Can Dogs Prime Autistic Children for Therapy? Evidence from a Single Case Study

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Abstract

Background and objectives: Canine-assisted therapy has been receiving growing attention as a means of aiding children with autism spectrum disorder (ASD). Yet, only limited studies have been done and a great deal of literature related to this intervention is anecdotal. The present study aims at providing additional quantitative evidence on the potential of dogs to positively modulate the behavior of children with ASD.

Settings/location, subjects, and interventions: A 12-year-old boy diagnosed with ASD was exposed, at his usual treatment location (the Portuguese Association for Developmental Disorders and Autism at Vila Nova de Gaia, Portugal), to the following treatment conditions: (1) one-to-one structured activities with a therapist assisted by a certified therapy dog, and (2) one-to-one structured activities with the same therapist alone (as a control). To accurately assess differences in the behavior of the participant between these treatment conditions, the therapist followed a strict research protocol. The behavior of the participant was continuously video-recorded during both treatment conditions for further analysis and comparison.

Treatment outcomes: In the presence of the dog, the participant exhibited more frequent and longer durations of positive behaviors (such as smiling and positive physical contacting) as well as less frequent and shorter durations of negative behaviors (such as aggressive manifestations).

Conclusions: These findings are in accordance with previous experimental work and provide additional support for the assertion that dogs can prime autistic children for therapy. Ultimately, this study may contribute toward a change for full acceptance of canine-assisted therapy programs within the medical milieu. Additional studies using a similar research protocol on more autistic children will certainly help professionals to work on the most effective methods to individually serve this population through canine-assisted interventions.

Introduction

The autism spectrum disorder (ASD) is a neurodevelopmental childhood condition characterized by variable difficulties in social behavior and communication, restrictive interests, and repetitive activities.1 According to recent epidemiological surveys, 1 child in 166 is affected with this disorder, which represents a major increment compared to assessments from a few decades ago (4 children in 10,000).2

As the prevalence of ASD has increased, so has the number of therapeutic modalities used to treat its symptoms (e.g., educational programs3; early behaviorally based intervention programs4; pharmacological interventions5). To date, however, none has proved dramatically effective, and complementary methods have been suggested.1 For example, the introduction of a dog into psychodynamic therapy sessions has been receiving growing attention as a legitimate means of aiding this population.6 In a study involving animal-assisted therapy and children with autism, Redefer and Goodman showed that supervised interactions with dogs increased prosocial behaviors, decreased self-absorption, and lessened stereotyped behaviors.7 Similarly, Martin and Farnum found that children with autism exhibited a more playful mood, were more focused and were more aware of their social environments when in the presence of a dog.8

Although encouraging, the findings above have not been replicated by further experimental work, and full acceptance

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of canine-assisted therapy programs into the medical milieu is still depending on additional studies incorporating rigorous scientific protocols. Following this line of reasoning, the single case study here presented was planned to explore the effect of the presence of a certified therapy dog on the behavior of a boy diagnosed with autism during one-to-one activities with a therapist.

Materials and Methods

The participant

The participant in this study was a 12-year-old boy diagnosed with DSM-IV autistic disorder through observation conducted by a health care professional (along with a semi-structured interview of the caregivers). The boy was recruited via the Portuguese Association for Developmental Disorders and Autism and was selected, among the younger patients who were not being followed by a psychologist and had no allergies to dogs, by a simple random sampling procedure (picking a name out of a box). His clinical reports referred a long history of language delays, poor social skills, aggressive behaviors, anxiety, as well as obsessions about magazines and newspapers. Permission for participant inclusion in the study was obtained through informed consent provided by the caregiver.

The therapy dog

The dog, a female Labrador retriever, was recruited, trained, and certified as a therapy dog by Ânimas. This Portuguese association, member of the Assistance Dogs International Inc. (ADI), tests the animals primarily for temperament, carefully assessing their potential to work safely and comfortably within institutionalized settings. Evaluation also includes a veterinary check, proof of vaccinations, and good health. All training programs use positive reinforcement (reward-based) approaches, and follow the minimum standards and ethics developed by the ADI Standards and Ethics Committee.9

The therapist

The therapist involved in this study was dual qualified as a psychologist and as a certified therapy dog handler. She took specific training from Ânimas and passed an evaluation of knowledge about how to mediate the interaction of dogs appropriately with various client populations, namely, autistic children. As handler, she was obliged to be in full and direct control of the dog at all times.

