in the quality of the therapeutic alliance, depth of elaboration and smoothness of the treatment during the intervention sessions, as rated by the observer, our results shed light on the essential role of such dimensions with respect to the changes which take place within the AAT. These findings also seem to suggest a positive outcome of the treatments, as a great body of studies have documented the pivotal role of such variables as the strongest predictors of outcomes in psychotherapy (Ardito & Rabellino, 2011).

In support of our second hypothesis, our findings seem to suggest that the human-animal bond can be a useful catalyst within the AAT process, facilitating various processes relevant to a successful treatment outcome.

With respect to the association between the human-animal bond and the therapeutic alliance, our results are in line with previous studies linking AATs with an enhanced degree of compliance and motivation on the part of the clients during the treatment and an increased retention (Prothmann et al., 2005), confirming that the interaction with the animal may enable a therapeutic connection. A possible explanation of this finding may lie in the idea that the presence of an animal, especially a dog, might act as a "social lubricant" serving to facilitate interpersonal interactions. In this regard, Schneider and Harley (2006) showed that the presence of a companion animal enhances the client's perception of the therapist, with participants reporting a more general satisfaction with and confidence in the therapist when the dog is present. These social catalytic effects may be particularly important in the treatment of children with psychopathological conditions (Germone et al., 2019), who often cannot be easily treated verbally due to social communication difficulties which may impede the therapeutic engagement and the development of a positive working alliance.

According to the FMHZ model, the interaction with the co-therapist dog can promote social interactions between the child and the working team and increase the therapeutic alliance in a variety of ways. First, the multisensory stimulation that the animal offers to the child may promote social interaction behaviors (Carminati et al., 2013), allowing the patient to become fully engaged in the proposed activities and reducing any inappropriate behavior which could represent an obstacle to the therapeutic alliance (e.g., isolation). Based on our clinical experience, we can assert that a crucial role is played by the clinician, who mediates the interactive exchanges by encouraging the child to reflect on the dog's feelings, desires, and needs, as well as on the consequences of their behavior towards the animal (Parish-Plass, 2008). Additionally, the

relationship between the dog and the zootherapist veterinarian offers a behavioral role model to children as regards their interactions with the working team, leading to an internalization of social rules, to the acceptance of responsibilities, and to the development of respect and attention to another's needs (Scandurra et al., 2021b).

Regarding the association between the human-animal bond and the quality of the sessions (i.e., the smoothness and depth of elaboration), our findings are consistent with previous studies, highlighting the positive impact of the HAI on the clients' perception of safety and positive acceptance, as well as on their willingness to engage in emotional disclosure (Bryan et al., 2014; Evans-Wilday et al., 2018; Parish-Plass, 2021; Serpell et al., 2017). Integrating a therapy dog within clinical practice can lead to a reduction in autonomic arousal and anxiety related to the therapeutic work, contributing to a positive perception of the therapeutic space, and allowing more spontaneous behaviors to occur (Lockwood, 1983). The unconditional acceptance offered by the animal can help to create a sense of relational safety, which in turn may lead to a decrease in maladaptive behaviors and, thus, to an enhancement of the gains achieved in the therapeutic alliance (Serpell et al., 2017). Compared with the complexity of human relationships, interactions with animals tend to be experienced as more straightforward due to their greater predictability, stability, and security (Levinson, 1969). Animals are often non-judgmental, emotionally available, and non-threatening, and therefore children may feel relatively in control and confident when communicating with them (Zilcha-Mano et al., 2011). All these unique characteristics of animals, together with the fact that human-animal relationships generally involve freedom from external pressures and social and cultural restrictions, lead patients to feel more comfortable in interacting with them and in continuing to practice their social-communication skills without fear of rejection (Parish-Plass, 2008).

