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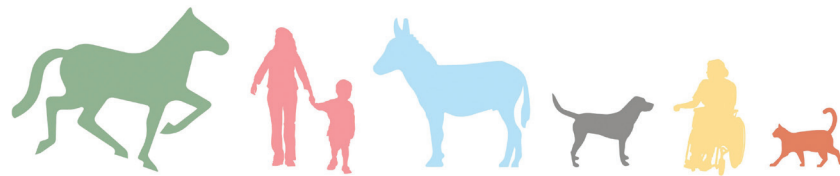
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## A Mixed-Methods Assessment of Human Well-Being Related to the Presence of Companion Animals During the COVID-19 Pandemic

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**Keywords:** companion animals, COVID-19, mental health, pets, well-being, psychological distress, loneliness, human–animal interactions

**Abstract:** COVID-19 and the measures used to curb the pandemic (e.g., lockdowns, isolation) have significantly impacted mental health and well-being. This study sought to investigate the role of companion animals in alleviating stress and improving mental health during the pandemic. In this study, 250 Australian adults completed measures of well-being and life satisfaction, animal dependency, perceived emotional support from animals, and animals' effect on mood. Employment and living with others were the strongest predictors of positive life satisfaction and well-being, while greater dependency on companion animals for emotional support and companion animals' negative effects on mood were associated with reduced life satisfaction and well-being. Qualitative data indicated equivocal results with animals a source of both support and stress, pointing to the complex nature of human–animal relationships, particularly during times of considerable stress. These outcomes have significant implications for welfare, as animals perceived to be annoying or disruptive may be at higher risk of abuse, neglect, and behavioral surrendering.

### Introduction

The coronavirus (COVID-19) pandemic resulted in wide-ranging health, social, and economic impacts (WHO, 2020). In tandem with developing vaccines, governments worldwide have implemented measures such as social isolation and distancing, quarantine, and closures of schools and nonessential businesses to contain the spread of this disease. These restrictions

have led to significant mental health concerns (Banerjee & Rai, 2020; Sepúlveda-Loyola et al., 2020). Existing research has found that isolation and loneliness can increase mental health symptoms (Beutel et al., 2017), while quarantining and social distancing are known to have negative psychological effects, including confusion, anger, and posttraumatic stress (Brooks et al., 2020). During complete lockdowns, individuals have been shown to experience feelings

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of frustration, fear of infection, boredom, financial loss, and loneliness (Loades et al., 2020).

Given the restrictions on interaction with others, this may be a time when people have found solace in companion animals. Empirical studies have shown that human–companion animal bonds can have benefits for human psychological and physical well-being (Fiocco & Hunse, 2017; Glassey, 2010; Headey & Grabka, 2011; Herzog, 2011; Smith, 2012; Wood et al., 2018). A study by Herzog (2011) found that people with companion animals made 15% fewer doctor visits than those without, as well as exercising more, sleeping better, feeling fitter, and missing less work. These effects were stronger for individuals who reported being closely attached to their companion animal (Herzog, 2011). Similarly, a systematic review of 70 empirical studies found companion animals often have a positive impact on older adults' physical and mental well-being, improving blood pressure, heart rate variability, and quality of life, and reducing depressive, anxiety, and dementia symptoms (Hughes et al., 2020).

However, not all research has shown the effects of animal companionship to be positive. Several studies have shown nil or negative effects of companion animals on human physical health and well-being (Herzog, 2011). Some studies have shown animal companionship to be associated with poorer psychological and well-being outcomes, including higher levels of anxiety, depression, and insomnia (e.g., Koivusilta & Ojanlatva, 2006; Mullersdorf et al., 2010), while others have found no effect of animal companionship on psychological states of stress or well-being (Gilbey et al., 2007; Wright et al., 2007). Given these equivocal findings, predictions about the impact of animal companionship on well-being during this period are challenging to make, considering the additional stressors and difficulties that the COVID-19 pandemic has introduced.

