**Animal-Assisted Psychotherapy and Changes in a Child’s Social Behavior: A Case Study**

**Abstract**

This paper describes social changes during the successful treatment of a seven-year-old boy diagnosed with ADHD and severe social problems. The study’s goals were to observe changes in child-animal relationships during 32 sessions of animal-assisted psychotherapy and assess whether they explain the child’s social behavior changes. Changes in child-animal relationships were studied across two therapy phases using four measures. Changes in nonverbal and verbal behaviors were assessed by analyzing four videotaped sessions, using a measure developed for this study. Changes in the child’s internal representation of the animals were assessed by analyzing interviews with the child in each therapy phase, using the Core Conflictual Relationship Theme method. Changes in the child’s symptoms were assessed by parents using Youth Outcome Questionnaires. Results show that each therapy phase was characterized by a distinct pattern of child-animal relationships. The child’s stated wish “to be close” to the animals in the early phase of therapy was manifested by holding small animals (mice) or less interactive animals (snakes), studying them, and evoking free associations about them and himself. The child’s subsequent wish “to be good” to the animals was manifested by feeding large and interactive animals (a family of rabbits) and addressing his dyadic or triadic relationships during therapy. The change in behavioral patterns corresponded with a parental report that his behavioral symptoms were no longer in the clinical range. We suggest that interactions with animals facilitated a growing awareness regarding the needs of others in the child’s internal world.

Keywords: children’s psychotherapy, child-animal relationships, process of change in therapy, social symptoms improvement, therapy outcomes, case study.

# Introduction

The inclusion of animals in psychotherapy is not new. Freud’s beloved dog, Jo-Fi, was often present during his treatment sessions, and he often described the impact of dogs on people’s emotional state (Pellegrini, 2009). The first explicit linkage to psychoanalytic theory took place during the mid-twentieth century when the psychiatrist Boris Levinson included his dog, Jingles, in the therapy sessions of a five-year-old boy whose therapy was not progressing. Levinson (1984) proposed that the dog functioned as a psychotherapeutic adjunct, enabling the child’s unconscious content and internal representations to be expressed. However, Animal-Assisted Psychotherapy (AAP) did not develop as a comprehensive therapeutic approach until recently (Fine, 2015; Kazdin, 2017; Serpell et al., 2017).

## Principles of AAP

The literature describes three principles of AAP with children. First, children can relax in the presence of animals, and fulfill their need for emotional intimacy, thus contributing to the development of the therapy alliance (Lev-Bendov & Barel, 2013; Levinson, 1984; Zilcha-Mano, 2017). Second, the similarities between the human life cycle and the animal life cycle (e.g., nurturing) make it possible for children to transfer their life experiences onto their interactions with animals (Levinson, 1984; Maayan, 2013). Third, animals respond to children’s behavior, thus creating a unique opportunity for interactions (Axelrad-Levy & Lancia, 2016; Borgi & Cirulli, 2016).

Currently, therapists use a variety of domestic animals, including representatives of the fowl, reptile families, and mammal families, especially dogs. The rationale is that different animals can evoke a variety of free associations or transferential issues and activate patterns of behavior within children undergoing therapy; for example, rats and snakes can evoke fear, while rabbits can evoke warmth. The therapy takes place in a fixed setting called the animals’ room or a therapy zoo. This adheres to Winnicott’s (1971) concept of a “potential therapy space.” The child is free to wander in this space and to choose which animals to interact with, the activity, and the place (Axelrad-Levy et al., 2004). A therapy session with animals can be visualized as a triangle, whereby the therapy process can vary between different patterns of real relationships (child-animal-therapist) and transferential relationships driven by both patient’s and therapist’s past experiences with animals and significant people (Figure 1).

Figure 1

*The Dynamic Change Between Real Relationships and Transferential Relationships in Animal-Assisted Psychotherapy*

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## Research on AAP for Children with Emotional Problems

Two literature reviews (Hoagwood et al., 2017; O’Haire et al., 2015) and three meta-analyses (Chitic et al., 2012; Marino, 2012; Nimer & Lundahl, 2007) indicated the lack of robust and rigorous research in animal-assisted therapy (AAT). None of them distinguished between AAP and other types of AAT. Kazdin (2017) and Serpell et al. (2017) indicated three problematic areas in this research field. First, there is a lack of coherent concepts that specify the process through which changes in human-animal relationships contribute to changes in psychological factors and therapy outcomes. Second, studies are designed with cohesive inference mechanisms, rather than using only the pre-post design. Third is the difficulty of planning studies with rigorous strategies wherein the clinical conditions meet most of the standards for randomized controlled trials.

