Article

The role of furry friends in facilitating social interaction during the COVID-19 pandemic

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SUMMARY

The COVID-19 pandemic disrupted social interactions unprecedently. Schools closed, people worked from home, and many were confined to interacting via social media and video chats. Studies have shown the psychological benefits of pet ownership. However, little research has been done on how and if the presence of a pet affects social interactions with strangers, especially during a socially isolated global pandemic. We set out to answer the question: will a dog walk change social interactions with strangers? We hypothesized that walking with a dog can change human-to-human interaction and help start conversations with unacquainted people. We conducted this experiment during six dog walks on randomly selected trails. We studied how walking with and without a dog affects interaction with other walkers. There were 245 observations in the study group (walking with a dog) and 208 in the control group (walking without a dog). We created a "Social Interaction Scale" to define the interactions during these observations. Walking with a dog resulted in social interactions 63.3% of the time, compared to 39.9% while walking without a dog. Results showed that walking with a dog significantly increased social interaction (z-score of 4.9, p-value < 0.0001). From our analysis, we concluded that walking with a dog can promote social interaction. Further research is suggested to assess the effect of these facilitated social interactions on feelings of loneliness and psychosocial well-being.

INTRODUCTION

The COVID-19 pandemic presented unprecedented social, emotional, and mental health challenges. The mandatory home confinement, closure of schools, and near elimination of in-person interactions following March 2020 increased feelings of loneliness and isolation. Loneliness is a feeling of lacking needed social connections and is associated with various psychological effects such as depression and substance abuse (1). In a study by Horigian *et al*., the authors estimated an alarming 65% increase in loneliness in young adults following the start of the COVID-19 pandemic began (1). In addition, the participants reported an increase in alcohol use (48%), drug use (44%), anxiety (62%), and depression (64%) while experiencing a decrease in feelings of connectedness (53%) (1). In another survey by the Making

Caring Common Project, 36% of respondents reported feeling lonely "frequently" or "almost all the time or all the time" (2). Significantly, 61% of people aged 18-25 reported loneliness, including "substantial increases in loneliness since the outbreak of the pandemic" (2). It is relevant and essential to find ways to improve social interactions between people to help reduce loneliness in such challenging times. Dogs could be a blessing in a "furry" disguise.

While there have been several studies that assess the psychological benefits of pet ownership on the mental health of the pet owner through companionship and a pet-human bond (2, 3), few studies have researched the effect of pet ownership on human-to-human social interactions. Zhe *et al*. studied older adult pet owners and how pets affect their mental health (3). Their results showed that pets provide comfort and safety, social inclusion and participation, purposeful routine and structure, and a meaningful role. McNicholas and Collis conducted experiments to determine if the dogs' handler's appearance influenced interaction (3). The results showed the most significant effect was present with the dog present, irrespective of the handler's image (4). A study by Wells investigated the behavior of 1800 pedestrians approaching a female experimenter accompanied by a dog (three different types of breeds were studied) or a neutral stimulus (a plant/teddy bear) compared to when the experimenter was alone (5). The author concluded that dogs could facilitate social interactions between adults, but the response can be dog-specific.

We wanted to research if the presence of a dog can be a catalyst for person-to-person social interaction in times of social isolation and distancing during the COVID-19 pandemic. We hypothesized that walking with a dog will change human-to-human interaction and initiate a conversation with unacquainted people. To facilitate our studies, we created a "social interaction scale" to quantify levels of person-to-person social interaction. The study was designed such that either an adult male or female walked with a dog on randomly selected trails. Each walk was 30 minutes with the dog. An hour later, the same adult walked the same trail for 30 minutes without the dog. A total of 12 walks were conducted over eight weeks. Social interaction data was recorded after every walk using the scale. In conclusion, our results showed that walking with a dog significantly increases person-to-person interactions between unacquainted people.

Observed Interaction	Social Interaction Score	Interaction
None	0	No Interaction
Eye contact only	1	
Smile	2	Social Interaction
Hello/wave/nod	3	
Conversation	4	

Table 1: Social Interaction Scale. The scale shows the various categories of observed interactions and gives them a numerical value from 0-4. The value of 0 corresponds to no interaction, while values 1-4 correspond to social interaction.