Our results also indicate that the human-animal bond positively affects not only the smoothness of the sessions but also the degree of the depth of elaboration, which is a necessary requirement for therapeutic success. This finding fits with the idea of the animal as an attachment figure, serving as a safe haven and a secure base for the working through of emotionally distressing and potent issues (Zilcha-Mano et al., 2011). From an attachment perspective, the AAT implies the formation of a strong relationship which might be regarded as a form of attachment tie, activating the client's internal working models and enabling the development of a secure basis, which is essential for therapeutic change (Bowlby, 1988; Obegi et al., 2008). Consistent with Bowlby's (1988) concept of a secure base, a secure attachment to the therapist in the context of conventional therapy has been found to be associated with deeper and smoother sessions (Mallinckrodt et al., 2005; Romano et al., 2008). However, whereas in conventional therapy it

generally requires considerable time and great effort to achieve a sufficiently secure attachment, due to the projection of the client's maladaptive working models onto the character of the clinician, co-therapist animals can more easily be experienced as secure attachment figures (Beetz et al., 2012). Indeed, relationships with animals are relatively free from maladjusted projections and are more likely to be perceived as straightforward and predictable compared to interpersonal relationships, which are rather burdened with hopes, fears, expectations, and disappointments (Levinson, 1969).

The results of the current work should be understood in the light of several limitations. First, the small size and specific composition of the sample prevent the results from being generalized. The group participants consisted in only three children, all male, aged from 7 to 9. Future studies should be carried out replicating the intervention with a wider sample diversified according to specific socio-demographic characteristics, such as gender and age.

Secondly, our results are limited in their ability to provide insights into the efficacy of AAT since no information about the intervention outcomes was available and no control condition was included. Indeed, the present study was not intended to directly assess the effectiveness of AAT interventions but to shed light on how HAIs relate to some dimensions recognized as relevant to therapeutic success and to adopt a study model for interpreting effects. Additional research is needed to test these findings in relation to treatment outcomes. Furthermore, future studies should use experimental designs with a control group experiencing the same intervention program but without the presence of an animal.

Thirdly, this study does not allow any determination of whether certain characteristics of the child, such as pet ownership and attitude toward animals, may have affected our results. Any future research should consider these variables in order to analyze their possible impact on the observed effects.

Finally, since the current work was a retrospective study because the Covid-19 pandemic did not allow us to implement prospective interventions (Ciccarelli et al., 2021; Moroianu et al., 2021; Ranieri et al., 2021; Rollè et al., 2022; Scandurra et al., 2021a; Veronese et al., 2021), it did not include any self-report measures and relied exclusively on an observer perspective. Although it has been widely suggested that observer ratings should be preferred in child psychotherapy due to developmental factors that may limit the children's ability to report accurately on their thoughts and feelings related to the clinical work, future research will also need to include self-report ratings to directly capture the subjective experience of the client and therapist.

5. Conclusions

The current study represents an initial investigation into the change processes occurring during AATs with children, offering some limited but specific insights into the interspecific relationship as a central axis of such treatments, in accordance with the suggestions of the FMHZ. Providing empirical evidence on the human-animal bond as a catalyst of a series of processes relevant to therapeutic success is crucial to enable an awareness of which mechanisms are involved and, particularly, which specific aspects of the relationship between the client and the co-therapist animal contribute most significantly to this catalytic effect. Building a strong empirical understanding of AATs is necessary in order to incorporate such therapies within clinical practice on a regular basis, taking full advantage of the invaluable therapeutic opportunities provided by the relationship between humans and animals.

Ethical approval: The current study was approved by the ethical committee of the University of Naples Federico II (protocol number: 188/19; date: 8 July 2019), conducted in according with the EU General Data Protection Regulation (GDPR), and designed in the respect of principles of the Declaration of Helsinki.

Informed Consent Statement: Once the children eligibility had been established, an informed consent to participate and for publication was obtained and signed by their parents before the intervention.

Data Availability Statement: The data and materials that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest statement: The authors have no conflicts of interest to declare that are relevant to the content of this article.

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Author Contributions: FM, CS (second author), RP, AS, LFM, and CS (last author) designed the study. SC, SG, NMM, and VB contributed to the acquisition of data. CS (last author) analyzed the data. All authors interpreted the data. FM, CS, and RP drafted the manuscript. FM, CS, RP, AS, SC, and SG performed the measurements. AS, NMM, VB, LFM, and CS (last author) critically revised the manuscript. FM, AS, LFM, and CS (last author) had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analyses. All authors have read the manuscript and have agreed with its submission.