Earlier (prepandemic) research has identified “the potential detrimental role of strong attachment to a pet in the absence of human support” (Stallones et al., 1990, p. 108). Stallones et al. (1990) and Antonacopoulos and Pychyl (2010) have both shown that people with high attachment to companion animals

and low social supports score higher on loneliness and depression. These findings suggest those who are lonelier may seek companionship from animals or rely more upon their companion animals to alleviate loneliness, yet animals may not fully reduce loneliness or resultant depression, suggesting that there may be a baseline need for human social contact to sustain mental health. Companion animals amplify negative mood states for people who are more reliant on them. Companion animals may therefore act as an additional stressor in an already stressful situation, serving to “increase rather than decrease emotional stress” (Stallones et al., 1990, p. 108). A New Zealand study conducted during various levels of restrictions found that while companion animals benefited from the time spent during lockdown (e.g., more company, play, and exercise), they experienced negative impacts after lockdown (e.g., separation anxiety, less company and attention) (Esam et al., 2021). In another recent study, caregivers also expressed similar distress and concern about their capacity to meet their companion animals' needs (Applebaum et al., 2021). As Janssens et al. (2020, p. 580) note, there is a lack of conclusive evidence for the belief that animal companionship can improve human health.

The current study sought to explore trends in human–animal relations during the unprecedented conditions of the COVID-19 pandemic and to investigate the relationship between animal companionship and well-being, as well as what factors may have influenced positive or negative outcomes. This study contributes to the growing body of knowledge exploring these relationships during periods of stress and social upheaval worldwide and considers the potential impacts on animal welfare that may result from these unique stressors.

## Method

### *Participants*

Participants were 250 Australian adults (212 women, 34 men, 4 nonbinary) aged 18–73 years ( $M = 39.31$ ,  $SD = 11.97$ ), who were caring for one or more companion animals during the pandemic. A priori

power analysis conducted via G\*Power (Faul et al., 2007) with a small effect size, an alpha level of .05, and power of .80 indicated that a sample size of 58 participants was needed. Participants were recruited via Australian social media sites and the psychology research participant pool of a rural Australian university. The study received ethics approval from the Human Ethics Research Committee of the University of New England and University of the Sunshine Coast prior to the commencement of participant recruitment.

### Measures

**Demographic variables.** Participants were asked about several demographic variables, including age, gender, whether they were living alone or with others, and current employment status. Participants also were asked whether their employment had been affected by the pandemic or associated lockdowns (see Table 1 for demographic information). Additionally, participants were asked about the

types and number of companion animals they currently had, and whether they had adopted, fostered, bought, lent, or borrowed any companion animals since the pandemic onset.

**The Satisfaction with Life Scale (SWLS).** The SWLS (Diener et al., 1985) is a five-item instrument designed to measure global cognitive judgments of satisfaction with life. Items include statements such as, “The conditions of my life are excellent,” with seven Likert-scale response options ranging from “strongly agree” to “strongly disagree.” Overall scale scores range from 5 to 35, with higher scores indicating higher life satisfaction. The SWLS has shown good reliability and validity across a variety of different cross-cultural populations (Pavot & Diener, 2008). The Cronbach’s alpha for the SWLS in the current study was good ( $\alpha = .85$ ).

**The Short Warwick-Edinburgh Mental Well-Being Scale (SWEMWS).** The SWEMWS (Stewart-Brown & Janmohamed, 2008) consists of seven statements about thoughts and feelings associated with well-being over the previous two weeks (e.g., “I’ve been feeling optimistic about the future”). Responses were measured on a 5-point Likert scale ranging from “none of the time” to “all of the time.” Total scale scores range from 5 to 35, with higher scores indicating higher well-being. The SWEMWS has been validated in the general population and has shown good internal consistency and convergent and discriminant validity in samples from the United Kingdom (Ng Fat et al., 2017), as well as high test-retest reliability (Tennant et al., 2007) and construct validity (Koushede et al., 2019) in other international samples. The Cronbach’s alpha for the SWEMWS in the current study was good ( $\alpha = .89$ ).

**Companion animals and COVID-19.** Given the novelty of the pandemic environment and existing surveys about the role of companion animals, we created our own unique research questions. For this reason several scales were created specifically to assess the relationship between animal companionship and overall well-being and coping in the specific

**Table 1.** Participants’ Employment and Living Circumstances During COVID-19

Participant Characteristics	N (%)
Employment during COVID-19	70 (29.7%)
Essential worker out of home	37 (15.7%)
Essential worker in home	34 (14.4%)
Student	9 (3.8%)
Unemployed	15 (6.4%)
Unemployed due to COVID-19	16 (6.8%)
Always worked from home	34 (14.4%)
Nonessential worker	21 (8.9%)
Other	
Living arrangements	
Alone	34 (14.4%)
With immediate family	192 (81.4%)
With extended family	10 (4.2%)

context of COVID-19 pandemic restrictions. Each scale and item was developed following a review of the literature, as well as consultation with experts in the field. The items and scales were reviewed by all members of the research team in order to ensure clarity and stability of each item and wording.

