Perceived Attitudes of Pet Owners About Their Pets During the COVID-19 Pandemic

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Abstract: The global COVID-19 pandemic has impacted the lives of both people and animals worldwide. The early lockdown phases of the pandemic caused people and their pets to spend increased time in close proximity, which intensified both positive and negative aspects of the relationships between people and their pets. This longitudinal study of U.S. residents (63 initial survey respondents; 23 follow-up survey respondents) sought to collect novel data related to the perceived attitudes toward, attachment to, and relationship with pets at two points during the COVID-19 pandemic. Many participants reported a positive relationship with their pets and appreciated the increased amount of time they could spend with them during the pandemic. Some participants noted an increase in negative behaviors, such as separation anxiety, in their pets. This study contributes to a body of research collected within the context of the COVID-19 pandemic in the U.S.

Keywords: Attachment; Attitudes; COVID-19; Human-Animal Interaction; Pets

The global COVID-19 pandemic has impacted the lives of both people and animals worldwide. While many around the world struggled as a result of social isolation during the initial months of the pandemic, a number of people reported a strong appreciation for their dog and that their dog ameliorated their sense of isolation and loneliness (Bussolari et al., 2021). A number of studies have been conducted investigating the mental health benefits of pet ownership in a non-pandemic setting (Beetz et al., 2012; Powell et al., 2019). However, these findings have been mixed, and especially as people spend more time with their pets than before COVID-19, further research is needed into the complex relationship between people and their pets to ascertain for whom and under which conditions pets are beneficial (Gee & Mueller, 2019; Wells, 2019). Due to the uncertainty and stress caused by the pandemic and a reduced ability to interact with others they might usually rely on for support, people may look toward pets as a form of adaptive coping.

One indicator that people might look toward pets as a form of adaptive coping can potentially be seen in the form of investigations into purported ballooning rates of dog adoptions during the pandemic. For example, one study in Israel during the onset of the pandemic reported increased rates of adoption with no significant change in relinquishments (Morgan et al., 2020). Researchers in the UK conducted a study which found that in some cases, participants had taken in a dog when a relative or friend became unable to care for the dog, while others simply encountered a dog in need (Holland et al., 2021).

Pet owners could be impacted differently based on their attitudes toward and attachment to their pets, especially given the increased amount of time spent in close proximity to their pets during the pandemic. Attitudes toward pets can be broadly defined as how people feel or think about either their pets specifically or pets generally. Attitudes toward animals have been studied in the context of employee attitudes (Foreman et al., 2019), styles of love (Guthrie et al., 2018), and different between rural and urban students' attitudes (Morrison et al., 2021). Attitudes toward animals also vary based on the species and role of the animal within the context of the participants' lives (Mueller, 2014; Taylor & Signal, 2015). Although the concepts of attitudes and attachment are similar, they can be differentiated by both specificity and conceptualization. As opposed to attitudes, attachment to pets can be broadly defined as the emotional bond between a person and their specific pet(s). Despite the general conception that pets are universally good for people – dubbed the "pet effect" (Allen, 2003) – pets can contribute both positively and negatively to a person's mental health outcomes (Beetz et al., 2012; Hawkins et al., 2021; Herzog, 2011).

There have been several studies conducted looking at pets and COVID-19 (e.g., Oliva & Johnston, 2020; Ratschen et al., 2020). However, there has not been a study that has examined if and how the COVID-19 pandemic has changed perceived attitudes of pet owners about their pets within the context of the US – which has a high proportion of dog-owning households compared to other types of pets (American Veterinary Medical Association, 2018). Households could be affected differently by social distancing

measures depending on which type of pets they own (e.g., dog vs. guinea pig). This longitudinal study aims to investigate perceived attitudes of pet owners about their pets during the COVID-19 pandemic in the US. Furthermore, this study seeks to examine how these attitudes change as COVID-19 vaccination rates increase and social distancing restrictions are eased, allowing people to spend more time away from home.

This study intends to build upon the previous literature related to attitudes toward pets, attachment to pets, and relationships with pets during the COVID-19 pandemic. Specifically, this study attempts to fill in gaps in the literature regarding the relationship between attitudes toward pets and attachment to pets, particularly within the context of COVID-19 in the US. To investigate potential changes in attitudes toward and attachment to pets in the context of the COVID-19 pandemic, this study utilized a longitudinal approach, collecting follow-up data six months after study initiation. Based upon the prior literature, I hypothesized that attitudes toward pets would significantly change as a result of the pandemic, and additionally that the change would have a relationship with attachment to pets. Specifically, I hypothesized that attitudes toward pets would become more positive in people with higher attachment to their pets, and more negative in people with lower attachment to their pets. This study also sought to gather information specific to the interaction between people and their pets during the COVID-19 pandemic, including adoptions and relinquishments.

