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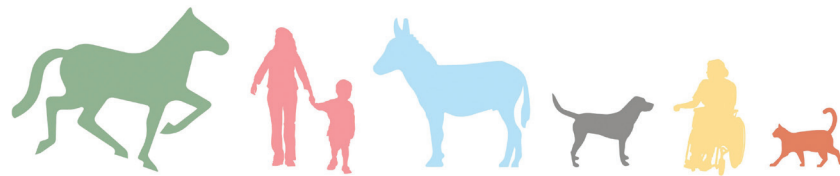
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Cover Page Footnote

Acknowledgments: We thank the dog guardians for their time and sharing their experiences with their canine companions during the challenging time of the UK's first COVID-19 lockdown.



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Dog Guardians' Subjective Well-Being During Times of Stress and Crisis: A Diary Study of Affect During COVID-19

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Keywords: dogs, human–animal interaction (HAI), COVID-19, affect, dimensions of subjective well-being

Abstract The impacts of companion animals on human well-being have been receiving increased media and research attention, especially in relation to the COVID-19 pandemic. Previously, there have been calls for research to consider the major components of subjective well-being separately and for research designs to include assessments over time. In line with this suggestion, the purpose of this study was to gain a more comprehensive understanding of how being a dog guardian can impact affect and contribute to the overall assessment of subjective well-being. This study used a seven-day diary design to capture 31 dog guardians' day-to-day feelings and thoughts during the UK's first COVID-19 lockdown—an example of a time of considerable stress and crisis. Closed-ended questions examined the impact of dog behavior, feelings toward dogs, participation in dog-related activities, and guardians' subjective well-being, while open-ended prompts were used to explore guardians' positive and negative affect. Results suggest that dog guardianship impacted subjective well-being during this time of stress and crisis. Findings indicate that dogs' behavior, feelings toward dogs, and participation in dog-related activities impacted the overall day-to-day subjective well-being of guardians. Additionally, six themes emerged related to positive and negative affect: amusement, joy, calm, frustration, worry, and guilt. These positive and negative affect findings help to explain some of the previous inconsistencies in pet effect-related research confirming that companion animals do impact subjective well-being. However, the effect is not always positive or consistent, and may be transient. In times of stress and crisis, companion animal guardians can face unique circumstances and could benefit from preparation, guidance, and clear communication about caring for their companion animals.

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IAHAIO

International Association of
Human-Animal Interaction
Organizations

1

Introduction

Living with companion animals has been associated with a range of positive and negative impacts.¹ Guardians of companion animals often report greater subjective well-being and that their animals help to buffer against negative feelings such as anxiety, sadness, and loneliness (Bao & Schreer, 2016; Clements et al., 2021; Hawkins et al., 2021; Janssens et al., 2020). During times of stress and trauma such as natural disasters, companion animal guardianship has been shown to provide some guardians with a sense of comfort by helping them to regulate emotions while also providing a sense of connection, emotional security, and increased well-being (Sable, 2013). One study found that dogs had positive effects on families and were a source of emotional support during the pandemic (Ratschen et al., 2020). However, other research found no relationship or a negative impact of companion animals on subjective well-being, especially in people who were strongly bonded with their companion animals (Amiot et al., 2022; Clements et al., 2021; Denis-Robichaud et al., 2022; Wells et al., 2022).

The pandemic and resulting restrictions have had significant economic and social impacts on the lives of people and companion animals globally. In numerous charity reports and news articles, animal guardians asserted that they felt their companion animals helped their general mental health, especially by reducing loneliness and providing a positive distraction during lockdown (Bawden, 2020; Josephs, 2021). However, researchers have warned that the strong focus of the media on the well-being benefits of companion animals during the pandemic may have been overstated and biased (Applebaum et al., 2020).

A growing body of research about the impact of the pandemic on companion animal guardians has found a unique set of benefits and challenges. Dogs have been credited with providing their guardians with support by encouraging routines (i.e., daily structure) while providing distraction, comfort, and the chance to connect with others during the pandemic (Bennetts et al., 2022). For example, researchers in Australia found that dogs buffered against loneliness by

creating opportunities to socialize with others outside of the household (Olivia & Johnston, 2021). However, for some guardians having dogs during unexpected critical life events can cause additional burdens and stress resulting in negative impacts to guardians' well-being (Krouzecky et al., 2019; Phillipou et al., 2021). For instance, during the pandemic some dog guardians reported challenges such as disruptions to working and learning from home, problematic interactions between children and animals, and concerns related to a lack of opportunities for animal socialization, animal care availability, and financial concerns (Bennetts et al., 2022). Overall, research found that the pandemic resulted in increased human–animal time spent together, motivation for physical activity, companionship, fears about dogs transmitting the virus, anxiety about future animal behavioral issues, and animal care concerns (Applebaum et al., 2020; Bennetts et al., 2022; Christley et al., 2021; Ratschen et al., 2020; Shoemith et al., 2021).

Pet Effect

The belief that living with companion animals can improve human mental and physical well-being is commonly referred to as the “pet effect” (Allen, 2003). The pet effect is widely believed by dog guardians, with 95% stating that having dogs makes them happy, and 87% stating that living with dogs improves their mental health (PDSA, 2022). Research on how companion animals impact well-being first began in the 1980s with a study comparing the post–heart attack survival rates of humans with and without companion animals (Friedmann et al., 1980). However, subsequent research has produced inconsistent results (Wells, 2009). Research prior, during, and post pandemic has continually found a mismatch between some scientific research and what dog guardians firmly believe are positive well-being benefits received from companion animals (Herzog, 2021b). Possible reasons for the conflicting results of pet effect research may be a result of the cross-sectional design of studies comparing guardians and nonguardians, which oversimplifies a complex relationship, and a lack of consideration of the

bond and interactions between the companion animals and humans, including things such as activity involvement (Barcelos et al., 2020; Hawkins et al., 2021; Teo & Thomas, 2019). Moreover, it has been postulated that the varied results found in human-animal interaction (HAI) research are a consequence of the complexity of studying two unique individuals, the human and the nonhuman animal, which interact in diverse and changing ways, therefore creating a need for a wider variety of research techniques (Rodriguez et al., 2021). Understanding the aspects of guardianship that influence human well-being needs to be refined, with more thought given to how well-being is impacted by companion animals and the engagement between the guardian and companion animal (Clements et al., 2021). Additionally, the mixed findings about the pet effect may be attributable to what dimensions of well-being are being studied (Bell, 2022, 18:09). To date, the pet effect is still an unproven hypothesis

that requires further research to understand the full impact of companion animals on human well-being (Herzog, 2011, 2021b).

