Animal Companions During Covid-19

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Animal Companions During COVID-19

by

Kelcie Lynne Meador

An Honors Capstone submitted in partial fulfillment of the requirements for the Honors Diploma to

The Honors College of

The University of Alabama in Huntsville

April 13, 2022

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Table of Contents

Abstract 2

Animal Companions During COVID-19 3

COVID Pandemic-Related Research 6

Hypotheses 8

Methods 10

Participants 10

Design 10

Materials 11

Procedure 13

Statistics 14

Results 14

Factorial Design Analyses 14

Comparisons to External Control 15

Nonexperimental Data Analyses 16

Discussion 16

References 21

Tables and Figures 23

Appendix 30
Abstract

Pets can act as an intervention for the mental declines associated with the COVID pandemic because of the attachment persons hold for the companion animal. Furthermore, it is possible that service dogs may be able to provide support that distinguishes them from regular pets. I evaluated the perceptions of human-dog profiles to determine the influence of pets. I hypothesized that descriptive profiles of human-dog relationships with pictures manipulated for dog size and dog purpose would generate main effects both for both factors on ratings of loneliness and attachment. I also tested correlations between loneliness and comfort from pets in the participants ($N = 60$) who were pet owners. Finally, I tested whether comfort was associated with a greater frequency of dog size. I used a 2 x 3 (Dog Purpose by Dog Size) within-subjects design with a human with a laptop as an external control. I found a main effect of size and an interaction such that pets and service dogs were only distinguished in the medium size for ratings of loneliness; however, the presence of a dog was consistently rated as less lonely than a human with a laptop. Service dogs were rated with greater attachment unless they were medium size. No significant correlation was found between self-reports of participants of loneliness and comfort from animals. My results indicate that the presence of service dogs may mitigate feelings of loneliness related to COVID-19. The human-animal attachment is stronger for service animals who spend more time with owners than pets.

Keywords: pets, COVID-19, loneliness, attachment
Animal Companions During COVID-19

Pet ownership statistics provide evidence of strong human-animal relationships. According to the American Pet Products Association (APPA, 2021), about 67% of households within the United States own some species of domesticated pet. With pet ownership comes pet expenses such that pet owners spent about 103.6 billion dollars in the pet industry in 2020. This spending had increased about 7 billion dollars from the previous year, 2019, despite the pandemic and the financial challenges associated with social isolation, mass furlough, and small business shutdown. The growth in spending did not appear to be smaller than in previous years, as spending had a similar 7 billion dollar increase from 2018 to 2019 as well. The APPA outlines the spending by category which provides useful insights into how much of the spending growth was voluntary rather than mandatory. As expected, a majority of the spending in 2020, about 44 billion dollars, was on pet food. An additional 32 billion dollars was spent on needed veterinary care. There was about 10 billion dollars’ worth of spending on voluntary pet care as well, i.e., grooming, daycare, insurance, etc. I am interested in this financial relationship because it represents a very large investment in pet care. The fact that this investment and spending, even on extra care that is not required, continues to increase despite continued financial strain during the pandemic, is a strong indicator of support for the perception of the human-animal relationship as a social one.

Dogs were chosen as my focus in investigating human-animal relationships because of the number of dogs kept as pets within the United States. According to the APPA, the most commonly owned pet in the United States for 2019 and 2020 was a dog, with a reported 63.4 billion U.S. households owning a dog by 2020 (APPA, 2021). With dogs being popular and widely varied by breed, it is important to also consider what factors may influence preferences
and decisions in dog acquisition. Ghirlanda, Acerbi, Herzog, and Serpell (2013) evaluated data provided by the American Kennel Club over the course of the past few decades with the intent to explain the apparently “whimsical” trends of dog breed popularity. Previous models indicated that these fluctuations were likely explained by chance or cultural modeling of influential individuals, but Ghirlanda et al. instead examined breed characteristics in an attempt to delineate whether one particular variation in dog breeds could help explain changes in popularity. Popularity data were gathered from American Kennel Club annual reports with behavioral data for specific breeds of dog collected from the Canine Behavioral Assessment and Research Questionnaire database. Data on longevity and health of dog breeds were taken from other published reports. Ghirlanda et al. used correlational testing to explore dog breed health, longevity, and behavior to popularity but found no significant correlations for any of the factors studied. While Ghirlanda et al. suggested that the breed preferences follow fashion trends, such factors as dog size and appearance were not tested. They suggested these characteristics should be investigated further to evaluate their possible influence on dog acquisition.

Research has shown that in addition to the psychological effects of comfort and support that pets provide, there is also a physiological component to responses to them. Wheeler and Faulkner (2015) investigated what they termed the “Pet Effect,” where interaction with companion animals is associated with improvements in mental health and decreases in signs of physiological stress. Participants in their study were divided among live and non-live pet conditions, with both close-contact or no-contact variations. Blood pressure, heart rate, and state anxiety were measured while participants were asked to perform a high-stress social task and exposed to an animal, live or non-live. Live pet presence was found to reduce state anxiety, and participants who were in the close-contact conditions with a live pet also experienced lowered
blood pressure and heart rate. What can be taken from these results is that there is a natural physiological calming effect that pets have on humans. The ability of live pet contact to reduce signs of stress may indicate that the presence of a pet can work as a coping mechanism for high-stress situations from both a mental and physical approach.

