

A Child's Best Friend?: A Review of Canine Interventions for Children with Autism Spectrum Disorder

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Abstract

Dogs have been working in partnership with humans for thousands of years, in roles ranging from hunter to herder to faithful companion. In the last century, a new role has emerged for man's best friend — that of a therapist. The availability of canine therapy programmes for children and young people with autism spectrum disorder is increasing worldwide, and both the media and the general population are lauding these canine therapists for the marvellous work they are completing. As educational psychologists, it is essential that we understand the evidence base these claims are rising from so that we are better able to advise and discuss the pros and cons of such interventions with schools and families.

Keywords

autism spectrum disorder, canine interventions, children, dogs, educational psychology, therapy

Introduction

The faithful dog — why should I strive
To speak his merits, while they live
In every breast, and man's best friend
Does often at his heels attend. (Ignotus, 1821, p.124)

The first recorded use of the phrase “man's best friend” to describe the dog dates back to a poem from 1821 (Martin, 2013), but the relationship between our two species has been cultivating for much longer. Dogs and humans have been working together for thousands of years, and while the origins of canine domestication are highly contentious (Skoglund, Ersmark, Palkopoulou & Dalén, 2015), genome sequencing evidence suggests that dogs began to be domesticated from wolves at least 27,000 years ago (Skoglund et al., 2015). Since then, dogs have served humans in a number of capacities, including as hunters, protectors, war dogs, gatherers and herders (Wendt, 1996). Of particular note is the use of animals in therapy, known as animal-assisted interventions (AAI). Dogs were first found to be beneficial in therapy in the 1950s (Melson, 2001) and are now the most commonly used animal in AAI (Fine, 2010). AAI can generally be classified into three groups: animal-assisted activities (AAA), animal-assisted therapies (AAT), and service animal programmes (SAP) (Burgoyne et al., 2014). AAA often take place in educational or healthcare settings and aim to improve education and quality of life; AAT is conducted by trained professionals with a goal of improving physical, social and cognitive functioning; and SAP uses animals to live in-house with individuals to support the performing of daily activities (Burgoyne et al., 2014).

Particular focus has recently been on the effectiveness of canine interventions for children and young people (CYP) with autism spectrum disorder (ASD) (Esposito, McCardle, Maholmes, McCune & Griffin, 2011). ASD is a condition that is estimated to affect one per cent of the population and is characterised by social and communication difficulties, as well as particular interests and stereotyped behaviours (Baron-Cohen et al., 2009). This interest has risen due to the relationship many individuals with ASD have with animals. CYP with ASD have been suggested to interact more frequently and willingly with dogs than other humans or inanimate objects (Prothmann, Ettrich & Prothmann, 2009), which Prothmann et al. (2009) argue is because animals communicate their intentions in ways easier to understand than humans. Indeed, Sams, Fortney & Willenbring (2006) suggest that acquiring the ability to interpret and respond to the social and behavioural cues of dogs may help CYP with ASD learn to interpret the more subtle needs of humans.

As the evidence for AAI is developed, so too are the number of programmes offered. In an online study of 248 parents of children with ASD, 59 (23.8 per cent) had participated in some form of AAI, with the majority of these suggesting it was beneficial (Christon, Mackintosh & Myers, 2010). The positive effects of dog-related AAI are also increasingly portrayed in the media. These interventions are reported to be “animal magic” with “miraculous effect[s]” (Cross, 2012, para. 2), or courting the merits of their “furry therapist” (Geary, 2015). It is, therefore, plausible that many parents and families an educational psychologist (EP) will work with will have heard about the curative powers of canines. As such, it is imperative that, as EPs, we are able to understand the psychology behind these “miracle” claims in order to better advise and discuss the pros and cons of such interventions with schools and families.

Animal-Assisted Activities

Animals have long been kept in the classroom as a way to aid the development of its students — the author fondly remembers a class hamster when he was in primary school, for example. Recently though, research has begun to explore the benefits of having these classroom visitors. The introduction of a classroom guinea pig was suggested to lead to an increased motivation to attend school, as well as significant improvements in social functioning for CYP with ASD (O’Haire, McKenzie, McCune & Slaughter, 2014), and a systematic review of the literature on “reading to dogs” programmes suggests benefits to reading and behaviour for all children (Hall, Gee & Mills, 2016). Over the past 20 years, there has been a steady increase in the number of AAI programmes implemented in the UK, especially within education (Society for Companion Animal Studies, 2013). As such, it is important that EPs keep on top of this growing field of research to be better able to support their local schools.