The therapist was selected for this experiment due to her vast experience on animal-assisted interventions, thus minimizing the effect of extraneous variables (such as her own motivation throughout the entire duration of the study) on the behavior of the participant.

Experimental design and data collection

An experimental design, approved by both clinical (Portuguese Association for Developmental Disorders and Autism) and academic (Instituto Superior de Psicologia Aplicada) units, was planned to expose the participant to two treatment conditions: structured sessions of one-to-one activities with the therapist in the presence of the therapy dog (Tdog) and structured sessions of one-to-one activities with the therapist without the presence of the therapy dog, serving as a control (T). Each week, the participant was exposed to T and Tdog sessions, for 45 minutes, on different and nonconsecutive days. All sessions were video-recorded for data-coding purposes and were held at the participant's usual treatment place.

Sessions were preceded by a 15-minute acclimatization period during which the therapist either (1) modeled and verbally encouraged approaching and exploring the dog through touching, holding, and petting activities (prior to Tdog sessions); or (2) followed the participant’s initiatives and gave no indications about any particular task (prior to T sessions).

To assess differences in the behavior of the participant between the two treatment conditions (T and Tdog) accurately, the therapist followed a strict research protocol instead of a more versatile agenda (as described in previous studies [e.g.7]). This protocol included structured one-to-one activities previously defined to promote prosocial behaviors in the participant (e.g., playing ball with the participant, questioning the participant about specific events). Both the order of presentation and the duration of activities were maintained across sessions so that the unique difference between the two experimental conditions was the presence of the dog, used by the therapist as a facilitator to communication with the participant. Fifteen (15) minutes of each session, including 5-minute periods (randomly selected by an independent researcher) of the initial, middle, and last parts of the video recordings, were analyzed and the following variables were coded: (1) negative behaviors of the participant, including physical aggressive behavior, verbal aggressive behavior, repetitive smelling, obsessive staring, grabbing behavior, as well as self-absorption; and (2) positive behaviors of the participant, including affectionate behavior, play, visual contact, as well as smiling. These variables were selected based on the clinical reports of the participant along with naturalistic observations (i.e., observations of behaviors as they occur naturally, without any intervention) conducted at the participant’s treatment place, prior to the beginning of the study. Their categorization (into positive and negative) followed previous studies assessing the effects of interaction with dogs on children with autism (e.g.7,8). The definitions of all recorded behaviors are presented in Table 1. Coding was performed using the Observer XT Software version 7.0 (Noldus Information Technology, Wageningen, The Netherlands), which allows an automatic reading of duration and frequency of behavioral events.

Interobserver reliability, using Pearson’s r correlation, was assessed between two coders who independently scored all video recordings. Obtained values of r were above 0.9 for the frequencies and durations of all the behaviors of the participant recorded throughout the study.

Statistical analysis

Inferential statistics used in the analysis of group data are generally considered invalid for use with data from single-case experimental designs.10 Instead, randomization tests are commonly used as valid statistical analyses for all designs that incorporate a random procedure for assigning treatments to subjects or observation periods, as was the case in the present study.10–12 Therefore, the recorded frequencies and durations of the behaviors exhibited by the participant in the two
treatment conditions (Tdog and T sessions), over a period of 15 minutes, were compared by means of a randomization test provided by Todman and Dugard\textsuperscript{13} and run using the Statistical Package for the Social Sciences 17.0 (SPSS Inc.).

**Results**

**Negative behaviors**

The results presented in Table 2A show that the frequencies and durations of both physical aggressive behavior toward inanimate objects and verbal aggressive behavior toward the therapist were significantly lower in the sessions that included the therapy dog (Tdog sessions) than in those that did not (T sessions). Similarly, the frequency and duration of grabbing behavior were significantly lower in Tdog than in T sessions. Also, the duration of absorption was found to be significantly lower in Tdog than in T sessions. Finally, pronounced differences in the frequency and duration of obsessive staring between were also observed (both being lower in Tdog than in T sessions), but no significance was found.

