

Animal Companionship for Children with ASD: The Physiological, Psychological, and Socio-Emotional Benefits

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Abstract: *Dog ownership allows children with autism spectrum disorder (ASD) to experience the human-animal bond and provides physiological, psychological, and socio-emotional benefits. Cortisol, a biological stress marker, has been shown to decrease when children with ASD interact with dogs. Dogs provide stimulating points of interest, such as playing and cuddling, which aid in redirecting children with ASD from some of the emotional and physical hardships they endure, lessening the effects of their anxiety and repetitive and restrictive behaviors (RRBs). The interaction and comfort dogs provide can assist in building socio-emotional competence with people. This paper argues that after considering sensory issues, economic stability, and parental stress, the human-animal bond can contribute to developing key traits and characteristics in a child's life, which helps their overall quality of life and that of their family.*

Keywords: autism spectrum disorder, human-animal bond, children, dog, stress, anxiety

Five-year-old James lives with conditions known as autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD). James struggles with sleeping, maintaining conversation, and building relationships with his peers. James's parents found out their neighbor, Mallory Howes, DVM, was rehoming a Shetland sheepdog named Brady. After a couple of months of welcoming Brady into their family, they called Howes and informed her the dog had become a blessing for James. They reported positive changes in his behavior and mood, such as a decrease in his hyperactive behavior, as well as being able to sleep longer and more comfortably. For the first time, they could say James had built a relationship with someone.

This family's story reveals the opportunities that dog ownership can bring to improve the quality of life for a child with ASD. James and Brady's relationship demonstrates what the American Veterinary Medical Association refers to as the human-animal bond, a "mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors essential to the health and wellbeing of both" ("Human-Animal Bond"). The human-animal bond between children with ASD and their pets benefits family functioning, which improves these families' lives overall. James's story is a perfect example of the effect that dogs in the household can have on children with ASD and how it can lessen their symptoms. For specific physiological, psychological, and emotional reasons, children with autism spectrum disorder with a human-animal bond experience deeper socio-emotional competence, which helps their overall quality of life, as well as that of their family.

Many hold to the popular belief that pet ownership, especially of dogs, offers health benefits to pet owners, and research scientists and behaviorists have recently been studying the role dogs play in assisting child development. Dr. Gretchen Carlisle, a researcher at the University of Missouri College of Veterinary Medicine, stated that "typically developing children have been reported to prioritize their relationships with their pets, identifying them as ones with whom they can share their feelings" ("The Social Skills" 1138). There is not an abundant amount of research done on the interactions between children with ASD and dogs; however, studies such as Carlisle's have shown promising results in relation to the development of social relationships, as children with ASD experienced positive behavioral and social benefits. It should be acknowledged that owning a dog takes hard work, commitment, and responsibility. This commitment, coupled with the human-animal bond, can contribute to developing key traits and characteristics in a child's life.

To understand how dog ownership can benefit children with autism, it is important to understand what ASD is and its variability. According to Carlisle, autism is “marked by deficits with communication and social skills, along with the presence of restrictive and repetitive behaviors, and symptoms ranging from mild to severe” (“Pet Dog Ownership” 114). Figure 1 categorizes the autism spectrum disorder symptoms from high-functioning autism to severe autism, which facilitates the process of diagnosing for doctors and families. Most of the time, autism spectrum disorder is accompanied by one or more other disorders, including but not limited to “hyperactivity and attention disorders (such as attention-deficit/ hyperactivity disorder (ADHD)), anxiety, depression and epilepsy” (Lord et al. 1). Even though there are other factors to consider, dog ownership offers children with ASD a multitude of physiological, psychological, and socio-emotional benefits.

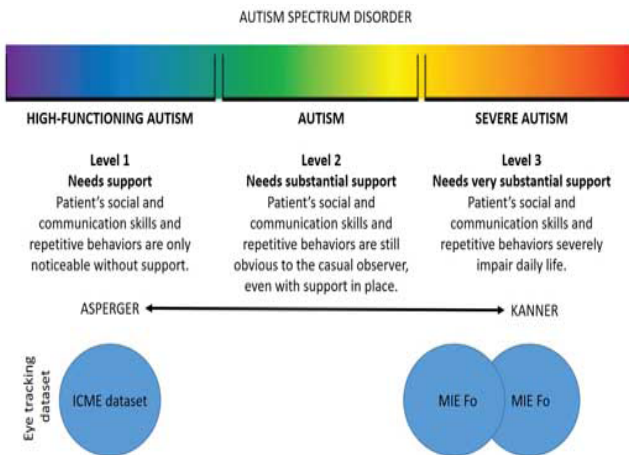


Figure 1. Autism Spectrum Disorder (Le Meur 162135). Used under CC BY 4.0 (<http://creativecommons.org/licenses/by/4.0>). No changes were made.