The first scale, the Pet Dependency Scale, included five items that were asked twice in order to assess potential differences in perceptions of dependency on and connection with companion animals before and during the pandemic. Response options were presented on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree.” Scale scores ranged from 5 to 35, with higher scores indicating more positive responses. Internal consistency for both timepoints was good, with Cronbach’s alphas of .85 and .86 for retrospective prepandemic responses and current pandemic responses, respectively.

The Perceived Emotional Support from Pets Scale, consisting of eight questions, was developed to query perceived emotional support received from companion animals during the pandemic. Response options were presented on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree.” Scale scores ranged from 8 to 40, with higher scores indicating more positive impacts of animal companionship on overall well-being during the pandemic. Internal consistency for this scale was good (Cronbach’s  $\alpha = .90$ ).

Finally, the eight-item Pets’ Effect on Emotional Experience Scale was developed to assess the specific impacts of animal companionship on positive and negative mood states during the pandemic. Participants were asked to respond to a 5-point Likert scale for each emotion. Positive and negative mood state scales were summed separately, resulting in subscale score ranges from 4 to 20, with higher scores indicating higher levels of positive or negative mood associated with animal companionship, respectively. The overall direction of mood states (positive or negative) attributable to the presence of companion animals was determined through a total scale score, which was calculated by subtracting the negative mood state scores from the positive mood state scores; this composite score ranged from -16 to 16. Cronbach’s

alphas were good for the positive emotions subscale ( $\alpha = .85$ ), though only fair for the negative emotions subscale ( $\alpha = .78$ ).

**Open-ended questions.** To develop a deeper understanding of people’s experiences of animal companionship during the COVID-19 pandemic, participants were asked to respond to several open-ended questions. These questions were designed to be short and clearly expressed; to capture various experiences, rather than making assumptions; and to allow participants to report what they felt was most important (Braun et al., 2020). Participants were also given the option to write freely about any other information they wanted to provide about their relationships with their companion animals.

### *Procedure*

Data were collected between June 29 and August 25, 2020. These dates corresponded to the height of the “hard” lockdown in the state of Victoria and significant restrictions on movement and socializing still in place for most of the rest of the country. Interested potential participants followed a link to an anonymous online Qualtrics™ survey detailing information about the study. Following consent to participate, participants were taken to demographic and study questionnaires.

### *Data Analysis*

Quantitative data were screened for statistical outliers and tested for normality. Descriptive statistics and frequencies were conducted to provide information on demographic variables, perceived companion animal dependency (pre- and during COVID), perceived emotional support from companion animals, animal effects on mood states (positive and negative), satisfaction with life, and mental well-being. Additionally, correlations, *t*-tests, and regressions were conducted to explore the relationships among the main study measures. Following data screening to remove participants who had not completed at least 70% of the survey, the final dataset (on which the

following analyses were conducted) included 236 individuals (199 women, 33 men, 4 nonbinary). Multiple imputation was used to address missing values due to nonresponse, and analyses on each imputation were pooled together.

Qualitative data were analyzed using inductive thematic analysis from a realist epistemology (Braun & Clarke, 2013). Data were read and reread to gain familiarity. Initial coding of data was then undertaken, with similar codes grouped together. Data were coded across the dataset, rather than grouping answers to individual questions, to ensure that the themes identified reflected patterns across the entirety of the data rather than summarizing answers to individual questions, as is recommended for qualitative online survey research (Braun et al., 2020). All relevant extracts for each code were collated. Recurring patterns in the data were identified and grouped together into themes and subthemes. Themes and subthemes were reviewed by multiple authors to ensure the validity, coherence, and consistency of the analysis undertaken, with themes refined to ensure that they provided a comprehensive representation of the data.

## Results

### *Animal Companionship During the COVID-19 Pandemic*

Respondents reported owning a range of companion animals, with dogs ( $n = 168$ ) and cats ( $n = 109$ ) the majority, followed by those with horses ( $n = 18$ ), chickens ( $n = 17$ ), fish ( $n = 12$ ), and birds ( $n = 11$ ). Fewer respondents reported having guinea pigs, lizards, rabbits, and cows ( $n = 3$  each), goats and mice ( $n = 2$  each), and quail, ferrets, guinea fowl, and alpacas ( $n = 1$  each). During the COVID-19 pandemic, 21 participants (9%) reported having purchased a new animal, 20 (9%) reported having adopted a new animal, and 9 (4%) reported having fostered one or more animals. Borrowing and lending companion animals was rare ( $n = 3$ , 1%). Most participants reported that costs associated with companion-animal care did not undergo any significant changes

during the pandemic, as compared with prepandemic conditions.

