

Critical Review:
Does canine-assisted intervention support positive social functioning and improve communication outcomes in children with Autism Spectrum Disorder (ASD)?

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The following literature review examined relevant research articles whose purpose was to determine the effectiveness of using canine-assisted intervention programs to encourage communication and social interaction in children with Autism Spectrum Disorder (ASD). The search yielded four studies that employed a systematic review, single case-control, A-B-A multiple baseline single subject, and informational review design, respectively. The results indicated that canine-assisted intervention yielded positive social behaviours and communication outcomes, while also reducing the amount of negative social behaviours displayed in children with ASD. The implications and limitations of the current research are discussed.

Introduction

Fine (2010) defines animal-assisted intervention (AAI) as the intentional inclusion of animals as part of a therapeutic process or milieu. As an umbrella term, AAI is used to describe the various aspects of animal-assisted options including animal-assisted activities (AAA), animal-assisted therapy (AAT) and animal-assisted education (AAE).

The recognition of the therapeutic benefits of animals, more specifically canines, dates back to the 1960s and 1970s, with the experience of Boris Levinson, and Samuel Corson and Elizabeth O'Leary, respectively (Fine, 2010). It was found that the presence of a dog could enhance therapeutic relationships and environments. These early experiences brought forth the idea that relationships with animals were not only beneficial within homes but also in therapeutic contexts. Siewersten, French and Teramoto (2015) found that animals are socially attracted to withdrawn children and vice-versa, suggesting that animals may be beneficial in facilitating interaction in children with social deficits. As a result, the inclusion of AAI has been

suggested as a possible treatment practice for children with Autism Spectrum Disorders (ASD) (O'Haire, 2013).

ASD, also known as pervasive developmental disorders (PDD), refers to a spectrum of complex, related, neurodevelopmental disorders including autism, Asperger syndrome, and atypical autism (Borgi, Francia, Alleva & Cirulli, 2013). Based on the Diagnostic and Statistical Manual of Mental Disorders (DSM IV), ASD is characterized by impairments in three behavioral domains: (1) social interaction, (2) language and communication, and (3) restricted range of interest and behaviours (Berry et al., 2013). Currently, ASD affects approximately 1 in every 68 children in the United States (Fine, 2010). Because no established cause or cure for ASD exists and the rapid increase in the number of cases, ratifying alternative treatment options for ASD is of great importance (Siewersten, French, & Teramoto, 2015).

Options such as canine-assisted intervention, specifically, which are based on the exploitation of the emotional aspects of the

human-dog relationship have the potential to target and overcome the difficulty of individuals with ASD to interact effectively with others. Berry et al. (2013) believed that the simple and interpretable movement of dogs might facilitate the engagement of children with ASD in simple, highly repetitive, social actions that do not require interpretation of verbal cues (e.g. throw, fetch, retrieve). Despite the growing amount of evidence, only a limited number of research has focused on the role of child-dog relationships in the ASD population (Yap, Scheinberg, & Williams, 2017). Therefore, the purpose of this review is to gather a comprehensive overview of empirical evidence and reported findings on AAI, specifically with canines, for children with ASD and provide direction for future research.

Objectives

The objective of this paper is to critically evaluate the existing literature on canine-supported intervention to determine if it is effective in increasing social functioning and communication outcomes in children with ASD.

Methods

Search Strategy

Articles related to the topic of interest were found using: PubMed, and Google Scholar. Keywords used for the data base search were as follows: ["Animal assisted therapy" AND "autism" AND "children" AND ("dog" OR "not equine")].

The search was limited to articles written in English and published after 2010 to ensure the information was recent and the amount of studies was manageable.

Selection Criteria

Within the original search parameters, the titles and abstracts of the search results were scanned. To meet inclusion, studies must have included: (a) participants 18 years of age and younger (b) an ASD diagnosis (c) a social communication and/or social functioning outcome (d) an AAI. Articles were eliminated if the AAI involved the use of animals other than canines.

Data Collection

The literature yielded six articles that met the selection criteria. The employed one systematic review, one case-control study, one A-B-A multiple baseline single subject, and one informational review.

Results

Systematic Review

A systematic review asks a specific clinical question, does a broad search of clinical databases for studies that will fit the predetermined parameters and then synthesizes the information to answer the question.