METHODS

Participants

This study was distributed via IAH-related email lists and social media platforms (i.e., Facebook, LinkedIn, Twitter). The eligibility criteria included pet owners currently in the US who were 18 years and older. Specifically, the study was distributed to HAI-related Facebook pages, other public Facebook pages (e.g., related to psychology or local issues), Tufts University class Facebook pages (e.g., Class of 2022), as well as on the author's professional Twitter and LinkedIn pages. Recruitment materials included a brief description of the study aims, structure, inclusion criteria, estimated time of survey completion, and an anonymous link to the survey itself (hosted on Qualtrics).

Initial Survey Participants

Initial survey (IS) distribution began during the COVID-19 pandemic on March 2, 2021. 82 participants responded to the survey, but 19 either did not complete the survey or were otherwise ineligible, resulting in an IS sample size of 63 (n = 63).

Follow-Up Survey Participants

IS participants who agreed to participate in the follow-up survey (FS) were contacted by email on September 2, 2021 – six months after IS distribution began. Of the 48 who agreed to follow up, a total of 23 completed the FS (five participants were excluded due to incomplete responses). FS distribution began during a time in which well over half of the 18-years-or-older US population were fully vaccinated against COVID-19 (NCIRD, 2021; Ogunwole et al., 2021).

Participant Demographics

Demographics information is displayed in Table A1. Racial/ethnic identity and gender identity language were adapted from Matijczak and colleagues (2020). Participants were additionally asked to report their household size and the number of adults in their household.

Materials

Measures

Pet Attitudes. Pet attitudes were measured using the Modified Pet Attitudes Scale (PAS-M) developed by Munsell et al. (2004). The PAS-M has shown consistently high internal validity (Coleman et al., 2016; Crossman & Kazdin, 2018; Munsell et al., 2004; Templer & Arikawa, 2011; Templer et al., 1981; Wilson & Netting, 2015). Three questions (specifically, 2, 8, and 16) were later revised by Munsell et al. (2004). Items were rated on a 7-point Likert scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The scale is scored by taking the sum of each participant's responses to the 18 items, with the range of possible scores being 18-126. The scale was slightly modified for clarity, and some phrasing was modified to bring the language in line with this study. The PAS-M demonstrated good reliability; IS α = .82, FS α = .71.

Participants were also asked if they "feel that [their] attitudes toward pets have changed since the onset of the COVID-19 pandemic (~March 2020)" and were instructed to respond referencing the same pet they had previously identified. Responses to this question were in the form of a text box.

Pet Attachment and Life Impact. Pet attachment and life impact were measured using the Pet Attachment and Life Impact Scale (PALS; Cromer & Barlow, 2013). Items were rated on a 5-point Likert scale ranging from 1 = *not at all* to 5 = *very much*. This scale is scored by averaging the means of each participant's responses. The PALS demonstrated excellent reliability; IS α = .95, FS α = .94.

Participants were also asked if they "feel that [their] relationship with [their] pet has changed – either positively or negatively – since the onset of the COVID-19 pandemic (~March 2020)" and were again instructed to respond referencing the same pet they had previously identified. Responses to this question were collected using an open-ended text box.

Pets and COVID-19. The relationships between pets and their owners in the context of the COVID-19 pandemic were measured

using a new scale developed for this study, called the Pets and COVID-19 (PAC-19) scale. The language was partially adapted from commentaries by Kelemen et al. (2020) and Nieforth and O'Haire (2020). Items were rated on a 7-point Likert scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The full text of the questions can be found in Appendix C. The PAC-19 scale demonstrated good reliability, IS α = .80, FS α = .66.

Pet Ownership. Participants were asked to specify the names and species of any animals that live with them and for whom they or anyone in their household functioned as the main caretaker. Participants were instructed not to include animals kept as livestock. This language was adapted from Matijczak et al. (2020) and Ratschen et al. (2020). IS participants were asked if they had acquired any of their pets within the last year (i.e., since February 1, 2020), and FS were asked if they had acquired any within the last six months (i.e., since March 1, 2021). They were additionally asked if they had to relinquish a pet within the last year (IS participants) or within the last six months (FS participants). The timeline of this question was intended to correlate with adoption and relinquishment patterns during the COVID-19 pandemic. Finally, participants were asked if any of the animals they listed held the role of service animal, therapy animal, emotional support animal, other form of working animal, or none of the above. This language was adapted from Ratschen et al. (2020).