References

1. Alexander, L. B., & Luborsky, L. (1986). The Penn Helping Alliance Scales. In L. S. Greenberg & W. M. Pinsof (Eds.), *The psychotherapeutic process: A research handbook* (pp. 325–366). New York: Guilford Press.
2. American Veterinary Medical Association. *The human-animal interaction and human-animal bond.* Retrieved November 23, 2021, from: https://www.avma.org/one-health/human-animal-bond
3. Ardito, R. B., & Rabellino, D. (2011). Therapeutic alliance and outcome of psychotherapy: Historical excursus, measurements, and prospects for research. *Frontiers in Psychology*, *2*, 270. https://doi.org/10.3389/fpsyg.2011.00270
4. Balluerka, N., Muela, A., Amiano, N., & Caldentey, M. A. (2014). Influence of animal-assisted therapy (AAT) on the attachment representations of youth in residential care. *Children and Youth Services Review*, *42*, 103–109. https://doi.org/10.1016/j.childyouth.2014.04.007
5. Beetz, A. M. (2017). Theories and possible processes of action in animal assisted interventions. *Applied Developmental Science*, *21*(2), 139–149. https://doi.org/10.1080/10888691.2016.1262263
6. Beetz, A., Julius, H., Turner, D., &Kotrschal, K. (2012). Effects of social support by a dog on stress modulation in male children with insecure attachment. *Frontiers in Psychology*, *3*, 352. https://doi.org/10.3389/fpsyg.2012.00352
7. Bert, F., Gualano, M. R., Camussi, E., Pieve, G., Voglino, G., & Siliquini, R. (2016). Animal assisted intervention: A systematic review of benefits and risks. *European Journal of Integrative Medicine*, *8*(5), 695-706. https://doi.org/10.1016/j.eujim.2016.05.005
8. Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research & Practice, 16*(3), 252 – 60. https://doi.org/10.1037/h0085885
9. Bowlby, J. (1969). *Attachment and loss. Vol. 1: Attachment.* New York: Basic Books.
10. Bowlby, J. (1988). A *secure base: Parent-child attachment and healthy human development*. New York: Basic Books.
11. Bryan, J. L., Quist, M. C., Young, C. M., Steers, M. L. N., Foster, D. W., & Lu, Q. (2014). Canine comfort: Pet affinity buffers the negative impact of ambivalence over emotional expression on perceived social support. *Personality and Individual Differences*, *68*, 23–27. https://doi.org/10.1016/j.paid.2014.04.003
12. Carminati, G. G., Lehotkay, R., Martin, F., & Carminati, F. (2013). An hypothesis about Jung's collective unconscious and animal-assisted therapy. *NeuroQuantology*, *11*(3). https://doi.org/10.14704/nq.2013.11.3.679
13. Chandler, C. K. (2005). *Animal-assisted therapy in counseling*. New York: Routledge.
14. Ciccarelli, M., Nigro, G., D'Olimpio, F., Griffiths, M. D., Sacco, M., Pizzini, B., & Cosenza, M. (2022). The associations between loneliness, anxiety, and problematic gaming behavior during the COVID-19 pandemic: The mediating role of mentalization. *Mediterranean Journal of Clinical Psychology*, *10*(1). https://doi.org/10.13129/2282-1619/mjcp-3257
15. Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, *20*, 37-46.
16. Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, 310–357.