Additional research has explored the human-animal relationship and its social aspects. Meehan, Massavelli, and Pachana (2017) conducted a two-part study with the goal of exploring the associations between Attachment Theory and companion animals in order to establish how pets may occupy a social role. All participants were companion animal owners who were approached and asked to complete different sets of survey measures depending on the study procedure. Meehan et al. used four different measures in this study that included the Sources of Social Support Scale, Companion Animal Attachment Scale, Attachment Hierarchy Scale, and Commitment to Companion Animals scale. Their results indicated that not only did participants agree when asked if pets occupied a social role, the participants included pets in social hierarchies with other relationships such as parents and romantic partners. Meehan et al. reevaluated these results in proximity attachment specifically and found that, in this context, pets ranked ahead of even parents and siblings. Given these results, it is clear that pets have the potential to serve as substitutes for social support roles when normal human-human relationships are restricted or removed.

It is important to distinguish the relationships pets have with owners from the relationship between a service dog and handler. Pets are able to provide emotional and physiological support in times of stress because of their proximity to owners, but that contact can vary widely. Service dogs, who are in almost constant contact with handlers, have more interaction time with handlers and can provide support full-time. Rodriguez, Bibbo, and O’Haire (2019) evaluated service dog
and human relationships in a survey study sent to individuals with service dogs or on a waitlist for a dog. The survey contained the Pediatric Quality of Life Inventory, the Patient Reported Outcomes Measurement Information System patient-report system, and the Monash Dog Owner Relationship Scale measurement for dog-owner relationships. Participants were sorted into pet and service dog conditions based on whether they had a service dog. Rodriguez et al.’s results indicated that those associated with pet dogs showed lower emotional functioning and that the presence of a pet in the home (waitlisted for service dog) did not have a significant effect on work or school performance and social function, whereas those with a service dog present saw higher ratings in human-animal bonding and in school or work performance. I aimed to incorporate these findings into my study design in order to further evaluate perceptions of service dogs. Service dogs’ constant presence with a handler and continued support may not only affect the handler but also perceptions of the handler.

**COVID Pandemic-Related Research**

Pets are a valuable source of emotional support and stability in times of stress when human interaction is limited. In their review of the literature, Nieforth and O’Haire (2020) explained the potential of this relationship such that in the absence of access to other humans, pets are often used as a source of live, supportive interaction. The biophilia hypothesis proposes that humans are drawn to other living beings in their environment. It explains this pattern of behavior by suggesting that when humans are absent, attention shifts towards the next available living being. Nieforth and O’Haire also focused on how pets, as constant companions in an isolated home environment, may assume roles normally associated with human-human relationships. Pets are a consistent variable within a home environment and act as sources of non-judgmental support and unconditional love. Pets also have one unique benefit over human-
human relationships in that they are unable to add information or opinions into an interaction. The one-sided support is beneficial in times of high stress when information overload and high emotional instability may negatively impact mental health. Pets simply act in support and do not exchange information or emotionally charged conversation. Such support is important in situations such as the COVID-19 pandemic, where much of normal human interaction is removed, and many circumstances are highly variable and uncertain. Nieforth and O’Haire proposed that pets are a valuable source of support in challenging times and may be essential to mitigating negative mental health effects of pandemic isolation.

The COVID-19 pandemic has had a wide range of effects on global mental health, but one strong impact has been on the young adult and adolescent population. Considering that young adults and adolescents had most of their social outlets removed as a result of COVID-19 isolation practices, an increased frequency in depressive characteristics and feelings of anxiety is to be expected. Ellis, Dumas, and Forbes (2020) surveyed over 1000 adolescents 14 to 18 years old and used the UCLA Loneliness Scale to evaluate loneliness and the Brief Symptom Inventory (BSI) scale to measure depressive symptoms present in the sample. Ellis et al. found that about 43% had great concern relating to the COVID-19 pandemic, and 28% reported depressive symptoms for every statement in the BSI scale. Lee, Cadigan, and Rhew (2020) conducted a similar study with young adults aged 18 to 23 years of age using the UCLA Loneliness Scale and Patient Health Questionnaire to evaluate depression and the Multidimensional Scale of Perceived Social Support to measure social support for the young adults in the study. The results of this study reflected those of Ellis et al. in that there was an increase in depressive symptoms over time, but the increase in depression was also found to be associated with increases in loneliness. These two studies indicate a troubling trend in youth
mental health in response to the pandemic. I was interested in how these results could be influenced by the presence of coping tools, specifically animals.