We observed three additional unsatisfactory measurement approaches: (a) determining the effect size of therapists *separately* from the that of the animals, (b) using therapeutic research tools not standardized to the animal-human bond (e.g., attachment), and (c) a focus in most clinical studies on adults and elderly people (approximately 80% of the studies) and the use of dogs (70%). Nevertheless, three consistent findings may be derived from the meta-analyses. First, there is a significant association between the presence of animals in therapy sessions and improvement in patients’ well-being, stress reduction, and social behavior. Second, the effect size of dogs and a combination of several types of animals on therapy outcomes are both positive; however, the impact of dogs is greater. Third, children under the age of 11 present the most effective outcomes compared to other age groups.

We designed the present study as a first step towards understanding the contribution of child-animal relationships to changing psychological factors. To look at micro-changes in children’s behaviors in the extensive study conducted, we analyzed each child’s therapy process using three different measurements at each point; then for this paper, we elected to report about one successful treatment case.

# Research Questions

1. What were the child’s preferred animals and what characterized the child’s nonverbal and verbal behaviors with the animals, during therapy?
2. Are changes in the child’s internal representation of the animals associated with changes in the child’s behavior during therapy?
3. How are changes in a child’s behavior during therapy related to changes in the child’s behavioral symptoms as reported by parents?

# Methods

## Case Selection

## Nine children were recruited for a larger study conducted through pediatrics clinics and the school system in the western part of Jerusalem. The children’s average age was 7.9 (SD = 0.740). They were all diagnosed with ADHD or another specific learning disorder, and presented behavioral and social problems. One child who presented major improvement in symptoms between session 3 and session 21, as assessed by the Youth Outcome Questionnaire® (Y-OQ) measure (Burlingame et al., 2005), was selected for this case study. This child was seven-year-old boy, in second grade. He is the second of three children in his family diagnosed with ADHD. In the intake interview, the parents described the child’s difficulties in forming social relationships and oppositional behaviors towards adults. All information regarding this child has been disguised to protect anonymity.

## The Psychotherapy and the Setting

Psychotherapy took place in a therapy-zoo-lab. It consisted of 32 weekly sessions that were 45 minutes long. The sessions were videotaped, with consent. The therapy-zoo-lab consisted of eleven different types of domesticated animals: families of rabbits, chinchillas, and mice, two cats, three guinea pigs, a hamster, a tortoise, two corn snakes, three lizards, one fish aquarium; and three cockatiels. None of these animals belonged to the therapists or the researcher, and which were supervised by a veterinarian. The ethical standards for animal welfare in Israel were applied scrupulously.

During the sessions, the child was free to choose the animal, the activity (e.g., nourishing, playing) and the place in the therapy-zoo-lab (such as the animal’s cage or the kitchen). The therapist was a 34-year-old female with four years of experience in conducting AAT with school-aged children. She received weekly supervision from a senior AAP therapist who uses a psychodynamic approach, but who was not a member of the research team.

## The Study Design

## We studied changes in the child’s nonverbal behaviors and verbal contents during two phases of the therapy: an early phase (sessions 3-4) and a later phase (sessions 20-21). We did not choose the termination phase of therapy (sessions 29-30) because both the therapists and the child were focused on closing the therapy process. Four sets of data from three different sources in the two therapy phases were collected. First, to study the changes in the child’s interpersonal representations of the animals, we coded two interviews with the child, one from each therapy phase (session 3 from the early phase and session 20 from the later phase), using the Core Conflictual Relationship Theme (CCRT) manual (Luborsky & Crits-Christoph, 1998). For this process, we implemented the qualitative coding procedure of the CCRT approach. Second, to study changes in the child’s nonverbal behaviors and verbal contents during therapy, we coded the four videotaped sessions (sessions 3, 4, 20, and 21) using a quantitative coding scheme developed for the larger study. Third, we transcribed segments of the four videotaped sessions, following episodes in which the child interacted with the same animal that appeared in his CCRT interviews. Fourth, we studied changes in the child’s symptoms by comparing the child’s scores on four subscales in the Y-OQ (Burlingame et al., 2005), which were completed by the parents in the early phase and the later phase.

## Measures

## The Core Conflictual Relationships Themes

##  The CCRT instrument (Luborsky & Crits-Christoph, 1998) identifies patients’ conflictual interpersonal patterns and how they change during therapy. Through a structured interview, participants describe relational episodes about significant others: father, mother, therapist, and the animals. The episodes are then coded on a seven-point Likert scale to determine the subject’s wishes (W) regarding the other, the perceived response of the other (RO), and the response of the self (RS). In the larger study, children related nine episodes. For this article, we analyzed six narratives about animals, three from each interview (sessions 3 and 20). Two trained students coded these narratives independently, identifying the main W, RO, and RS according to the CCRT protocol (Luborsky & Crits-Chrostoph, 1998). We compared the students’ lists of CCRT with the authors’ list in each of the three components, then discussed the gaps in ratings and agreed on the final category.

