



## Social-emotional adjustment and pet ownership among adolescents with autism spectrum disorder



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### ABSTRACT

Adolescents with Autism Spectrum Disorder (ASD) often experience poor social-emotional adjustment and interactions with peers, but taking care of a family pet may serve as a buffer. This study utilized 81 parent-adolescent dyads to examine how dimensions of pet ownership (responsibility, comfort, companionship) may be associated with social-emotional adjustment (depression, loneliness, friendship quality) among adolescents with ASD, as well as how social impairments may influence these relations. Results revealed that adolescents who took more responsibility for their pet exhibited fewer depressive symptoms. Additionally, parents of more socially impaired adolescents reported better friendship quality than less socially impaired adolescents. Findings suggest taking care of a pet may facilitate better social-emotional adjustment among adolescents with ASD.

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## 1. Introduction

One of the hallmarks of Autism Spectrum Disorder (ASD) is a deficit in social interactions, which often results in fewer friends and poorer friendship quality (Orsmond, Krauss, & Seltzer, 2004). Adolescents with high-functioning ASD (HFASD), characterized by no to mild cognitive impairment, often have greater awareness of their social challenges, which can lead to frustrations, isolation, and higher rates of depressive symptoms and loneliness compared to typically developing populations (e.g., Klin, McPartland, & Volkmar, 2005; Locke, Ishijima, Kasari, & London, 2010; Lopata et al., 2010; Strang et al., 2012). Given that youth with HFASD may be at increased risk for these negative outcomes, research has prioritized exploring potential buffers to enhance social-emotional adjustment, including human-animal interactions. The literature in this area suggests that human-animal interaction may improve health and wellness, as well as facilitate positive social-emotional adjustment, among typically developing individuals (Lem, Coe, Haley, Stone, & O'Grady, 2016; Levine et al., 2013; McConnell, Brown, Shoda, Stayton, & Martin, 2012; Stanley, Conwell, Bowen, & Van Orden, 2014). As such, high functioning youth with ASD, in particular, may also benefit from intervention efforts in this area in light of their greater capacity to care for pets independently and ability to more fully engage in the interactions.

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### 1.1. Benefits of human-animal interaction

Initially, research focused on examining the benefits of working with service animals in treatment settings. Recent meta-analytic reviews of animal-assisted interventions in mental health highlighted several themes that have emerged regarding the mechanisms through which human-animal interactions are beneficial to treatment. Researchers have found that animals may provide safe and calm companions that facilitate social expression by not only reducing anxiety and arousal in patients, but also promoting interactions between providers and patients (Berry, Borgi, Francia, Alleva, & Cirulli, 2013; Kruger & Serprell, 2006). More recently, however, researchers have turned to examining the benefits of human-animal interactions specifically within ASD populations, and have found that animals increase the ability to seek social relationships with others through increased use of prosocial behaviors (i.e., eye contact and talking), as well as decrease negative behaviors such as whining and crying (Carlisle, 2014; O'Haire, 2013; O'Haire, McKenzie, Beck, & Slaughter, 2013). Further support for the role of animals in promoting social functioning among youth with ASD can be found in neurobiological research. In one recent study, the presence of animals was shown to reduce stress in children with ASD as measured by physiological biomarkers (i.e., skin conductance) across a variety of social conditions (O'Haire, McKenzie, Beck, & Slaughter, 2015). That is, children with ASD demonstrated heightened arousal as compared to typically developing youth in all social contexts (e.g., reading silently, reading aloud in class, free play with peers), with the exception of when animals were present. Additionally, MRI studies have confirmed that youth with HFASD exhibited greater activation in affective and face-processing brain regions when shown animal versus human faces, as compared to their age-matched, typically developing counterparts (Whyte, Behrmann, Minshew, Garcia, & Scherf, 2016). More specifically, while typically developing adolescents demonstrated similar activation patterns to human and animal faces, youth with HFASD demonstrated stronger responses to the animal faces. Collectively, these results highlight the potential for animal use in interventions moving forward.

Although a number of studies have explored the benefits of the presence of animals to increase social functioning among ASD populations, only a few have examined the role of family pets in the context of the everyday lives of youth with HFASD and their families. Grandgeorge, Tordjman, Lazartigues, Deleau, and Hausberger (2012) found that children with ASD ages five and older demonstrated improvements in prosocial behaviors (i.e., offering to share and offering comfort) after acquiring a pet. Additionally, Carlisle (2014) conducted a qualitative study examining qualities of dog ownership in families of children with ASD. Of the dog owners, 47% of parents reported that their child talked to his/her dog and used it for companionship. To build on qualitative data, Wright et al. (2015a) conducted a randomized, controlled trial examining the influence of pet dogs on caregiver stress levels among families with a child with ASD. Results revealed significantly lower stress levels among parents in the intervention group (i.e., acquiring a pet) as compared to the parents in the control group (i.e., not acquiring a pet), with stress levels within normal limits for intervention parents. These results suggest that pet ownership may be associated with improved social-emotional and family functioning. A follow-up study utilizing the same sample also revealed a decrease in symptoms of anxiety among the children with ASD from pre-intervention to follow-up for the dog-owning group (Wright et al., 2015b).

Taken together, these studies suggest a link between pet ownership among youth with ASD and social-emotional adjustment. They also highlight the importance of examining qualities of the human-animal interaction, including comfort, companionship, and responsibility, that may be related positive outcomes. The current study builds upon the emerging literature examining human-animal interactions (e.g., service animals) in therapeutic settings to further explore the social-emotional benefits of family pets in daily life. This provides an initial attempt to better understand the mechanisms that link human-animal interactions to improved functioning, which can provide valuable information in the development of future intervention efforts. Specifically, this study explored the associations between certain qualities of pet ownership (e.g., responsibility for pets, turning to the pets for comfort/companionship) and social-emotional adjustment (e.g., depressive symptoms, loneliness, friendship quality) among adolescents with HFASD. Further, given that higher functioning youth may have greater capacity to take care of and engage with their pets, this study investigated whether these links differed depending on the adolescents' level of social impairment.

## 2. Method

### 2.1. Participants and procedure

All participants for this study were recruited from a larger study assessing dimensions of executive functions, social impairment, and friendship quality in HFASD youth. The majority of families for the larger study were recruited nationally from the Interactive Autism Network (IAN) Research Database at the Kennedy Krieger Institute and Johns Hopkins Medicine – Baltimore, sponsored by the Autism Speaks Foundation. Additional families were recruited via postings in online support groups, advocacy group websites, and clinics as part of the larger study of HFASD youth. Participants from the larger study were then contacted via email about a follow-up survey assessing pet ownership, and either completed measures online through Opinio or via mailed paper survey within that same year. Of note, high functioning is not defined clearly in the literature and can refer to many aspects of development and functioning (e.g., social skills, language, cognitive abilities, etc.), but for the purposes of this study referred to youth with no to mild cognitive impairment. Consistent with this characterization, inclusion criteria for the current study required that adolescents (1) had a current ASD diagnosis (per DSM-

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