Procedure

The Tufts Institutional Review Board (IRB) determined that the study was exempt from review. The Tufts Integrative Safety Committee (ISC), from which approval was needed for any research involving COVID-19, approved the study. The IS was first distributed on March 2, 2021, during the COVID-19 pandemic and prior to distribution of vaccines to the general US population. After IS completion, participants were asked if they would like to take part in the FS. Those who agreed to partake in the FS provided their email address, which was used to send the second survey on September 2, 2021. The median completion times for IS and FS were approximately 14 and 13 minutes, respectively. To increase FS engagement, the email to FS participants noted that upon completion they would be entered into a raffle to win one of 10 gift cards valued at $50; winners were chosen using a random number generator.

Data Analysis

For cross-sectional analyses assessing IS and FS data separately, the full cross-sectional data were used. For analyses involving change, a matched sample of participants from IS and FS were used. Paired-samples Wilcoxon signed rank tests were used to assess participant change from IS to FS (n = 23). Wilcoxon rank sum tests were used to assess differences in results between IS participants who completed the FS (n = 23) and IS participants who did not (n = 40). Spearman's rank correlation was used to measure correlations between paired participants at IS and FS (n = 23). An alpha level of .05 was used for all inferential analyses. For all box plots, lower and upper hinges corresponded to the 25th and 75th percentiles, respectively. Lower and upper whiskers extended from the hinges to the smallest and largest values no further than 1.5 * interquartile range. Outliers beyond the ends of the whiskers were plotted individually. Responses to open-ended questions were manually grouped into categories by content type and were coded. All statistical analyses were conducted using R (R Core Team, 2019), and figures were produced using the package, ggplot2 (Wickham, 2016).

RESULTS

Pet Ownership

IS participants reported acquiring a combined 25 pets, and 6 IS participants reported giving up a pet within the last year. FS participants reported acquiring a total of four pets, and no FS participants reported giving up a pet within the last year. Demographics of participants' pet ownership are laid out in Table A2.

Pet Attitudes

The difference between IS participants and FS participants on the PAS-M was not significant, M = 109.3 (SD = 9.75) and M = 111.78 (SD = 7.24), respectively, v = 59.5, p = .16. The difference between IS participants who completed the FS and those who did not was also not significant, M = 109.3 (SD = 9.75) and M = 109 (SD = 12.38), respectively, w = 438.5, p = .76.

In response to the open-ended prompt asking if they felt their attitudes toward pets had changed since the onset of the COVID-19 pandemic, the majority of IS participants (38; 60%) and FS participants (16; 70%) subjectively reported that their attitudes had not changed. Three (5%) IS participants reported becoming more cognizant of their pets' needs and daily routines during the pandemic's course. No FS participants reported this increased cognizance. Nine (14%) IS and three (13%) FS participants noted their increased appreciation of the companionship their pets bring to their lives, especially during the period of quarantine and social isolation. Six (10%) IS and three (13%) FS participants noted an increased interdependence between them and their pets, reporting both pet-directed (e.g., increased anxiety over leaving their pets) and owner-directed (e.g., attention-seeking and neediness from pets) behaviors. One FS participant noted that their attitudes toward pets had changed but did not specify how.

Pet Attachment and Life Impact

The difference between IS participants and FS participants on the overall PALS was not significant, M = 3.91 (SD = 0.62) and M = 3.92 (SD = 0.57), respectively, v = 113, p = .67. The difference between IS participants who completed the FS and those who did not was also not significant, M = 3.91 (SD = 0.62) and M = 3.94 (SD = 0.71), respectively, w =438, p = .76. The descriptive statistics for the PALS factors have been laid out in Table A3.

When responding to the open-ended prompt asking them if they felt their relationship with their pet had changed since the onset of the COVID-19 pandemic, 24 (38%) IS and 11 (48%) FS participants subjectively reported that their relationship with their pet had not changed. Fifteen (24%) IS and three (13%) FS participants reported that they had become closer with their pets. Ten (16%) IS and three (13%) FS participants reported an unspecified positive change, and one IS participant reported an unspecified negative change. No FS participants reported an unspecified negative change. Three (5%) IS participants and one FS participant reported that their pet had become clingy or developed separation anxiety. One IS participant (and no FS participants) noted that a pet seemed to miss their time alone in the house without the owner. One FS participant noted that they and their pet had become reliant on each other. One FS participant noted that their pet brought stability to their life and one FS participant appreciated being able to practice for and compete in performance sports (i.e., obedience, rally, and nose work) with their pet. Three (5%) IS and two (9%) FS participants noted that their relationship with their pet had changed but did not specify how.