Animals are a tool that can be used to cope with difficult situations. Williams et al. (2021) found that animal intervention methods for loneliness in the studies they reviewed did have an impact on UCLA Loneliness Scale scores, but the main challenge with animal intervention was that it was difficult to implement on a large scale. The survey designed by Ratschen et al. (2020) expanded on this idea of animal support during COVID-19 isolation by utilizing the Comfort from Companion Animals Scale (CCAS) and UCLA Loneliness Scale to explore the connection between pets and experiences of loneliness, specifically in the context of the COVID-19 pandemic. Previous research indicated that human-animal bonds follow human bond attachment models, but there were conflicting conclusions regarding the impact of strong human-animal bonds on the owner. Ratschen et al. explored whether strong attachments to pets is beneficial or detrimental to mental health. Their results indicated that many pet owners viewed their pets as holding a social role in the owners’ lives with pet ownership associated with slight decreases in loneliness. In this case, pet ownership did serve to mitigate increases in loneliness and decreases in mental health, but the strength of the bond between pet and owner, as indicated by the CCAS, was not significant. These results corroborated the conclusions of the reviews by Nieforth and O’Haire (2020) and Williams et al. Pets, as an unexploited resource, represent an easily accessible source of animal intervention and support for the declines in mental health seen as a result of COVID-19.

Hypotheses

Collectively, the literature indicates that there is strong evidence that animals are a reliable source of support, both mental and physical, for individuals under stressful conditions. In
the context of COVID-19, this is an important relationship to consider because for many people, the human-animal relationship was and may continue to be the only relationship that is easy to access under social distancing standards (Nieforth & O’Haire, 2020; Williams et al., 2021). The Pet Effect of animals on human physiology makes pets a convenient coping tool for managing high stress and anxiety in circumstances where support from another human is inaccessible (Wheeler & Faulkner, 2015) as pets in the home are often seen as sources of social support (Meehan et al., 2017). Additionally, the role of service dogs is largely unexplored, but this relationship needs to be evaluated further to fully understand how a service pet may benefit a handler more than a normal pet (Rodriguez et al., 2019). I developed a study wherein I manipulated brief profiles describing a dog (small, medium, large), its purpose (pet or service dog), with a description of the human companion to better understand the perceived differences in support from animals based on their role as a service animal or pet and the social stereotypes of dog size. I hypothesized that these manipulations would result in an interaction and main effects for dog size and purpose on ratings of loneliness and attachment for the human in the image. I also hypothesized that there would be a negative correlation between comfort from animals and experiences of loneliness for the participants in the study that experienced the COVID-19 lockdown. Finally, I hypothesized that there would be a significant preference for dog sizes established via attachment ratings collapsed by dog purpose. This study tested the model of unconditional support put forward by Nieforth and O’Haire (2020) by investigating whether the support would be perceived by outsiders to a human-animal relationship.
Methods

Participants

We recruited introductory psychology students from The University of Alabama in Huntsville who participated in exchange for course credit. The study was limited to those who have pets at home, either in a college living space or off-campus. The final sample contained 60 participants with the average age of 20 yrs (range 18 – 30 yrs) and self-identified as 38 women and 22 men with 48 White, 3 African American, 3 Asian, and 3 Hispanic. Participants were also required to have at least 10 years of experience speaking English because of the extensive use of language in each experimental trial. Additionally, participants who had a fear of dogs were advised not to volunteer. Of the 115 participants recruited, 2 elected to decline participation in the study and data from 53 of the participants were excluded because of incompletion or failure to finish the study before the assigned deadline. The IRB at The University of Alabama in Huntsville approved the study administration (see Appendix for approval letter).

Design

We used a 2 x 3 (Dog Purpose by Dog Size) within-subjects design. Dog purpose was defined as either service dog (named and labeled in profile, wearing red harness in image) or pet (named in profile with no accessories other than collars). Dog size was defined by weight; small dogs were those under 30 pounds \((n = 6)\), medium dogs were those between 30 and 60 pounds \((n = 6)\), and large dogs were those over 60 pounds \((n = 6)\). An external control consisted of a profile of a human with a laptop. Responses to the profiles in each trial were measured with ratings on a Likert scale for perceived loneliness \((1-7)\) and perceived attachment to dog or laptop \((1-5)\).

As an exploratory correlational design, participant responses to the UCLA Loneliness Scale (Hughes, Waite, Hawkley, & Cacioppo, 2004) and Comfort from Companion Animals
Scale (Zasloff, 1996) were collected. As no data could be collected on the second scale if a participant had no experience with pets, the participants with pets were recruited.

To evaluate dog size preferences, ratings for attachment for each dog size regardless of purpose were averaged for each participant. I created bins labeled small, medium, large, or tie then tallied which size category each participant rated highest in attachment.

Materials

The profiles were developed to present short, 6-sentence descriptions accompanied by a photo of a human with a dog or for the external control, a laptop (Table 1). Descriptions for dog conditions included the person’s and dog’s names, the person’s college major, job, and hobbies, as well as some information about the dog by identifying it as a pet or a service dog. The external control of a person with a laptop replaced information about the dog with information about the laptop. Photos of individuals with dogs (n = 21) were collected from volunteers and from the internet using the Google photos search function. There were 3 photos per dog condition (small pet or service dog, medium pet or service dog, large pet or service dog) and 3 photos for control with a person and a laptop with no animal present. Of the 21 color photos used, 11 were of college age women and 10 were of college age men facing the camera for a clear view of the face presenting a pleasant expression. The persons were posed with their dog in the dog conditions, or a laptop computer in the control condition. All photos were edited to make the person’s clothing a neutral gray or black color with neutral backgrounds that were edited or blurred as needed. Dog condition images were classified based on dog size and purpose. Small dogs were defined as those being under 30 pounds, medium as between 30 and 60 pounds, and large as over 60 pounds (see Figure 1). Photos in the service dog conditions were edited to
include a service dog harness that was a dark red color and mostly devoid of any health signifiers.