17. Crossman, M. K. (2017). Effects of interactions with animals on human psychological distress. Journal of Clinical Psychology. 73(7), 761–784. https://doi.org/10.1002/jclp.22410
18. Dicé, F., Santaniello, A., Gerardi, F., Menna, L. F., & Freda, M. F. (2017). Meeting the emotion! Application of the Federico II Model for pet therapy to an experience of Animal Assisted Education (AAE) in a primary school. *Pratiques Psychologiques*, *23*(4), 455–463. https://doi.org/10.1016/j.prps.2017.03.001
19. Elvins, R., & Green, J. (2008). The conceptualization and measurement of therapeutic alliance: An empirical review. *Clinical Psychology Review*, *28*(7), 1167–1187.https://doi.org/10.1016/j.cpr.2008.04.00
20. Evans-Wilday, A. S., Hall, S. S., Hogue, T. E., & Mills, D. S. (2018). Self-disclosure with dogs: Dog owners' and non-dog owners' willingness to disclose emotional topics. *Anthrozoös*, *31*(3), 353–366. https://doi.org/10.1080/08927936.2018.1455467
21. Fine, A. H., & Beck, A. (2010). *Understanding our kinship with animals. Handbook on Animal-Assisted Therapy*, 3–15. https://doi.org/10.1016/b978-0-12-381453-1.10001-7
22. Fine, A. H., Beck, A. & Ng, Z. (2019). The state of animal-assisted interventions: Addressing the contemporary issues that will shape the future. *International Journal of Environmental Research and Public Health*, *16*(20), 3997. https://doi.org/10.3390/ijerph16203997
23. Flynn, E., Zoller, A. G., Gandenberger, J., & Morris K. N. (2021) Improving engagement in behavioral and mental health services through animal-assisted interventions: A scoping review. *Psychiatric Services*. Advance Online Publication. https://doi.org/10.1176/appi.ps.202000585
24. Gennaro, A., Rocco, D., Negri, A., Auletta, A., Marinaci, T., Dell'Arciprete, G., ... & Salvatore, S. (2022). The role of interpretation in fostering the psychotherapy process: Evidence from a single case study. *Mediterranean Journal of Clinical Psychology*, *10*(1). https://doi.org/10.13129/2282-1619/mjcp-3320
25. Germone, M. M., Gabriels, R. L., Guérin, N. A., Pan, Z., Banks, T., &O'Haire, M. E. (2019). Animal-assisted activity improves social behaviors in psychiatrically hospitalized youth with autism. *Autism*, *23*(7), 1740–1751. https://doi.org/10.1177/1362361319827411
26. Guérin, N. A., Gabriels, R. L., Germone, M. M., Schuck, S. E., Traynor, A., Thomas, K. M., McKenzie, S. J., Slaughter, V., &O'Haire, M. E. (2018). Reliability and validity assessment of the Observation of Human-Animal Interaction for Research (OHAIRE) behavior coding tool. *Frontiers in Veterinary Science*, *5*, 268–282. https://doi.org/10.3389/fvets.2018.00268
27. Hutton, V. E. (2014). Companion animals and wellbeing when living with HIV in Australia. *Anthrozoös*, *27*(3), 407–421. https://doi.org/10.2752/175303714x14023922797823
28. International Association of Human Animal Interaction Organizations (IAHAIO). *IAHAIO White Paper 2018, Updated for The IAHAIO Definitions for Animal Assisted Intervention and Guidelines for Wellness of Animals Involved in AAI*. Retrieved November 23, 2021, from: https://iahaio.org/wp/wp-content/uploads/2021/01/iahaio-white-paper-2018-english.pdf
29. Julius, H., Beetz, A., Kotrschal, K., Turner, D., &UvnäsMoberg, K. (2013). *Attachment to pets – An integrative view of human-animal relationships with implications for therapeutic practice*. New York: Hogrefe.