Evidence

In order to understand how a school-based dog may support students in an academic setting, Beck (2015) used a questionnaire to gather data from one school that already had an in-situ canine. Though responses covered all students in the school, the responses highlighted that the dog supported students with ASD in developing their social skills through their interactions with the dog. As one respondent said:

I worked with a boy with severe autism and he responded well to a therapy dog. It gave him responsibility by feeding her and taking her for walks. They had a wonderful relationship and he didn’t have with people. The dog could break that social barrier. (Beck, 2015, p. 25)

Additionally, through the use of two visiting school dogs to an ASD classroom, Stone (2010) reports that the CYP demonstrated an increase in verbalisations, spontaneous conversations and eye contact. Stone also explains how the dogs were used in conjunction with an activity board, which allowed the CYP to structure sentences around them, improving language skills. While this evidence is anecdotal, and no mention is given to how the activities with the dogs were structured, it does provide further evidence that CYP with ASD can benefit from the presence of a dog in the classroom as a way to support their learning.

Stevenson, Jarred, Hinchcliff, and Roberts (2015) reported on three case studies in which dogs were introduced to classrooms in an attempt to motivate students with ASD and increase their social interaction and engagement with their teacher. In all three cases, levels of interaction, visual interest and meaningful vocalisations increased when the dog was present — an effect also observed in the rest of the students in the room. Additionally, through a pre- and post-intervention ADOS assessment, though no improvements in symptomology were recorded, in two cases qualitative reflections indicated improvements in attention and meaningful vocalisation. Together, these case studies suggest that while each CYP’s response was highly individual, in each case the dog did appear to assist the CYP socially. This was the only study found that used an ASD diagnostic tool to assess the effect of a dog on CYP with ASD, and, while promising, the small number of participants and lack of control group do prevent results from being generalised.

Summarising the literature, Harris and Sholtis (2016) discuss how school dogs can support CYP with ASD by calming them during episodes of anxiety, redirecting harmful behaviours and increasing the CYP’s independence. Additionally, they discuss how these dogs also support a CYP in developing character traits such as generosity, empathy, responsibility and patience, which were then applied to social interactions with peers in the classroom.

Dogs can also be used as a way to support CYP in the classroom with their reading. Konarski (n.d.) reported that, compared to reading to a teacher, when reading to a dog a CYP with ASD demonstrated a more positive attitude towards reading and an increase in attempts to read unknown words. This improved motivation was also observed in an increase in oral reading fluency and non-word reading fluency. Reviewing the literature on dog reading programmes, Fung (2016) argues that such programmes would be beneficial to CYP with ASD, not only as a way to encourage and support social communication and joint attention but also to provide a comfortable and stress-reduced environment in which to learn.

It is important to note that such programmes may be beneficial not only for the CYP but also for the dogs themselves. Henderson and Ravesz (2016) discuss how a young boy with ASD reads at his local dog shelter to help the *animals* become more sociable and easier to re-home. They report that the Battersea Dogs and Cats Home has a similar programme, where the animals are read to, helping them to socialise and become accustomed to humans — a key stage in their re-homing. Therefore, there is an important ethical consideration that, where such programmes prove beneficial to CYP with ASD, this relationship should also be used to support the welfare of the animals involved.

Summary

Evidence supporting the use of dogs in schools is a limited but growing field. Current research suggests that dogs can be used in several ways in the classroom to support CYP with ASD, from supporting with social interactions and vocalisations to helping individuals read. However, much of the evidence is still in its infancy and reliant on anecdotal evidence or small sample sizes. While reading to dogs has been suggested to be beneficial with regards to a CYP’s reading (Hall et al., 2016), research has yet to be conducted to explore the benefits of such a programme for CYP with ASD — though a current, single case study does exist to suggest some benefits (Konarski, n.d.). As AAI are becoming increasingly popular in schools, with many beginning to work with EPs to implement these schemes (i.e., Davison, 2015), it is important that EPs are aware of the evidence behind these programmes to better advise their schools on the benefits and drawbacks of such approaches.

Animal-Assisted Therapy

Animals have been used in therapy since the late eighteenth century to increase socialisation in asylums and as a means of “self-help” throughout the nineteenth century (Serpell, 2010). Kruger and Serpell (2010) suggest that humans view animals as

sources of non-judgemental social interaction — as mediators for those with social needs — making it easier to communicate when an animal is present. In particular, Johnson (2003) argues that the social aversion many individuals with ASD feel may not extend to animals. As such, AAI are becoming increasingly popular, with programmes including animals as diverse as dogs, horses, dolphins and llamas (Davis et al., 2015). The media, too, are championing the idea of AAI, referring to one dog as a “furry therapist” (Geary, 2015). These programmes, however, each have their own goals and outcomes and use different methods (Maurer, Delfour, Wolff, & Adrien, 2010). As such, it is important to understand the evidence supporting them in order to advise on their use.

