University of Chester

The effects of resident and visiting pets on elderly peoples' mood states in residential homes

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ABSTRACT

Whether or not animal therapy provides positive therapeutic benefits to the elderly living in long-term care facilities remains inconclusive. Therefore, based on the study of Crowley-Robinson, Fenwick and Blackshaw (1996) this current study investigated whether the presence of a resident pet, visiting pet or no pet in residential homes, caused differences within elderly residents' mood states. Additionally, it considered their gender and liking of animals, to examine whether animal therapy benefited one individual more than another. The Profile of Mood States (POMS) questionnaire was employed to measure the mood states tension, depression, anger, vigour, fatigue and confusion, as well as a Total Mood Disturbance (TMD) score, which were analysed using a between-subjects Multivariate Analysis of Variance (MANOVA). The results found no significant main effect of pet presence on any of the mood states or TMD score, thus one pet presence did not cause more positive mood states than another. Gender was found to have a significant main effect on tension, with females being significantly tenser than males. No significant interaction between gender and pet presence was found, meaning pet presence did not benefit the mood states of one gender more than the other and, due to a limited, uneven sample size, the data for whether the participants liked animals or not was not analysed. Therefore, inconclusive findings continue as to whether animal therapy provides the elderly with positive therapeutic benefits. Although, this does indicate that elderly residents living in long-term care facilities with no pet are not at a disadvantage.

KEY WORDS:	ANIMAL THERAPY	MOOD STATES	ELDERLY

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Introduction

Animal therapy is becoming increasingly popular (Marino, 2012), particularly in long-term care facilities for the elderly. Nevertheless, whether or not the use of animal therapy in these facilities provides positive therapeutic benefits to the elderly residents remains inconclusive. Therefore, building on the earlier research of Crowley-Robinson, Fenwick and Blackshaw (1996), this present study investigated the mood states of elderly individuals living in residential homes, to see whether they differed depending on whether they lived in a residential home with a resident pet, visiting pet or no pet. Furthermore, the resident's gender was taken into account, to see whether pet presence was more beneficial to one gender than the other, as well as the participants liking for animals, to see whether the presence of the visiting pet or the resident pet was more beneficial to those who liked animals compared to those who did not.

Human-animal interactions have existed for years, with interactions between pets and their owners continuing to be one of the most common. While a diverse range of pets exist, dogs and cats continue to be the most popular within the UK, as approximately eight million dogs and eight million cats reside within UK homes (Pet Food Manufacturers' Association, 2012). Companionship, support and entertainment have been the primary reasons for individuals having these pets (Wells, 2009). However, the past 30 years has provided an abundance of evidence to suggest that pets play a much more important role in their owner's lives, enhancing their physical and mental health (McNicholas et al., 2005).

Wegenka (2002) implied that on the whole pet owners are healthier than non-pet owners. Reduced loneliness (Wells, 2011) has been identified as a regular mental health benefit to pet owners, while reduced heart rates and reduced cholesterol levels have been recognised as a couple of the physical health benefits (Walsh, 2009). Allen, Blascovich, Tomaka and Kelsey (1991) observed females to become significantly less stressed in the presence of their pet than in the presence of their female friends without a pet during a mental arithmetic task, suggesting pets are perceived as less judgmental than people (Allen, 2003; Parslow & Jorm, 2003). In addition, dog owners partake in more physical exercise than non-dog owners, as they walk their dog every day (Brown & Rhodes, 2006; Parslow & Jorm, 2003). Nevertheless, pets are not always so beneficial. Parslow and Jorm also identified pet owners as having higher blood pressures and an increased tendency to smoke than non-pet owners. Furthermore, Parker et al. (2010) discovered that pet owners had higher fatality rates and remissions one year after having a heart attack than non-pet owners.

This high level of controversy in the general field of pet owners is also present in the field of elderly pet owners; with the most recent literature proposing pets are detrimental to their health (Chur-Hansen, Stern & Winefield, 2010). Elderly individuals who live with pets have been identified as having no health benefits and using more pain relief medication than non-pet owners (Parslow, Jorm, Christensen, Rodgers & Jacomb, 2005). Moreover, Wells and Rodi (2000) recognised elderly individuals living with pets to have higher levels of loneliness and boredom than non-pet owners, as well as putting their pet's health ahead of their own; an action which could put elderly individuals at great risk. Still, pets are not always so harmful to their

elderly owners. They provide them with a great form of social support when their family members are unable to visit regularly (Beck & Katcher, 2003). Dogs in particular provide this support because, compared to other pets, they provide their owner with a greater feeling of companionship and attachment (Siegel, 1990).

Correlation methodology could provide one possible explanation as to why such inconclusive findings have been recognised for the effect of pets on their owners. Causal inferences cannot be made; hence it cannot be guaranteed that it is the pet influencing their owner's health (Herzog, 2011). Wells and Rodi (2000) support this, because the participants in their study could have been bored and lonely which is why they acquired their pet in the first place, thus their pet did not cause their negative feelings. Furthermore, Winefield, Black and Chur-Hansen (2008) found it was the owner's health habits and social network which influenced their health, not their pet. Thus, both studies suggest that correlation methodology is a significant limitation in this area of research, as the researchers cannot be certain that the results of their study are due to the influence of the pets. Then again, whilst this limitation is present, it must be noted that pets, in some studies, have been recognised to provide positive health benefits to their owners; providing one possible explanation as to why animals are used in therapy.