### *Animal Companionship and Well-Being During the COVID-19 Pandemic*

**Perceived dependency on companion animals.** To compare participants' attitudes toward their companion animals before and during the COVID-19 pandemic, dependent samples  $t$ -tests were conducted on the five items of the Pet Dependence Scale. Statistically significant differences were found between these two time periods, with all items showing an increase in perceived dependency during the pandemic when compared with prepandemic conditions. Specifically, participants reported increased perceptions that their companion animals (1) gave them routine ( $p < .001$ ); (2) helped them manage their well-being and emotions ( $p < .001$ ); (3) gave purpose and meaning to their life ( $p < .001$ ); (4) helped them to feel loved ( $p < .001$ ); and (5) helped them connect with other people ( $p < .001$ ).

**Emotional support received from companion animals.** Participants tended to receive positive emotional support from their companion animals during COVID-19 overall ( $M = 5.22$ ,  $SD = 1.17$ ). A one-way analysis of variance showed gender differences in perceived emotional support from companion animals,  $F(2,235) = 6.29$ ,  $p = .002$ ,  $\eta_p^2 = .05$ . Games-Howell post-hoc comparisons revealed that men utilized companion animals for emotional support significantly less than did women,  $M_{\text{Diff}} = .75$ ,  $p = .003$ , 95% CI [-1.27, -.23].

**Effects of companion animals on mood states.** More than 86% of the sample reported experiencing positive mood states driven by companion animals, including feeling happy (76%), loved (77%), and connected (67%). Most participants reported never having felt alone (91%), sad (80%), overwhelmed (74%), or angry (74%) because of their companion animals. The composite score mean ( $M = 6.37$ ,  $SD = 4.29$ ) indicated that participants tended to experience more positive than negative

**Table 2.** Descriptive and Correlation Coefficients of Study Variables

Study Variable	1	2	3	4	5	6	7
Pet dependency (pre-COVID)	–						
Pet dependency (during COVID)	.84***	–					
Emotional support	.64***	.70***	–				
Pet positive mood	.41**	.44***	.62***	–			
Pet negative mood	.02	.02	.09	.16*	–		
Life satisfaction	-.01	.01	-.09	-.03	-.14*	–	
Mental well-being	-.07	-.04	-.23***	-.06	-.11	.47***	–
Mean	27.25	28.57	5.22	14.06	7.68	24.37	21.26
(SD)	(6.54)	(5.86)	(1.17)	(3.94)	(2.87)	(6.59)	(3.77)

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

emotions because of their companion animals during the COVID-19 pandemic. Descriptive and correlational data on the study's main variables of interest can be found in Table 2.

### *Predictors of Well-Being Related to Animal Companionship During the COVID-19 Pandemic*

Multiple regression analyses were conducted to determine the predictive effect on satisfaction with life, as well as mental well-being, of the following variables: current employment (*employed* included—essential worker out of home, essential worker at home, always worked from home, nonessential worker; *unemployed* included—student, unemployed, and unemployed due to COVID); current living arrangements (i.e., living alone or living with others); perceived companion-animal dependency (pre-COVID and during COVID); perceived emotional support from companion animals; and companion animals' effect on emotional experience (both positive and negative). Table 3 displays the results of the multiple regression analyses.

Analyses indicated that the model was statistically significant in predicting satisfaction with life,  $F(7, 228) = 3.62, p < .001$ . Being employed ( $p = .002$ )

and living with others ( $p = .006$ ) predicted increased levels of satisfaction with life, whereas higher emotional support from companion animals ( $p = .042$ ) and companion animals' negative effect on emotional experience ( $p = .021$ ) significantly predicted poorer life satisfaction. Additionally, the multiple regression model significantly predicted mental well-being,  $F(7, 228) = 5.98, p < .001$ . Being employed ( $p = .050$ ), living with others ( $p = .003$ ), companion-animal dependency during COVID ( $p = .024$ ), and companion animals' positive effects on emotional experience ( $p = .032$ ) significantly predicted improved mental well-being, whereas emotional support received from companion animals ( $p < .001$ ) predicted poorer well-being.