The physiological changes that come with pet ownership for children with autism have been briefly studied within the last

twenty years. The Physiological Society defines physiology as the “mechanisms of living things, from the basis of cell function at the ionic and molecular level to the integrated behavior of the whole body and the influence of the external environment” (“What Is Physiology?”). One of the physiological changes that has been studied is the changes in cortisol hormone levels in children with autism. This cortisol hormone can be used to determine the effect dogs have on stress in children with ASD. Carlisle stated, “Cortisol, the biological indicator of stress, has been found to be increased when children with ASD interact with peers, yet decreased when children with ASD have been paired with a service dog. The calming effect may aid children with ASD in developing relationships with dogs” (“Pet Dog Ownership” 115). Animal companionship could specifically be beneficial to children with ASD who are nonspeakers, because it could take away the stress of having to communicate with their peers; with dogs, they do not have the obligation to express their emotions verbally. Additionally, Carlisle’s findings of decreased cortisol levels in children interacting with service dogs unveil the possibility of extended periods of calmness and mood enhancement if children with ASD have a dog in the household. Likewise, Kristina Byström and Christina Persson, Swedish researchers of work science and psychology, respectively, contend, “animal-assisted treatments for different types of clinical groups such as children with insecure attachment, hospitalized children, and children as psychiatric patients have been evaluated, all with positive effects, such as lower cortisol levels, reduced depression, positive affect and mood, and lower heart rate” (264). These positive effects can also be seen in interactions between dogs and children with autism. James’s decrease in hyperactive behavior and improved sleeping patterns reflect Carlisle’s, Byström’s, and Persson’s findings on the positive outcomes of human-animal interaction.

The human-animal bond’s lessening of stress through the decrease of cortisol also suggests the therapeutic potential of

dogs in treating children's anxiety. Anxiety and stress are similar, but they are not the same. According to the American Psychological Association, "People under stress experience mental and physical symptoms, such as irritability, anger, fatigue, muscle pain, digestive troubles, and difficulty sleeping. Anxiety, on the other hand, is defined by persistent, excessive worries that don't go away even in the absence of a stressor" ("What's the Difference"). Children with autism can feel stressed when attempting to interact with their peers, and the stress might leave when separated from the stressful situation. However, most of them have to live with anxiety daily, so much so that some say anxiety should be listed as a core aspect of ASD (Kerns et al. 780). Dog ownership in families with an autistic child can help attenuate some of the stressors in the child's life, which can lessen their anxiety.

Not enough scientific research has been conducted on the effects of pet ownership on a child's anxiety levels. However, in the study conducted by Byström and Persson, they captured the effect the family dog had on some of the children who dealt with anxiety. One of the parents of a child with ASD reported that "the dog seemed to even seek the child on its own initiative when the child most needed help in controlling strong, negative emotions, and stress. The dog was able to both elevate and moderate the child's mood" (Byström and Persson 273). This dog buffers the negative emotions and stress that contribute to the child's anxiety. Dr. Hannah Wright and her colleagues, both at the University of Lincoln and multiple research centers for the disabled in the United Kingdom, theorize the dog's ability to lessen those stressors and bad moods is related to a "decrease in cortisol awakening" when the children interact with the dog (613). Wright continues her argument that cortisol awakening has been shown to "increase again following removal of the animal" (613). Carlisle's and Wright's findings of cortisol lowering could stem from the distraction the interaction offers from a stressor or anxious moment. The mother of a girl with

ASD stated that “the dog gave her something to focus on when things were so bad for her. It gave her something to take care of” (Byström and Persson 270). Walking, cuddling, and playing with the dog are among the activities that can give children with ASD a break from some of the emotional and physical hardships they endure, thus moderating the effects of anxiety.

Another psychological benefit a human-animal bond can offer a child with ASD is the interruption of some repetitive and restrictive behaviors (RRBs). These can manifest as “a wide range of idiosyncratic behaviors including stereotyped movements, repetitive self-injury, compulsive/ritualistic behaviors, insistence on sameness, repetitive language, and unusual and/or intense preoccupations” (Harrop et al. 1773). These RRBs are often the root of these children’s anxiety and inability to have stable relationships with others. The interaction between a child with ASD and a dog may separate the children from their repetitive behaviors by “breaking the cycle through providing a stimulating point of interest (e.g., by playing a game with the dog)” (Wright et al. 621). Wright also suggested the possibility that “by stroking the dog the child engages in repetitive behaviors which are viewed as less problematic by their parent” (621). Some of the problematic repetitive behaviors Wright is referring to are those that result in self-harm. More research needs to be conducted to have a complete understanding of the long-term benefits of dogs breaking RRBs and to investigate whether harmful repetitive behaviors might be transferred to the dog by causing them physical harm. However, short-term benefits could potentially lower anxiety, self-harm, and the physiological factors previously mentioned like stress responses. By lessening stress and RRBs, the human-animal bond could facilitate socio-emotional competence so the child can create relationships with their peers.