The Qualtrics online survey system was used to present stimuli and collect responses. One Qualtrics file was used for all participants that contained trials presented in the same order for all participants after being randomized using a Microsoft Excel random number table function. Stimulus slides, as shown in Figure 1 and Figure 2, had the photos on the right with the text of the profile (black against white background) on the left in a left-justified orientation with 30 s allowed for viewing. Each stimulus slide was followed by a response slide for 60 s with a free-response text box to list what was noticed in the previous slide, as well as two sliders for rating the previous photo subject’s loneliness (1-7; low to high) and attachment to the pet or laptop computer (1-5; low to high). Figure 4 shows the response slide structure. See Appendix for template used for response slides.

Following all stimulus and response slides, two questionnaires were presented. The first was the UCLA Loneliness Scale (Hughes et al., 2004; Russell, Peplau, & Ferguson, 1978) that contains 20 questions which were not edited for use in this study. Reliability testing done by Hughes et al. produced a Cronbach’s alpha value of 0.91 for this scale. The original UCLA Loneliness Scale response structure allows the choice of O, S, R, or N for Often, Sometimes, Rarely, or Never. This response structure was changed for this study as statements posed as “I never feel this way,” “I rarely feel this way,” “I sometimes feel this way,” and “I often feel this way.” The second questionnaire used was the Comfort from Companion Animals Scale (CCAS; Zasloff, 1996), a 13-item questionnaire. Testing for reliability by Zasloff for the CCAS produced a Cronbach’s alpha level of 0.85. The questions were not edited for use in this study with the questionnaire’s original response structure of a 1-5 Likert scale from strongly disagree to
strongly agree being used in this study. See Appendix for UCLA and CCAS formats.

A post-task questionnaire (PTQ) was created for the end of the study. It contained questions about image clarity, timing, and interest in animal therapy programs with a 1-4 Likert scale of disagree to agree. A demographic section included questions about participant age, sex, and ethnicity with free-response text boxes to answer.

**Procedure**

Participants registered for a survey due date slot in SONA then a link was emailed instructing that the survey be completed within 48 hr. of receipt. After accepting the study and providing voluntary consent (see Appendix for consent form), participants read the instructions. The 21 randomized experimental stimulus slides sequenced after 30 s to present a profile that either varied based on conditions of dog size and dog purpose or were a control with a laptop instead of a dog. Response slides were presented for 60 s with a free-response text box with instructions to list what was noticed in the previous stimulus slide, as well as two rating sliders to rate the perceived loneliness (1-7) and attachment to animal or laptop (1-5) of the person in the profile.

After the experimental trials, participants completed the UCLA Loneliness Scale, followed by the CCAS, both untimed. Once the questionnaires were complete, participants were then asked to answer the untimed PTQ containing manipulation check questions regarding image clarity, study timing, and on-campus therapy programs. Participants were also asked to provide information in free-response text boxes about their age, sex, and ethnicity. The session duration was no longer than 45 min.

The session ended with a debriefing page and a place for participants to choose either “I permit the use of my data” or “I withdraw the use of my data” after viewing the full details of the
study, its purpose, and its uses going forward. Credit was awarded through the SONA system
Following the receipt of participant data then data were downloaded from Qualtrics, personally
identifiable information was removed from the data set and saved to a password protected
computer, then an alphanumerical identifier was assigned to each case to ensure anonymity
during data analysis.

Statistics

Ratings of loneliness and attachment of the person in the stimulus profile were averaged
by condition. These mean ratings were evaluated using a 2 x 3 repeated-measures ANOVA;
specific paired samples t tests to compare dog conditions to the laptop control were also
performed. A Goodness of Fit Chi Square with an alpha level of $p < .05$ was conducted for breed
size ratings of attachment ($N = 60$). Size preference tallies were collected using highest average
attachment rating collapsed for purpose and classified as either Small, Medium, Large, or Tie.
Pearson Correlation Coefficients were calculated to test the relationship between participants’
responses to the UCLA Loneliness Scale and the CCAS. All analyses were performed via SPSS
with an alpha level of $p < .05$.

Results

Factorial Design Analyses

As can be seen in Figure 3, ratings for loneliness were higher for small and medium-sized
service dogs but lower for large-sized service dogs which illustrates the significant dog purpose
by size interaction, $F(2, 118) = 9.998, p < .001, \eta_p^2 = .145$. There was a main effect for size,
$F(2, 118) = 5.045, p = .008, \eta_p^2 = .079$, in that pet dogs were distinguished from service dogs only
when medium-sized dogs were in the profile. There was no significant main effect for purpose,
$F(1, 59) = 1.098, p = .299$. 
Figure 5 shows that ratings for attachment distinguished service dogs from pet dogs except when dogs were medium-sized. This was a significant dog purpose by dog size interaction, $F(2, 118) = 5.863, p = .004, \eta_p^2 = .090$. There was a main effect for dog purpose with ratings for attachment consistently higher for service dogs of each size, $F(1, 59) = 39.197$, $p < .001, \eta_p^2 = .399$. There was a main effect for dog size that illustrates differences when dogs were small or large compared to medium-sized, $F(2, 118) = 3.288, p = .041, \eta_p^2 = .053$.