Well-Being

Well-being is a multifaceted construct consisting of various dimensions and is best understood as a term encompassing the optimal experience and functioning of an individual (Pressman et al., 2013; Ryan & Deci, 2001). The terms “well-being,” “happiness,” and “health” are often used with varying definitions and sometimes interchangeably (Pressman et al., 2013). However, there are three widely recognized dimensions of well-being: physical, social, and mental. Each of these three has subdimensions that account for the full construction of a person's overall well-being (see Figure 1). Although all dimensions impact an individual's well-being, the strength of each component and the direction of the causal

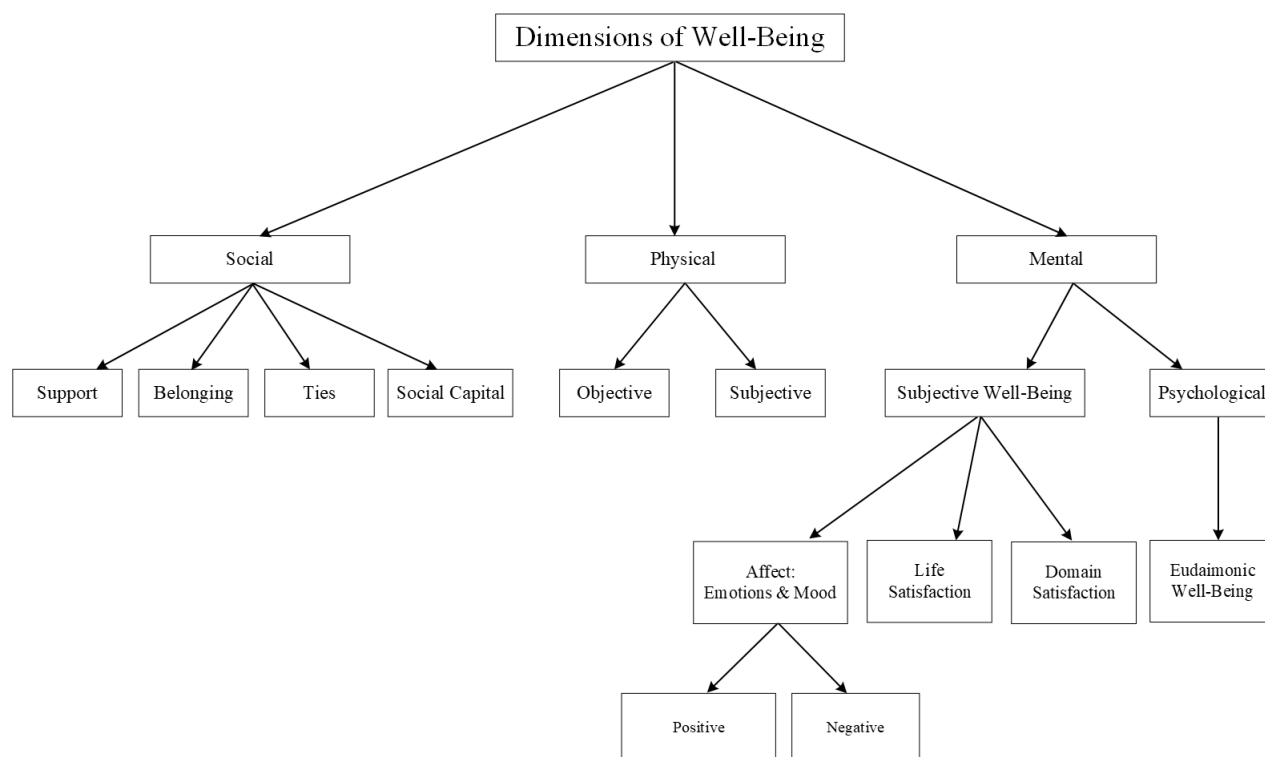


Figure 1. Dimensions of well-being. Based on Diener, 1984, 2000; Diener et al., 2002; Kahneman et al., 1999; Keyes et al., 2002; Lucas & Diener, 2008; Pressman et al., 2013; Ryan & Deci, 2001; Ryff, 1989; Ryff & Keyes, 1995; Ryff & Singer, 2008; Seligman, 2008, 2011; Waterman et al., 2010.

arrow may go in either or both directions depending on the individual (Diener et al., 2018).

When focusing on the mental dimension of well-being, one of the frequently studied subdimensions is subjective well-being, also referred to as hedonia or “happiness,” which is based on an individual’s cognitive and emotional evaluation of their life over time (Diener, 1984, 2000; Kahneman et al., 1999). Three constructs are recognized as creating a person’s subjective well-being: life satisfaction; domain-specific satisfaction with things such as one’s job or romantic partner; and affect, which can be positive or pleasant, and negative or unpleasant (Diener et al., 1999). Affect encompasses the feelings that people can experience and is composed of both emotion and mood (Russell, 1980, 2003). Emotions are transient, intense feelings that are usually directed at a source, whereas mood is an object-free, fluid feeling that lasts longer (Pressman et al., 2013; Russell, 2003). Positive affect is generally associated with feelings such as happiness, joy, contentment, and relaxation while negative affect is associated with feelings such as frustration, anger, unhappiness, sadness, and stress (Pressman et al., 2013). Researchers have argued that subjective well-being is essential to measure because it allows individuals to share what provides happiness in their lives and it likely has a causal role in good health (Diener, 2013; Diener et al., 1998). Positive affect may benefit health in two ways, including contributing to well-being by encouraging healthy practices and social relationships, or by reducing stress responses while aiding in stress coping and recovery (Pressman & Cohen, 2005).