Children with ASD experience difficulty connecting with other people, expressing their emotions, and recognizing other people’s emotions. Carlisle suggests, “The lack of necessity to

identify what a dog may be thinking, in order to have a social interaction, may provide a rationale for the ability of children with ASD to interact with dogs" ("Pet Dog Ownership" 115). Likewise, new research has proposed that interacting with a dog can build socio-emotional competence with people. Socio-emotional competence is defined as a "central developmental goal of early childhood that includes the understanding of one's own and others' emotions, emotional expression and the use of emotion regulation strategies and social skills" (Gev et al. 1). Dr. Tali Gev from the Autism Research Lab at Bar-Ilan University and Autism Treatment and Research Center in Israel, along with her colleagues, conducted a study in which they examined the differences between typical developing (TD) children and children with ASD during interaction with other peers. Their results suggested that "compared to the TD group, the ASD group showed poorer emotional understanding, greater emotional dysregulation, and was rated by parents as having poorer social competence" (Gev et al. 4). The human-animal bond or simple interactions with dogs could increase some of these socio-emotional components during peer-to-peer interactions. In a study conducted by Dr. Amanda Ward, a psychology instructor at the Massachusetts General Hospital and Harvard Medical School, along with her colleagues, Ward argued that "adolescents with greater social impairments who turned to pets for comfort reportedly experienced benefits in terms of their friendships (e.g., positive associations with friendship quality) according to parent report" (41). To control for confounding variables, Ward used the social impairment variable in the first step of their experiment and pet ownership qualities variables in the second step to control for the variable turning to the pets for comfort (38). By finding comfort in their dogs, they can mimic similar behaviors when interacting with people. Some of the activities mentioned previously, such as playing, walking, and cuddling with the dog, can eventually be simulated by the child when interacting with people, in attempts to establish relationships.

Although the human-animal bond between a dog and a child with ASD can be advantageous for the child to build socio-emotional competence, there are some financial and mental health factors for the families and boundaries for the children. Critics worry about the economic and health considerations of such major financial and family commitment. Researchers Chiara Horlin and her colleagues at the School of Occupational Therapy and Social Work at Curtin University in Perth, Australia, researched the difference in expenses between families whose child was diagnosed soon after showing signs of autism, typically within the ages of 2–4, and families who waited some time between suspicion and formal diagnosis. Horlin stated that “the median family cost of ASD was estimated to be AUD \$34,900 per annum with almost 90% of the sum (\$29,200) due to loss of income from employment. For each additional symptom reported, approximately \$1,400 cost for the family per annum was added” (Horlin et al. 1). According to the Autism Speaks organization, the average cost of autism in America is \$60,000 a year through childhood (“Autism Statistics and Facts”). The researchers suggested that earlier diagnosis could prevent future financial burden, since a “delay was associated with a modest increase in the number of ASD symptoms, indirectly impacting the cost of ASD” (Horlin et al. 1). Given these costs, one can infer that it is best for parents to consider their circumstances and make sure they are willing to put time and money into caring for a dog.

Parents must also consider their emotional availability and stability when contemplating dog ownership. The responsibility, time, and financial stability required to raise a child with ASD would ultimately increase with pet ownership. Dr. Clare Harrop, a developmental psychologist at the University of North Carolina at Chapel Hill, along with her colleagues McBee and Boyd, conducted a study on how RRBs in children with ASD affected their caregivers' stress levels over time. Their results indicated that “when caregivers reported

increased child RRBs, this was mirrored by increases in caregiver stress” (1773). The researchers emphasized the importance of identifying “effective intervention strategies for these behaviors as these may have beneficial effects on caregiver well-being” (Harrop et al. 1781). Parental stress should be considered as an outcome if a dog is acquired, and this stress may lead to side effects and additional health problems, such as anxiety and depression.