Relationships Between Attitudes and Attachment

There was a significant positive correlation between the attitudes toward and attachment to pets in paired participants at both IS (s = 790.67, p = .002, ρ = .61) and FS (s = 414
06, p = .00, ρ = .79).

Pets and COVID-19

There were no significant differences between IS and FS participants on the PAC-19. There were also no significant differences between IS participants who completed the FS and those who did not. Participant responses to the PAC-19 Scale have been provided in Table A4. A box plot visualization of the IS and FS responses to the Pets and COVID-19 questions can be found in Figure B1 and Figure B2, respectively.

DISCUSSION

This longitudinal study aimed to investigate perceived attitudes of pet owners toward their pets during the COVID-19 pandemic in the US. Additionally, this study sought to examine how these perceived attitudes changed as the pandemic eased (allowing people to safely spend more time away from home). It also was intended to gather data related to people and their pets during COVID-19, including adoptions and relinquishments.

The PAS-M, PALS, and PAC-19 scales proved to be reliable and measured attitudes toward pets, pet attachment and life impact, and aspects of the relationship with pets in the context of the pandemic, respectively, well. The PAC-19 scale could serve as a foundation for future research conducted during the COVID-19 pandemic or future pandemics that may occur. Future studies could aim to validate this measure and investigate the specific factors of the scale.

I hypothesized that attitudes toward pets would significantly change as a result of the pandemic, and additionally, that the change would have a relationship with pet attachment; specifically, that the attitudes of people with higher attachments to their pets would become more positive in relation to their pets, and more negative for people with lower attachment to their pets.

These hypotheses were not supported by the data gathered in this study. Attitudes toward pets did not significantly change between initial study contact and follow-up. Similarly, pet attachment did not significantly change. For the individual factors of the PALS, there were no significant changes. Within this study's sample, people's attitudes toward and attachment to their pets mostly did not change between these stages of the pandemic, but some reported a reduction of negative impact.

One significant finding was the strong, positive correlation between reported attitudes toward and attachment to pets, which was maintained between the IS and FS. In fact, the correlation increased in strength between the IS and FS. Although attitudes and attachment did not significantly change over the phases of the pandemic measured in this study, this finding could indicate a link between attitudes toward and attachment to pets. A relationship between these two constructs could have implications for programs or research targeting the relationship between people and their pets. Additionally, the direction of the relationship could be explored by future research; that is, if attachment improves attitudes, if attitudes strengthen attachment, or if the relationship is bidirectional.

Qualitative reports from participants were more mixed than the quantitative data show. In terms of attitudes toward pets, most participants felt that their attitudes did not change. However, some participants reported becoming more cognizant of their pets' needs and daily routines, having an increased appreciation for the companionship their pets provided, and noticing an increased interdependence between them and their pets. This bidirectional interdependence potentially points to some maladaptive outcomes

as a result of the pandemic, including increased separation anxiety in owners and an increase in attention-seeking behaviors of pets.

In contrast with reported attitudes toward pets, fewer than half of IS and FS participants reported that their relationship with their pet had not changed as a result of the pandemic. This finding could indicate that participants' preexisting conceptions of pets generally remained stable, but when considering their day-to-day relationship with their current pet, participants reported increased change. Many reported that they had become closer with their pets, mostly in a positive manner. There were some negative outcomes reported, such as pets developing separation anxiety, but these were outweighed by the benefits their pet brought to their life.

Participant reports do seem to reflect an increased amount of ownership change as a result of the pandemic's onset. As was reported, IS participants acquired a total of 25 pets from the start of the pandemic and six participants relinquished one of their pets during that same timeframe. While there were fewer FS participants, the rate of change in pet ownership had greatly decreased between initial study contact and follow-up: Only four pets were acquired between the IS and FS, and no FS participants reported relinquishing a pet. However, there may have been some bias in who chose to take both the IS and the FS; for example, a participant who was forced to relinquish a pet or otherwise experience pet-related trauma as a result of the pandemic may have been reticent to participate in a study related to pets.