Overall, subjective well-being, including affect, is widely recognized as essential for a full life, contributing to overall well-being (Diener et al., 1998; Huta & Ryan, 2010; Ryan & Deci, 2001; Seligman, 2002). However, limited research has examined affect as a component of dog guardians’ subjective well-being, plus the dog-related activities in which dog guardians are involved. There have been calls to consider the major components of subjective well-being separately and for research designs to include assessments over time (Diener et al., 1999). In line with this suggestion, this mixed methods study was designed to

examine positive affect and negative affect separately by using a seven-day diary study to capture dog guardians’ day-to-day activities, which are usually affective in nature, their lockdown experiences, and impacts on their overall subjective well-being (Henderson & Knight, 2012; Waterman, 1993). Also, as suggested by Diener (2000), this study conducts an exploratory seven-day diary study to examine when and why guardians reported positive and negative feelings related to their dogs and how that influenced their subjective well-being. Thus, this study aims to explore both the positive and negative affect experienced by dog guardians to gain a more comprehensive and specific understanding of how factors such as dog behavior, feelings toward their dogs, and the number of activities people are involved in with their dogs can impact affect and contribute to the overall assessment of subjective well-being, while also exploring key themes related to both the positive and negative affect experienced by dog guardians, especially during stressful times such as the pandemic.

Methods

Procedure

Study participants were recruited through Facebook Groups focusing on UK dog guardianship. Participation criteria were (1) over 18 years old, (2) a dog guardian, (3) living in the UK, and (4) able to provide informed consent. An information sheet was provided prior to starting the diary study. Diaries were completed for seven sequential days with participants starting their initial diary entry between May 10 and May 14, 2020. The primary researcher emailed the participants a daily reminder.

Instrument Design

The diary study design is an unobtrusive measurement that allowed dog guardians to record and express their feelings over the course of a week (Denzin, 1978). Previously, diary methods have been shown to allow for an exploration of daily behaviors and

interactions, and therefore have been found to be a useful method to study HAI (Power, 2008; Westgarth et al., 2019). Seven days for the diary study struck a balance between the length of the study and the amount of information that could be collected, plus a week is a commonly recognized way of organizing time (Nezlek, 2012).

The seven-day diary study was designed with initial person-level questions regarding human and dog demographics on Day 1. Then Days 1–7 diary-level measures consisted of daily closed questions (4 questions) and open follow-up prompts (6 questions) (see Table 1) (Nezlek, 2012). The diary study was administered through Qualtrics. Day 1 of the diary study took on average 30 minutes to complete and Days 2–7 around 10–15 minutes.

Analysis

Data analysis began by uploading the data to NVivo (QSR International, 2020) for assessment of the person-level and diary-level measures (Nezlek, 2012).

Quantitative Analysis. The four close-ended questions were analyzed through Spearman rank-order correlations and multiple regression. Data from each participant was collected for seven days, but as suggested for diary studies for which temporality is irrelevant, quantitative data was analyzed on a cross-sectional basis (Hyers, 2018). Spearman's rank-order correlations were calculated to assess the relationships between the four scaled daily diary

Table 1 Daily Diary Questions

1. What activities did you do with or for your dog today? <i>Options included: Walking; Grooming; Playing; Petting; Feeding; Toilet breaks; Sleeping/napping with them; Car ride; Training (tricks or obedience); Online event; Shopping online for dog supplies, food, or toys; Shopping in store for dog supplies, food, or toys; Veterinary visit; Agility work; Other (please specify)</i>
2. How has your dog's/dogs' overall behavior been today compared to before the lockdown? <i>1 = Much worse, 4 = About the same, 7 = Much better</i>
3. The dog's/dogs' behaviors that made me answer this way include . . .
4. How are you feeling toward your dog(s) today? <i>1 = Extremely negative, 4 = Neither negative nor positive, 7 = Extremely positive</i>
5. Today my dog(s) made me feel positively for example happy, smile, or laugh because . . . (if applicable)
6. Today my dog(s) made me feel negatively for example frustrated or angry because . . . (if applicable)
7. How are you mentally feeling overall today? <i>1 = Terrible, 4 = Average, 7 = Fantastic</i>
8. Reasons for why I am overall feeling the way that I do today are . . .
9. Today the lockdown made me feel . . .
10. Finally, I would like to share more about my emotions and mood such as related to workload, living situation, friends/relatives . . .

questions: (1) dogs' behavior, (2) guardians' feelings toward their dogs, (3) number of dog-related activities done by guardians, and (4) guardians' overall daily affect. Furthermore, multiple regression was conducted to predict the dependent variable of overall daily guardians' affect from the predictor variables of daily assessments of the dogs' behavior, guardians' feelings toward their dogs, and the number of dog-related activities done by guardians.

Qualitative Analysis. Open-ended responses were analyzed using a reflexive, inductive approach to thematic analysis in line with Braun and Clarke (2006, 2019, 2021). This type of analysis was used to develop knowledge about the positive and negative affect experienced by dog guardians, describe patterns across the data, and generate themes driven by affect's role in subjective well-being theory (Braun & Clark, 2006, 2021). This inductive approach to qualitative data analysis has six phases, which include becoming familiar with the diary data by reading through the responses, systematic data coding, and generating themes in the coded data and full dataset (Braun & Clark, 2006). Coding is interactive and involves continually reviewing and developing themes and then defining and naming the themes (Braun & Clark, 2021). Responses are analyzed in repeated further rounds to review, refine, and redefine themes where needed in relation to the coded extracts and the entire data set.

The primary researcher initially examined the data, noting preliminary ideas and generating 18 initial codes. Through further rounds of analysis, all researchers collaborated on the reflexive, analytic process to condense the codes into six semantic themes related to affect based upon the data. The data and codes were revisited on multiple occasions for rereading, reflecting, and questioning. This reflexive approach to thematic analysis allowed for a deeper and more nuanced construction of the data as recommended by Braun and Clarke (2019) while viewing the researchers' subjectivity as a resource for knowledge production (Braun & Clark, 2021).

Results

Sample Characteristics

The final sample consisted of 31 participants (a dropout rate of 18.4%). The majority (90.3%) of the respondents were female, had one dog in the home (67.8%), and did not have other pets (67.7%). Most households consisted of two or more adults (90.3%) with only a small minority being the sole dog guardian (9.7%). The largest proportion of respondents were between 25 and 34 years of age (38.7%), followed by 45–54 years (32.2%). The majority lived in a house, which was detached (22.6%), semidetached (32.2%), or terraced (22.6%), with the remaining 22.6% living in flats. Garden access at the home was available for 83.9% of the respondents.

