



## ROLE OF ANIMAL ASSISTED INTERVENTION ON SOCIAL AND COMMUNICATION SKILLS OF CHILDREN WITH AUTISM: REVIEW ARTICLE.

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### Abstract:

The practice of Animal Assisted Interventions (AAI) has been recommended as a possible management for children with autism. In this article review the focus will be on the possibilities to increase social and communication skills of autistic children with the help of AAI. Social skills defined as behaviors that predict fundamental social outcomes for children, which can include peer acceptance, academic achievement, self-esteem, acceptable psychological adjustment, and teacher or parent judgment of key communicative social interactions. Due to these deficits in social skills, many children with ASD have difficulty bonding with loved ones, and often have episodes of elopement and irregular mood, and behavior that can be challenging for parents. This study will aimed to explain the concept of autism spectrum disorder, discuss the animal assisted intervention and highlight the role of animal assisted intervention in management of children with autism. A literature search was conducted within 4 months. In total 42 studies were identified that fitted the inclusion criteria. The results show many positive outcomes from AAI on children with autism were found that can contribute to increase their social and communication skills.

**Key words:** animal assisted intervention, social, communication skills, children, autism.

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### **Background:**

Thousands of years ago, domestication of cats and dogs seems to have started, with the domestication of dogs starting over 30,000 years ago (Wang et al., 2016). According to studies, there are currently over 85 million pet-owning households in the US (American Pet Products Association, 2019), and the body of knowledge about how animals can benefit humans is expanding. In addition, compared to non-animal owners, this study indicated that pet owners experience less stress, healthier weights, better cardiovascular health, and fewer allergies.

Through animal-assisted intervention, animals are being employed more frequently as a supplemental therapy with vulnerable groups. These interventions include sessions with a qualified animal handler and a group of people who carry out these interventions for a brief period of time in community-based settings. According to a recent assessment of the literature, when used with dementia patients, animals can improve quality of life and social relationships while reducing agitation and violence. (Yakimicki et al., 2019; Grandgeorge & Hausberger., 2011).

A further analysis of the literature revealed that animal-assisted therapies were helpful for those who had been traumatized, especially those who had been diagnosed with post-traumatic stress disorder (PTSD), claiming decreased symptoms of depression, anxiety, and PTSD (O'Haire et al., 2015). Children's pain and anxiety may also be reduced by animal-assisted interventions (Barker et al., 2015); Alzheimer's patients' cognitive function and mood may be improved by animal-assisted interventions (Menna et al., 2016); and people with attention-deficit/hyperactivity disorder may find that animals are calming, socialising, and motivating (Busch et al., 2016, Hege., 2019).

Research shows 1 in 59 children are diagnosed with autism spectrum disorder (ASD) (Baio et al., 2018). Due to the growing prevalence, there is a mounting effort to recognize the human-animal bond and its influence on families with children with ASD. A primary diagnostic criterion of ASD comprises deficits in social skills including social-emotional reciprocity, response to social interaction, and social communication containing verbal and nonverbal cues (American Psychiatric Association, 2013). Elliot and Gresham (1987) describe social skills as behaviors that predict fundamental social outcomes for children, which can include peer acceptance, academic achievement, self-esteem, acceptable psychological adjustment, and teacher or parent judgment of key communicative social interactions. Due to these deficits in social skills,

many children with ASD have difficulty bonding with loved ones, and often have episodes of elopement and irregular mood, and behavior that can be challenging for parents (Lisk et al., 2021). In the 1980s, researchers started looking into the possibility of using animals in therapy for kids with ASD (Redefer & Goodman, 1989). Much of the current research on human-animal interactions promotes the use of animals as interventions to help children with ASD who are experiencing sensory difficulties and to improve their social and communicative skills (Grandin et al., 2015). Numerous studies do not examine the effects of animal ownership and instead concentrate on animal-assisted therapies for children with ASD that are intended to improve particular outcomes over a defined period of time. This review's objective is to assess the current state of the literature on the impacts of animal exposure on children with ASD, with a particular emphasis on how it affects their communication abilities.

### **Objective:**

- Explain the concept of autism spectrum disorder.
- Discuss the animal assisted intervention.
- Highlight the role of animal assisted intervention in management of children with autism.

