DOGS AS CO-THERAPISTS

FOR INDIVIDUALS WITH AUTISM SPECTRUM DISORDER: 50 YEARS AFTER A FIRST PSYCHIATRIST'S INSIGHT

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The Psychiatrist Boris Levinson gave birth, quite by accident, to the concept of dogs as 'co-therapists' (Levinson, 1962). In a paper that turned out to be at the basis of Animal-Assisted Interventions, he described the unexpected benefits that the presence of his dog brought to his counseling sessions with children and youth and provided numerous examples of ways in which a positive interaction with animals could enhance therapy. Lately, he highlighted a number of research questions that he considered as fruitful to explore, and he opened the way for the emergence of a multi-disciplinary field of research known as Anthrozoology, or Human-Animal Interaction (HAI) (Levinson, 1982).

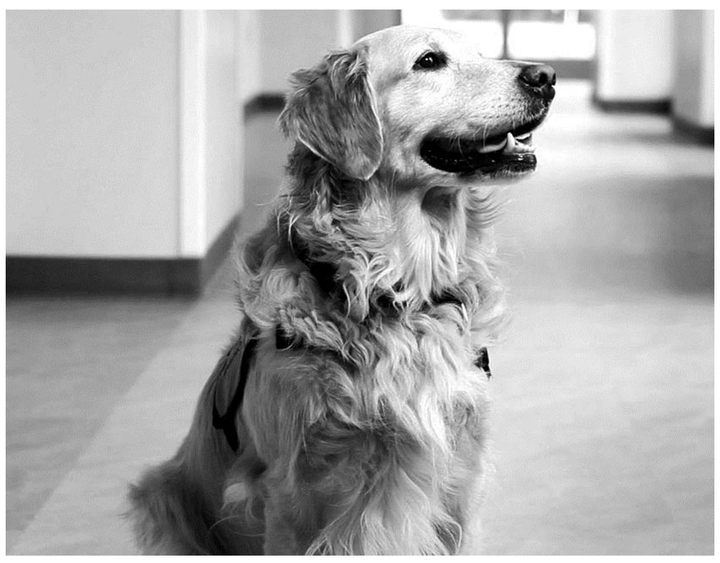
As evidence for the benefits associated to the 'dog-human bond' is growing (Nagasawa et al., 2015), Dog-Assisted Therapy - *a goal oriented, planned and structured therapeutic intervention delivered by health professionals that intentionally include a trained and certified therapy dog for the purpose of therapeutic gains in patients* - is being increasingly popularized and commercialized in a number of countries, notably for individuals with Autism Spectrum Disorder (ASD), and mostly through pervasive and subjectively positive anecdotal media (O'Haire, 2013). But…

Does empirical evidence from high quality research support such a rapid raise and acceptance of Dog-Assisted Therapy for individuals with ASD?

We here present an overview of empirical research published, in English, in peer-reviewed papers, integrating data of relevance to the field of Dog-Assisted Therapy for ASD, from both *'laboratory'* studies (i.e., studies focusing on particular aspects of the dog-individual with ASD interaction) and *'clinical'* investigations (i.e., research evaluating dog-assisted interventions for ASD). Presented information (Tables 1 and 2) is of necessity limited in that it does not include work that was not accepted for publication, which might well include studies with negative results. It is also possible that relevant studies were excluded due to the English-language parameter of the inclusion criteria.

Table 1. Laboratory studies

First author	Participants	Main aim	Main results
Prothmann (2005)	Individuals diagnosed with: -Anxiety (N=10; 6♀, 4♂; mean age: 13.7 years) -Anorexia (N=10; 10♀; mean age: 15.6 years) -Bulimia (N=10; 10 ♀; mean age: 16.4 years) -ASD (N=10; 2 ♀, 8♂; mean age: 12.3 years)	To examine whether characteristic interaction patterns exist during dog-assisted therapy, and whether these can be used for diagnosing psychiatric disorders in children and adolescents.	The participants demonstrated significant diagnosis-specific behavioral differences during interactions with the dog. The interaction style of the individuals with ASD was characterized by: • frequent but brief looks at the dog; • short phases of positive contact with the animal and long phases of distancing behavior; • active seeking of visual and physical contact with the persons present.
Prothmann (2009)	Individuals diagnosed with ASD (N=14; 3♀, 11♂; age range: 6-14 years)	To assess the preference for and responsiveness to people, dogs and objects in children with ASD.	The participants: • interacted most frequently and for longest with the dog, followed by the person and then the objects; • treated the dog as a living object, making physical contact with the animal, talking to it and initiating in reciprocal interactive play.
Grandgeorge (2012)	Individuals diagnosed with ASD (N=260; 59♀, 191♂; age range: 6-34 years)	To evaluate the association between the presence or the arrival of pets (dogs, cats and/or little furry animals) in families with an individual diagnosed with ASD and the changes in his or her prosocial behaviors.	Children between the age of 4 and 5 years, who experienced the arrival of a pet in their home, showed significant changes in two specific aspects of their social-emotional development: • sharing (e.g., food or toys with parents or other children); • offering care (e.g., reassuring parents who were sad or hurt).
Funahashi (2014)	Individuals: -diagnosed with ASD (N=1; ♂; age 10 years) -with typical development (N=1; ♂; age: 10 years)	To analyse the effect of interactions with a dog on the smiling behavior of an individual with ASD (and a control of the same age) and test whether or not this effect may facilitate social behaviours.	When the smiles increased: • positive social behaviors increased in both individuals; • negative social behaviors decreased in the individual with ASD.
Maurer (2015)	Individuals: -with typical development (N=84; 47♀, 33♂; age range: 4-8 years) -diagnosed with cognitive impairment (N=92; 39♀, 53♂; age range: 7-23 years) -diagnosed with ASD (N=22; 7♀, 15♂; age range: 7-21 years)	To explore children's thoughts about dogs, cats and horses.	The three mammals were perceived positively by both typical and individuals with cognitive impairment. Individuals with ASD: • gave heterogeneous answers; therefore it was more complicated to identify clearly what these animals meant to them.
Whyte (2015)	Individuals: -diagnosed with ASD (N=14; 1♀, 13♂; age range: 13–18 years) -with typical development (N=14; 1♀, 13♂; age range: 13–18 years)	To assess the activation of the neural face processing network of individuals with ASD in response to both human and animal (cats and dogs) faces.	The participants with ASD evidenced: • hypo-activation throughout the face-processing system in response to unfamiliar human, but not animal, faces; • greater activation in affective regions of the face-processing network in response to animal, but not human, faces.