There were no significant changes in participants' PAC-19 responses between the IS and FS. Participants agreed most strongly that they had been able to spend more time with their pet because of the pandemic. They also strongly agreed that playing with their pet was comforting, and that they felt less lonely because of their pet. Participants agreed that they felt their days were more structured because of their pet, that they felt more certain of the future because they had their pet with them, and that they had been turning to their pet for social support and companionship since the beginning of the pandemic. Participants were most mixed in their responses to the question asking if they had bought more toys than usual for their pet during the pandemic.

Participants did not feel that it had been difficult to provide their pet with adequate exercise during the pandemic. When asked if they worried that their pet could become infected with COVID-19, and if they worried that their pet could infect them with COVID-19, participants' responses indicated that this was not a concern. They also reported strongly disagreeing with the notion that having a pet increased their risk of being infected with COVID-19. Finally, participants did not find it difficult to afford to care for their pet as a result of the pandemic.

Although these data should not be generalized, they offer useful insights into the perceptions of some pet owners during the COVID-19 pandemic. Many of the participants reported a positive relationship with their pet despite the difficulties brought about by the pandemic. This study adds to the body of literature which shows that pets are important members of many households and provide families with comfort and companionship during times of stress. As such, pets should be considered in future planning for crisis and disaster responses.

Study Limitations

The original design intended to measure these data at two points in time: During and after the pandemic. However, COVID-19 variants (e.g., Delta) and vaccine hesitancy have prolonged the duration of the pandemic beyond initial estimations (Mlcochova et al., 2021; Wake, 2021). Instead, this study measured two distinct periods within the pandemic: Before vaccines became widely available, and after. This study also suffered from an oft-repeated flaw in HAI research – a nonrepresentative sample. Specifically, participants in this study were primarily White, cisgender women living in the US who lived with either a cat or a dog. As such, the responses provided by participants may not be representative of the general pet owner experience, especially given the impact of culture as well as the influence of species/role on attitudes toward animals. This biased sample, in conjunction with the relatively small sample size, reduces the external validity and generalizability of the reported findings. Additionally, participants seemed to conflate attitudes toward and attachment to their pets, which became apparent in some of the qualitative responses. Therefore, it is recommended that these constructs be further separated in future research to avoid confusion.

The data are also marred by the ceiling effect, as participants reported very positive opinions of their pets, so future research should consider this phenomenon and attempt to account for it in the study design. The majority of IS participants did not participant in the FS despite many noting that they would be interested in FS participation. Thus, the sample size was limited even further beyond the initial sample, reducing the statistical power of the analyses. Furthermore, FS participants agreed to participate in the FS without knowing they might be compensated, so it is possible that these participants – who were willing and able to complete two surveys without compensation – were not representative of pet owners generally. Offering an incentive to IS participants to be redeemed after FS completion could increase retention in future research and could additionally produce less biased results.

Future Directions

Increasing the validity and representativeness of HAI research is essential to the future of the field, so measures need to be taken to ensure that a representative sample is recruited. There are a number of methods that could be applied to solve this issue, including over-recruiting underrepresented participants and utilizing study recruitment channels outside of listservs and social media. Two possible avenues through which a more representative sample could be recruited include using Amazon Mechanical Turk (Bao & Schreer, 2016; Crossman & Kazdin, 2018) or a community on Reddit dedicated to research recruitment (Luong & Lomanowska, 2021).

Furthermore, future research should explore the role of culture in attitudes toward animals by conducting cross-cultural analyses, as many regions are still understudied (Gustafsson et al., 2020). Additionally, because people hold different attitudes toward animals based on the species and role of the animal within the context of their lives (Mueller, 2014; Taylor & Signal, 2015), future research should further isolate responses by species and role, and/or recruit participants with only one species of pet within the home. As the pandemic is ongoing, it is unclear how future pet acquisition and relinquishment will change as more people return to work in person, so future research should be conducted examining these trends. While COVID-19 may never fully disappear, a follow-up study should be conducted after global vaccination rates have reached sufficient saturation for social distancing measures to be completely eased.

CONCLUSION

This longitudinal study collected novel data related to the perceived attitudes toward, attachment to, and relationships with pets held by US residents at two points during the COVID-19 pandemic. Participants did not report significant changed in either their attitudes toward or attachment to their pets as a result of the pandemic. There was a significant positive correlation between attitudes toward and attachment to pets, which was maintained over time. Many participants reported a positive relationship with their pets and appreciated the increased amount of time they could spend with them during the pandemic. Some participants noted an increase in negative behaviors in their pets, such as separation anxiety. Future research should be conducted with a more representative sample to capture the full experience of US residents. Overall, this study shows that participants held generally positive attitudes toward pets, which were maintained over time; additionally, participants reported generally positive relationships with their pets during the COVID-19 pandemic.