### **Review or literature:**

Autism spectrum disorder (ASD) is a heterogeneous condition defined by the DSM-5 as a person experiencing persistent difficulties in social interaction, in a range of contexts, and as showing restricted, repetitive behaviours (APA 2013). These problems must have been evident in early childhood, cause significant impairment in functioning and not be explainable by intellectual disorders or developmental delays (DSM-5, APA 2013). As recognised by the term 'spectrum' ASD is highly complex and individualised, often comorbid with a range of other developmental disorders which can create unique challenges in developing effective treatment programmes. Therefore, it is important that therapy programmes are dynamic, being adaptable to the needs of an individual at a specific time and location (Hall et al., 2016; Kohane et al., 2012; Mukaddes & Fateh., 2010).

Following a diagnosis, physicians may educate parents on a wide variety of different potential treatment plans (Speaks., 2010; Hamburg & Collins., 2010). However, it is acknowledged that many of the currently available interventions lack a solid scientific evidence base, which might cause

parents to get perplexed during this trying period and cause them to choose the wrong therapy. The clinical therapy can be interrupted at any time, even if starting it may be unpleasant and expensive for the child and the family. In contrast, acquiring a pet dog should be viewed as a lifelong commitment, not something that can be terminated if the expectations are not meeting the reality. Therefore, it is imperative that families have good quality information available to them about the potential impact of a dog and what to expect when deciding whether or not to acquire one. Although there is increasing information available on the effects of trained dogs used in Animal Assisted Interventions (AAI), including Animal Assisted Therapy (AAT), Animal Assisted Activities (AAA) and animal assistance programs there is little literature available on the effects of pet dogs as an autism therapy. Indeed, the evidence base in the area of AAI in general is constrained by a lack of high quality studies and there is a clear need for investment in well-designed large scale clinical trials (Berry et al., 2013; O'Haire., 2013; Mills & Hall., 2014).

Nonetheless, despite the criticisms of AAI research there is growing interest and evidence to suggest that dogs can benefit children with autism in a number of ways. For instance, studies show that dogs may prime children with autism for therapy by increasing positive engagement with the therapist (Silva et al., 2011). Dogs have also been shown to increase patient interaction and communication, and decreasing problem behaviours and stress (Viau et al., 2010). Moving away from the controlled environment of the therapy room, evidence indicates that when trained assistance dogs are placed in the home benefits are observed in terms of increased child safety, outdoor access, enhancement of communication and social interaction with other people and reduced child anxiety (Burrows et al., 2008). Many of these benefits may not be related to the specific training that the dogs have received, but rather are incidental results of the presence of the dog. Although the existing literature supporting this hypothesis is sparse, a study by Grandgeorge et al., 2012 reports an increase in pro-social behaviours in children with autism upon acquisition of a pet (dog, cat, small furry animal), as measured by parent telephone interviews using the Autism Diagnostic Interview- Revised (ADI-R). Similarly, qualitative interviews with parents revealed that children with ASD showed more social behaviours, and less restrictive, repetitive behaviour patterns when interacting with a companion animal (Byström, & Persson., 2015).

Additionally, interview data collected from 70 parents identified that parents generally believed their pet dog to be beneficial to their child with autism, encouraging interactions, play behaviours, companionship and responsibility. These findings were partly supported by parents' responses on standardised scales including, the Social Skills Rating Scale—which showed that children with a dog had significantly greater social skills than children without a dog, and the Companion Animal Bonding Scale—which suggested that children were highly attached to their dogs. However, parents also perceive some barriers to dog ownership, such as time and cost constraints as well as conflict between parents and siblings on how to best care for the dog and division of responsibilities. These latter issues are not likely to be encountered during AAI, and represent potential negative factors associated specifically with pet dog therapy, as opposed to trained dog therapy, which are important to consider (Carlisle., 2014; Carlisle., 2015).

Recent studies have highlighted how the acquisition of a pet dog can bring significant improvements to parent-carers of children with autism. Using standardised assessments of parenting stress and family functioning significant improvements were observed in families who acquired a pet dog, compared to families who did not acquire a pet dog, over the first year of ownership. However, these studies concentrated on the potential benefits of pet dogs to the family unit rather than the child with autism (Wright et al., 2015; Wright et al., 2015;b ).