***Videotape Coding Scheme***

We developed a quantitative coding scheme comprised of 18 categories for the videotaped sessions in the larger study. (The scale can be obtained from the first author). The categories describe the child’s interactions with the animals including verbal and nonverbal features, and the animals’ responses to the child’s initiatives. Three clinicians developed this scheme based on eight interviews that the first author conducted with senior animal-assisted psychotherapists, and observation of 15 videotaped sessions. For the current case study, we used nine categories: four describe the child’s nonverbal behavior, three describe the child’s verbal contents, and two describe the animals’ responses. The coding was a three-stage process. First, each session was divided into episodes defined by the type of animal the child chose, and the duration of each episode was measured. Second, the episodes were coded according to the nine categories. Finally, episodes in which the child interacted with the same animal that appeared in his CCRT interviews were transcribed and analyzed qualitatively.

**Child’s Nonverbal Behaviors**. These were comprised of four categories: animal type, touching versus not touching the animal, direct eye contact versus other types of eye contact, and specific actions that the child initiated. Three types of actions were coded as (a) “holding” – placing the animal on thechild’s body; (b) “feeding” – all actions aimed at nurturing the animal/s; and (c) “living space arranging” – all activities which aimed to build, reshape or place the animals’ environment.

**Animal Behavior***.* This was comprised of two categories: animal compliance with the child’s lead; and animal non-compliance and opposition to the child’s actions or will (e.g., hiding or not eating).

**Child’s Verbal Contents*.*** These were comprised of three categories: addressing the animal’s realistic state (e.g., the animal’s physical condition/abilities), evoking free associations regarding the animals or the child’s personal world (e.g., “Cats and dogs are not alike, like me and my brother”), and addressing the relationships with the animal (e.g., “Why is he running away from me?”).

**Training Coders and the Obtained Reliability*.*** The team included the first author and a master’s degree student in social work. As training, the team coded 15 sessions from this child’s therapy and other children’s therapy. They then coded sessions 3, 4, 20 and 21 for this case study. Cohen’s kappa was calculated for each category separately and were as follows: (a) *almost perfect* for the animal type and the child’s activity (0.904 - 1.00 and 0.785-0.873 respectively) (b) *substantial* for the touch categories (0.851 - 0.655); (c) *moderate* for eye contact and the three verbal categories (0.512 - 0.655 and 0.462 - 0.530 respectively) (d) *fair* for the two categories of animals’ behaviors (0.382 - 0.417). The coders met and discussed disagreements, and the final agreed-upon scores were used for the data analysis.

### **The Youth Outcome Questionnaire**

## The Y-OQ (Burlingame et al., 2005) tracks changes in the child’s behavior from the child’s caregivers’ point of view. It consists of 64 questions on a five-point Likert scale divided into six scales: somatic (S), interpersonal relations (IR), social problems (SP), behavioral dysfunction (BD), intrapersonal distress (ID), and critical items (CI). The clinical cut-off for the total questionnaire score is 46, and the reliable change index (RCI) for the total score is 13. For this paper, we analyzed the father’s questionnaires from sessions 4 and 21.

**Data Analysis**

The analyses were carried out in three stages, in which each type of data was first studied separately, and afterwards were studied together. We first analyzed qualitatively the two CCRT interviews with the child to assess the change in his interpersonal representations of the animals during therapy. In the second stage, two separate coding teams analyzed the four videotaped sessions. The quantitative and qualitative analyses were conducted separately by the two researchers in each method, and the third researcher did both. One team assessed the changes in the child’s nonverbal behavior and verbal contents through the quantitative analyses. Through the qualitative analyses, the second team described the child’s verbal content changes with his preferred animals. In the third stage we analyzed the changes in the subscales of the two corresponding parents’ responses to the Y-OQ.

We predicted that changes in the child’s nonverbal behavior and verbal contents would be associated with changes in child’s perspective of his relationships with the animals (assessed using CCRT) and his behavioral symptoms as reported by his father on the Y-OQ.

# Results

## Changes in Child’s Nonverbal Behavior

During both therapy phases, the child spent most of his session time interacting with animals (*M* = 40.7 minutes, 85%, *SD* = 5.7). He chose different animals in each phase. In the early phase, he chose snakes and mice, whereas in the later phase he preferred rabbits. During both phases, the child spent short periods with other animals. As therapy proceeded, the duration of the interaction with the preferred animal increased (Table 1).