**Comparisons to External Control**

Mean ratings for loneliness and standard deviation for small dogs collapsed by purpose are shown in Table 2. Testing for the small-sized dog condition indicated a significant decrease in loneliness ratings for small pets compared to the control profile of the person with a laptop, $t(59) = -14.86, p < .001, d = 1.90$, as well as for small service dogs compared to the control, $t(59) = -11.55, p < .001, d = 1.75$. A significant decrease in attachment ratings was found for small pets, $t(59) = -3.307, p = .001, d = .49$, but not for small service dogs when compared to the control ($M = 3.94, SD = 1.01$), $t(59) = 1.03, p = .153$.

Mean ratings for loneliness and standard deviation for medium dogs collapsed by purpose are shown in Table 2. Further testing for the medium-sized dog condition indicated a significant decrease in loneliness ratings for medium pets compared to the control profile of a human with a laptop as the attachment object, $t(59) = -14.64, p < .001, d = 2.15$, as well as for medium service dogs compared to the control condition, $t(59) = -10.82, p < .001, d = 1.71$. There was a significant decrease in ratings of attachment for medium-sized pet dogs compared to the control profile with a laptop, $t(59) = -1.75, p = .042$, but not for medium-sized service dogs compared to the control, $t(59) = -.341, p = .734$.

Mean ratings for loneliness and standard deviation for large dogs collapsed by purpose
are shown in Table 2. For the large-dog condition, there was a significant decrease in ratings of loneliness for large pets when compared to the control condition with a laptop computer, $t(59) = -13.22, p < .001, d = 1.91$, as well as a significant decrease in loneliness for the large service dog condition compared to control, $t(59) = -13.146, p < .001, d = 2.23$. A significant decrease in attachment ratings was found for the large pet compared to the control laptop, $t(59) = -2.073, p = .022, d = .33$, but a significant increase was found in attachment ratings for the large service dog compared to the control person with laptop, $t(59) = 1.91, p = .030, d = .33$.

**Nonexperimental Data Analyses**

For responses to the UCLA Loneliness Scale and CCAS, there was an insignificant positive correlation, $r(58) = .163, p = .214$.

Figure 5 shows that the observed ratings of attachment were highest for large-sized dogs, $X^2(3, N = 60) = 11.33, p = .01$. Large dogs accounted for almost half of the highest ratings compared to small, medium, or tie categories.

**Discussion**

The significant decrease in ratings of loneliness in the conditions with a dog present compared to the control is consistent with the model from Nieforth and O’Haire (2020). It was proposed in that study that pets can occupy social roles akin to that of siblings or friends, thus decreased loneliness in the presence of an animal can be seen as a reaction to a source of social support within the environment. The $t$ test results further support this model; in all individual conditions for dog purpose and size, ratings for loneliness were significantly lower when compared to the control condition without any animal present. The presence of a pet then effects the perceived loneliness in the scenario and is likely seen as a mitigating factor on loneliness as a result of the provided support. Large service dogs were associated with the lowest loneliness
ratings, as is indicated in the Size by Purpose interaction. Service dogs are in constant contact with handlers and so can provide more consistent support when compared with pets. Additionally, large dogs represent the stereotype for service dog appearance. According to the American Kennel Club, 7 out of 9 of the most common service dog breeds are classified as large breeds, such as Golden Retrievers, German Shepherds, and Labrador Retrievers (Bauhaus, 2021). The frequency of large service dogs within the service dog population has possibly created an availability heuristic and could influence participant perceptions of a service dog-handler relationship. With ease of recall and imagery creation could come a perception of higher support from a large service dog.

Findings for attachment ratings were as expected. The results are consistent with the study by Rodriguez et al. (2019), who found that those with service dogs performed better at work and school and had better mental well-being overall, a result consistent with the model from Nieforth and O’Haire (2020). The close contact seen in service dog-handler relationships creates a higher sense of attachment that comes from constant companionship and the consistent support that pets are unable to provide due to lack of access. Service dogs provide a benefit greater than that of a pet dog according to Rodriguez et al., and it is natural that higher attachment should come from that. The highest attachment ratings were for large service dogs, again consistent with the popularity of large breeds in service dog positions (Bauhaus, 2021). As with loneliness, the popularity has likely created a heuristic which influences conclusions made about service dogs and may help explain the Size by Purpose interaction for attachment as well. The t-tests for attachment ratings did not show as many significant differences between dog conditions and the control, indicating that the perception of attachment was more similar between dogs and laptop computers. Laptops, then, can act as a point of attachment in isolated
circumstances, but they do not provide the same level of loneliness mitigation as dogs do, given the results. A significant increase for attachment was found when large service dogs were compared to the control, and this result reinforces the possibility of an availability heuristic influencing perceptions of attachment.