Berry et al. (2013) completed a systematic review to examine the effects of brief interactions with therapy dogs and assistance dogs on children with ASD and the overall well-being of their families, the latter of which is not of interest to the present review. Their results yielded six articles: semi-structured interview (1), longitudinal repeated measures (2), crossover repeated measures (2), case study (1); two of which focused on assistance dogs and four on therapy dogs. All six articles looked at social behaviours and/or language outcomes in children aged 3-15 with PDD. The results of the review indicated that therapy dogs increased the frequency of verbal and nonverbal social behaviours directed at the dog and the therapist, in children with ASD. In addition, engagement with therapy

dogs decreased negative social behaviour, such as social isolation and withdrawal.

Strengths of the study included detailed procedures sufficient for replication. Weaknesses include small sample sizes and the selection of articles with biased designs.

Overall, this study provides suggestive evidence that therapy dogs promote an increase in verbal and non-verbal social behaviours in children with ASD.

Case Control

Case control studies can be useful in outlining differences between an experimental group and a control group in situations when the subjects cannot be randomly assigned to either group (e.g. when looking at special populations).

Funahashi et al. (2013) completed a case-control study that quantitatively compared the smiles of a male aged 10 with ASD, with that of a typically developing, aged-matched control, while participating in an animal-assisted activity (AAA). Participants wore the interface device during 30-40 minute sessions over the course of 7 months. Video recordings of the participants' behaviour was coded by a medical examiner using Dartfish software. Results of the study found that during AAA, positive social behaviours increased when smiles increased and negative social behaviours decreased when smiles increased, respectively. More specifically, there was improved quality and social meaning of eye contact in the child with ASD.

Strengths of the study included detailed methods, an appropriate study design with a control, and a quantitative analysis. Weaknesses include a small sample size.

Overall, this study provides highly suggestive evidence that bringing children with ASD into

environments such as AAA that can cause smiling, facilitates positive social behaviours and lessens negative social behaviours.

A-B-A Multiple Baseline

A multiple baseline design is a type of single case design, used to study treatment effects across participants. Each participant acts as their own control group, with a baseline established for each participant through repeated observation. Interventions are implemented, and effects are demonstrated when changes from baseline performance are observed as a result of intervention.

Fung (2015) completed an A-B-A single subject design that examined the effectiveness of animal-assisted play therapy (AAPT) on increasing social communication in a male, aged 7 with autism. Video recordings were made in a room at the participant's school of the child interacting with a dog in the presence of a therapist. AAPT was implemented three times a week (20 minutes) for a total of 14 sessions. The outcome measures were measured during 3 baseline sessions, 14 AAPT sessions, 3 post-treatment sessions and again during 3 follow-up sessions. Results revealed that the boy's social communication increased during treatment and remained higher than baseline at follow-up, specifically in regard to joint attention and waiting. In addition, Fung found that the more the dog was involved in therapy, the more social behaviours that were exhibited.

Strengths of the study included detailed procedures sufficient for replication, the quantitative design and high interrater agreement for coding social behaviour. Weaknesses included the limited number of participants and design complexity.

Overall, this study provides highly suggestive evidence that the use of AAPT is effective in

increasing the social communication of a boy with autism.

Informational Review

Informational reviews of the literature can provide good overviews and models by using related research to inform practice, thereby providing suggestive evidence. However, these reviews should be interpreted with caution because a critical review of the supporting research is often not included, and the available research might not directly address the population of interest.

Siewertsen et al. (2015) completed an informational review that summarized the findings on the effectiveness and limitations of pet therapy on ASD. Their review included a total of 7 articles: systematic review (2), single-group quasi-experimental (1), survey research (3), and qualitative research (1). The results of the review suggested that studies have shown mostly positive effects for pet therapy, including better social and communication interactions, a decrease in ASD severity and high satisfaction rates among families of children with ASD.

Strengths of this study are limited. Weaknesses include lack of search criteria and procedures, small sample sizes, and lack of control groups within studies used.

Overall, this study provides equivocal evidence for the effectiveness of pet therapy on children with ASD.

Conclusion

This critical review determined that although the current evidence is suggestive that canine-assisted intervention is effective in supporting positive social behaviours and communication outcomes in children with ASD, more research with larger sample sizes, improved study designs with controls, and consistent use

of terminology surround AAI is needed to establish true effectiveness.

Clinical Implications

Based on the results of this review, clinicians working with children with ASD should be aware of the benefits, but exercise caution in using canine-assisted intervention as a therapy to promote social behaviours and communication. Specialized training of professionals and canines, allergies, fears and negative experiences with animals and severity of ASD should all be considered prior to individualized therapy plans for these children.

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