Animal therapy is the use of animals in an individual's or a group's direct environment, to provide them with positive therapeutic benefits (Brodie & Biley, 1999). Dogs, birds, cats, fish and rabbits are the top five animals employed in animal therapy to provide these therapeutic benefits, as indicated by Darrah (1996) with dogs continuing to be the leading animal, as they can prevent, facilitate and predict physical illness, as well as promote psychological well-being (Wells, 2007). Hence, most research which considers the effects of animal therapy, often look at the effects of therapy dogs.

Animal therapy was first integrated into society as early as the 19th century, when the British Charity Commissioners proposed that placing animals such as sheep and hares in the grounds of mental institutions would improve the atmosphere and make it less prison-like (Serpell, 2010). Moreover, Florence Nightingale in 1859 expressed the importance of having small animals, such as birds, in the presence of ill individuals confined within small rooms, as it could be the only pleasure they have for years (Willis, 2012). Nonetheless, it was not until the early 1960's that animal therapy was systematically studied, when Levinson (1972, cited in Crowley-Robinson et al., 1996) proposed that companion animals could be beneficial to patients during therapy sessions and Corson and Corson (1980, cited in Crowley-Robinson et al., 1996) suggested that psychiatric patients could develop their social skills with the help of a loving dog. Both studies indicated that animal therapy was possible; but there have since been more methodologically sound studies to establish the actual therapeutic benefits (Phelps, Miltenberger, Jens & Wadeson, 2008).

A variety of areas have integrated animal therapy to help improve the well-being of individuals. Barker and Dawson (1998) uncovered hospitalised individuals with psychotic and mood disorders to have reduced anxiety after dog visits. Children with persuasive developmental disorders had improvements in their social bonds during interactions with dogs (Martin & Farnum, 2002). Prison inmates who interacted with

dogs had more positive behaviour and psychological outcomes than those who did not (Fournier, Geller & Fortney, 2007) and Macauley (2006) uncovered that animal therapy was just as effective and preferred over traditional therapy, when treating men with aphasia. These are just a handful of examples where animal therapy has been employed in society and the therapeutic benefits it has conveyed. However, animal therapy with the elderly has been the main focus of investigation, particularly elderly people living in long-term care facilities (Phelps et al., 2008).

Dementia is a leading illness causing elderly people to move into long-term care facilities, as it leads to problems such as depression and irritability. Fortunately, animal therapy has been identified as one possible solution to manage such problems. Motomura, Yagi and Ohyama (2004) carried out a study in which eight females with dementia interacted with two dogs for one hour over four consecutive days. Before and after these interactions they also carried out mental tests, to identify any improvements in their apathy, irritability, depression, daily living or mental states. Results indicated that there was a significant improvement in their apathy state, suggesting animal therapy could benefit individuals in care homes with dementia. Still, the small sample size encouraged further research, to account for other possible therapeutic benefits which could be present.

Kramer, Friedmann and Bernstein (2009) carried out this further research, in which they compared the effect of a visiting dog, visiting person and visiting robotic dog, AIBO, on the social interactions of dementia patients' living in nursing homes. In support of Motomura et al. (2004), animal therapy provided further therapeutic benefits to dementia individuals, as the visiting dog and AIBO stimulated social interactions more than the visiting person. Nevertheless, both studies relied on an all-female sample, indicating the results could not be generalised to the male population, as males may not respond to animal therapy in the same way.

Along with dementia patients, animal therapy has been found to benefit elderly individuals who feel alone when they move into long-term care facilities (Le Roux & Kemp, 2009). Banks and Banks (2002, 2005) discovered significant reductions in the elderly's loneliness levels after the introduction of weekly dog visits. In addition, a significant difference was present between the loneliness levels of those residents who had the therapy sessions and those who did not, suggesting animal therapy does not only cause significant improvements to the elderly's loneliness levels over a period of time, but it also causes significantly lower loneliness levels in those who receive the therapy sessions compared to those who do not. Banks and Banks also discovered that individual therapy sessions were more beneficial than group therapy sessions, as the presence of other people interfered with the presence of the dog, suggesting that, when possible, animal therapy sessions should be carried out individually.

A limitation to both of these studies was that the participants were self-selected. Therefore, animal therapy may only have benefited the participants because they wanted to participate as they liked animals. Nonetheless, the participants in Banks, Willoughby and Banks' (2008) study did not volunteer to take part, they were chosen to take part and because the results of their study also found a significant difference in loneliness levels between those elderly residents who received weekly dog visits

and those who did not, they imply that animal therapy benefits everyone, not just those who want it.

Similar to Kramer et al. (2009), Banks et al. (2008) also discovered AIBO, the robotic dog, to provide positive therapeutic benefits to the elderly, as it reduced their levels of loneliness to a very similar degree to that of a living dog. Moreover, Paro, a robotic seal, was found to benefit the elderly, because it significantly improved their social interactions (Shibata & Wada, 2011). These findings propose that whenever a living animal is not available for therapy sessions, AIBO or Paro could be robotic alternatives. However, human-robot interactions are still a growing field. Interactions with robots will not be comfortable with everyone; urging on-going research to identify which people it would benefit the most (Dautenhahn, 2007).