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APPENDIX A

Table 1

Participant Demographic Information

	IS Participants	FS Participants
	n = 63	*n* = 23
	m (*SD*)	*m* (*SD*)
Age (years)	47.62 (16.83)	46.76 (16.71)
Age Range (years)	22 – 77	22 – 78
Gender Identity*	*n* (%)	*n* (%)
Agender	2 (3)	0 (0)
Cisgender Men (i.e., assigned male at birth and identify as a man)	12 (19)	5 (22)
Cisgender Women (i.e., assigned female at birth and identify as a woman)	45 (71)	17 (74)
Genderfluid	1 (2)	0 (0)
Genderqueer	0 (0)	0 (0)
Nonbinary	2 (3)	0 (0)
Transgender Men	1 (2)	1 (4)
Transgender Women	0 (0)	0 (0)
Multiple Identifications	0 (0)	1 (4)
Not Sure/Questioning/Prefer to Self-Describe	0 (0)	0 (0)
Racial/Ethnic Identity*	*n* (%)	*n* (%)
Arab/Arab American	0 (0)	0 (0)
Asian/Asian American	4 (6)	3 (13)
Black/African American	1 (2)	1 (4)
Latina/Latino/Latinx	6 (10)	1 (4)
Multiracial/Mixed Race	3 (5)	0 (0)
South Asian/Pacific Islander	0 (0)	0 (0)
White	57 (90)	21 (91)
Prefer to self-describe	1 (2)	0 (0)
Household Size	*m* (*SD*)	*m* (*SD*)
Number of People Living in Household	2.44 (1.09)	2.35 (1.03)
Number of Adults (18+) Living in Household	2.16 (0.95)	2.13 (0.87)

Note: *These groups are not mutually exclusive

Table 2

Pet Ownership Information

	IS Participants	FS Participants
	n = 63	*n* = 23
	m (*SD*)	*m* (*SD*)
Pet Type*	*n* (%)	*n* (%)
Dog	86 (58)	20 (50)
Cat	46 (31)	18 (45)
Small Mammal	4 (3)	0 (0)
Bird	0 (0)	0 (0)
Fish (Aquariums)	3 (2)	0 (0)
Reptile or Amphibian	1 (0.6)	1 (2.5)
Horse or Pony	2 (1)	1 (2.5)
Farm Animal (e.g., goat, pig, etc.)	7 (5)	0 (0)
Other	0 (0)	0 (0)
Animal Role*	*n* (%)	*n* (%)
Service Animal	1 (2)	0 (0)
Therapy Animal	6 (10)	0 (0)
Emotional Support Animal	5 (8)	4 (10)
Other Form of Working Animal	6 (10)	1 (2.5)
None of the Above	49 (78)	18 (45)

Note: *These groups are not mutually exclusive

Table 3

PALS Responses by Factor

	Unpaired IS Participants	Paired IS Participants	Paired FS Participants	Paired Wilcoxon Tests	Wilcoxon Rank Sum Tests
PALS Factors	*m* (*SD*)	*m* (*SD*)	*m* (*SD*)	*v* (*p*)	*w* (*p*)
Love	4.14 (0.7)	4.18 (0.6)	4.24 (0.54)	104.5 (.32)	480 (.78)
Regulation	3.42 (1.07)	3.27 (0.93)	3.31 (0.94)	102 (.65)	418 (.55)
Personal Growth	3.7 (0.88)	3.59 (0.75)	3.50 (0.7)	130 (.92)	403 (.42)
Negative Impact	4.61 (0.34)	4.64 (0.26)	4.55 (0.31)	46 (.05)	469.5 (.89)

Note: Paired samples Wilcoxon signed rank tests were used to assess change from IS to FS in participants who completed the FS. Wilcoxon rank sum tests were used to assess differences in results between IS participants who completed the FS and IS participants who did not complete the FS.