Table 1

*Animals Chosen by the Child for Interactions and Duration Times with Each Animal, at Two Therapy Phases*

|  |  |  |
| --- | --- | --- |
|  | Early phaseSessions | Later phaseSessions |
| 3 | 4 | 20 | 21 |
| min | % | min | % | min | % | min | % |
| Total time with animal/s in each session | 37.3 | 83 | 37.5 | 85 | 37.4 | 73 | 50.6 | 96 |
| Snakes | 17.8 | 40 |  |  |  |  |  |  |
| Mice |  |  | 28.6 | 65 |  |  |  |  |
| Chinchillas | 8.1 | 18 |  |  |  |  |  |  |
| Tortoise  | 11.4 | 25 | 5 | 11 |  |  | 1.0 | 2 |
| Hamster |  |  | 3.9 | 9 |  |  |  |  |
| Rabbits  |  |  |  |  | 37.4 | 73 | 33.3 | 64 |
| Guinea pigs |  |  |  |  |  |  | 2.5 | 5 |
| Parrots |  |  |  |  |  |  | 13.75 | 26 |

The child also changed his activity between the two phases. In the first phase, he focused on holding the snakes and mice, whereas in the second phase, he mainly fed the rabbits, and the amount of time spent holding the animals dropped to 3%. The time spent in each dominant activity compared to other activities increased between the two phases (Table 2).

Table 2

*Activities Initiated by the Child and Invested Time in Each Activity, at Both Therapy Phases*

|  |  |  |
| --- | --- | --- |
| Later phase (Sessions 20-21) | Early phase (Sessions 3-4) |  |
|   | *SD* | Mean  | Animal type |   | *SD* | Mean  | Animal type |
| % | min | % | min |
|   | 0.56 | 51.8 |   |   | 0.57 | 44.4 |   | Therapy time |
| 85 | 6.58 | 44.0 |   | 81 | 0.14 | 36.0 |   | Time with animal/s |
| 5 | 2.15 | 2.2 | Rabbits, guinea pigs | 59 | 7.44 | 21.3 | Chinchilla, snake, mice, hamster, tortoise | Holding |
| 80 | 3.32 | 35.1 | Rabbits |  |  |  |  | Feeding |
| 15 | 6.88 | 6.7 | Parrots, tortoise | 41 | 9.45 | 14.8 | Tortoise, hamster | Arranging the animal space |

The frequency of touch and direct eye contact decreased between the two phases. Initially, the child engaged in touching the animals for 43% of the session, and later only 12%. Likewise, his eye contact with the animal dropped from 72% to 58% of the session in the later phase. Finally, the animal’s compliance rate in response to the child’s initiatives decreased as well. The child succeeded in holding the mice in 90% of his attempts (31 out of 34), but was only successful in 30% of his attempts to feed the rabbits (6 out of 21).

## Changes in the Child’s Internal Representations of the Animals and Verbal Contents

Interestingly, during the CCRT interviews the child chose to tell stories about the animals with which he spent most of his session time. The differences between the two phases are evident in three components (Table 3). The child expanded his W by adding two wishes: “to be good” to the animals and “to feel comfortable with them”. His positive RS expanded to include “to help the animals fulfill their needs”. There were no negative RS responses in the later phase.

Table 3

*Changes in Child’s Internal Representation of His Relationships with the Animals: W, RO, and RS, at Both Therapy Phases*

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Early phase(Sessions 3-4) | Later phase(Sessions 20-21) |
| Animals chosen for the narratives | Mice and snakes | Rabbits, snakes, and a turtle |
| Child’s wishes (W) |  | To be close to all animals, especially rabbit kits | * To be close to all animals
* To be good to all, but especially to rabbit kits
* To feel comfortable while being with them
 |
| How child perceived the animals’ response (RO) | Positive | They accept him | They accept him |
| Negative | They reject him  | They reject him |
| How child perceived his own response (RS) | Positive | Accepts their behavior | 1. Accepts their behavior.
2. Helps them fulfill their needs
 |
| Negative | Opposes them  | --------- |

The child’s verbal contents also changed over the two phases. In the first phase, with the mice, the child focused on two topics: the animals’ realistic/physical state and free associations about the animals and his own private life. In the later phase, with the rabbits, those contents dropped to a few utterances, and the child’s focus shifted to the relationships he formed in therapy. The following excerpt from session 21 demonstrates this shift:

Child: [moving the carrot towards the rabbit kit] “The carrot is here!” [pointing to another carrot], “Look, you have another one” . . . “Take it away from him! Catch it! Do not let him have it” . . . [moving the carrot towards the kit] “It is here, look, it is here. Don’t you want the carrot?” . . . [the kit does not eat]. “He is confused, and he does not know how to reach it” . . . “They all want one part, a specific part of the carrot. You do not see the carrot!” [the child goes to bring more carrots] “They are not rushing to eat” . . . “Look. Pay attention. Pay attention. You are going to have one carrot all to yourself. Kits, look, it is there, it will be all yours.”