The demands and restrictions of children with ASD should be considered before introducing a dog into their environment. However, the effect children with ASD can have on their pet should also be considered to ensure both parties can maintain a good quality of life. Similarly to humans, dogs experience physical and emotional stress, which has been studied through blood biochemistry analysis, cell count, and physiological values by veterinarians (Kartashova et al. 1). However, a more accessible way for the families of children with ASD to measure their pets’ stress levels at home is understanding visual signs of behaviors in dogs. Public health epidemiologist Kristen Burrows, along with professors of veterinary health Cindy Adams and Suzanne Millman, conducted a study in which they assessed the behavior and welfare of service dogs trained by the National Service Dogs organization, an organization specializing in training service dogs to assist children with ASD, while living alongside a child with ASD and their family. In the study, the authors paired energetic dogs with relatively reserved children and calm dogs with energetic children to balance temperaments. Through the caregiver interviewing process, the authors observed that these service dogs experienced some level of physical stress when enduring long periods without urinating or defecating, long periods in a service jacket, short sleeping periods, and unprovoked negative attention from the children (Burrows et al. 50). Caregivers reported the dogs were disturbed by the children during their sleeping hours and napping times, and the children were physical with the dog (sitting on them and pulling on their ex-

tremities), which resulted in the dog appearing exhausted and performing poorly during their working times. These physical stress factors can equally affect animals not trained by National Service Dogs, influencing their behavior and their relationship with the child.

In addition to emotional and financial availability, some children with ASD might have sensory issues which could get in the way of the human-animal bond experience. In a study, Carlisle explored the role that dogs played in a family with an autistic child. After interviewing different parents about their experiences with pet ownership, she reported that children who had sensory issues were unable to live with a dog due to "loud barking, smell, jumping up and other behaviors of dogs" ("Pet Dog Ownership" 118). A child with similar sensory issues should not be in a household with a dog because it can increase the child's anxiety, which can completely disrupt family functioning and the child's quality of life. Nevertheless, the positive physiological, psychological, and socio-emotional adjustments that the human-animal bond can offer to a child with ASD should be highly considered after acknowledging personal circumstances.

Certainly, there are economic and mental health factors amongst these families. However, the physiological, psychological, and socio-emotional benefits for many are undeniable. Byström and Persson seek to understand and report the parents' perspective on the human-animal bond between their children with ASD and a companion animal. They conducted focus group discussions with twelve parents of children with ASD to ask the open-ended question, "Do your children benefit from companion animals, and what have your experiences been?" (266). Their data suggested that children's interactions with their companion animal are more social and contribute to their functioning and development. This inference was based on five categories of interactions and behaviors between the children and their pets. The first one is the pets' ability to provide com-

fort, which was observed at times when one of the children was upset or crying and stayed near the pet for comfort. The second category was the pets' ability to regulate feelings and stress, like sleeping in bed with the child when having trouble sleeping. The third category was pets facilitating motor development, which parents expressed were observed in their children having more control of their body movements and doing activities on their own. The fourth category was pets facilitating coping with difficult life events, and the fifth category was pets stimulating the children to evoke caring behaviors, which a parent expressed as their child assuming responsibility for the pet and its needs. The parents reported that each of those interactions appeared to help the children's restrictive and repetitive behaviors lessen. One of the parents said, "She talks to her assistant at school about what she's been doing with the dog" (Byström and Persson 269). Another parent said, "The dog offers comfort in a different way to how I do, more unconditional. Åsa can hold the dog when she is feeling miserable. The dog doesn't ask why or what's happened" (Byström and Persson 269). These personal statements are worth more than statistics to determine whether pet ownership is beneficial or not.

In addition to the benefits noted by parents, several researchers indicated the human-dog bond has long-term mental and physical health benefits, as well as overall family functioning. Researcher Sophie Hall, along with her colleagues at the School of Life Sciences, University of Lincoln in the United Kingdom, conducted a study using self-reported measures in twenty-two families to determine the long-term benefits of dog ownership for children with ASD and the effects it had on overall family functioning. The control group in this experiment included fifteen families who did not own a dog. The researchers concluded there were "lower scores in the intervention group compared to the control group, reflecting decreased family difficulties and increased family strengths," and after completing a follow-up study two and a half years later, the family func-

tioning results from the first study remained relatively constant (Hall et al. 49). Additionally, “parenting stress scores revealed trends to a greater reduction in all domains of parenting stress (total stress, parental distress, parent-child dysfunctional interactions, and difficult child) in the intervention group compared to the control group” (Hall et al. 52). This result was linked to the attachment between the child and the dog. However, this could also suggest that the human-animal bond might affect the child developing emotional competencies rather than the cause.

The human-animal bond helps children with ASD to break out of their repetitive behavior and contributes to their physiological, psychological, and emotional development, which facilitates their lives and benefits family functioning. The autism spectrum is very broad, and every child has a lifestyle and traits that are unique to them. It cannot be ignored that every family dynamic is different. Not all families have the same financial and emotional availability to support and care for a child with ASD and a dog at the same time. After carefully considering all the benefits and mentioning the exceptions, like sensory issues, economic stability, and parental stress, it can be concluded that, just like James and his family, experiencing the human-animal bond can change the lives of many affected with ASD and their families.

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