Quantitative Results

Significant, positive correlations existed in five of the six relationships between the four scaled daily diary questions. However, the data indicated that during the lockdown there was no relationship between the number of activities that guardians did in relation to their dogs and their dogs' behavior (see Table 2 for the correlation matrix).

Furthermore, multiple regression showed that daily assessment of the variables of the dogs' behavior, guardians' feelings toward their dogs, and the number of dog-related activities done by guardians predicted guardians' overall daily affect. These three variables predicted guardians' daily affect: $F(3, 213) = 9.745, p < 0.001, R^2 = 0.121$. All three variables added statistically significantly to the prediction, $p < 0.05$ (see Table 3 for full regression results).

Qualitative Results

This section reports and analyzes six themes related to positive and negative affect about how dog guardians described the impact of their dogs on them during the UK's first lockdown. Three themes were generated associated with positive affect, namely

Table 2. Descriptive Statistics and Correlations for Study Variables

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4
1. Dogs' behavior	217	4.35	1.193	–			
2. Guardians' feelings toward their dogs	217	6.16	1.144	0.367**	–		
3. Number of dog-related activities done by guardians	217	6.28	1.560	0.016	0.211**	–	
4. Guardians' overall daily affect	217	4.63	1.517	0.272**	0.307**	0.207**	–

Note: *M* and *SD* are used to represent mean and standard deviation, respectively. ** indicates $p < 0.001$

Table 3. Results of the Multiple Regression Analysis by Guardians' Overall Daily Affect

Predictor	<i>B</i>	<i>SE B</i>	β	95% CI	<i>t</i>	<i>p</i>
Dogs' behavior	0.193	0.091	0.152	[0.015, 0.370]	2.141	0.033
Guardians' feelings toward their dogs	0.211	0.096	0.159	[0.021, 0.401]	2.190	0.030
Number of dog-related activities done by guardians	0.187	0.064	0.192	[0.060, 0.314]	2.904	0.004

Note: CI = confidence interval for *B*

Theme 1: Amusement; Theme 2: Joy; Theme 3: Calm. Three themes were generated related to negative affect, namely Theme 4: Frustration; Theme 5: Worry; Theme 6: Guilt.

Positive Affect

Theme 1: Amusement. Amusement is recognized as an emotion that is a response to something humorous or funny, which can range from a mild reaction like a slight grin to jaw-drop/mouth opening to strong, sudden outbursts of mirth (Sharpe, 1975; Shiota et al., 2003). It is often elicited by something that is incongruous with the way that we think or expect things to be or brought on by an object that brings on a physiological or behavioral response, which may be hard or impossible to control (Roberts, 1988), for example, seeing a dog in an unexpected situation such as a dog on a surfboard or a dog getting a severe attack of the zoomies, which makes it almost impossible not to laugh or at the very least, smile. This theme embodied participants' reports of positive emotions elicited by their dogs,

which provided both situationally based cheer and distraction. Participants reported their amusement was often expressed as a physical reaction of laughter caused by their dogs' behavior. Laughter and humor have been shown to benefit mental and physical well-being through higher psychological resilience, immune function, and better heart health (Dowling et al., 2003; Gonot-Schoupinsky & Garip, 2019; Hawkins et al., 2021; Taylor et al., 2005; Thorson et al., 1997). The amusement in the diary entries was expressed as an interplay of behavior between the human and dog, which benefited people by making them smile and laugh during the stressful lockdown period.

Glad he's with me whilst I'm stuck in quarantine, and he makes me laugh by just being his usual self. Had a laugh at him snoring loudly whilst I was on a conference call with my team. (#2, Female, 25–34, 1 dog)

They cheered me up during a few stressful meetings. My dogs had a mad half hour at one point

and made other members of the Zoom call laugh. (#26, Female, 35–44, 2 dogs)

Their play makes us laugh and they are competing to perform their new tricks for us . . . not always at appropriate moments which is very amusing. They are both comedians/court jesters and will play the fool for attention. (#30, Female, 45–54, 2 dogs)

He does silly things that make me laugh like falling out of his bed or sleeping in strange positions. He's also been very cuddly lately which is unlike him and it's nice to get the affection from him! (#2, Female, 25–34, 1 dog)

Throughout this process our dogs have grounded us all and provided comfort and amusement. (#21, Male, 45–54, 2 dogs)

Theme 2: Joy. A feeling of joy is a positive emotional response to a “good” object such as a positive event, circumstance, or interaction (Watkins et al., 2018). Joy also can be a result of feeling connected with others and often is related to gratitude, where people feel “blessed” or in some way favored (e.g., lucky) (Moltmann, 2015). Additionally, theorists in the area of joy posit that a feeling of joy is good because people appraise a situation as some kind of turning of fortune or redemptive twist after all felt lost (McAdams, 2006), which was especially apt during the first months of the COVID-19 pandemic when people were scared and confused about the virus and its implications for the future. This theme captures participants' reflections on their overall sentiments of thankfulness and gratitude for their dogs, and how their dog(s) created feelings of substantial love and companionship in their life.

I am completely smitten with my dog; he brings pure joy and companionship. He is our perfect excuse for a long leisurely walk during this lockdown time. (#22, Female, 45–54, 1 dog)

My dogs always make me smile, when training with them they react in ways unique to their personality.

My Labrador tries everything to please me while my rescue works when he wants to and wanders off when he doesn't. [. . .] There is nothing better than a snuggle with them in the evenings. (#31, Female, 35–44, 3 dogs)

Participants reported that they were lucky to have their dogs and loved being around them. They reported that having their dogs around fostered joy by providing companionship, which consequently helped to support their mental well-being during the isolating time.