Table 4

PAC-19 Responses

Questions	Unpaired IS Participants *m* (*SD*)	Paired IS Participants *m* (*SD*)	Paired FS Participants *m* (*SD*)	Paired Wilcoxon Tests *v* (*p*)	Wilcoxon Rank Sum Tests *w* (*p*)
1. I have been able to spend more time with my pet because of the COVID-19 pandemic	6.43 (1.36)	6.61 (0.66)	6.61 (0.72)	18.5 (1)	443 (.76)
2. I worry that my pet could become infected with COVID-19	2 (1.4)	2.22 (1.44)	2.26 (1.51)	25 (.83)	510 (.45)
3. I worry that my pet could infect me with COVID-19	1.43 (0.75)	1.87 (1.25)	1.43 (0.51)	43 (.11)	546.5 (.15)
4. I have been turning to my pet for social support and companionship since the beginning of the COVID-19 pandemic	4.5 (2.06)	5.26 (1.6)	4.61 (1.9)	88 (.11)	551 (.19)
5. I feel more certain of the future because I have my pet with me	4.08 (1.95)	4.3 (1.33)	4.48 (1.41)	27 (.62)	469 (.90)
6. I feel that my days have more structure because of my pet	5.2 (1.84)	5 (1.6)	5.43 (1.2)	46 (.15)	403 (.41)
7. I feel less lonely because of my pet	5.55 (1.47)	5.74 (1.6)	5.65 (1.64)	39.5 (1)	516 (.41)
8. Playing with my pet is comforting	5.98 (1.14)	6.17 (0.89).	6.22 (1.67)	36 (.84)	499.5 (.55)
9. I have bought more toys than usual for my pet during the COVID-19 pandemic	3.93 (2.04)	3.26 (1.71)	3.57 (1.59)	38 (.37)	376.5 (.23)
10. I have found it difficult to afford caring for my pet as a result of the COVID-19 pandemic	1.78 (1.1)	1.52 (0.59)	1.57 (0.51)	12 (.78)	446 (.83)
11. I have found it difficult to provide my pet with an adequate amount of exercise as a result of the COVID-19 pandemic	2.25 (1.85)	1.87 (1.49)	2.26 (1.63)	24.5 (.46)	428 (.62)
12. I feel that having a pet has increased my risk of being infected with COVID-19	1.35 (1)	1.35 (0.88)	1.39 (0.5)	27.5 (.63)	458 (.98)

APPENDIX B

Figure 1

Pets and COVID-19 (IS)