This excerpt demonstrates how the child’s new wish (W) “to be good” to the animals is manifested in his interaction with the rabbit kits. It also shows the appearance of the new RS “to help the animals fulfill their needs”. The 30% compliance rate indicates that feeding the rabbits was not an easy task. The gap between the child’s expectations (W) and the real relationships with the kits, may have caused frustration. This excerpt reflects the child’s frustration, as he shifted between his wishes that were projected on the kits (e.g., “Don’t you want the carrot?” “You don’t see the carrot?”) and his attempts to explain the reality of the relationships with them (e.g., “He is confused”, “He does not know how to reach it”). We suggest that the ability to make this shift helped him work through this gap, fostering positive RS, dismissing the negative RS, and strengthening his new W.

## Changes in the Child’s Symptoms

The child’s symptoms improved significantly between the two phases, both in the total score and three subscales (S, IR, and SP), of the Y-OQ (Table 4). In the IR and SP scales, there was a reliable change (RCI), and a drop below the clinical cut-off score. The BD subscale did not drop below the clinical range; however, it did show reliable change. These three specific subscales correspond to the parents’ presentation of the child’s problems at intake.

Table 4

*The Child’s Y-OQ Total Score and its Division into Six Subscales: Compared to the Clinical Range (Cut-off)1 and the Reliable Change Index (RCI) 2 at Both Phases of Therapy3*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The later phase | The early phase  | Changes index (RCI) 2 | Clinical range1 |   |
|
|
| 30 | 56 | 13 | 46 | Total score  |
| 3 | 8 | 5 | 5 |  Somatic (S)  |
| 3 | 9 | 4 | 4 |  Interpersonal relations (IR)  |
| 2 | 9 | 5 | 3 |  Social problems (SP)  |
| 14 | 23 | 8 | 12 |  Behavioral dysfunction (BD) |
| 5 | 7 | 8 | 16 |  Intrapersonal distress (ID)  |
| 3 | 0 | 5 | 5 |  Critical items (CI) |

1The clinical range = 46, *SE* = 1.3, *N* = 300. 2 RCI = 13, *SE* = 1.96, *N* = 356 (the minimum scores for presenting significant change between the early and later phases).

 In summary, changes in nonverbal patterns of the child-animal relationship occurred simultaneously with changes in child’s verbal content in therapy and with his internal representations of his relationship with the animals. These changes correspond to the parents’ reports on improvement of social symptoms.

# Discussion

## Development of the Child-Animal Relationships in the Course of Therapy

To present an initial understanding of how interaction with animals may contribute to the therapy process, we first triangulated the results of all three measures. The child’s preferred animal at each therapy phase (mice and snakes versus rabbits) appeared to be associated with the main activity he initiated (holding versus feeding) and with changes in the frequencies of direct eye contact and touch. We suggest that the substantial decrease in the child’s direct eye contact and touching of the animals in the later phase may relate to the characteristics of each activity and the type of animal chosen. Holding involves touch and direct eye contact, which is easier to carry out with less interactive animals like snakes or small animals like mice. When the child changed his activity to feeding, he also changed his preferred animal to larger and more interactive animals, rabbits and rabbit kits. In order to succeed in feeding them, he had to develop other skills, like observing and learning their cooperation capabilities, rather than simply engaging in touch and direct eye contact. The findings also show that the length of time the child spent with the preferred animals in the second phase increased, as did time spent in his preferred activity. Feeding the animals requires the development of reciprocal interaction between the child and the animal; therefore, it continued for a more extended period than holding.

The changes in the child’s behavior were associated with changes in his internal representations of the animals, as seen in the CCRT narratives. In the first phase, the child’s wish “to be close” to the animals fit the nature of the mice, which are comfortable to hold, and the snakes, which are less interactive. Rabbits, on the other hand, are larger and less adaptive to human hands, but they are inclined to eat a lot and are motivated towards interaction. Thus, the child’s wish “to be good” in the later phase was reflected in his attempts to feed the rabbits and to try out different ways of attaining their cooperation. The changes in the child’s wish also seem to parallel the changes in his verbal content during therapy. When he wished “to be close” he evoked free associations and talked about the animals’ reality. In the later phase, when he wished “to be good,” the child talked mainly about the rabbits’ needs and how he should provide for these needs. Therefore, we infer that in this case the child: (a) established two different patterns of relationships with the animals throughout therapy, holding versus feeding; and (b) substituted one pattern of relationships for another one, parallel to changes in his internal representations of the animals.