### **Methodology:**

To prepare this brief report, we systematically searched web of science, PubMed, and Google scholar databases to find articles related to autism, animal assisted intervention and its impact on various aspects of autistic children capabilities as social skills, communication, attention, school engagement and others. A number of 42 articles were reviewed, summarized and used after removing of irrelevant studies and duplication. Publication in English in a peer-reviewed journal, including an AAI, which means that at least one animal needs to be included that interacts with the participant, and the participant must be a child (under the age of 18) diagnosed with autism, autism spectrum disorder (ASD), autistic disorder; all of these must be considered in the article to be involved in the study. Studies that considered pet ownership where no defined action takes place in the interaction of the child and the animal were excluded.

## **Results:**

Autism Spectrum Disorder (ASD) is a disorder that affects a variety of developmental difficulties, including issues with verbal and non-verbal communication, lack of social skills, repetitive or obsessional activities, and others. The CDC states that ASD is a catch-all term for a number of diseases, including Asperger Syndrome, pervasive developmental disorder, and autistic disorder. The earliest an ASD diagnosis may be made is at age two, and symptoms range from avoidance of eye contact and aversion to physical contact to repetitive behaviour and a dislike of routine modification. People with ASD may find it difficult to understand or express their own emotions because they lack social skills, which can be frustrating. To improve socialising, there are a variety of therapies and treatments available for people with ASD (Finkelman., 2017; Christensen & Zubler., 2020). Due to up growing prevalence of autism and increased expenditure of health care, a new care modalities arising.

Animal assisted therapy (AAT) or animal assisted intervention is one treatment in particular becoming more well-known. There are not many studies on AAT, but some do suggest there is a positive effect on social skills in children with ASD compared to no interaction with animals. This is because AAT allows the children to interact with animals, such as horses, care for them, and train on horseback at an attempt to learn responsibility and improve social skills in a more natural setting (Gabriels et al., 2015; Steiner & Kertesz., 2015; Smith., 2018).

Within this respect, Steiner, Kertesz (2015) conducted one five month study in a natural outdoor setting involving two different AAT sessions three months apart. The study consisted of 26 children diagnosed with ASD between the ages of 10-13 years old with 13 subjects in the experimental horse riding group and 13 in the control non-riding group. They displayed data on communication from the PAC test immediately before therapy and one month after therapy, and there was no reported difference in compliance between the groups. The change in baseline mean for the experimental AAT group was 5 and the control group had a change of 0 after the full five months and both AAT sessions. With the larger change in mean from baseline in the horse riding group compared to no change whatsoever in the control group, the AAT group had a larger increase in socialization.

Furthermore, O'Haire et al., 2014 study was to implement and evaluate a classroom-based Animal-Assisted Activities (AAA) program on

social functioning in children with autism spectrum disorder (ASD). Significant improvements were identified in social functioning, including increases in social approach behaviors and social skills, and decreases in social withdrawal behaviors, from before to after the AAA program, but not during the waitlist period. Over half of parents also reported that participants demonstrated an increased interest in attending school during the program. Results demonstrate the feasibility and potential efficacy of a new classroom-based Animal-Assisted Activities model, which may provide a relatively simple and cost-effective means of helping educators and families to improve the social functioning of children with ASD.

Uccheddu et al., 2019 conducted a research to compare reading motivation and attitude, as well as reading and cognitive skills, of school-age children diagnosed with Autism Spectrum Disorders (ASD) who attended a 10 session reading programme with and without the presence of a dog. Children who read to a dog had 100% attendance at sessions over the course of the programme versus 75% (range 25–100%) of children attending reading sessions without a dog. In addition, after the programme, they were significantly more motivated and willing to read at home, as perceived by their parents. However, there were no significant differences in scores on reading and cognitive tests either within each group or between groups. Based on these results, we can conclude that reading to a dog can have positive effects on an ASD child's motivation and attitude toward reading. More research is needed to better understand if it can also have positive effects on children with ASD's overall reading and cognitive abilities.

Focusing on communication skills, Gómez- Calcerrada et al., 2021 performed experimental study aimed to evaluate the effects of a dog-assisted therapy program on gait, posture, and communication skills. The experimental group was involving 12 participants who received AAT for 10 weeks, at two sessions per week. The focus of these sessions was conducting different activities and physical exercises, facilitated by dogs. The control group was receiving treatment as usual. The outcome measures were the ability to walk and climbing stairs, balance, risk of falls and communication skills. This study concluded that the role of dogs as facilitators of the movement may lead to relevant benefits in the gait, posture and communication skills of adults with ASD, improving their ability to perform activities of daily living.