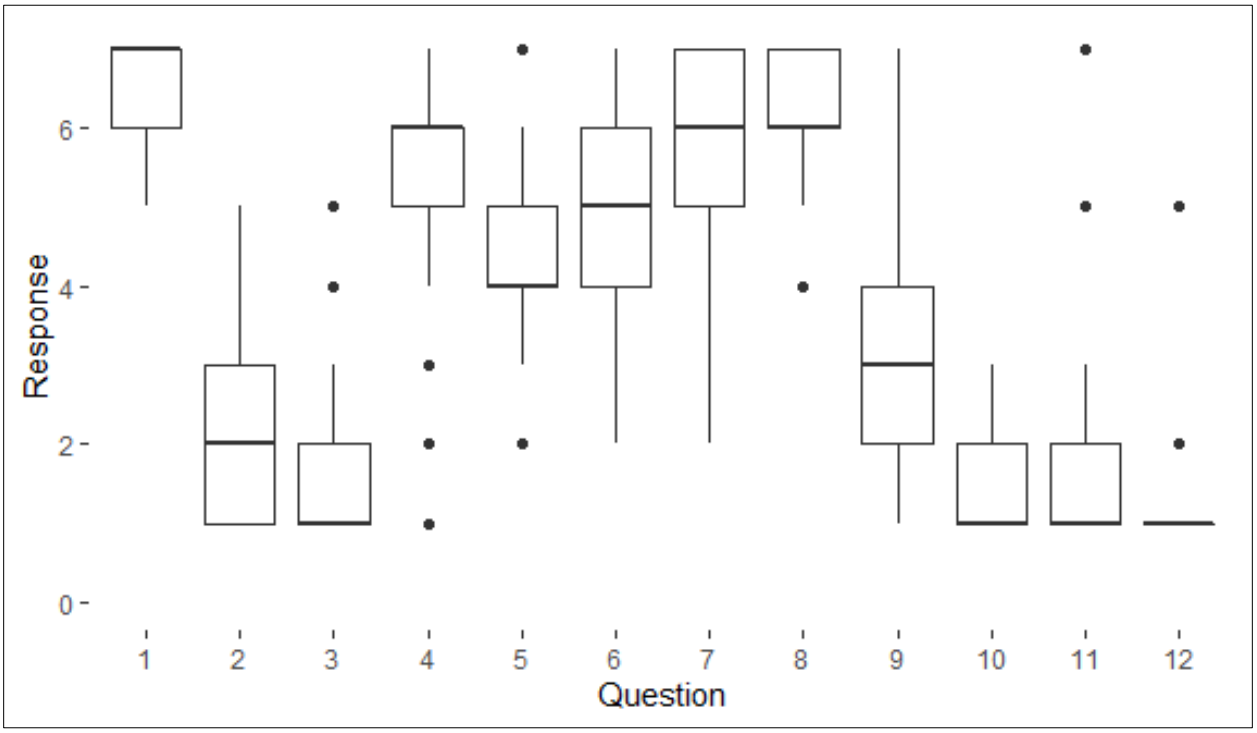
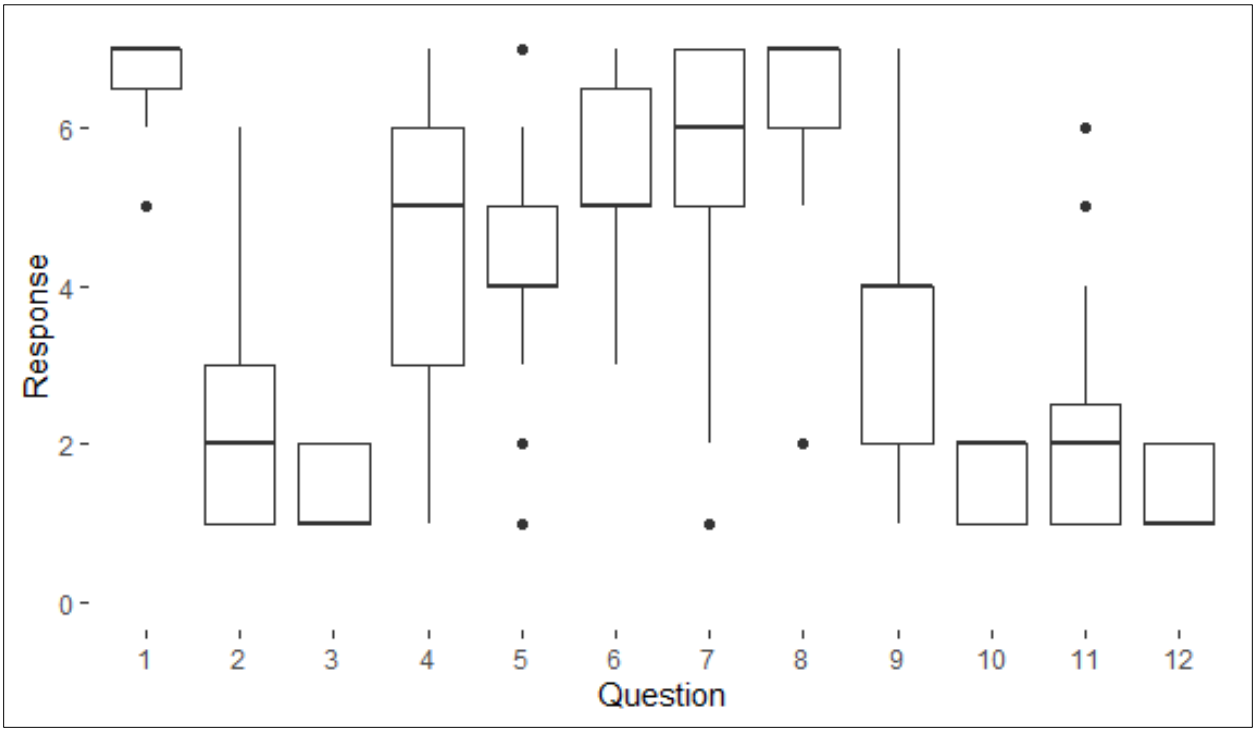


Figure 2

Pets and COVID-19 (FS)



APPENDIX C

Pets and COVID-19 Scale (PAC-19) Items

For this measure, please respond with the same pet you chose previously in mind. Please rate the extent to which you agree with the following questions.

1. I have been able to spend more time with my pet because of the COVID-19 pandemic
2. I worry that my pet could become infected with COVID-19
3. I worry that my pet could infect me with COVID-19
4. I have been turning to my pet for social support and companionship since the beginning of the COVID-19 pandemic
5. I feel more certain of the future because I have my pet with me
6. I feel that my days have more structure because of my pet
7. I feel less lonely because of my pet
8. Playing with my pet is comforting
9. I have bought more toys than usual for my pet during the COVID-19 pandemic
10. I have found it difficult to afford caring for my pet as a result of the COVID-19 pandemic
11. I have found it difficult to provide my pet with an adequate amount of exercise as a result of the COVID-19 pandemic
12. I feel that having a pet has increased my risk of being infected with COVID-19