The significant size preference for large dogs provides some insight into dog breed choices within the population. Ghirlanda et al. (2013) indicated that dog breed health, behavior, and longevity were not significant influences on breed choices when purchasing a dog; this leaves breed size or appearance as a possible explanation for breed acquisition behavior. The attachment ratings in this study can subsequently be used to determine whether dog breed size may affect breed preferences and subsequently response ratings. Large dog breeds comprise not only the top service dog breeds, but they also account for 9 out of 20 of the top pet breeds, including those such as Poodles, Rottweiler, and Great Danes (Reisen, 2021). The popularity regardless of purpose is reflected in the data, which was tallied using ratings collapsed for purpose. The $t$ tests for attachment help to support these findings. While most of the comparisons between dog conditions and the control were insignificant, there was a significant increase in attachment ratings for large service dogs compared to the control. The increase found for the large service dogs was the highest out of the significant trends in attachment rating comparisons.

The lack of significant correlation within the data is likely explained by the restriction of the study sample to pet owners. The restriction was necessary to reach the targeted population and to reduce reactivity to the study content, but it must be considered that those who are already pet owners are more likely to score highly on the CCAS. Most participants attained scores over 30 points on the CCAS, with the maximum possible score being 52. Furthermore, the students returning to classes this fall semester might be those who adjusted better to the pandemic
restrictions rather than have a negative outcome as described for this age group by Lee et al. (2020) because they did have an animal companion. Those who own pets make significant financial investments in their pet’s well-being according to the APPA (2021), and the investment-reward relationship is already established. Pets present in the home are able to provide social support, as already established by Nieforth and O’Haire (2020), to act as a point of attachment in the absence of other human contact where comfort may be found in times of stress and isolation. In restricting the study sample to pet owners, the restriction has created a group of participants who already take advantage of their pets in social roles during isolation. A more informative correlation could be performed in a similar study with both pet owners and non-pet owners, using other instruments for social attachment.

The data from this study were restricted in that there was no live contact between animals and participants. Wheeler and Faulkner (2015) established that live contact with animals is associated with reduced physiological signs of stress such as blood pressure and heart rate, but data from live studies such as this evaluating psychological effects of animals are not widely available. One area of future study would then be to utilize live or active stimuli, where a participant would be able to observe interactions between pets and service dogs in their owner in real time. The use of live stimuli may provide more context for dog owners normal interactions with their pet and service dog, and it may affect perceptions of loneliness and attachment. An additional study design which could provide useful context for the data collected in this study would be a longitudinal study measuring self-reports of loneliness before and after bringing a pet into the home. Such a study would provide a more in-depth look at how strongly and how quickly pet owners respond to the presence of an animal.
Previous literature indicated that pets could have a strong impact on a person’s mental and physiological well-being, especially within the context of COVID-19. Nieforth and O’Haire (2020) indicated that, in the absence of human interaction, pets can occupy roles of social support. Pets, as a constant variable within the home, provide unconditional love and support without asking for anything in return. In my study, I utilized static stimuli focusing on dogs and manipulated dog size to fit three standardized categories based on limits of 30 and 60 pounds while also manipulating purpose to designate dogs as either pets or service animals to evaluate how these factors may affect ratings of perceived loneliness and attachment between the dogs and their owners. An interaction was found between dog size and purpose for ratings of loneliness, and the data also revealed a main effect for dog size which depended on purpose. An interaction between dog size and purpose was also found for ratings of attachment, and main effects for both size and purpose were also present. No significant correlation was found between scores on the UCLA Loneliness Scale and CCAS for the participants responding in the study. I wanted to further analyze the preferences of dog size as a possible influence on breed popularity and thus ratings of loneliness and attachment and found that large dogs are more highly preferred. My research provides a future avenue for research into live animal interaction and how perceptions of loneliness and attachment may be affected through live presentation.
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### Table 1

*Condition by Example Stimuli*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Example Stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pet</td>
<td>Brandon is a 23-year-old university student who is majoring in Psychology. He has a pet dog named Tessa who lives in his apartment with him. Tessa is a 1-year-old Shih Tzu. Brandon works for the tutoring services department at his university, helping people pass their classes. After school and work, he likes to watch historical documentaries and read. Tessa loves to play with rope toys and enjoys eating bananas.</td>
</tr>
<tr>
<td>Service Dog</td>
<td>Marcy is a 20-year-old Film major in college. She lives with her service dog, Baxter. Baxter is a 2-year-old Labrador Retriever. Marcy works with Baxter at a movie theater when Marcy doesn’t have class. In her free time, Marcy likes to sew and makes costumes for her school’s theater program. Baxter enjoys napping and watching TV when Marcy is home.</td>
</tr>
<tr>
<td>Control</td>
<td>Keith is an 18-year-old Chemistry major in college. He lives alone in an apartment. He works for a ride-sharing service in the evenings after his classes are done. Keith is often in the library or study rooms using his laptop, which he uses for all of his school reports and the laboratory software. In his free time, Keith likes to video chat with family. He also likes to go on social media.</td>
</tr>
</tbody>
</table>
Table 2