Laboratory studies

Results from laboratory studies, either based on observations of behavioral interactions or analysis of neural responses, suggest that individuals with ASD tend to show special interest on and affective preference for dogs while exhibiting positive changes in social behavior when in the presence of these animals (Table 1). These studies, therefore are of particular importance in that they sustain the *rationale underlying dog-assisted therapy for ASD*, first proposed by Levinson: *that exploring the emotional aspects of a relationship with a dog can help overcome the inability of individuals with ASD to relate and interact effectively with others, targeting some of the core symptoms of this disorder.*

Clinical studies

Outcomes reported in clinical studies include interesting improvements for multiple areas of functioning known to be impaired in ASD (Table 2). The fact that similar results appear in different studies (using disparate measures and individual characteristics) is significant, encouraging, and should increase confidence in the field. Yet, one has to recognize that the few studies currently available are limited by many methodological weaknesses (e.g., reduced sample sizes, limited number of assessments). Moreover, research on dog-assisted therapy clearly lacks a standard methodology and randomized controlled trial designs.

Table 2. Clincal studies

First author	Participants	Experimental design	Interaction with the dog	Main results
Redefer (1989)	Individuals diagnosed with ASD (N= 12; 3♀, 9♂; age range: 5–10 years)	Longitudinal, repeated measures (pre- and post-test) design	20 min. of interaction with a therapist in the presence of a therapy dog	During the intervention: • participants showed an increase in social interaction and a decrease in isolation in the presence of the dog. One month after the intervention: • social interaction declined but remained above baseline; • isolation increased but remained below baseline.
Martin (2002)	Individuals diagnosed with: -Pervasive Developmental Disorders not otherwise specified (N=7) -ASD (N=3) In total: 2♀, 8♂; age range: 3-13 years	Crossover, repeated-measures design (all participants experienced three conditions)	15 min. of interaction with a therapist in the presence of either a therapy dog, a stuffed dog, or a ball	In the presence of the therapy dog, children: • showed a more playful mood; • were more likely to keep their gaze focused on the dog, talk to the dog and engage the therapist in discussion regarding the dog; • exhibited more hand flapping. Children touched the dog less often than the ball or the stuffed dog.
Silva (2011)	Individuals diagnosed with ASD (N=1; 1♂; age: 12 years)	Case study (the participant experienced two conditions)	45 min. of interaction with a therapist either in the presence of a therapy dog or without the presence of the animal	In the sessions that included the therapy dog: • aggressiveness and self-absorption were significantly less frequent; • visual contact, smiling and affectionate behaviors were more frequent.
Fung (2014)	Individuals diagnosed with ASD (N= 10; 2♀, 8♂; age range: 7-10 years)	Randomized group-comparison design	20 min. of interaction with a therapist either in the presence of a therapy dog (experimental group) or a doll (comparison group)	In the experimental group: • verbal social behavior increased significantly but the magnitude of this increase was not significantly larger than that in the comparison group.

Overall…

… data from both the laboratory and clinical studies here reviewed highlight the potential of dogs as effective therapeutic tools to be included in interventions for individuals with ASD. Notwithstanding, only few studies have been conducted to date and available research is plagued by rather limited samples when considering the vast heterogeneity that characterizes ASD. As a consequence, a number of questions of major importance to therapeutic practice – most of them raised by Levinson himself more than 50 years ago – still remain unanswered.

"What's the best contribution that different dog breeds might make to therapeutic work? (…) What kind of dog would be most helpful to individuals with specific characteristics? (…) How does the use of dog affect the therapist's attitude toward his or her patient? (..) What are the physiological mechanisms underlying the positive effects related to positive interactions with dogs? (..) When is the dog-co therapist inadvisable? (…) What's the difference between individuals with ASD who can and who cannot benefit of dog-assisted therapy? (…) How can the presence of a companion animal at home augment or even substitute for the activity of a therapist?" (Levinson, 1982)

… more rigorous research is mandatory.

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