30. Kamioka, H., Okada, S., Tsutani, K., Park, H., Okuizumi, H., Handa, S., … Mutoh, Y. (2014). Effectiveness of animal-assisted therapy: A systematic review of randomized controlled trials. *Complementary Therapies in Medicine*, *22*(2), 371–390. https://doi.org/10.1016/j.ctim.2013.12.016
31. Kurdek, L. (2009). Pet dogs as attachment figures for adult owners. *Journal of Family Psychology*, *23*(4), 439–446. https://doi.org/10.1037/a0014979
32. Levinson, B. M. (1969). *Pet-oriented psychotherapy*. Springfield: Charles C. Thomas Publisher.
33. Lockwood R. (1983). The influence of animals on social perception. In A. H. Katcher& A. M. Beck (Eds.), *New perspectives on our lives with companion animals* (pp. 64–71). Philadelphia: University of Pennsylvania Press.
34. López-Cepero, J. (2020). Current status of animal-assisted interventions in scientific literature: A critical comment on their internal validity. *Animals*, *10*(6), 985. https://doi.org/10.3390/ani10060985
35. Mallinckrodt, B., Porter, M. J., & Kivlighan, D. M. (2005). Client attachment to therapist, depth of in-session exploration, and object relations in brief psychotherapy. *Psychotherapy: Theory, Research, Practice, Training, 42*(1), 85–100. https://doi.org/10.1037/0033-3204.42.1.85
36. Martin, D. J., Garske, J. P., & Davis, M. K. (2000). Relation of the therapeutic alliance with outcome and other variables: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, *68*(3), 438–450. https://doi.org/10.1037/0022-006X.68.3.438
37. McLeod, B. D. (2011). Relation of the alliance with outcomes in youth psychotherapy: A meta-analysis. *Clinical Psychology Review*, *31*(4), 603-616. https://doi.org/10.1016/j.cpr.2011.02.001
38. McLeod, B. D., & Weisz, J. R. (2005). The therapy process observational coding system-alliance scale: Measure characteristics and prediction of outcome in usual clinical practice. *Journal of Consulting and Clinical Psychology*, *73*(2), 323–333. https://doi.org/10.1037/0022-006X.73.2.323
39. Menna, L. F. (2015). *The scientific approach to pet therapy. The method and training according to the Federician Model*, 1st ed. Napoli: University of Naples Federico II.
40. Menna, L. F., Santaniello, A., Amato, A., Ceparano, G., Di Maggio, A., Sansone, M., Formisano, P., Cimmino, I., Perruolo, G., & Fioretti, A. (2019a). Changes of oxytocin and serotonin values in dialysis patients after Animal Assisted Activities (AAAs) with a dog: A preliminary study. *Animals*, *9*(8), 526. https://doi.org/10.3390/ani9080526
41. Menna, L. F., Santaniello, A., Todisco, M., Amato, A., Borrelli, L., Scandurra, C., & Fioretti, A. (2019b). The human–animal relationship as the focus of animal-assisted interventions: A one health approach. *International Journal of Environmental Research and Public Health*, *16*(19), 3660. https://doi.org/10.3390/ijerph16193660
42. Morin, E. (1992). From the concept of system to the paradigm of complexity. *Journal of Social and Evolutionary Systems*, *15*(4), 371–385. https://doi.org/10.1016/1061-7361(92)90024-8
43. Moroianu, L. A., Moroianu, M., Toma, A., Barbu, R. E., Ardeleanu, V., & Nitoi, L. C. (2021). Psychopathology in patients diagnosed with SARS COV 2: A brief report. *Mediterranean Journal of Clinical Psychology*, *9*(1). https://doi.org/10.6092/2282-1619/mjcp-2982
44. Ng, Z. Y., & Fine, A. H. (2019). Considerations for the retirement of therapy animals. *Animals*,*9*(12). https://doi.org/10.3390/ani9121100