RESULTS

The purpose of our experiment was to determine if the presence of a dog could influence social interaction between unacquainted people during the COVID-19 pandemic. To test our theory, we walked a dog on randomly selected trails. A total of 12 walks were conducted, with each walk being 30 minutes. 6 of the walks were with the dog, and six were without the dog. We developed a social interaction scale to quantify person-to-person social interaction and recorded observed interactions (**Table 1**). A total of 453 observations were made, out of which 54% (n = 245) were with a dog, and 46% (n = 208) were without a dog. We analyzed the observed interactions as categories of "social interaction" and "no interaction" and compared the interactions that occurred with and without a dog (**Table 1**). Of all the observations made, 63.2% of observations during walks with a dog resulted in social interactions compared to 39.9% without the dog (z = 4.962, $p < 0.0001$, two-tailed z-test; **Table 2**).

The most significant difference in the subgroup analysis of social interactions was seen in the conversation category. Eleven percent (n = 27) of observed interactions during walks with a dog resulted in conversations, compared to 0.96% (n = 2) without a dog (**Table 2**). The number of outcomes (conversations) in the group without a dog were inadequate to perform statistical analysis. In addition, the subgroup analysis did not show a statistically significant difference between the eye contact and smile categories. However, there was

Observed Interaction	With Dog	Proportion	Without Dog	Proportion	Z-Score	*P*-Value
Eye Contact	28	11.43%	23	11.06%	0.1425	0.9
Smile	29	11.84%	17	8.17%	1.2865	0.2
Hello/wave/nod	71	28.98%	41	19.71%	2.2786	0.02*
Conversation	27	11.02%	2	0.96%	N/A	N/A
None (No Interaction)	90	36.73%	125	60.1%	-4.962	< 0.00001*
Total Social Interactions	155	63.27%	83	39.9%	4.962	< 0.00001*

Table 2: Number of interactions and their statistical significance using the z-test. Observations were made during 12 walks. Six of the walks were with a dog (study group), and the other six were without (control group). The data were compared using the two-tailed z-test. * indicates a significant p-value (α = 0.05).

a significantly higher number of "hello/wave/nod" observed interactions in walking with a dog compared to without a dog ($p < 0.02$; **Table 2**).

DISCUSSION

Humans are social animals by nature. During the COVID pandemic, there was an increase in social isolation and loneliness. We set out to determine if the presence of a dog could influence social interaction between people during the pandemic. To determine whether the presence of a dog could influence social interaction, we conducted 12 walks. 6 of those walks were with the dog, and six were without. We observed people's interactions with us using the social interaction scale during each walk. Our research demonstrated that the presence of a dog during a walk could significantly increase social interactions between unacquainted people, mainly driven by the "hello/ wave/nod" and "conversations" categories (**Table 2**). In our studies, the dog behaved as a catalyst to prompt social interaction and more conversations between the dog walker and the unacquainted people walking on the trail. Our findings are broadly in line with results from prior studies (4, 5). However, our study provides a more detailed view of social interactions with and without a dog using our social interaction scale (**Table 1**). Additionally, we studied the effect of a dog on the social interactions during the COVID pandemic, which is unique and relevant for this time with no similar study, to our knowledge, during the pandemic.

We noted a higher number of social interactions in the presence of a dog. There could be several possible reasons for this, such as people commenting on the dog and initiating a conversation in the process. Some people may have been tempted to pet the dog, or the dog himself may have approached the unacquainted people, eliciting a response. Some people might have accompanied their dog on the trail, and the dog-to-dog interaction may have initiated the person-to-person interaction. The reasons were not explicitly studied or recorded in the data, and this is a limitation of our study. A prior study used "trained" dogs to eliminate some of these limitations (4), but our study opted to use an "untrained" pet dog, which most dog owner households would presumably have. The experimental dog was a small size, 25 lb cockapoo puppy, and friendly nature. A different breed or a more aggressive dog may not have elicited a similar social response. A prior study has shown that some of the effects may be dog breed-specific (5). Additionally, social interactions are influenced if the dog walker is smartly dressed (4), although this effect was not studied in our experiment. The dog walkers in our study were appropriately dressed for an outdoor walk, as they would have been in a non-experimental setting with or without a dog.