Interestingly, our findings did not show any association between the extent of animal compliance with the child’s initiatives and his responses towards them. The child spent more time with the rabbits compared to the mice, even though he did not experience as much success in feeding them as he had in holding the mice. Further, when the child experienced success in holding the mice, his RS as related in his CCRT narrative consisted of both positive and negative components (he accepted and opposed the animals). However, when he experienced limited success in feeding the rabbits, his negative RS components disappeared, and a new positive RS was added: “to help the animals fulfill their needs”. It is important to note that the changes in RS took place even though the child’s perspective regarding the animal’s response (RO) did not change.

Finally, we propose drawing an initial link between the changes that occurred in child-animal relationship patterns and the progress the child presented in the three subscales of the Y-OQ: the capacity to suspend the urge to control the situation (BD scale), empathic awareness of others (IR scale), and construction of emotional understanding of his behavior towards others (SP scale). The changes in the RS and the Y-OQ subscales further support our inference that the child developed a social-orientation pattern in the later phase, as he was not focused on lack of compliance, but on his experience of the relationship.

## Understanding Changes in Child-Animal Relationships in the Context of the Therapy Process and Outcomes

Our findings show that in the course of therapy, the child moved from a state of self-orientation to a pattern of social-orientation. Initially, he was focused mainly on his own needs (closeness with the animals) and reflected on the animals through associations from his internal world. Later, he was able to relate to the animals more flexibly. One way of understanding the development of these patterns of child-animal relationships is through the mechanism of displacement-projection with animals, as described in a study by Gavriele-Gold (2000). This study showed that people’s actions with animals might reflect unconscious mental states that parallel their relationships with significant others (attributing to the animal their unacknowledged thoughts, feelings, and deeds). Similar ideas are presented in several case studies (Glucksman, 2005; Roth, 2005). The child in this study suffered from poor communication skills and social skills, and thus his initial CCRT reflected unconscious conflicts regarding wishes for closeness that were not fulfilled. We suggest that the choice of small animals in the initial phase served to fulfill this wish in a way that felt safe. The use of high frequencies of touch with these animals functioned as a fundamental communication skill that compensated for his inadequate capabilities in communicating with other people (Dunbar, 2010; Hertenstein et al., 2006). Thus, choosing small animals and interacting mainly through touch could have been a displacement action to compensate for the child’s poor communication skills. The animals’ high rate of compliance may have contributed to feeling secure in the sessions. Furthermore, touch promotes secretions of hormones that are associated with feelings of warmth and nurturance (Dunbar, 2010) and with an increase in the sense of security and togetherness between people (Serpell et al.,2017). These feelings may have also been transferred to the therapist, enhancing the therapeutic alliance. Thus, it seems that touch may be a mechanism of change in AAP.

In the later phase of therapy, the child’s attention was drawn, for the first time, to the rabbits’ interactions, particularly the kits’ attempts to find their place among the bigger rabbits. New wishes appeared in his narratives: “to be good” and “to feel comfortable” with the animals. These wishes motivated him to initiate new relationships (with rabbits), a new activity (feeding), and a new topic to discuss with the therapist (his relationships). Feeding the rabbits might be viewed as another form of displacement-projection, wherein the child projected images of child-adult relationships onto the rabbits, and their vigorous responses to his attempts to feed them triggered his emotional world. As seen in the excerpt from session 21, the rabbits’ refusal to eat promoted a heightened awareness of the gap between his desires and the rabbits’ needs, as when he said: “Don’t you want the carrots?” and “You are going to have one carrot all to yourself.” It seems that the repeated action of trying to feed rabbits that refused to eat triggered the child’s mental world, but also confronted him with the here-and-now of his relationships with the rabbits.

The child’s awareness of the animals’ real needs indicates the development of his capacity to mentalize. Mentalizing is a form of imaginative mental activity, namely, perceiving and interpreting human behavior in terms of intentional mental states (e.g., needs,

desires, feelings, beliefs, goals, purposes, and reasons). The ability to understand oneself and others is a critical developmental milestone, which contributes to a cohesive sense of self, and to the ability to form stable social relationships (Fonagy et al., 2017). In the excerpt from session 21, the child was clearly trying to understand the rabbits’ refusal to eat: “He is confused”, or “He doesn’t know how to reach it,” or “They are not rushing to eat”. Thus, the intense interaction with living creatures created a shift between two mental states: the child’ internal world and the reality of the relationship with the rabbits.