Evidence

Solomon (2010) reported on observations and interviews with the parents of a girl with ASD following the introduction of a therapy dog to sessions at the family home — through interacting with the dog, the girl was able to engage in co-operative play and interact with an unknown child — both of which had not been observed before. Additionally, she was reported to have a generally increased emotional connection with others. Another case study was presented by Silva, Corria, Lima, Magalhães, and de Sousa (2011), suggesting that in therapy sessions with a dog present, the CYP exhibited more frequent and longer durations of positive behaviours — such as engagement and positive physical contact — as well as fewer and shorter negative and aggressive behaviours. Silva et al. (2011) attempted to control the sessions by having the therapist conduct structured one-to-one activities and avoid a disappointment behaviour dip by randomising the dog/no-dog sessions. As such, they concluded that the presence of the dog primed the CYP for therapy and enabled greater participation.

There have also been attempts to compare the effectiveness of AAI with traditional interventions for ASD. Grigore and Rusu (2014) split CYP into sessions aiming to improve their social interactions: using social stories alone or social stories with a dog present. They suggest that reading social stories with a dog present led to an increase in the frequency of social initiations as well as a decrease in the level of social prompts required during social interactions. However, no control was conducted in order to compare the effect of the dog itself, so the exact effect of the dog is unclear. Additionally, of the three participants, only one had a significant increase in appropriate social interactions, so it is unclear to what extent their results justify their conclusion.

Fung and Leung (2014) also present an experimental design whereby ten CYP were randomly assigned to sessions of social interaction therapy. Half of them engaged in play therapy with a trained dog, while the control group engaged in identical play therapy using a doll substitute. They found that verbal social behaviour improved significantly in the dog group, suggesting the dog had a positive impact on language output. However, improvements were also observed in the no-dog group — so, while slightly more improvements were noted in the dog group, the difference between the groups was not significant.

Interestingly, however, one study was found with a null result, in which dog therapy was suggested to be ineffective in decreasing the duration of tantrum behaviours or the intensity of aggressive behaviours in CYP with ASD (Jesionowicz, 2016).

Davis et al. (2015) conducted a systematic review for AAI for CYP with ASD identifying 20 studies, of which 11 referred to the use of a dog. They suggest that the use of a therapy dog can have a positive impact on a CYP's behaviour, social skills and communication, but they highlight several methodological concerns that limit the applicability and replicability of these findings. Almost all the studies reviewed used case study designs or relied on parental reports of behavioural changes. These methods limit the ability to infer cause-and-effect relationships due to the possibility of bias from the parents or researchers. As such, all of the dog-related AAI studies were rated as insufficient in terms of their certainty of evidence. An additional systematic review by O'Haire (2013) added that, while much of the evidence for AAI currently is weakened by the methodology used, the nature of the studies suggests that AAI is still in the first phase of research — that of proof of concept. With further, more rigorous research, the benefits of AAI may become more apparent.

Summary

While research regarding the use of therapy dogs suggests that it can lead to improvements for a CYP with ASD, especially regarding behaviour and social communication, much of the evidence is weak. Many of the studies are based on researcher or parental reports on case studies of individuals or very small groups and, as such, cannot be generalised. Additionally, the effect size for most studies was quite small, with improvements over traditional, non-AAI interventions slim (Fung & Leung, 2014; Grigore & Rusu, 2014). Therapy dogs, as with all therapy animals, may also be injured from a CYP's rough handling or aggression, and many animals can become anxious around strangers (Zamir, 2006). As such, it is important that these dogs go through training to prepare them for work. Additionally, not all animals will want to be “therapists” and shouldn't be forced to work if they become anxious around people (Preziosi, 1997). It is important that the welfare of therapy dogs is the priority of the therapy facilitator (Zamir, 2006), and the dogs have the time and space they need to rest, although this may disrupt therapy sessions and the organisation of a continued intervention programme, thereby limiting the effect it may potentially have.

Service Animal Programmes

An assistance dog is different to a pet dog or therapy dog in that it has received specific training to support an individual with particular needs. Assistance dogs for CYP with ASD are becoming better known, with the media portraying them as nothing short of “miraculous” (Cross, 2012, para. 2). This has led to an increased demand for assistance dogs, with demand far outstripping supply (Wright, Hall, & Mills, 2016). It has also led to an increase in unofficial retailers of service dogs, who charge thousands of pounds for untrained puppies (Packham, 2015). As such, it is important to understand what benefits an assistance dog can provide for a CYP with ASD, whilst also balancing the cost of obtaining and raising the dog, before recommendation can occur.