### *Qualitative Results*

The aim of the qualitative analysis was to further understand and examine experiences of animal companionship amid COVID lockdowns and social distancing requirements. Companion animals were predominantly reported as having a beneficial impact, particularly on well-being and mental health. However, they were also simultaneously reported by a subset of participants to be an increased source of stress. Furthermore, the impact of the lockdowns



**Table 3.** Multiple Regression Predicting Life Satisfaction and Mental Well-Being

	Satisfaction with Life		Mental Well-Being	
	B	SE B	B	SE B
Employment status <sup>a</sup>	-2.97**	.96	-1.05*	.54
Living arrangement <sup>b</sup>	3.22**	1.18	1.97**	.66
Pet dependency (pre-COVID)	.01	.14	-.03	.08
Pet dependency (during COVID)	.14	.15	.19*	.08
Emotional support	-1.18*	.58	-1.57***	.32
Positive mood	.16	.15	.18*	.08
Negative mood	-.35*	.15	-.15	.08

Note. <sup>a</sup>Employment status was dummy-coded as 0 = employed, 1 = unemployed. <sup>b</sup>Living arrangement was dummy-coded as 0 = living alone, 1 = living with others. B = unstandardized coefficient; SE B = standard error; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

on companion animals themselves was often discussed as a source of additional stress and concern for caregivers.

### *Companion Animals as Beneficial for Well-Being*

Most participants reported that having a pet had enhanced their well-being and ability to cope with the impacts of the pandemic. Companion animals were described as helpful in promoting well-being through providing comfort and emotional support: “*I feel like having unconditional love during a time like this is so important. My dog is always so present and joyful, and it brings me back to the present and away from my worries*”; “*They always know how to lift you up when you’re feeling a bit low. Even just during the day, they’ll come and check on you.*” Companion animals also improved emotional well-being through providing distraction and joy during what were described as challenging and difficult circumstances. As one participant wrote, “*Playing with her [companion animal] gives us a joyous break from the dumpster fire that is 2020*,” while another remarked that “*the gentle, loving disposition of beautiful horses that have been cared for and given love is a wonderful thing to experience, daily, when the world seems to be going to hell in a handbasket.*” Across the data, companion animals were reported to be beneficial for well-being and

emotional support in four key ways: companionship; stability; routine and purpose; and entertainment.

**Companionship.** The most often reported benefit was companionship. Participants frequently described feelings of isolation during lockdowns, with companion animals providing relief from their sense of loneliness. For example, one participant reported,

*Throughout COVID, I have been working alone at home, and my pets have been there for me whenever I’ve felt down or alone. They’ve been my best friends and have provided me with company that I otherwise wouldn’t of [sic] had.*

Several participants described their companion animals as fostering connection and interaction with others. For example, dog-walking allowed individuals to meet and talk with other companion-animal caregivers: “*Walking our dog on the beach daily kept . . . us connected with other people.*” Companion animals facilitated interactions through providing topics of conversation to share with others in person and on social media when everyday life had become dominated by COVID-19–related issues: “*It gave me something new to talk about when literally nothing else was happening in life*”; “*Sharing cat pictures on Facebook of what my crazy cat has been doing has helped me to communicate with others.*”

**Stability.** Companion animals were described as providing stability in unpredictable and frequently changing circumstances. That is, participants described their companion animals' needs as unchanged, thereby providing a source of stability in a world where daily life was changing rapidly. Respondents expressed gratitude that their companion animals were *"the one constant in a changing world"* and that there was *"a part of life that isn't much affected by something like the pandemic—when other duties, distractions, and opportunities are in flux, the cat is still the same as ever."*

**Routine and purpose.** Companion animals also enhanced well-being through providing a stable and ongoing routine for their caregivers, especially where personal circumstances had changed. This routine helped caregivers to maintain a regular schedule amid unpredictable and chaotic circumstances, providing *"a structure to lockdown"* and a comforting routine, which, as one respondent wrote, *"helps anchor me during stress and chaos."* The care of companion animals gave people a sense of purpose. For one participant, the obligation of care *"encouraged me to get out of bed to feed them [companion animal], when I could have stayed in bed."* Others also reported that feeling needed by companion animals was a valuable buffer to the lockdown experience:

*At first when the pandemic hit, my work closed. I was depressed and stressed as work gives me a reason to get out of bed and I have structure. Without that, I felt like I was falling apart and went into a dark hole of depression but caring for my piggies and my other two animals really helped.*