45. Obegi, J. H. (2008). The development of the client-therapist bond through the lens of attachment theory. *Psychotherapy: Theory, Research, Practice, Training*, *45*(4), 431–446. https://doi.org/10.1037/a0014330
46. Parish-Plass, N. (2008). Animal-assisted therapy with children suffering from insecure attachment due to abuse and neglect: A method to lower the risk of intergenerational transmission of abuse? *Clinical Child Psychology and Psychiatry*, *13*(1), 7-30. https://doi.org/10.1177/1359104507086338
47. Parish-Plass, N. (2021). Animal-assisted psychotherapy for developmental trauma through the lens of interpersonal neurobiology of trauma: Creating connection with self and others. *Journal of Psychotherapy Integration*, *31*(3), 302–325.https://doi.org/10.1037/int0000253
48. Peacock, J., Chur-Hansen, A., &Winefield, H. (2012). Mental health implications of human attachment to companion animals. *Journal of Clinical Psychology*, *68*(3), 292–303. https://doi:10.1002/jclp.20866
49. Pennella, A. R., & Bignami, G. M. (2021). I didn't think you were listening. Some reflections on online setting and patient proxy in the remote clinical relationship. *Mediterranean Journal of Clinical Psychology*, *9*(3). https://doi.org/10.13129/2282-1619/mjcp-3155
50. Pesale, F. P., Hilsenroth, M. J., & Owen, J. J. (2012). Patient early session experience and treatment outcome. *Psychotherapy Research*, *22*(4), 417–425. https://doi.org/10.1080/10503307.2012.662607
51. Prothmann, A., Albrecht, K., Dietrich, S., Hornfeck, U., Stieber, S., &Ettrich, C. (2005). Analysis of child—dog play behavior in child psychiatry. *Anthrozoös*, *18*(1), 43–58. https://doi.org/10.2752/089279305785594261
52. Ranieri, J., Guerra, F., Cilli, E., Caiazza, I., Gentili, N., Ripani, B., ... & Di Giacomo, D. (2021). Buffering effect of e-learning on Generation Z undergraduate students: A cross-sectional study during the second COVID-19 lockdown in Italy. *Mediterranean Journal of Clinical Psychology*, *9*(2). https://doi.org/10.13129/2282-1619/mjcp-3051
53. Rocco, D., Salcuni, S., & Antonelli, E. (2017). A pilot study of the Italian adaptation of the Session Evaluation Questionnaire fourth version. *Research in Psychotherapy: Psychopathology, Process and Outcome*, *20*(2). https://doi.org/10.4081/ripppo.2017.269
54. Rodda, S. N., Lubman, D. I., Jackson, A. C., & Dowling, N. A. (2016). Improved outcomes following a single session web-based intervention for problem gambling. *Journal of Gambling Studies*, *33*(1), 283–299. https://doi.org/10.1007/s10899-016-9638-2
55. Rodriguez, K.E., Herzog, H., &Gee, N.R. (2021). Variability in human-animal interaction research. *Frontiers in Veterinary Science*, *7*, 619600. https://doi.org/10.3389/fvets.2020.619600
56. Rollè, L., Trombetta, T., Calabrese, C., Vismara, L., & Sechi, C. (2022). Adult attachment, loneliness, Covid-19 risk perception and perceived stress during Covid-19 pandemic. *Mediterranean Journal of Clinical Psychology*, *10*(1). https://doi.org/10.13129/2282-1619/mjcp-3286
57. Romano, V., Fitzpatrick, M., & Janzen, J. (2008). The secure-base hypothesis: Global attachment, attachment to counselor, and session exploration in psychotherapy. *Journal of Counseling Psychology*, *55*(4), 495. https://doi.org/10.1037/a0013721