When Jackson (2006) investigated the effect of a visiting dog on elderly people's depression levels, a reduction was present, although it was not significant. On the other hand, Le Roux and Kemp (2009) did discover the introduction of dog visits to cause significant reductions in elderly resident's depression levels, identifying another therapeutic benefit produced by animal therapy. Then again, the results of Le Roux and Kemp did not propose that animal therapy was more beneficial at treating depression than no animal therapy, because a significant difference in depression scores was not found between those who received the animal therapy sessions and those who did not. Therefore, even if significant improvements in well-being are found after the introduction of animal therapy sessions, it does not necessarily mean that they are more successful at providing therapeutic benefits to the elderly than no animal therapy sessions.

Furthermore, Lutwack-Bloom, Wijewickrama and Smith (2012) provided support to the fact that animal therapy and a visiting person could be just as beneficial as each other when treating depression, because they discovered a visiting person and a visiting dog to reduce levels of depression the same. Moreover, visits from a person once a week for three weeks were found to encourage the same level of prosocial behaviours, for example smiling, as a visiting dog once a week for three weeks (Kaiser, Spence, McGavin, Struble, & Keilman, 2002) proposing animal therapy and people could be just as advantageous as each other.

In addition to Lutwack-Bloom et al. (2012) identifying this similarity between animal therapy and visiting people, they also highlighted a major limitation often present in animal therapy studies. Participants are often recruited from more than one nursing home, thus the staff could be a potential confounding variable. If elderly individuals which participate in an animal therapy study live in a care facility which has unfriendly staff, then they may benefit from animal therapy even if they do not like animals or they may have benefit from visiting people even if they do not like people, because they are just glad to have something happy and friendly in their life. Therefore, the only reason Lutwack-Bloom et al. may have found animal therapy to be as beneficial as the visiting person, may have been due to the hostility of the staff, not the actual therapy sessions. Nevertheless, because many researchers which investigate the therapeutic effects of animal therapy often use more than one care home, this would suggest that researchers do not consider it to be a significant limitation.

One area which has had little research is the effect of animal therapy on elderly people's mood states. Lutwack-Bloom et al. (2012) found dog visits to significantly improve elderly people's mood states, whereas visiting people did not. Furthermore, using the Profile of Mood States (POMS) questionnaire, Crowley-Robinson et al. (1996) conducted a longitudinal study to investigate how elderly individuals' tension, depression, anger, vigour, fatigue and confusion mood states may change over a period of time, depending on whether they lived in a nursing home with a resident dog, visiting dog or no dog. They identified the resident and visiting dog to significantly improve more mood states than no dog, while the resident dog significantly improved more mood states than the visiting dog, suggesting the increased presence of the dog provided increased benefits to the elderly residents' moods. On the other hand, Phelps et al. (2008) did not find a visiting dog to cause significant improvements in elderly people's mood, proposing animal therapy may not be as beneficial to the elderly's mood as first thought.

Even though there are contradictory findings as to whether animal therapy provides positive therapeutic benefits to the elderly living in long-term care facilities, the meta-analytic study of Nimer and Lundahl (2007) suggested that animal therapy should be used. Hence, when the animal therapy field is considered as a whole, more beneficial results are found. Nevertheless, this study also identified that animal therapy does not benefit everyone; a finding which could provide one possible explanation as to why contradictions throughout the field of animal therapy exist, particularly when investigating its effects on mood states.

Perelle and Granville (1993) discovered that animals provided a bigger stimulus for behavioural change in males than in females. Therefore, this could be the case when it comes to the effect of animal therapy on mood states; it could be more beneficial to the males' mood states than the females. If this is the case, then it could explain the findings of Phelps et al. (2008). They may not have found the visiting dog to significantly improve mood states because only two out of their five participants were males, meaning the dog visits would only have been benefiting the minority.

In addition to gender, peoples' opinions of animals could influence how effective animal therapy is to them. Studies have found animal therapy to be very beneficial when participants like animals (Banks & Banks, 2002, 2005) proposing studies which have not found animal therapy sessions to be very beneficial could be due to their participants not liking animals. Therefore, the elderly's gender and opinion of animals should both be taken into consideration when investigating the effects of animal therapy on their mood states. However, this should not be done via correlation methodology. The reason being the results may not be due to the effect of animal therapy on the elderly, but other confounding variables.

Therefore, based on the current literature, this study set out to investigate how a resident pet, visiting pet or no pet may cause differences in the following six mood states of elderly individuals: tension, depression, anger, vigour, fatigue and confusion, as well as their Total Mood Disturbance (TMD) score; to see whether a visiting pet or a resident pet were more beneficial at improving mood than no pet. Moreover, it accounted for the participants' gender and opinion of animals, to see whether these were confounding variables causing contradictions throughout this area of research. Thus, the first hypothesis was that there would be a main effect of

pet presence on each mood state and TMD score. The second hypothesis was that there would be a main effect of gender on each mood state and TMD score and the third hypothesis was that there would be a main effect of liking of animals on each mood state and TMD score. In addition, interactions were sought between pet presence and gender, pet presence and liking of animals and gender and liking of animals, to investigate whether animal therapy was more beneficial to males than females as well as more beneficial to those who liked animals.