**Entertainment.** Companion animals were reported to be a distraction from the boredom of lockdowns and a valuable source of entertainment. Caregivers described how the humorous or entertaining behaviors of companion animals had a positive influence on their well-being. As one commented, *"Provides entertaining antics and company, keeps you occupied at times."* Companion animals were also reported as providing entertainment and something to do through play. One participant regarded their companion as *"entertainment for my children and . . .*

*[adding] fun all day, every day,"* while another wrote that their cat *"keeps me fairly busy. I lose track of time when we are playing."* Exercising companion animals also provided an opportunity for people to leave the house and engage in recreation: *"It was good to have the excuse of walking my dog in order to get out briefly."*

### *Companion Animals as a Source of Stress*

While almost all respondents reported that companion animals had been beneficial for their well-being, a small proportion of participants reported companion animals to have been a source of stress during COVID-19 lockdowns. There were four main concerns expressed by caregivers about their companion animals.

**Catching COVID-19.** A small proportion of participants reported anxiety around either themselves or their companion animals catching COVID-19: *"As cats are known to be able to catch COVID I have worried they would get sick."* Additionally, some participants also reported concerns in relation to animal care if they themselves caught COVID-19. That is, participants were worried about who would care for their companion animal, especially if they required hospitalization: *"I worry if I get the virus who will care for my four cats."*

**Access to care needs.** Most commonly, participants reported stress and concerns around access to supplies and veterinary care for their companion animals during COVID-19 lockdowns. During the earlier stages of the pandemic, when many people hoarded resources, participants reported being worried about having sufficient access to resources for their companion animals. For example, *"making sure there was sufficient food and litter during the period everyone kept over-buying."* This concern was especially compounded where companion animals had medical conditions or specific needs, such as requiring a particular diet for their health.

Additionally, lockdown rules restricted access to animal health services, with caregivers being unable to talk face-to-face with a vet or enter the clinic with

their companion animal. These restrictions were reported as a stressful component of companion-animal caregiving during the pandemic: *“Having to take her to the vet has been stressful with social distancing”; “The restrictions at the vet [were difficult]—meeting veterinarian workers in the carpark for cat exchange.”* Veterinary access concerns were reportedly additionally stressful where companion animals were older or already unwell. In these cases, the restricted access to veterinary care was an additional challenge to animal care. For example, one participant reported that their companion animal had *“kidney failure and we had to learn to administer fluids, but the vet couldn’t really show us—we learned via YouTube.”*

**Companion animals wanting attention.** Despite the positive benefits of companion animals, many respondents also said that their companion animals were now demanding additional attention. Where companion animals would usually be home alone—such as while caregivers were at work—they were now seeking attention and play from their caregivers, who were spending more time at home due to lockdowns. This was reportedly challenging and stressful for respondents who had shifted to working from home, with many describing challenges in completing work due to distractions caused by their companion animals. As one participant wrote:

*When working from home it can be difficult as he expects lots of attention and barks/growls when he doesn’t get it. It was . . . hard work to keep him entertained or worn out so I can get work done undisturbed. I think overall having a pet during COVID has been quite stressful.*

**Financial stress.** Less common, but still reported, were concerns around finances with the changes to labor and employment security that accompanied restrictions. While only a proportion of participants had been directly financially impacted by COVID-19 due to job loss, many were concerned about their capacity to afford their companion animals if they lost their employment, or their finances were stretched. Participants reported *“worrying about the cost of food and pet bills when having no income”* and

about how *“we would look after her if we both had lost our jobs.”* Such concerns were amplified when respondents considered how a loss of income would affect their companion animals if they became unwell: *“I would not earn enough money to pay for food and vet bills if something went wrong.”*

### *Impact on Companion Animals*

The lockdowns were also reported to have impacted companion animals themselves in numerous ways, which further created sources of stress for their caregivers. The onset of COVID-19 was described as disruptive by many participants, who felt that their companion animals had detected and were emotionally affected by the stress in their caregivers:

*The COVID-19 situation stressed all of us . . . so it was inevitable that our pets would also feel the stress of things and know something wasn’t right . . . and we tried to make it less stressful and try different things to help them settle down, but even now they are still out of whack.*

Caregivers reported changes to their own daily routines, such as working from home, had impacted their companion animals: *“I feel both dogs got less sleep because we [were] home all the time”; “He has been a bit stressed with all the change going on, especially with my ex working from home. He doesn’t like that she is home all the time. I think it messes with his nap time!”*