Within Gómez- Calcerrada et al., 2021 study, and during the last session in the dogs' presence, the



communication skills of the experimental group was assessed using an adapted version of the comprehensive and expressive language scale to assess interaction and communication with dogs and other people. This scale was designed by a group of experts, including researchers from different disciplines, therapists, and educators with a significant experience with people with ASD. This scale will be completed by the staff according to the frequency of the occurrence of relevant behaviors, such as staring at the dog, fixing the attention to the dog, interacting with the dog (feeding, petting, grooming . . . ), speaking with other people, naming objects or people, expressing feelings, or asking questions. This scale consists of 38 items scored 2 (yes, always), 1 (sometimes) or 0 (no, never) The minimum score that could be reached is 0 and the maximum score 76. Higher score scores mean better communication skills. This scale will be administered during the first, intermediate and final sessions, and only in the experimental group, as the control group will not have contact with the dog.

Furthermore, Rosenburg., 2016 research conducted provides evidence that introducing a therapy dog in an art room setting has a positive effect on all students involved. This research found, through teacher observation, an increase in socialization in all students in the classroom including students with disabilities such as autism spectrum disorder. This study also showed a correlation between increased student socialization and participation with a deeper understanding of students that were included in the classroom. This study supports earlier studies that have shown that inclusion is more successful if there is an effort to increase communication and support acceptance of all students in the class.

Grandgeorge et al., 2012 added that animal-assisted therapies are used widely but their relevant benefits have never been scientifically evaluated. Therefore study was done to evaluate the association between the presence or the arrival of pets in families with an individual with autism and the changes in his or her prosocial behaviors. Of 260 individuals with autism – on the basis of presence or absence of pets - two groups of 12 individuals and two groups of 8 individuals were assigned to: study 1 (pet arrival after age of 5 versus no pet) and study 2 (pet versus no pet), respectively. Evaluation of social impairment was assessed at two time periods using the 36-items ADI-R algorithm and a parental questionnaire about their child-pet relationships. The results showed that 2 of the 36 items changed positively between the age of 4 to 5 (t0) and time of assessment (t1) in the pet arrival group (study 1):

“offering to share” and “offering comfort”. Interestingly, these two items reflect prosocial behaviors. There seemed to be no significant changes in any item for the three other groups. The interactions between individuals with autism and their pets were more – qualitatively and quantitatively - reported in the situation of pet arrival than pet presence since birth. These findings open further lines of research on the impact of pet’s presence or arrival in families with an individual with autism. Given the potential ability of individuals with autism to develop prosocial behaviors, related studies are needed to better understand the mechanisms involved in the development of such child-pet relationship.

Comparing the presence of animal effect with toys, O’Haire et al., 2013 demonstrated that the capacity of animal presence to stimulate social interaction among humans. Their study aimed to examine the interactions of children with autism spectrum disorder (ASD) with an adult and their typically-developing peers in the presence of animals (two guinea pigs) compared to toys. The study suggest that the presence of an animal can significantly increase positive social behaviors among children with ASD.

Within the impact of animal pet as dogs on family activity, Burrows et al., 2008 examined the effect of integrating service dogs into ten families with an autistic child. Data included participant observation, video recordings of family–parent–dog interaction, and semistructured interviews with the parents. The themes were (a) the dog as a sentinel of safety, (b) gaining freedom through enhanced safety, facilitating public outings and family activities, and (c) improving social recognition and status, in which the presence of the dog promoted awareness of autism and affected social interaction. The triadic relationship between parent, autistic child, and service dog constantly evolves. This research provides valuable information for parents interested in having a service dog for their autistic child, and has implications for long-term human–animal companionship for children with special needs and their caregivers.

### **Conclusion and recommendations:**

The majority of studies examined in this review revealed that animals can help ASD kids with their social skills including communication skills. However, it is challenging to advise families with ASD children to possess animals because there is a lack of objective measurement and a dearth of controlled experiments. The existing evidence points to the exploratory and preliminary nature of

the study of the human-animal bond in natural settings, which has laid the foundation for comparison and longitudinal studies. Families of children with ASD may benefit from having animals in the home in a number of ways, including social, safety, and mental health benefits. To validate and encourage the application of these findings, additional research using strict methodologies is required. Large, diversified studies with a wide range of sample sizes should be a part of future study.

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