I am lucky to have my dog by my side, he keeps me going and is the reason I'm able to get up in the mornings. I don't generally suffer from mental health issues, but during this time I can completely understand how people may feel trapped and alone. (#11, Female, 25–34, 1 dog)

I love being around my dogs. They support my mental health and make my life feel “complete.” It is different to time with my partner or children. (#10, Female, 35–44, 2 dogs)

Dogs have been found to provide their guardians with companionship and reduce loneliness and isolation (Dotson & Hyatt, 2008; McNicholas et al., 2005; Ratschen et al., 2020). Similarly, in recent findings by Ratschen et al. (2020), some participants believed that their dog's companionship helped them to avoid deteriorating mental health despite isolation during the pandemic, especially for those who did not live with other humans.

He always makes me feel good. I was widowed in August 2019. He has been my constant companion and support since. (#17, Male, 65–74, 1 dog)

Having a dog is a huge bonus—he is very much an alive, happy presence and a loyal companion. I suspect if my circumstances were being alone for 8 weeks, I might have got a bit depressed and drank a lot more wine [and more] than was good for me! (#28, Female, 55–65, 1 dog)

Theme 3: Calm. Research suggests that dogs can help people to cope with stress and anxiety (Allen et al., 2001; Ogechi et al., 2016). This theme focused on the calm contentment that dog guardians felt when interacting with their dogs. Participants expressed that their dogs provided them with a sense of calm and relaxation when participating in activities such as cuddling, playing, and walking, which seemed to help people to find some relaxation during the uncertainty and stress of the pandemic.

I enjoyed having a cuddle today with them which cheered me up as I found work a little stressful and did not sleep very well. This made me more relaxed. (#21, Male, 45–54, 2 dogs)

He was also playful and snuggly with me which was out of character. At the end of the day, he had really passed out downstairs but once I went to bed, he hauled himself upstairs to sleep near me. This was really comforting and sweet. (#24, Female, 25–34, 1 dog)

Being able to walk the dogs felt good and has benefited my mental health today, enabling me to slow down and given me an excuse to leave the house definitely helping me to relax and reduce any stress I had. (#21, Male, 45–54, 2 dogs)

Many studies have demonstrated the physical, social, and mental benefits of walking with dogs (e.g., Brown & Rhodes, 2006; Christian et al., 2013; Cutt et al., 2008; Gómez et al., 2018; Graham & Glover, 2014; Westgarth et al., 2017), and dogs typically helped during lockdown by providing a motivation for a walk. By providing needs support for dogs in the form of a walk, people reported being better able to manage their feelings and stress levels while creating a sense of closeness between the guardian and dog (Kanat-Maymon et al., 2021).

I was diagnosed with anxiety, depression, and PTSD before lockdown. I have found lockdown to be a rollercoaster of emotions. On the whole, my partner and my dog have been a huge support to

me and something to refocus my attention and get outside. (#3, Female, 25–34, 1 dog)

My stress level was getting unbearable from being stuck in the house, so I was naughty and took my dog for a walk outside in the sun. It really helped my mental health, and she enjoyed it too. (#27, Female, 25–34, 1 dog)

I love to walk with him, I would be a couch potato otherwise. But with my dog I have to get up, and out and always feel good after a walk. (#28, Female, 55–65, 1 dog)

Negative Affect

Theme 4: Frustration. Frustration is a negative emotion that is related to disappointment and can be defined as irritation after a desire is not achieved (Jeronimus & Laceulle, 2017). Feelings of frustration are experienced when people have unresolved problems that are often a result of barriers or obstructions to their personal goals, desires, or needs. Things that trigger frustration are external and are perceived as an intentional antagonistic act (Jeronimus et al., 2015). Based on how controllable and attainable the personal goal or desire is, feelings of anger, avoidance, or sadness result from frustration (Jeronimus & Laceulle, 2017). This theme of frustration reflects the feelings of annoyance, irritation, and disappointment that participants were experiencing in the pandemic related to the government's restrictions and guidance, their dogs' behavior, and personal feelings of disappointment. Acknowledging some of the participants' more general feelings of frustration is important in the development of this theme because of the repeated links of frustration with aggression and attention deficits (Berkowitz, 1989), plus the possibility of humans passing on this emotion to their dogs in a form of emotional contagion, thereby creating negative emotions and further unwanted behavior in their dogs (Custance & Mayer, 2012; Sundman et al., 2019; Walsh, 2009).

The UK Government (2020a) provided frequent, often daily updates during the COVID-19

pandemic. However, participants indicated that they needed further information or that guidance was not always clear, which resulted in feelings of frustration.

The government guidance lacked detail. Both my partner and I are highly educated people. The language used was confusing, messages unclear. It's frustrating as it needed to be clear to stop the media from giving mixed or false messages. (#20, Female, 25–34, 1 dog)

I am frustrated with the government. Isolated from friends but I have a Zoom with them later. (#26, Female, 35–44, 2 dogs)

A little angry as I'm always frustrated with how the government is handling things, and today there's lots of talk online about Boris's useless speech last night, which most people found to be confusing. (#15, Female, 45–54, 1 dog)

Participants often mentioned frustrations related to their dogs' behavior. This was particularly interesting because their language indicated the perception of an intentional antagonistic act on the part of the dogs despite having often acknowledged how the dogs' routines and daily lives had been changed by lockdown restrictions.

He was being difficult when he kept running up the stairs and my partner had to chase him around to pick him up. He generally wasn't listening to commands. (#24, Female, 25–34, 1 dog)

Frustrated to see them get a bit silly with another dog . . . one came in to protect the other and, although it wasn't an aggressive exchange, I have worked hard to make my dogs highly sociable. Felt like a step backwards. (#30, Female, 45–54, 2 dogs)

He did bark at me when I was trying—frustratedly—to use a new corkscrew to open a bottle [of] wine. He really picks up on my “moods” and

because I was frustrated—he got anxious—and then barked at me. [. . .] I am super aware that when I am frustrated or anxious the dog gets agitated and barks or plays up. (#28, Female, 55–65, 1 dog)

The evening walk can feel like a chore when the dogs appear to take a long time to go to the toilet. This is very frustrating for me, and I have begun to dread the evening walk when I am tired and want to relax. (#21, Male, 45–54, 2 dogs)

Pooping inside the house despite having a lot of time outside the house to stretch her legs was a cause for a lot of stress, especially that it wasn't a small accident! We spent the evening cleaning the mess. (#4, Female, 35–44, 1 dog)

People reported being frustrated at how much the pandemic and its resulting restrictions were impacting their lives, including their social interactions and activities/interactions with their dogs.