**Change in routine.** Participants also described changes in their companion animals’ behavior, which they attributed to the disruptions in their daily lives: *“Much more behavior issues because everyone is home a lot more, so they are overstimulated and weren’t getting their usual down time during the day.”* These changes in behavior included destructive behaviors, and toileting and spraying indoors (in previously trained companion animals): *“They became a bit stressed and sometimes toileted in the house and I felt I was always cleaning up and this made me a little frustrated and annoyed . . . sometimes angry”; “If we are inside during the evening, she will try to break the doors to continue getting attention, she has found ways to escape from the yard if we all leave home.”* These pet

behaviors reportedly led to tensions in households, more work, and increased stress for caregivers. As one respondent stated,

*The stress they cause my husband when he sees the amount of mess they make each day digging up the garden and destroying things around the house . . . also the barking annoys my husband and he is then irritable towards the family.*

**End of lockdowns.** While being home with their pet had been positive for many, such positives became challenging as restrictions eased. Participants who had started returning to work reported that the transition was difficult for both themselves and their animals: *“The transition back to us going out more has been much harder for them, and us, and they’re now keeping us awake all night and going crazy because they don’t have us around as much during the day”*; *“She is sad—I have a camera and she sits on the couch looking at the door for a lot of her day.”* In general, participants discussed anxiety and feelings of guilt around leaving animals on their own again. Many participants also reported their companion animals had become very attached during the COVID-19 pandemic, to the extent that they were developing separation anxiety; this left participants feeling anxious and stressed about how their companion animal was going to respond to being left at home again. As one respondent explained, *“They have become more clingy as used to me being home and now feel guilty leaving them on their own again while I am back at work.”*

## Discussion

The present study found that companion animals generally had a positive impact on mood during the COVID-19 pandemic, with qualitative responses further elucidating the specific ways in which pets improved well-being. Companion animals were reported to provide solace, alleviate loneliness, and reduce stress levels. Caregivers were grateful to companion animals for being emotionally responsive, a source of entertainment and joy, and a vehicle of interaction with other humans. Importantly, companion animals acted as a normalizing influence by

providing caregivers with routine (including physical exercise), stability, and a focus of care in ways that distracted from the anxiety of the fluctuating incidence and severity of virus transmission and lockdown measures. Respondents felt that they were more dependent on their companion animals during the pandemic than before for emotional support and well-being. The positive effect of companion animals on mood suggests companion animals may be of benefit to people who are struggling with their mental well-being during the pandemic. This perhaps also partly explains the 22% of participants who purchased, adopted, or fostered one or more animals during the pandemic, when the need for a companion animal may have felt especially acute. This cohort may reflect the reported higher demand for animals from animal shelters during and after lockdown (ABC News, 2021).

Current employment and living with other people—as distinct from animal companionship—had the greatest influence on overall human well-being and life satisfaction. This finding suggests that while companion animals do alleviate loneliness, it may not be enough to substitute for the emotional fulfillment derived from human networks, particularly for people who are living alone.

Despite an overall finding that pets were beneficial for mood, qualitative data also indicated that companion animals were described as more “needy,” anxious about being left alone, and demanding of time, affection, and energy. Other companion animals developed behavioral issues (such as toileting in inappropriate places) that presented difficulties for caregivers. Participants identified that their companion animal’s level of dependency, and increased behavioral issues, increased feelings of annoyance. Behaviors that seemed to cause the most annoyance were naughtiness and the need for exercise and attention, which might help to explain mixed findings in the literature to date regarding the impact of animals on well-being. These findings on the disruptive effects of the pandemic on companion animals and caregivers also appear in other recent studies.

The present study has shown that women turn to companion animals for emotional support more than

men, which tallies with other research findings that women report greater attachment to their companion animal(s) than men (e.g., Smolkovic et al., 2012; Winefield et al., 2008). This finding may point to avenues for further research on the specific ways that companion animals have supported women during the pandemic.

The equivocal finding in the present study that companion animals may simultaneously buffer against *and* amplify negative mood states is consistent with the conflicting evidence in the existing literature. The present study enlarges the picture of animal companionship in times of significant environmental stress by showing how negative mood might be reinforced by distressing companion animal behaviors and anxieties about their welfare, which may mitigate against the protective effects of animal companionship. These results may partly explain the recent media reports of cats and dogs that were adopted out returning to shelters as surrenders. Animal behavioral problems were among the most common reasons for surrendering an animal over the past year, along with restrictions on animals in rental properties and domestic violence (Dexter, 2021).