We suggest that the shifts between these two mental states reinforced the child’s capacity to mentalize. He developed positive RS towards the rabbits and dismissed the negative RS, despite the rabbits’ reluctance to eat. Further, the child’s father reported a significant changes in three Y-OQ subscales that correspond with social relationships. Finally, the child recognized the changes in his own perceptions, saying in one of the later sessions that he was now able to recognize when the animals were hungry, whereas at first, he couldn’t.

In conclusion, we propose that the presence of animals in psychotherapy with children presents a unique opportunity, arousing the child’s inner world and also attention to real relationships with the animals. The need to attend to both internal and external contents facilitates shifts in the child’s mental states, which facilitates the development of mentalization.

The changes in the child’s CCRT narratives fit with changes that have been observed in psychotherapy sessions with adults and adolescents. In one study, changes from the beginning of therapy to the end in terms of the rigidity of the CCRT (additional W, more positive RO and RS) predicted symptomatic improvement (Atzil et al., 2011). In a more recent study, the impact of innovative moments on the decrease of depressive symptoms was mediated by changes in patients’ RS (Batista et al., 2019). Those findings reinforce our proposal to link changes in the child’s internal representation of his relationship with the animals (in the W and RS) and the parental report on symptom improvement, which placed him in the non-clinical range in the Y-OQ.

We suggest that working with animals in therapy may be a precursor to understanding social interaction with peers. It appears that understanding animals requires less complicated social and cognitive skills than those employed in peer relationships. (Beetz, 2017; Serpell et al., 2017). Consequently, the animals enabled the child to express a range of emotions and emotional content that surfaced in the various stages of the therapy and to experience a range of interactions in a secure setting and safe space. The ability to form a variety of interactions that were relatively simple to understand and to maintain made it possible to move back and forth between the internal and external worlds at the child’s own pace.

# Study Limitations

Our analysis is based only on one case, which limits generalizability. Therefore, analyses of additional cases, both successful and unsuccessful, will contribute to the validity of our findings. Our coding instrument, which shows promise, should be further tested in other to increase reliability and validity.

# References

Atzil Slonim, D., Shefler, G., Dvir Gvirsman, S., & Tishby, O. (2011). Changes in rigidity and symptoms among adolescents in psychodynamic psychotherapy. *Psychotherapy Research*, *21*(6), 685–697. <https://doi.org/10.1080/10503307.2011.602753>

Axelrad-Levy, T., Hattab, H., & Blum-Weinberg, P. (2004). The role of the ‘animal-corner’ informing potential therapy space. In *People and animals: A timeless relationship. IAHAIO conference handbook*. International Association of Human-Animal Interaction Organizations.

Axelrad-Levy, T. & Lancia, J. (2016). Why do therapists’ partner with animals in the psychotherapeutic process? A theoretical exploration. In A. Höing & B. Matamonasa (Eds.), *Humans and animals: Intersecting lives and worlds* (pp. 135–147). Inter-Disciplinary Press.

Batista, J., Silva, J., Freitas, S., Alves, D., Machado, A., Sousa, I., . . . Gonçalves, M. M. (2019). Relational schemas as mediators of innovative moments in symptom improvement in major depression. *Psychotherapy Research,* *29(1)* 58–69*.* <https://doi.org/10.1080/10503307.2017.1359427>

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>

Borgi, M., & Cirulli, F. (2016). Pet face: Mechanisms underlying human-animal relationships. *Frontiers in Psychology*, *7*, 298. doi:10.3389/fpsyg.2016.00298

Burlingame, G. M., Wells, M. G., Cox, J. C., & Lambert, M. J. (2005). Administration and scoring manual for the Y-OQTM Youth outcome questionnaire. Brigham Young University. Retrieved from https://[www.oqmeasures.com](http://www.oqmeasures.com)

Chitic, V., Rusu, A. S., & Szamoskozi, S. (2012). The effects of animal-assisted therapy on communication and social skills: A meta-analysis. *Transylvanian Journal of Psychology*, *13*(1), 1–17.

Dunbar, R. I. M. (2010). The social role of touch in humans and primates: Behavioural function and neurobiological mechanisms. *Neuroscience and Biobehavioral Reviews*, *34*(2), 260–268. <https://doi.org/10.1016/j.neubiorev.2008.07.001>

Fine, A. H. (2015). Incorporating animal-assisted interventions into psychotherapy: Guidelines and suggestions for therapists. In A. Fine (Ed.), *Handbook on animal-assisted therapy. Foundations and guidelines for animal-assisted interventions* (4th ed., pp. 141–155). Elsevier.