<table>
<thead>
<tr>
<th>Behavioral measures</th>
<th>Definitions</th>
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<tbody>
<tr>
<td>Negative</td>
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<tr>
<td>Physical aggressive behavior toward the therapist</td>
<td>Engaging in actions (other than verbalizations) causing pain and physical harm to the therapist (including biting, pushing, and hitting)</td>
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<tr>
<td>Physical aggressive behavior toward inanimate objects</td>
<td>Engaging in actions causing damage to inanimate objects (including biting, pushing, and hitting)</td>
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<tr>
<td>Verbal aggressive behavior</td>
<td>Using hostile words to insult, threaten, anger, or intimidate the therapist</td>
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<tr>
<td>Repetitive smelling</td>
<td>Inhaling the odor of the therapist or inanimate objects with direct contact</td>
</tr>
<tr>
<td>Obsessive staring</td>
<td>Gazing fixedly and steadily at journals and magazines</td>
</tr>
<tr>
<td>Grabbing behavior</td>
<td>Taking possession of journals and magazines by force</td>
</tr>
<tr>
<td>Self-absorption</td>
<td>Adopting an absent expression, appearing to be totally emotionally detached</td>
</tr>
<tr>
<td>Positive</td>
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</tr>
<tr>
<td>Affectionate behavior</td>
<td>Accepting and giving physical contact from/to the therapist (including hugs and kisses)</td>
</tr>
<tr>
<td>Play</td>
<td>Initiating and maintaining symbolic and/or organized games with the therapist</td>
</tr>
<tr>
<td>Visual contact</td>
<td>Looking directly into the eyes of the therapist</td>
</tr>
<tr>
<td>Smiling</td>
<td>Change in facial expression by turning up the corners of the mouth/spreading the lips</td>
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**Table 1. Positive and Negative Behavioral Measures Coded in the Participant**

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(f), frequency; (d), duration in seconds.

*Indicates significant differences between the two treatment conditions (randomization tests).
Positive behaviors

The results presented in Table 2B show that the frequencies and durations of both visual contact and smiling were significantly higher in the sessions that included the therapy dog (Tdog sessions) than in those that did not (T sessions). Affectionate behavior was also significantly more frequent in Tdog than in T sessions.

Discussion

Compared to the control condition (T sessions), the presence of the dog during one-to-one activities with the therapist was not only associated with a higher engagement of the participant with the therapist but also with a lower level of negative behaviors, namely, aggressive and obsessive manifestations, which is in accordance with preliminary experimental work conducted by Redefer and Goodman as well as Martin and Farnum. See also Beck and Ketcher.

One could question whether the lower behavioral scores recorded during T sessions might have been motivated by some disappointment due to the absence of the dog. In a report describing the use of feral cats as adjuncts to psychotherapy, for example, Wells and colleagues mentioned that clients sometimes verbalized disappointment, because the cats were not present when they arrived for a scheduled appointment. To these authors, however, unpredictability and potential for emotional risk constitutes a positive attribute of therapy as “an accurate mirror of life as it truly exists.” Moreover, these same authors mention an expectation and disappointment due to the absence of the animal. The current understanding of the role of pets in autism so that they may be able to participate in therapeutic interactions better and respond more effectively to the demands of therapy (as also previously reported by Redefer and Goodman). Given that maintenance and generalization have long been recognized by clinicians as persistent problems in this population, further research should focus on assessing whether positive effects can (1) generalize to therapeutic contexts that do not involve the presence of a dog, and (2) be maintained outside a therapeutic environment. Moreover, given the marked phenotypic diversity in ASD, additional case studies are necessary for the characterization of individual differences that likely exist across children with ASD in their responses to canine-assisted therapy. With such studies, professionals could work on the delineation of the most effective methods to individually serve this population through animal interventions.

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Disclosure Statement

No competing financial interests exist.

References


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