### *Implications for Practice*

Though the focus of this study was on indicators of human well-being related to companion animal presence during the COVID-19 pandemic, the results point to several potential concerns for animal welfare. As previously mentioned, reduced access to veterinary care associated with the lockdowns posed problems for numerous respondents, particularly those who were caring for companion animals with specific medical needs—possibly placing animals at higher risk for poorer health outcomes. Postponed regular checkups may have contributed to missed early intervention opportunities for as-yet unidentified health problems in otherwise healthy animals, also potentially contributing to poorer physical health outcomes.

Further risks to animal welfare include the impact of lost income, as well as the impact of living under stressful circumstances for weeks or months.

Lost or reduced income may have reduced access to resources in general, as well as for companion animals, which may have had an overall negative effect on animal welfare. Financial problems, as well as increased stress and emotional regulation deficits, also put companion animals at risk of abuse. Van Wijk et al. (2017) reviewed files of animal abuse cases, noting 40% of offenders were unemployed and/or had serious debts, with 34% receiving welfare assistance. Higher levels of stress and distress have been noted as environmental predictors of animal abuse (Parfitt & Alleyne, 2018a, 2018b), which, given the social circumstances of the pandemic and associated lockdowns, likely put companion animals at higher risk of abuse than during more “normal” times. Individual correlates increasing the propensity for animal abuse—including anger, frustration (in general and toward the companion animal specifically), and need for power and control (Alleyne & Parfitt, 2019; Hensley & Tallichet, 2005; Parfitt & Alleyne, 2018a; van Wijk et al., 2017)—may all have increased because of the pandemic (e.g., Serafini et al., 2020; Smith et al., 2021), likely placing animals at higher risk of abuse. A great deal of research has linked domestic violence with animal abuse (see Alleyne & Parfitt, 2019, for review); with anecdotal evidence that domestic violence significantly increased during the 2020 lockdowns (Usher et al., 2020), it stands to reason that animal abuse may have also increased, something that future research should examine. Frustration and annoyance with companion animals was reported in our study and may also be contributing to the many reports of “pandemic pets” being surrendered, with clear potential negative effects on welfare.

### *Limitations and Future Directions*

Women were overrepresented in the self-selected study sample. Examining these experiences among a more diverse sample with respect to gender would be worthwhile. The study sample was also composed solely of people who had companion animals. Without a comparison group of those who did not have companion animals, it is difficult to ascertain the

extent to which well-being and life satisfaction can be attributable to the company of nonhuman animals. Further studies allowing comparison of groups with and without companion animals are therefore recommended. In the current study sample, most participants were still employed and lived with others, with both variables indicating a strong relationship to well-being and life satisfaction. A more diverse sample would be needed for future investigation of the relationship between animal companionship and job stability/job loss and living with others/living alone. The study also developed new scales to measure pet dependency, perceived emotional support from pets, and pets' effect on emotional experience during COVID-19. As these were newly developed to suit the social climate of the pandemic, the scales' psychometric reliability and validity need to be further tested. Future validation of these scales would be beneficial. The scales also relied on retrospective reports about previous experiences compared to pandemic experiences, which carries the risk of recall bias. There is thus scope for longitudinal studies to assess comparisons over time. As the sample was dominated by cat and dog companions, it was not able to examine the potential differences between a broader variety of companion-animal species in relation to human mood, well-being, and life satisfaction.

### Conclusion

The present mixed-methods study explored trends in companion animal–human relations during the COVID-19 pandemic, including whether caring for a pet was associated with quality of life, as well as factors influencing positive or negative outcomes. The findings indicated increased pet dependency during COVID-19 as compared with pre-COVID times. Given the added stress the global pandemic has inflicted (e.g., isolation, job loss, health concerns, increased exposure to domestic violence), it is unsurprising that participants in the study indicated an increase in pet dependency. Animal companionship was found to be an important driver of better mental health during the pandemic in improving mood.

However, it was not able to overcome loneliness in pandemic conditions where worries about the capacity to care for companion animals, as well as the behaviors of animals themselves, were high. Given the unprecedented nature of the global pandemic that began in 2020, the findings of this study may be useful in supporting future research on animal companionship in contexts of extended environmental crisis, enhanced stress, and restricted social contact.

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