Comparisons of Dogs by Size (Collapsed for Purpose) to Laptop

<table>
<thead>
<tr>
<th>Object</th>
<th>Loneliness</th>
<th>Attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Laptop</td>
<td>4.26</td>
<td>1.15</td>
</tr>
<tr>
<td>Small Dogs</td>
<td>2.40</td>
<td>0.61</td>
</tr>
<tr>
<td>Medium Dogs</td>
<td>2.36</td>
<td>0.56</td>
</tr>
<tr>
<td>Large Dogs</td>
<td>2.20</td>
<td>0.58</td>
</tr>
</tbody>
</table>
Figure 1

*Stimulus Slide (Service Dog x Medium Size Condition)*

Sarah is a 22-year-old college student studying English Literature. She has a service dog, Lily, who is a 2-year-old Staffordshire Terrier. Sarah lives by herself with Lily in an apartment unit, and she can often be found studying after school. She enjoys reading and drawing, practicing in her free time. Lily usually helps Sarah out around the house but also likes to chew on bones and play with tennis balls.

*Note.* Stimulus slides contained a photo of a neutral person and a dog manipulated for size and status. There were descriptions for each photo on the left-hand side.
Figure 2

Stimulus Slide (Control)

Keith is an 18-year-old Chemistry major in college. He lives alone in an apartment. He works for a ride-sharing service in the evenings after his classes are done. Keith is often in the library or study rooms using his laptop, which he uses for all of his school reports and the laboratory software. In his free time, Keith likes to video chat with family. He also likes to go on social media.

Note. Control slides contained a photo of a neutral person and a laptop computer. There were descriptions for each photo on the left-hand side.
Figure 3

Loneliness Ratings

Note. There was a main effect of dog size that depends on the interaction between dog size and purpose for large dogs.
Figure 4

Attachment Ratings

Note. There was a main effect for dog size and purpose, as well as an interaction between them.
Figure 5

Highest Attachment Ratings for Dog Sizes

Note. The majority of participants had the highest attachment ratings for large-sized dogs.
APPENDIX

IRB APPROVAL LETTER

Date: 1 October 2021

PI: Kelcie Meador
PI Department: Psychology
The University of Alabama in Huntsville

Dear Kelcie,

The UAH Institutional Review Board of Human Subjects Committee has reviewed your proposal titled: Animal Companions During COVID-19, and found it meets the necessary criteria for approval. Your proposal seems to be in compliance with these institutions Federal Wide Assurance (FWA) 00019998 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

Please note that this approval is good for one year from the date on this letter. If data collection continues past this period, you are responsible for processing a renewal application a minimum of 60 days prior to the expiration date.

No changes are to be made to the approved protocol without prior review and approval from the UAH IRB. All changes (e.g. a change in procedure, number of subjects, personnel, study locations, new recruitment materials, study instruments, etc) must be prospectively reviewed and approved by the IRB before they are implemented. You should report any unanticipated problems involving risks to the participants or others to the IRB Chair.

If you have any questions regarding the IRB’s decision, please contact me.

Sincerely,

Ann L. Bianchi
IRB Chair
Associate Professor, College of Nursing
ANIMALS AND COVID-19

Expedited: form 2

☐ Clinical studies of drugs and medical devices only when condition (a) or (b) is met. (a) Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required. (Note: Research on marketed drugs that significantly increases the risks or decreases the acceptability of the risks associated with the use of the product is not eligible for expedited review. (b) Research on medical devices for which (i) an investigational device exemption application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling.

☐ Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows: (a) from healthy, nonpregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550 ml in an 8 week period and collection may not occur more frequently than 2 times per week; or (b) from other adults and children, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 5 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

☐ Prospective collection of biological specimens for research purposes by noninvasive means. Examples: (a) hair and nail clippings in a nondisfiguring manner; (b) deciduous teeth at time of exfoliation or if routine patient care indicates a need for extraction; (c) permanent teeth if routine patient care indicates a need for extraction; (d) excreta and external secretions (including sweat); (e) unaccumulated saliva collected either in an unstimulated fashion or stimulated by chewing gumbase or wax or by applying a dilute citric solution to the tongue; (f) placenta removed at delivery; (g) amniotic fluid obtained at the time of rupture of the membrane prior to or during labor; (h) suprap- and subgingival dental plaque and calculus, provided the collection procedure is not more invasive than routine prophylactic scaling of the teeth and the process is accomplished in accordance with accepted prophylactic techniques; (i) mucosal and skin cells collected by brush or scraping; (j) sputum collected after saline mist nebulization.

☐ Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving X-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications).

☐ Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis).

☐ Collection of data from voice, video, digital, or image recordings made for research purposes.

☒ Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.
ANIMALS AND COVID-19

CONSENT FORM

Consent Form: Animal Companions During COVID-19
[Note: presented as page on Qualtrics survey platform]
You are invited to participate in an online research study about relationships with animals during the COVID-19 pandemic. You'll be shown pictures and scenarios and then asked to rate them and answer some questions about yourself. This study should provide context for past research that helped us understand how we attach to animals, view our relationships with them, and rely on them in times of stress. We hope to recruit 60 people aged 18 or over for this study who have at least corrected vision, have been English speakers for at least 10 years, and who own pets.