Evidence

Burrows, Adams, and Spiers (2008) worked with ten families where a CYP with ASD had an assistance dog. Perhaps because focusing solely on parental reports can lead to bias in interpretation, Burrows et al. (2008) also observed the interactions between CYP and their dogs directly, and had access to video recordings of family–parent–dog interactions. They suggest that assistance dogs provide a safety barrier for the CYP, increasing their freedom and the family's perceived ability to go out in public together. They also suggest that the presence of the dogs improved social recognition when in public, which, in turn, improved social interactions for the CYP and their family. Additionally, Davis, Natrass, O'Brien, Patronek, and MacCollin (2004) interviewed seventeen families with assistance dog placement, identifying several social and cognitive benefits for the CYP involved, as well as some medical and physical benefits.

While the above studies relied on small numbers of participants, which could limit their applicability, Burgoyne et al. (2014) used a controlled parental questionnaire to assess the perceived impacts of having an assistance dog for a CYP with ASD. They received responses from 164 families — 80 with an assistance dog, 84 on a waiting list. They found that families who already had an assistance dog felt that the public responded better to their child than those on the waiting list, as well as feeling that their child was safer and that they were more competent in managing their child. Most interestingly, parents also reported upon the constraints of having an assistance dog. Families who already had a dog were more likely to mention factors relating to the dog itself, such as cleanliness, whereas families on the waiting list were more likely to suggest factors relating to holidays and going out without the dog. Also of note was the concern with how the CYP with ASD might react in the event of the dog dying or retiring, which was present in both groups.

Berry, Borgi, Francia, Alleva, and Cirulli (2013) conducted a systematic review of experimental studies looking at the benefits of therapy and assistance dogs for CYP with ASD and identified six studies. They suggest that the introduction of assistance dogs led to improved behaviour, decreased anxiety and anger, and decreases in the number of problematic behaviours for CYP with ASD. However, all of the studies looking at assistance dogs relied on parental reports of their child's behaviour, so it is uncertain how much of the difference made actually reflected the CYP's feelings and reflections, and how much was parental interpretation. To combat this, one study (Viau et al., 2010) looked at cortisol levels in children with ASD before, during and after the introduction of an assistance dog to identify physiological markers of stress and the effect of having the dog. They found that the cortisol awakening response (CAR), typically associated with an individual's worries regarding social stress, self-esteem and self-efficacy (Wüst, Federenko, Hellhammer, & Kirschbaum, 2000), decreased upon the introduction of a dog but returned to higher pre-dog levels after the assistance dog was removed. This may suggest that parental reflections of reduced anxiety may accurately reflect the CYP's own experience.

Furthermore, there is evidence to suggest that having a dog in families with CYP with ASD has significant positive impacts on the parents. Smyth and Slevin (2010) interviewed seven parents after an assistance dog had been placed with their family. While the parents suggested that their child benefited in terms of positive social acknowledgement and personal safety, they also thought the family benefited as a whole, as they reported less anxiety regarding their child's safety and felt they could go on more family outings, receiving more positive social acknowledgements. Using the Parenting Stress Index at stages of pre-intervention, post-intervention and follow-up, Wright et al. (2015) demonstrated that after getting a dog (post-intervention and follow-up), parents had significantly lower reports of total stress, parental distress and difficult child, compared to pre-dog levels. Control families reported no significant differences across the timeframe. Additionally, in terms of parental distress specifically, a significant number of parents in the families with dogs moved from clinically high to clinically normal levels of stress between pre- and post-intervention. Together, these suggest that having a dog can provide immediate and significant reductions in the level of parental stress in families where a child has ASD, and these effects appear to be relatively stable (follow-up was conducted up to 40 weeks after dog acquisition).