The dog walkers were adult male and female in their mid-40s. Another dog walker of different ages or physical appearance may have prompted different responses. It is conceivable that the dog's presence could influence the mood of the dog walker and influence how personable or

responsive they were to other unacquainted people, which could have affected social interaction. Another limitation of the study is that the dog walkers knew the research question as they recorded the observations. This could have potentially introduced a bias by influencing how engaging they were (e.g., unknowingly through body language) to induce a social interaction from people. The people walking on the trail were generally friendly, and many made eye contact or smiled on crossing paths. Of note, there was no significant difference in the eye contact and smile categories, with or without a dog. This suggests that the dog walkers themselves likely did not inadvertently elicit social interactions in either group. Future studies could avoid these limitations by using a scientist as a neutral observer, collecting the data by observation, and not being involved in walking the dog.

This study did not evaluate the effects of the observed social interactions and conversations on the psychological well-being and feelings of loneliness of the adults walking the dogs. Future studies should be designed to research the downstream effects of these social interactions and conversations (initiated by the presence of a dog) on feelings of psychosocial well-being and effects on loneliness, depression, anxiety, and other mental health disorders. Additionally, the effects of dog ownership and dog walking could be studied in patients with depression or older adults who may be more prone to loneliness and social isolation.

About 50% of US households owned a dog in 2019-2020, a number which increased even further during the pandemic (6,7). Walking with a dog is a very simple intervention that can significantly impact peoples' social interactions and can help alleviate feelings of loneliness and social isolation, especially during a pandemic.

MATERIALS AND METHODS

Based on our prior experience walking on the local trails, most people walking on the trail were adults. We chose to have middle-aged adult walkers, a male and a female, in order to stay in the approximate age group of the other walkers, avoiding confounding by extremes of age. The dog was comfortable walking with these adults, providing a natural environment for him. The dog walkers walked on different trails in the local area to collect the data and provide variability, and the data were pooled together for all observations.

We designed the study as a walk by either an adult male or female with a pet dog (species: cockapoo, 1-year-old) on randomly selected walking trails in Charlotte, NC, for about 30 minutes each walk. This was followed an hour later by the same adult walking on the same trail for the same amount of time without the dog to serve as a control for the study. The study walks (with dog) and control walks (without dog) were conducted on the weekend days between 10:00 AM - 4:00 PM. This study time was chosen to be consistent in data collection because it was a time in which the weather was warmer and pleasant to walk in during the winter months. This might have led to more observations as more people were likely to be out

on the trail during these hours on the weekends. The study was conducted over eight weeks to be able to complete the research in a timely fashion. A total of 12 walks (6 study and six control) were completed from December 2020 to January 2021.

A prior study by McNicholas and Collis used different categories to quantify the length of social encounters (4). These authors recorded the encounters as a brief nonverbal acknowledgment, including a smile, wave, nod, etc., a talk for up to 1 minute, a talk for up to 3 minutes, and a talk for longer than 3 minutes. We developed the social interaction scale (Table 1) based on our prior experience walking on the trail and anecdotal observations on how people interact. We used the scale to measure the observed interactions, assigning a higher score to a higher level of interaction without using time as a factor. An observation was recorded for any person (excluding bikers and people wearing both masks and sunglasses) crossing the dog walker in the opposite direction. A "social interaction" was defined as any of the following - eye contact, smile, hello/wave/nod, or conversation. A conversation was defined as any dialogue with the dog walker initiated by the unacquainted person, regardless of the nature or duration of the conversation. Only the highest-scoring interaction was recorded if more than one interaction was observed for a person. For example, if someone gave a smile and carried out a conversation, only the conversation was recorded for data collection. People riding bikes on the trail were excluded from the study because it was difficult to assess response. Since the study involved the assessment of eye contact and smile, people who were wearing both a face-covering mask and sunglasses were also excluded from the study. Only people who were walking in the opposite direction were included in the study to be able to assess responses (like eye contact and smile). After all the walks were completed, we used Microsoft Excel to compile the data.

We used a two-tailed z-test for statistical analysis to compare observed interactions (no interactions or Social Interactions) with or without a dog. Subgroup analysis was also performed for each category (Table 2).

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