Method

Participants

Participants were recruited from three residential homes in Birmingham, UK. Prior to recruitment, the manager at each of the three residential homes was contacted and asked to identify which residents would be able to complete the questionnaire and which residents would not. From the responses received those residents whom were able to complete the questionnaire on their own or needed help writing the answers were selected to take part in the study. Those who were not physically or verbally able to complete the questionnaire were not selected, and were not approached during recruitment to avoid unnecessary distress and embarrassment.

Overall 40 participants were identified as being able to take part in the study. However, due to unforeseen circumstances such as illness, choice and in some cases death, this figure was reduced to a total of 24 participants: eight participants from the residential home with no pet, eight from the home with a visiting dog and eight from the home with a resident cat. The sample included five males and 19 females aged 65 and over. Any ethical issues which may have arisen were approved by the University of Chester Ethics Committee, in accordance with the BPS guidelines.

Materials

An information sheet was compiled to recruit participants and a cover sheet was used to gain the participant's informed consent. To measure the participant's mood states, the Profile of Mood States (POMS) questionnaire was employed (McNair, Lorr & Droppleman, 1971). A questionnaire which contained a total of 65 words, for example friendly and angry, which participants had to rate on a Likert scale of 0 - 4 on how much each word had related to them over the past week and on the day of the questionnaire. Overall, the questionnaire gave a score for six different mood states; tension-anxiety (tension), depression- dejection (depression), anger-hostility (anger), vigour-activity (vigour), fatigue-inertia (fatigue) and confusion-bewilderment (confusion), along with a Total Mood Disturbance (TMD) score which identified the participants' overall mood. The questionnaire was also used to record the participant's gender and opinion of animals. Finally participants were given a debriefing sheet once the questionnaire was complete.

Procedure

Participants were invited to take part in the study face-to-face, via the information sheet. It was read to potential participants to invite them to take part in the study, as well as provide them with information on the purpose of the study, the POMS questionnaire, that they could withdraw from the study by saying “stop” and miss out questions by saying “pass” and that confidentiality and anonymity would always be maintained. If the participants agreed to take part, their informed consent was marked on the cover sheet and they were taken to the manager’s office where they could complete the questionnaire in private.

The participant’s gender and liking for animals was first recorded by the researcher. Once this had been done, the POMS questionnaire was then carried out verbally, with the researcher reading each word to the participants and recording the answers they gave. Participants were given as much time as they needed to complete the questionnaire, with most questionnaires taking approximately 15 minutes to complete. However, some questionnaires took longer, due to the participants reminiscing about the past after being prompted by certain words.

On completion of the questionnaire, it was placed into a sealed envelope and participants were given a debrief sheet to thank them for taking part in the study and to provide them with further contact details if the questionnaire had made them feel upset in any way. Once all the data was collected, the score for each of the mood states was calculated by hand and then put into a spread sheet on SPSS, where the data was further analysed.

Design and Analysis

Questionnaire methodology was employed to conduct this study, with the overall design being a between-subjects design. There were three independent variables. The first was pet presence with three levels: resident pet, visiting pet or no pet. The second was gender with two levels: male or female and the third independent variable was the participant’s liking for animals with two levels: yes or no. The dependent variables were the mood states: tension, depression, anger, vigour, fatigue and confusion, with the TMD score also being calculated.

To calculate each mood state in the questionnaire, the sum of the words relating to each mood factor was calculated. However, ‘relax’ for the mood state tension and ‘efficient’ for the mood state confusion, were reversed. To calculate the TMD score, the total for each of the mood states was summed together, apart from the score for vigour which was made negative. The higher the score calculated for each mood state and TMD, the more negative the mood; although, the higher the score calculated for vigour, the more positive the mood. Due to the participants being tested in only one condition and there being several dependent variables, the data was analysed using a general linear model Multivariate Analysis of Variance (MANOVA), with the alpha level set at $p < 0.05$.

Results

Once all the data had been collected, the participants' gender, liking of animals and score for each of the six mood states and TMD were placed into SPSS and analysed. Unfortunately, due to only one person stating that they did not like animals, this resulted in a very limited and uneven sample size for the independent variable of liking of animals, thus no further analysis was carried out on it. Nevertheless, the analysis was carried out as planned for the independent variables of pet presence and gender, using a between-subjects MANOVA.

Pet Presence

The six mood state scores and TMD scores were investigated, to see whether they differed depending on whether participants lived in a residential home with a resident pet, visiting pet or no pet.

Table 1
Means (SEs) for the six mood states and TMD score in each pet presence condition

	Pet Presence *(N)*		
	No Pet *(8)*	Visiting Pet *(8)*	Resident Pet *(8)*
Mood State			
Tension	6.67 (2.34)	10.38 (2.03)	6.50 (2.10)
Depression	10.75 (3.19)	12.25 (2.77)	8.00 (2.86)
Anger	7.42 (2.26)	6.88 (1.96)	3.87 (2.03)
Vigour	12.08 (2.98)	11.88 (2.58)	11.63 (2.66)
Fatigue	7.08 (2.07)	9.25 (1.79)	7.23 (1.85)
Confusion	8.00 (1.95)	10.38 (1.69)	8.07 (1.75)
TMD	27.83 (11.12)	37.25 (9.63)	22.03 (9.95)

From Table 1, it can be seen that the mean scores for tension, fatigue, confusion and TMD in the visiting pet condition, were higher than those in the no pet and resident pet conditions. The mean scores for depression and anger differed between all three levels of pet presence, whereas very little difference between each level of pet presence can be seen for vigour.