Today the lockdown made me feel frustrated and fearful. I missed the freedom of travel and meeting friends. I was fearful of the world post-Corona. I am currently getting a master's degree, however my industry is currently facing redundancies and closures. (#18, Female, 25–34, 1 dog)

I am just a bit frustrated—a friend rang—she needed a shoulder to cry on—can only do this by phone. [I'm] missing hugs and being able to support friends who are experiencing bad times—not as easy to do remotely. (#12, Female, 45–54, 2 dogs)

So frustrated, more agility shows have been cancelled and the venue I train at has decided to remain closed. I just want to get my dogs back to doing what we love. (#31, Female, 35–44, 3 dogs)

We took him on a walk, but we cannot take him off the lead because he runs off. I feel frustrated that I can't let him join in with other dogs. (#24, Female, 25–34, 1 dog)

Feeling tired . . . frustrated . . . the unknown gets you down slightly, but my furry friend is keeping my spirits high. (#11, Female, 25–34, 1 dog)

Theme 5: Worry. The anticipation of real and perceived threats or issues results in the negative emotional response of worry (Kemeny & Shestyuk, 2008). Worry often results in psychological stress in the form of anxiety and distress, which has been consistently linked with negative physical and mental health outcomes (O'Connor et al., 2021). A wide range of factors emerged as causes for concern or worry for dog guardians during the UK's first pandemic lockdown including changes to walking routines, behavioral issues, access to veterinary services, the ability to get dog services and products, and the possibility of zoonotic transmission of COVID-19.

Many aspects of dogs' normal routines were changed including restrictions on outdoor time, which severely impacted dog walking. The UK Government (2020a, 2020b) limited exercise to one time per day, including walking dogs, and many local areas put in place restrictions requiring dogs to be kept on a lead. The loss of the freedom to walk dogs when, where, and how the guardian desired resulted in worries about the quality of the walks for dogs and the adequacy of dogs' exercise.

It's annoying that dog walkers have to keep dogs on lead now. The reason given is because if the dog goes up to someone you can't get them back, but as a [professional] dog walker, you wouldn't let them off lead unless they came back. I have three [client's] dogs from the same house all with various physical abilities. It's really difficult for all of them and not enjoyable for any of us. (#3, Female, 25–34, 1 dog)

Choosing between walking the dogs or shopping/going to pharmacy etc. has been awkward, especially when my husband got injured and couldn't walk. (#30, Female, 45–54, 2 dogs)

Participants expressed that they were particularly worried about the changes in behavior that they

were seeing in their dogs or concerns about future behavior, such as separation anxiety, in their dogs.

My dog started to pace up and down the stairs, repeatedly, throughout the night, which is worrying but I know this is due to no routine. (#11, Female, 25–34, 1 dog)

I noticed he's been over licking his paws and his blanket—sign he is bored. Gave him a rawhide chew which kept him occupied for half an hour. He was protective of it when I went near him. (#1, Female, 45–54, 1 dog)

His friendliness toward strangers (he's always been very willing to say hi and get affection from strangers) has decreased. When people approach him on lead to say hi, he backs off and barks. Just frustrating to see him be less inclined to greet new people. (#25, Female, 25–34, 1 dog)

Also, I was speaking to other dog owners, and we were all fearful that our dog would suffer separation anxiety once lockdown is over. We never left our dog for a long time, but an hour here or there but that hasn't happened since March. (#18, Female, 25–34, 1 dog)

Whilst I'm enjoying him being more affectionate, I am concerned he is getting much more attached to me being around. This makes me apprehensive for when things change again. (#24, Female, 25–34, 1 dog)

Even though the UK Government (2020b) allowed veterinary services and pet shops to continue trading during the pandemic restrictions, the British Veterinary Association issued guidance for veterinarians on providing essential care during the COVID-19 pandemic (BVA, 2020). Although veterinarians were able to exercise judgment in the care that they provided, many followed the main guidance points including not allowing clients to accompany their animals into the veterinary practice; suspending routine treatments such as vaccinations, neutering, and

microchipping; and remotely assessing issues considered to be minor like mild trauma, skin issues, lumps, wounds, and so on.

He has an ongoing eye problem. I didn't like the vet seeing him in the consulting room without me. I know it's silly, but I worry they won't be kind to him. There was a horrible case in the media once and I have never forgotten it. (#22, Female, 45–54, 1 dog)

My husband met one of our neighbors, whose dog was diagnosed with cancer yesterday. I didn't know that dogs had to go into the vet alone, and we have to wait outside, at the moment. That really worries me!!!! I'm praying my boy doesn't get hurt or sick. (#16, Female, 45–54, 1 dog)

Called the vets today for the dog's yearly injections as due next week. They have advised me that they are now delayed for 3 months and told me not to let him near water. I mentioned we live by the Thames and that my dog likes to drink or go in. They still can't give him his injections and told me to keep him away from the river. I am not very happy about this and worried. (#9, Female, 45–54, 1 dog)

I checked the local vet's websites again and there seems to be no movement on being able to make non-emergency appointments. [. . .] My dog's annual boosters will be due this weekend, so as time goes on this will be more of a concern. I will keep checking this regularly for any changes. (#15, Female, 45–54, 1 dog)

Worries were also expressed by dog guardians in the form of concerns about their ability to care for their dogs. These types of concerns were seen in the ability to get things such as grooming supplies and what would be needed if the guardian contracted COVID-19 and could not take the dog out. While many participants said that they were financially comfortable, many people were starting to wonder about their financial situation in the future. Some

respondents were very concerned about their financial situation and others said they may have to use their savings, but all stated they would do whatever was necessary to care for their dogs.

I am concerned about minor things . . . the dogs' claws need clipping, and I haven't been able to purchase clippers (none available online and pet shops shut). (#30, Female, 45–54, 2 dogs)

I haven't got a plan if I got COVID-19. I wonder if I should have "puppy pads" in the flat as he couldn't go out to pee/poo. (#28, Female, 55–65, 1 dog)

Financial worries are huge as I am only entitled to Job Seekers Allowance. (#3, Female, 25–34, 1 dog)

Due to being placed on furlough for longer, I do worry about caring for my dog, but that's what the savings are for! (#11, Female, 25–34, 1 dog)

Dog guardians also reported having concerns and worrying about the possibility of contracting COVID-19 while dog walking or transmission from their dogs.