58. Santaniello, A., Dicé, F., Claudia Carratú, R., Amato, A., Fioretti, A., &Menna, L. F. (2020). Methodological and terminological issues in animal-assisted interventions: An umbrella review of systematic reviews. *Animals*, *10*(5), 759. https://doi.org/10.3390/ani10050759
59. Scandurra, C., Bochicchio, V., Dolce, P., Valerio, P., Muzii, B., & Maldonato, N. M. (2021). Why people were less compliant with public health regulations during the second wave of the Covid-19 outbreak: The role of trust in governmental organizations, future anxiety, fatigue, and Covid-19 risk perception. *Current Psychology*. Advance online publication. https://doi.org/10.1007/s12144-021-02059-x
60. Scandurra, C., Santaniello, A., Cristiano, S., Mezza, F., Garzillo, S., Pizzo, R., … Bochicchio, V. (2021b). An animal-assisted education intervention with dogs to promote emotion comprehension in primary school children-The Federico II Model of Healthcare Zooanthropology. *Animals*, *11*(6), 1504. https://doi.org/10.3390/ani11061504
61. Schneider, M. S., & Harley, L. P. (2006). How dogs influence the evaluation of psychotherapists. *Anthrozoös*, *19*(2), 128–142. https://doi.org/10.2752/089279306785593784
62. Serpell, J., McCune, S., Gee, N., & Griffin, J. A. (2017). Current challenges to research on animal-assisted interventions. *Applied Developmental Science*, *21*(3), 223–233. https://doi.org/10.1080/10888691.2016.1262775
63. Shen, R. Z. Z., Xion, P., Chou, U. I., & Hall, B. J. (2018). "We need them as much as they need us": A systematic review of the qualitative evidence for possible mechanisms of effectiveness of Animal-Assisted Intervention (AAI) in participants' overall conditions. *Complementary Therapies in Medicine*, *41*, 203–207. https://doi.org/10.1016/j.ctim.2018.10.001
64. Shirk, S. R., &Saiz, C. C. (1992). Clinical, empirical, and developmental perspectives on the therapeutic relationship in child psychotherapy. *Development and Psychopathology*, *4*(4), 713–728. https://doi.org/10.1017/S0954579400004946
65. Somma, A., Maffei, C., Borroni, S., Gialdi, G., & Fossati, A. (2019). Post traumatic reactions as individual differences: Latent structure analysis of the international trauma questionnaire in Italian trauma-exposed and non-trauma exposed adults. *Mediterranean Journal of Clinical Psychology*, *7*(1). https://doi.org/10.6092/2282-1619/2019.7.2058
66. Stiles, W. B. (1980). Measurement of the impact of psychotherapy sessions. *Journal of Consulting and Clinical Psychology, 48*(2), 176–185. https://doi.org/10.1037/0022-006X.48.2.176
67. Stiles, W. B., & Snow, J. S. (1984). Dimensions of psychotherapy session impact across sessions and across clients. *British Journal of Clinical Psychology, 23*(1), 59–63. https://doi.org/10.1111/j.2044-8260.1984.tb00627.x
68. Stiles, W. B., Reynolds, S., Hardy, G. E., Rees, A., Barkham, M., & Shapiro, D. A. (1994). Evaluation and description of psychotherapy sessions by clients using the Session Evaluation Questionnaire and the Session Impacts Scale. *Journal of Counseling Psychology*, *41*(2), 175–185. https://doi.org/10.1037/0022-0167.41.2.175
69. Stiles, W. B., Shapiro, D. A., & Firth-Cozens, J. A. (1990). Correlations of session evaluations with treatment outcome. *British Journal of Clinical Psychology*, *29*(1), 13–21. https://doi.org/10.1111/j.2044-8260.1990.tb00844.x

70. Veronese, G., Cavazzoni, F., Fiore, F., & Rachel, P. (2021). Fear of COVID-19 mediates the relation between mental distress and at-risk health behaviours in Italian adults. *Mediterranean Journal of Clinical Psychology*, *9*(3). https://doi.org/10.13129/2282-1619/mjcp-3145

71. Visintini, R., Roder, E., Gaj, N., & Maffei, C. (2020). Group experience therapy for outpatients with borderline personality disorder features: Preliminary results on its effectiveness in a randomized trial. *Mediterranean Journal of Clinical Psychology*, *8*(1). https://doi.org/10.6092/2282-1619/mjcp-2275

72. Wesley, M. C., Minatrea, N. B., & Watson, J. C. (2009). Animal-assisted therapy in the treatment of substance dependence. *Anthrozoös*, *22*(2), 137–148. https://doi.org/10.2752/175303709x434167

73. Wilson, E.O. (1984) *Biophilia: The human bond with other species*. Cambridge: Harvard University Press.

74. Zilcha-Mano, S., Mikulincer, M., & Shaver, P. R. (2011). Pet in the therapy room: An attachment perspective on animal-assisted therapy. *Attachment & Human Development*, *13*(6), 541–561. https://doi.org/10.1080/14616734.2011.608987

DOI: 10.13129/2282-1619/mjcp-3433