Nevertheless, even though some differences in the mood states were evident in Table 1, there were no significant main effects of pet presence on tension (F (2, 19) = 0.002, p = 0.998), depression (F (2, 19) = 0.300, p = 0.744), anger (F (2, 19) = 0.772, p = 0.476), vigour (F (2, 19) = 0.029, p = 0.971), fatigue (F (2, 19) = 0.210, p = 0.812), confusion (F (2, 19) = 0.006, p = 0.995) or TMD (F (2, 19) = 0.085, p = 0.919). Furthermore, there were no significant interactions between pet presence and gender for tension (F (1, 19) = 0.045, p = 0.834), depression (F (1, 19) = 0.412,

p = 0.529), anger (*F* (1, 19) = 0.041, *p* = 0.841), vigour (*F* (1, 19) = 0.024, *p* = 0.879), fatigue (*F* (1, 19) = 0.000, *p* = 0.995), confusion (*F* (1, 19) = 0.086, *p* = 0.773) or TMD (*F* (1,19) = 0.040, *p* = 0.844).

Even though no significant interactions were found between pet presence and gender for any of the six mood states or TMD score, a trend did emerge to suggest that the increase in pet presence for females was influencing several of their mood states. The female participants' scores for tension (as can be seen in Figure 1), depression (Figure 2), anger (Figure 3), confusion (Figure 4) and TMD (Figure 5) all decreased, as pet presence increased from no pet, to visiting pet, to resident pet.