Fonagy, P., Allison, L., & Ryan, A. (2017). Therapy outcomes: What works for whom? In N. Midgley, J. Hayes, & M. Cooper (Eds.), *Essential research findings in child and adolescent counseling and psychotherapy*‏ (pp. 79-118). Sage.

Gavriele-Gold, J. (2000). *When pets come between partners: How to keep love – and romance –* *in the human/animal kingdom of your home*. Howell Book House.

Glucksman, M. L. (2005). The dog’s role in the analyst’s consulting room. *Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry*, *33*(4), 611–618. <https://doi.org/10.1521/jaap.2005.33.4.611>

Hertenstein, M. J., Verkamp, J. M., Kerestes, A. M., & Holmes, R.M. (2006). The communicative functions of touch in humans, nonhuman primates, and rats: A review and synthesis of empirical research. *Genetic, Social, and General Psychology Monographs*, *132*(1), 5–94. <https://doi.org/10.3200/MONO.132.1.5-94>

Hoagwood, K. E., Acri, M., Morrissey, M., & Peth-Pierce, R. (2017). Animal-assisted therapies for youth with or at risk for mental health problems: A systematic review. *Applied Developmental Science*, *21*(1), 1–13. <https://doi.org/10.1080/10888691.2015.1134267>

Kazdin, A. E. (2017). Strategies to improve the evidence base of animal-assisted interventions. *Applied Developmental Science*, *21*(2), 150–164. <https://doi.org/10.1080/10888691.2016.1191952>

Lev-Bendov, S., & Barel, I. (2013). Take me under your wings - love in animal-assisted psychotherapy: A clinical perspective on the unique therapeutic bond between animal and humans. In N. Parish-Plass (Ed.), *Animal-assisted psychotherapy: Therapy, issues, and practice* (pp. 399-413). Purdue University Press.

Levinson, B. M. (1984). Human/companion animal therapy. *Journal of Contemporary Psychotherapy*, *14*(2), 131–144. https://doi.org/10.1007/BF00946311

Luborsky, L., & Crits-Christoph, P. (1998). *Understanding transference: The core conflictual relationship theme method*. American Psychological Association.

Maayan, E. (2013). The therapy zoo as a mirror to the psyche. In N. Parish-Plass (Ed.), *Animal-assisted psychotherapy: Theory, issues, and practice* (pp. 171–221). Purdue University Press.

Marino, L. (2012). Construct validity of animal-assisted therapy and activities: How important is the animal in AAT? [*Anthrozoös: A Multidisciplinary Journal of The Interactions of People & Animals*](http://www.ingentaconnect.com/content/bloomsbury/azoos;jsessionid=1s5qttwnyzlnh.alexandra), *25*, 139–151. <https://doi.org/10.2752/175303712X13353430377219>

Nimer, J., & Lundahl, B. (2007). Animal-assisted therapy: A meta-analysis. [*Anthrozoös: A Multidisciplinary Journal of The Interactions of People & Animals*](http://www.ingentaconnect.com/content/bloomsbury/azoos;jsessionid=1s5qttwnyzlnh.alexandra), *20*(3), 225–238. <https://doi.org/10.2752/089279307X224773>

O’Haire, M. E., Guérin, N. A., & Kirkham, A. C. (2015). Animal-assisted intervention for trauma: A systematic literature review. *Frontiers in Psychology*, *6*, 1121. doi:10.3389/fpsyg.2015.01121

Pellegrini, A. (2009). The dogs of war and the dogs at home: Thresholds of loss. *American Imago*, *66*, 231–251. https://www.jstor.org/stable/26305498

Roth, B. (2005). Pets and psychoanalysis: A clinical contribution. *The Psychoanalytic Review*, 92(3), 453-468.‏ <https://doi.org/10.1521/prev.92.3.453.66541>

Serpell, J., McMune, S., Gee, N., & Griffin, A. J. (2017). Current challenges to research on animal-assisted interventions. *Applied Developmental Science*, *21*(3), 223–233. <https://doi.org/10.1080/10888691.2016.1262775>

Winnicott, D. W. (1971). *Playing and reality*. Penguin.

Zilcha-Mano, S. (2017). Resolution of alliance ruptures: The special case of animal-assisted psychotherapy. *Clinical Child Psychology and Psychiatry*, *22*(1),34–45. <https://doi.org/10.1177/1359104516671385>