More people are definitely about, some in groups which puts me at greater risk when I walk my dogs. I hope this does not make it difficult to find a safe place to walk my dogs in the future. (#21, Male, 45–54, 2 dogs)

My mum called me to tell me that it [COVID-19] can now be transferred to pets. My rational brain knows that there isn't that much scientific evidence, however I was still momentarily concerned. (#18, Female, 25–34, 1 dog)

Theme 6: Guilt. This theme encompassed guilt, which is a self-conscious negative emotion when an individual concludes that they have fallen short or failed (Lewis, 2008). Dog guardians often feel a sense of duty to their dogs as cherished family members who are dependent on people (Higgins et al., 2013).

Like other research conducted during the pandemic, this study showed that participants expressed guilt about the care they were able to provide for their dogs (Hawkins et al., 2021). These feelings were largely a result of how restrictions had impacted their dog's daily life, including more time indoors, less stimulation, and less play.

I was feeling bad for my dog today because his life is so different here and he gets much less stimulation, I feel. He's a really energetic dog and I feel bad about him being indoors so much more than he was. (#19, Female, 25–34, 1 dog)

He's a good boy and I feel bad he doesn't get to play as much now. (#2, Female, 25–34, 1 dog)

Working and studying from home was an adjustment for many people and dogs. Participants often reported feeling guilty that they were at home with their dogs, but that due to work and family commitments they were not able to give their dogs the attention they deserved.

He was playful when I was working. Obviously, I don't blame him at all, but it makes me feel guilty when I can't give him attention all the time. (#24, Female, 25–34, 1 dog)

Just felt sorry for my dog as he had so little attention from me today, so he did a pee on the bathroom floor. It wasn't his fault. It made me feel guilty as I was too busy to notice he needed to go in the garden. (#9, Female, 45–54, 1 dog)

Our dog never had any behavioral issues, but she clearly is unhappy being stuck with us in the house all the time. We give her a break from our daughter and try to give her separate space and peace, but life with a toddler is just chaotic and messy. Also, we have to give a lot of attention to the baby while trying to meet our work commitments, which automatically means that our dog gets less attention. This is probably stressing her out and is making her feel insecure. (#4, Female, 35–44, 1 dog)

I feel bad for the dog as both my husband and I have had loads of calls and meetings today so his time on walks has been greatly reduced. (#5, Female, 45–54, 1 dog)

Discussion

The impact of dogs on human well-being has been frequently investigated yet the pet effect hypothesis is still unproven. Also, an increasing body of research during the pandemic indicates that dogs may have had both positive and negative impacts on their guardians during this highly stressful time (e.g., Applebaum et al., 2020; Bennetts et al., 2022; Clements et al., 2021; Shoemith et al., 2021). The aim of this mixed methods seven-day diary study was to examine the positive and negative subjective well-being component of affect reported by guardians relative to their dogs during the UK's first COVID-19 lockdown (i.e., a time of stress and crisis). This research has four important implications for how companion animal guardianship may impact affect as a piece of subjective well-being evaluation, especially in times of stress and crisis, and contributes to the investigation of the pet effect hypothesis.

Number of Activities Is Related to Feelings toward Dogs and Daily Affect

Quantitative results of the diary entries showed that during the lockdown, participating in more dog-related activities was positively related to guardians' feelings toward their dogs and their overall assessment of their subjective well-being. This is in line with previous research, which found that rather than the simple presence of dogs in homes providing human well-being benefits, it is the activities and amount of time spent together that explain how human well-being is positively impacted (Barcelos et al., 2020). Previous well-being research has also suggested that participating in meaningful activities may have a stronger impact on well-being than simple, pleasurable activities (Schueller & Seligman, 2010). For the diary participants in this study, there was a positive

relationship between the number of activities they did and how they felt toward their dogs and their well-being, which may indicate that dog guardians found at least some of the activities with their dogs to be meaningful. This may be because many of the activities such as walking, agility work, and training can be very time intensive or others such as playing, petting, and sleeping/napping with dogs can create a more bonded relationship between guardians and dogs.

Interestingly, the number of daily dog-related activities that the guardians participated in did not seem to be related to their dogs' behavior. This is surprising given that many people mentioned concerns about changes to their dogs' routines. Given that this research was conducted at the end of the first lockdown, it is possible that dogs had been able to adjust to any changes in their daily activities or were simply not bothered by their routine changes.

Dogs' Behavior Is Related to Feelings toward Dogs and Daily Affect

Our findings indicate that dog guardians' assessment of their dogs' behavior was positively correlated with how they felt toward their dogs and their subjective well-being, especially when guardians are under stress or coping with difficulties. Previous research has found that guardians who perceived their dogs as well behaved reported higher happiness and lower stress levels, while those who viewed their dogs' behavior as challenging perceived it as annoying and spent less time with their dogs (González-Ramírez et al., 2018). During the pandemic lockdowns, many guardians spent more time with their dogs and therefore dog behavior may have had a greater impact on levels of stress and happiness. Alternatively, it is possible that guardians' feelings and moods impacted their dogs' behavior in a type of emotional contagion (Palagi et al., 2015).

Feelings toward Dogs Are Related to Daily Affect

The data from this study indicates that people's feelings toward their dogs were related to their overall

daily affect. People are often very attached to their companion animals and desire to spend a large portion of their free time interacting with them (Allen, 2003; Dotson et al., 2010; Greenbaum, 2004). Additionally, research has found that dogs are playing an increasingly important role in the lives of their guardians, being considered as "more than an animal" (Risley-Curtiss et al., 2006), and often as integral family members who increase household cohesion (Carr, 2017; Danby et al., 2019; McNicholas et al., 2005; Walsh, 2009). In addition to the perception of dogs as family, people feel a sense of responsibility toward their dog resulting from the perception of unconditional, reciprocal love believed to exist between the guardian and their animal (Westgarth et al., 2019). Therefore, it is not surprising that how people feel toward their dog impacts their overall daily assessment of their well-being because the life of the guardian and dog are intertwined, though dynamic to each human–dog relationship.