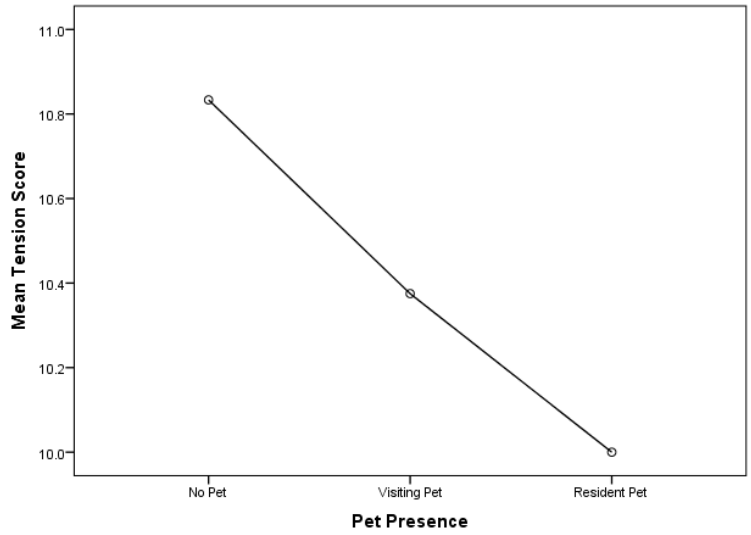

Figure 1: Mean female tension scores for the three levels of pet presence

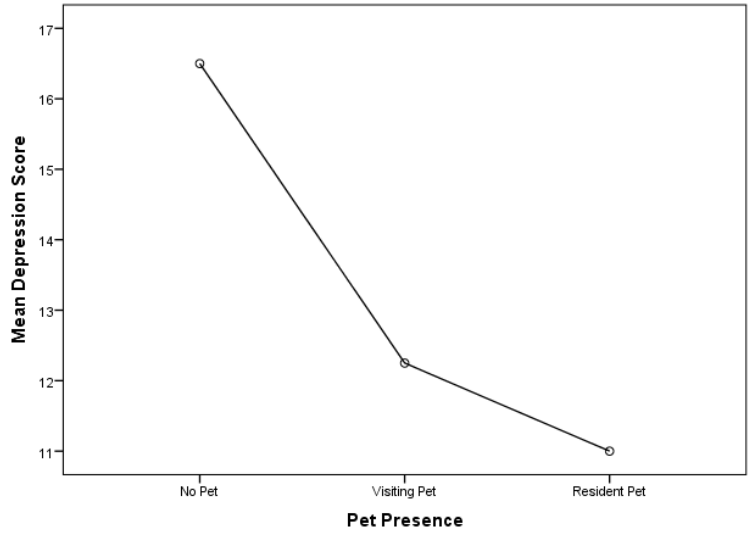

Figure 2: Mean female depression scores for the three levels of pet presence

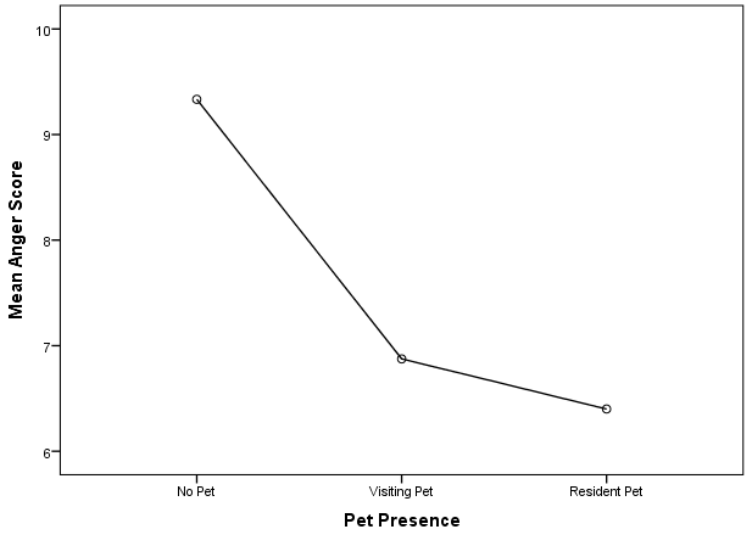

Figure 3: Mean female anger scores for the three levels of pet presence

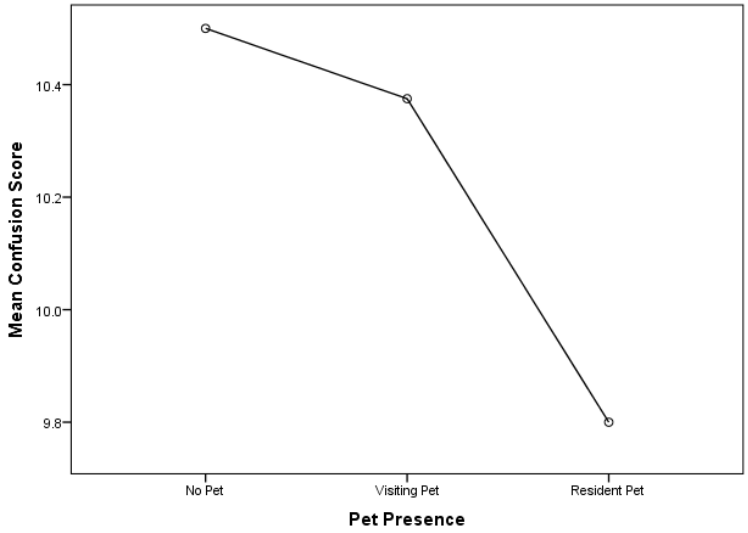

Figure 4: Mean female confusion scores for the three levels of pet presence

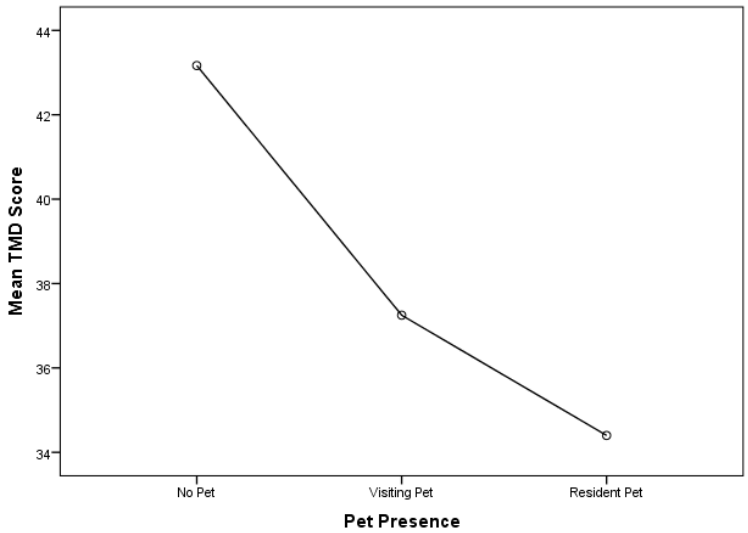

Figure 5: Mean female TMD scores for the three levels pet presence

Furthermore, a similar trend occurred for the male participants' scores in relation to several mood states. Their scores for anger (Figure 6) and TMD (Figure 8) decreased, while their scores for vigour (Figure 7) increased, as pet presence increased from no pet to resident pet.