The primary investigator is Kelcie Meador klm0064@uah.edu from the Psychology Department at UAH. The Faculty Supervisor for this study is Dr. Aurora Torres torresa@uah.edu from the Psychology Department at UAH.

PROCEDURE TO BE FOLLOWED IN THE STUDY: Participation in this study is completely voluntary. Once written consent is given electronically, you will view pictures, read related scenarios, and will then be asked to answer questions and provide ratings based on what you saw. Some of the pictures you view will have dogs in them, and some will not. After you complete the ratings for all the scenarios, you will answer questions regarding your attitudes about loneliness during the pandemic. This session will take 45 minutes to complete.

DISCOMFORTS AND RISKS FROM PARTICIPATING IN THIS STUDY: There is a minor risk if looking at a monitor bothers your eyes, but the time for completing the study is similar to what students are normally exposed to. Some pictures in the trials contain dogs, so if you have a fear of dogs, this may cause some distress. If you have a fear or phobia of dogs, it is recommended that you decline participation in this study.

EXPECTED BENEFITS: You will have the chance to think about your own feelings of loneliness and relationships with your animals during the COVID-19 pandemic. You will also have the chance to learn how people may become attached to pets when presented with challenges such as isolation. Data collected will be used to benefit society by providing a better understanding of our relationships with animals and how we rely on them in times of stress. Data will also show what people think the benefits are of having animals in our lives. Please see the section below for incentives and compensation for participation in this study.

INCENTIVES AND COMPENSATION FOR PARTICIPATION: You will earn 2 research credits as a student enrolled in an introductory psychology course.

CONFIDENTIALITY OF RESULTS: Participant numbers will be used to record your data, and these numbers will be made available only to those researchers directly involved with this study, thereby ensuring strict confidentiality. Your Consent Form information sheet will be removed from the 08/2021
downloaded Qualtrics file then kept on a password protected computer. This consent form will be destroyed after 3 years. The data from your session will only be released to those individuals who are directly involved in the research and only using your participant number.

**FREEDOM TO WITHDRAW:** You are free to withdraw from the study at any time simply by closing your browser to exit Qualtrics. You will not be penalized because of withdrawal in any form. Investigators reserve the right to remove any participant from the session without regard to the participant’s consent.

**CONTACT INFORMATION:** If you have any questions, please ask them now. If you have questions later on, you may contact the Principal Investigator Kelcie Meador at 615-486-9626 or at klm0064@uah.edu. You may also contact Supervising Faculty member Dr. Aurora Torres at 256-824-2320 or at torressa@uah.edu. If you have questions about your rights as a research participant, or concerns or complaints about the research, you may contact the Office of the IRB (IRB) at 256-824-6992 or email the IRB chair Dr. Ann Bianchi at irb@uah.edu.

This study was approved by the Institutional Review Board at UAH and will expire in one year from <August 30th, 2021>.

Please enter your name (serves as electronic signature), A Number, and Date in the slots below.
Name [ ] A Number [ ]
Date [ ]

Select the box that you prefer to show your voluntary consent or decline to exit the study.

I accept participation in this study. [ ] I decline participation in this study. [ ]

08/2021
Note. Response slides contained a free-response text box and two sliders for rating Loneliness (1-7) and Attachment (1-5).
### UCLA LONELINESS SCALE

Please answer the following questions. Your responses are not timed.

<table>
<thead>
<tr>
<th></th>
<th>I never feel this way</th>
<th>I rarely feel this way</th>
<th>I sometimes feel this way</th>
<th>I often feel this way</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am unhappy doing so many things alone.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I have nobody to talk to.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I cannot tolerate being so alone.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I lack companionship.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I feel as if nobody understands me.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I find myself waiting for people to call or text.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>There is no one I can turn to.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I am no longer close to anyone.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>My interests and ideas are not shared by those around me.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I feel left out.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I feel completely alone.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I am unable to reach out and communicate with those around me.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>My social relationships are superficial.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I feel starved for company.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>No one really knows me well.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I feel isolated from others.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I am unhappy being so withdrawn.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>It is difficult for me to make friends.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>I feel shut out and excluded by others.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
<tr>
<td>People are around me but not with me.</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
<td>circle</td>
</tr>
</tbody>
</table>

**Note.** The UCLA Loneliness Scale was structured in a 20-item matrix table.
COMFORT FROM COMPANION ANIMALS SCALE

Please answer the following questions regarding the relationship between you and your pet(s) at home on a scale of 1 to 4, with a response of 1 indicating that you Strongly Disagree and a response of 4 indicating that you Strongly Agree. Your responses are not timed.

<table>
<thead>
<tr>
<th>My pet provides me with companionship.</th>
<th>1 (Strongly Disagree)</th>
<th>2</th>
<th>3</th>
<th>4 (Strongly Agree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having a pet gives me something to care for.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My pet provides me with pleasurable activity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My pet is a source of constancy in my life.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My pet makes me feel needed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My pet makes me feel safe.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My pet makes me feel safe.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having a pet gives me something to love.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get more exercise because of my pet.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get comfort from touching my pet.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy watching my pet.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My pet makes me feel loved.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My pet makes me feel trusted.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. The CCAS was structured in a 13-item matrix table.