New Framework of How Dogs Impact the Affective Component of Subjective Well-Being

Regression analysis also showed that guardians' overall daily affect was predicted by daily assessment of dogs' behavior, guardians' feelings toward their dogs, and the number of dog-related activities done. The latter had the greatest impact on the variability of guardians' overall daily reported affect. These results indicate that dogs did have a significant impact on their guardians' subjective well-being during lockdown, and likely do more generally; however, dogs alone seem to only explain a small portion of guardians' subjective well-being assessments (12.1% of variance). It is possible that other dog-related variables such as attachment, quality of the bond, and time spent together might account for more of the impact on guardians' subjective well-being, plus there are many other factors beyond the dogs in people's lives, including their positive and negative affect toward their job, family life, finances, and available leisure time (Diener et al., 1999).

Furthermore, our qualitative diary study findings demonstrate that during the pandemic restrictions, dogs provided their guardians with positive feelings of amusement, joy, and a sense of calm. However, dogs also had negative impacts on guardians' affect through frustration, worry, and guilt. We found that dogs impacted guardians' feelings and behaviors but so did other issues/concerns. This is similar to previous studies showing that subjective well-being remains relatively stable over time but personal circumstances, including major life events such as the death of a spouse or unemployment, can have longer and lasting negative impacts on subjective well-being (Diener et al., 2018). However, to counteract such negative impacts our study shows that positive emotions can be cultivated and increased by seeking active and engaging experiences through human–dog interactions and activities such as walking, playing, and training. Researchers have posited that participating in these types of activities can create positive feelings, which can drive happiness and positive well-being (Lykken, 1999).

In short, this study indicates that dogs' behavior, guardians' feelings toward their dogs, and participation in dog-related activities did impact guardians' subjective well-being. Guardianship had both positive and negative impacts on the affective component of subjective well-being. Importantly, participating in activities with dogs may decrease negative affect and foster feelings of happiness during stressful life events such as the pandemic. Overall, dog guardianship did generate challenges and negative feelings for some; however, for most guardians in this study, dogs were a great source of comfort and support.

Strengths, Limitations, and Future Research

The main strength of this research is a clear focus on the affect component of subjective well-being and the use of a diary study, which is a longitudinal research design. The diary study allowed for an exploration of the daily life of participants with their dogs and an assessment of the positive and negative affect that dogs

induced in their guardians during the first COVID-19 lockdown in the UK, which yielded important findings about how dogs impact guardians' affect and overall subjective well-being. The design also helped to avoid recall bias by focusing on participants' current thoughts and feelings rather than requiring them to recall or summarize feelings over a long period of time (Alaszewski, 2006). Diary studies are less obtrusive than other qualitative methods and gave participants the opportunity to be more open, honest, and share thoughts and feelings that they might not have otherwise made public (Denzin, 1978).

As with all research, this study has several limitations. First, the use of a convenience sample of those engaged with dog-related social media groups resulted in a high proportion of female respondents who were likely highly attached and bonded with their dogs. An overrepresentation of females is a common bias in HAI studies (Herzog, 2021a). However, decades of subjective well-being research has shown that demographic factors such as gender, income, age, and marital status do not account for much of the variance in subjective well-being (Diener et al., 1999), and research into HAI indicates that the effect size of gender differences in attachment to companion animals is small (Herzog, 2007). Nevertheless, a wider range of participants (e.g., males, those who live alone, or those who do not live in a house with a garden) from a larger sample would provide further insights into how dogs impact guardians' positive and negative affect. Second, the lockdown restrictions were different in different parts of the world. The experiences of dog guardians under different restrictions would likely have varied, and therefore the impact of guardianship on their subjective well-being may also have varied. This is especially true in relation to negative affect depending on whether walking or exercise with dogs was restricted, people were unable to work creating financial concerns, and how veterinary practices were impacted. Finally, due to the nature of the diary study, the researchers were not able to explore any of the themes further since there was no direct interaction with the participants.

Additional studies utilizing a longitudinal research design will help to further explore the positive and

negative affect experienced by dog guardians and how that subsequently impacts subjective well-being. Due to the complex nature of individuals, both dogs and humans, and the uniqueness of their relationships, we may never be able to definitively generalize the pet effect. Future research should measure the level of dog–human attachment and bond, personality traits of humans, the behavior of the dogs, and further explore the types of activities in which human–dog dyads are involved. Considering those factors may provide additional insight into how guardians’ affect, and overall subjective well-being, is impacted by their dogs. Although it is likely that the positive and negative affect experienced by dog guardians during the UK’s first COVID-19 lockdown has many similarities with daily affect during other times of stress or crisis experienced by dog guardians, future research should also explore this further.

Conclusions

In summary, the present study indicates that dog guardianship impacted subjective well-being during the UK’s first COVID-19 lockdown. This research suggests that the dogs’ behavior, guardians’ feelings toward their dogs, and the participation in dog-related activities significantly impacted the overall subjective well-being of guardians; however, this accounted for only roughly 12% of guardians’ subjective well-being. The presence of dogs in homes during the stress of the pandemic seems to have been associated frequently with feelings of positive affect of amusement, joy, and providing a sense of calm, which lends support to the pet effect hypothesis.

However, dog guardians also experienced feelings of negative affect related to their dogs, including frustration, worry, and guilt. These positive and negative affective findings may help to explain some of the previous inconsistencies in pet effect–related research. The varied pet effect findings may be, at least in part, a result of the dimensions of well-being being measured, the personalities and behavior of the dogs and guardians, the relationship between the dogs and guardians, and the level and type of activity involvement of the

guardians with their dogs. Findings from this study emphasize that companion animals can have an impact on their guardians’ well-being, particularly the affective component of subjective well-being, during times of stress and crisis. Therefore, guardians face unique situations and may benefit from preparation, guidance, and clear communication about how to best care for their companion animals.

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Note

1. The terms “pet” and “owner” have been commonly used in studies of people and animals living in households. In this report, we refer to animals that live in people’s homes as “companion animals” or simply as the type of animal in this study, “dogs.” We also refer to people who have companion animals in their homes as “guardians” when not referring to previous research and theory to better reflect the complex relationships between companion animals and guardians increasingly confirmed in HAI research.

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