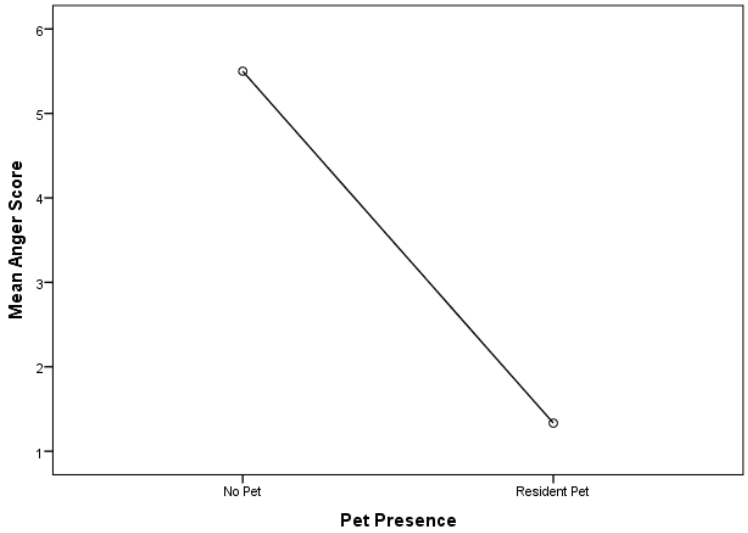

Figure 6: Mean male anger scores in the no pet and resident pet conditions

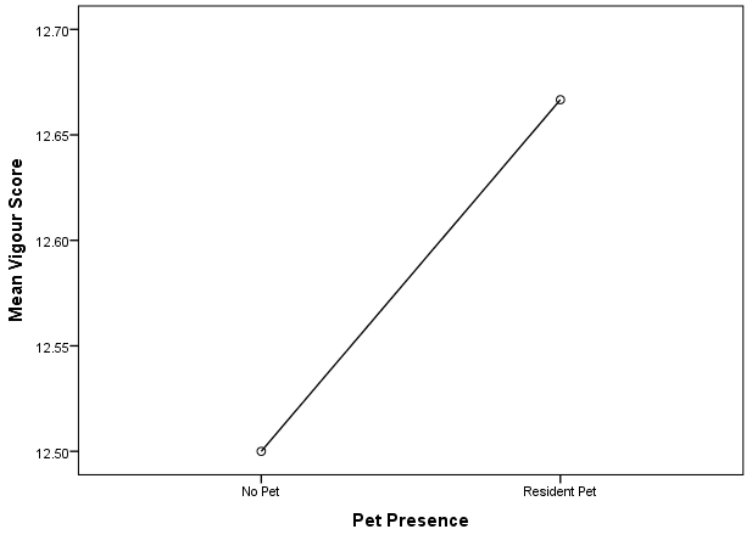

Figure 7: Mean male vigour scores in the no pet and resident pet conditions

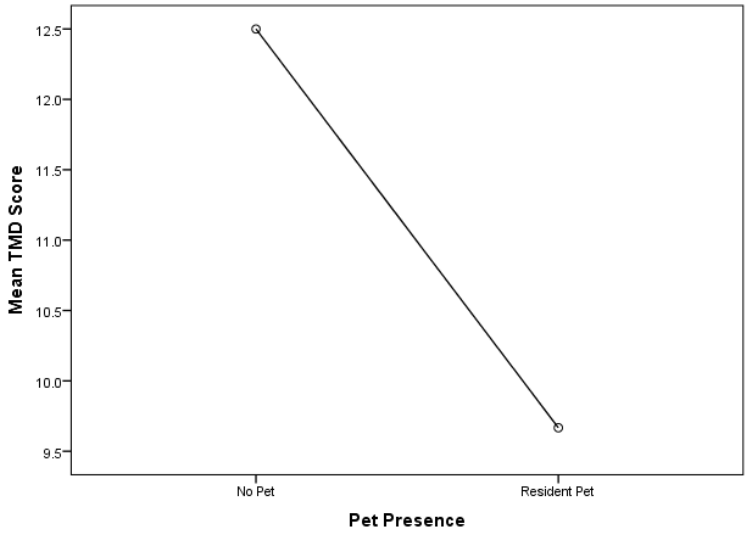

Figure 8: Mean male TMD scores in the no pet and resident pet conditions

Gender

The six mood state scores and TMD scores were investigated, to see whether they differed depending on the gender of the participant, whether male or female.

Table 2
Means (SEs) for the six mood states and TMD score for each gender

	Gender *(N)*	
	Male *(5)*	Female *(19)*
Mood State		
Tension	2.75 (2.62)	10.40 (1.34)
Depression	5.00 (3.57)	13.25 (1.83)
Anger	3.42 (2.53)	7.54 (1.30)
Vigour	12.58 (3.33)	11.38 (1.71)
Fatigue	6.58 (2.31)	8.24 (1.18)
Confusion	5.92 (2.19)	10.23 (1.12)
TMD	11.08 (12.43)	38.27 (6.37)

From Table 2, it can be seen that the mean scores for vigour and fatigue were more similar for each gender, whereas the mean scores for tension, depression, anger, confusion and TMD differed, with females scoring higher on the negative mood states and lower on the positive vigour state. Nonetheless, even though these differences were visible, the only significant main effect of gender was found for tension (F (1, 19) = 5.95, p = 0.025), with Figure 9 showing the female tension scores to be significantly higher than the male tension scores. On the other hand, there was no significant main effect of gender on depression (F (1, 19) = 4.17, p =

0.055), anger (F (1, 19) = 2.15, p = 0.159), vigour (F (1, 19) = 0.132, p = 0.721), fatigue (F (1, 19) = 0.172, p = 0.683), confusion (F (1, 19) = 2.61, p = 0.123) or TMD (F (1, 19) = 3.45, p = 0.079).