In Wright et al.'s (2015) study, the intervention was looking at generic pet dogs, as opposed to specifically trained support dogs, so the findings may not be transferable. They do, however, suggest that the very presence of a dog — even one not specifically trained to support CYP with ASD — can potentially have a positive effect on the family unit as a whole. Indeed, Grandgeorge et al. (2012) suggest that simply acquiring a pet (specifically dogs, cats and other furred creatures) can lead to parents perceiving reduced stress and increased prosocial behaviours in CYP with ASD. It is important to note that in Wright et al.'s study, parents in both the experimental and control conditions were recruited through a charity focused on dogs and autism. As such, it is possible that many parents may already have been aware of the supposed benefits of having a dog, and after getting one may therefore have been acting with confirmation bias: those with a dog may have been looking for evidence that having a dog was supportive, and may have interpreted several behaviours with that in mind. In their review of the study, Crossman and Kazdin (2016) also highlight difficulties with the causal claims made by Wright et al. (2015). Instead, they suggest an alternative causal claim in that high pre-intervention stress levels may have reflected family anticipation and preparation for getting a pet, which then declined post-acquisition as relief from obtaining a pet, rather than reflecting any therapeutic effects the dog may have. However, as Wright, Hall, and Mills (2016) discuss in their response to Crossman and Kazdin, the need for autism assistance dogs far outstrips the availability, and, as such, this study is important in establishing whether pet dogs with little or no training can also be beneficial to CYP with ASD and their families.

Summary

While most of the research into the impact of assistance dogs for CYP with ASD comes from parental reports and is therefore subject to bias, it is interesting to note that the majority of the literature highlights similar themes. Assistance dogs allow a CYP to develop their social interaction skills and lead to greater freedom for the CYP and their family, with more positive social interactions with the public when out. Having an assistance dog can reduce stress in families — as they worry less about their child's safety — and lead to a more positive outlook regarding one's child. Concerns were raised regarding the training and

maintenance of the dogs, as well as their integration into the family and problems arising from the dog leaving the family. Additionally, Burrows, Adams, and Millman (2008) suggest that a lack of recovery and recreation time, as well as unintentional maltreatment from CYP, can lead to serious impacts on the behaviour, welfare and performance of assistance dogs. However, current research does suggest that having a dog can lead to significant benefits for CYP with ASD, as long as everyone involved is mentally and financially prepared to care for a new member of the family.

Conclusion

On the surface, the literature available does suggest that AAI with dogs can provide support for individuals with ASD. There are consistent findings that working with a dog can help a CYP with ASD improve their social skills and behaviour, with increased vocalisations and interactions with peers in the presence of a canine supporter. It is also suggested that the dogs support not only the CYP but also their families, decreasing feelings of anxiety and fear. However, the evidence base to support these claims is not wholly developed. Much of the research is anecdotal or based on case studies, which, whilst giving a detailed picture of behaviour and outcomes for those individual cases, may not be generalisable. It is also important to understand that much of the research focuses on cases in which a dog is already involved with the CYP — and with individuals who like dogs. It is obviously important to ascertain the CYP's opinion of dogs before any AAI is introduced.

As Davison (2015) suggests, however, EPs should take care not to dismiss AAI. The popularity of such interventions is growing, thanks in no small part to their ever-increasing presence in social and printed media, and it is likely that schools and other agencies would benefit from an EP's understanding of the psychological theory and evidence base of AAI practices before they decide on any form of implementation (Davison, 2015). While dogs may not be a regular sight in UK schools, it is possible that in the future they may become a more common occurrence. The Equality Act (HM Government, 2010) has three requirements that establishments — including schools — must fulfil to support individuals with disabilities. The establishment must make reasonable adjustments for the individual, improve access and provide necessary aids so as not to discriminate against the individual. As awareness of autism assistance dogs increases, some of these “reasonable adjustments” may be adjusting a no-dog policy to allow for assistance dogs in schools. Indeed, guide dogs are already supporting CYP with visual impairments in schools (Rose, 2013) across the UK, and in America a court has already overturned a school's decision to refuse an autism assistance dog because they thought it did not properly assist the CYP in question (Schoenbaechler, 2010). However, the guidelines from the Equality Act to make reasonable adjustments can be confusing — both for families and schools. It is important, therefore, that EPs keep up to date with legislation, to ensure they are able to support both parties' queries and concerns regarding the presence of dogs in education.

When working with animals, it is vital that schools, families and practitioners understand the ethical considerations involved. The welfare of the animals should always be the top priority (Zamir, 2006), and schools must ensure that, when working with dogs, they cater to the needs of the animal first. Schools will also have to ensure that they are covered by insurance when working with dogs, and that additional risk assessments are completed, with rules in place for all students and staff to protect both them and the dog (i.e., Titkin, 2016). In organising AAI for students, schools may request support from an EP to help them understand the psychological and ethical implications, so it is important that we are aware of safe and proper practice when dealing with such cases.

Our key responsibility as practitioners is to remain highly vigilant in our duty of care, but this should not prevent us from pursuing new developments in this area. AAI is a popular — yet still emerging — field in psychology that is beginning to branch into the realm of education. As EPs, we must remain on top of this field of research to ensure that we understand the psychology behind it. Only then can we work with schools and families working with animals to better support CYP in need.

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