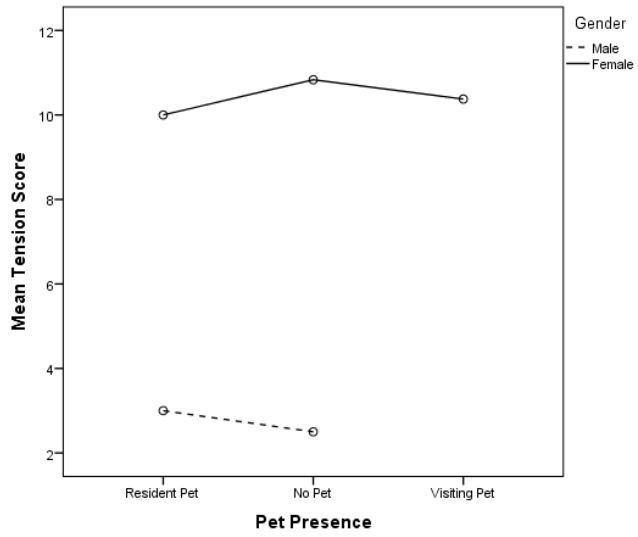

Figure 9: Mean male and female tension scores for the three levels of pet presence

Discussion

The results from this study did not support hypothesis one. Pet presence did not have a significant main effect on tension, depression, anger, vigour, fatigue or confusion, nor on TMD. Thus one pet presence did not cause more positive mood states than another. Hypothesis two, that there would be gender differences in each of the mood states and TMD score, was supported for the mood state tension; females were significantly tenser than males. However it was not supported for depression, anger, vigour, fatigue or confusion nor for TMD; indicating there were no significant differences in these mood states between each gender. Finally, due to a very limited and uneven sample size for the participants liking of animals, no further analysis was performed on this independent variable, thus hypothesis three was not investigated further for any main effects or significant interactions.

The main aim of this study was to investigate how pet presence in residential homes caused differences in elderly people's mood states. The findings indicated that pet presence did not have a significant main effect on any of the mood states or TMD score. Thus each pet presence condition had a similar effect on mood states as each other. Crowley-Robinson et al. (1996) also used the POMS questionnaire to investigate the effects of pet presence on elderly people's mood states. However, instead of investigating the differences in mood states between no pet, a visiting pet and a resident pet, they conducted a longitudinal study, in which they investigated the effect of no pet, a visiting pet or a resident pet on elderly peoples mood states over a period of time and discovered that the introduction of a visiting pet or a resident pet in nursing homes significantly improved more of the mood states over a period of time than no pet.

Even though this current study and the study of Crowley-Robinson et al. (1996) did not investigate the exact same effect of pet presence on mood states, they both wanted to find out whether the increase in pet presence resulted in more significant positive mood states. Therefore show that animal therapy provided more positive therapeutic benefits than no animal therapy. Crowley-Robinson and colleagues did show this, as their longitudinal study found the resident pet and the visiting pet to significantly improve more mood states than no pet, and the resident pet significantly improved more mood states than the visiting pet, thus the increase in pet presence from no pet, to visiting pet, to resident pet caused more positive mood states. On the other hand, this current study did not show this. Pet presence did not have a significant main effect on any of the mood states, meaning one pet presence condition was not significantly more beneficial at causing more positive mood states than another. Therefore, this current study did not support the findings of Crowley-Robinson et al., as it did not find animal therapy to provide significant positive therapeutic benefits.

Nonetheless, while this current study did not find significant results to suggest that one pet presence was more beneficial than another at improving mood states and did not find a significant interaction between pet presence and gender to suggest that one gender was benefiting more from the presence of a pet than the other, a trend did emerge for both males and females to suggest that the increase in pet presence was being slightly more beneficial. As pet presence increased from no pet, to visiting pet, to resident pet, the females' tension, depression, anger, confusion and TMD scores decreased. This exact pattern did not emerge for males, because no male participants from the residential home with the visiting pet took part. Still, similarly to the females, the males' depression, anger and TMD scores decreased and vigour scores increased, as pet presence increased from no pet to resident pet, suggesting that as pet presence increased several of the mood states for both males and females became more positive. This trend supports the research of Jackson (2006). Elderly people's depression levels did decrease in the presence of a visiting dog but not significantly, indicating that animal therapy sessions were still beneficial, even if not to a significant degree. Therefore, just because the findings were not significant in this current study, does not mean that the increase in pet presence was not causing more positive mood states.

Due to this present study not finding a significant difference for any of the mood states between the three levels of pet presence, it suggests that animal therapy is not more beneficial on mood states than having no animal therapy. This supports Le Roux and Kemp (2009), because they did not find a significant difference in depression levels between the residents which received weekly dog visits and the residents which did not. Nevertheless, even though Le Roux and Kemp did not find a significant difference in depression levels between pet presences; they did discover a significant difference in depression levels within pet presences. The implementation of dog visits significantly reduced the elderly's levels of loneliness over a period of time, meaning the introduction of animal therapy was very beneficial at treating depression, even though it was not more beneficial than having no therapy sessions. Therefore, it is possible that just because this current study did not find animal therapy to be significantly more beneficial than no animal therapy on mood states, it does not mean that the presence of the visiting pet or the resident pet had not improved the elderly residents' mood states since they were first introduced

into the residential homes; emphasising the importance of more longitudinal studies in the future.

With this current study not finding the visiting pet or the resident pet to be significantly more beneficial to the elderly than no pet, it also relates to the findings of Kaiser et al. (2002) and Lutwack-Bloom et al. (2012) as they both discovered animal therapy to be as beneficial as a visiting person without a pet, at providing certain therapeutic benefits. Kaiser and colleagues found a visiting dog and a visiting person to encourage the same amount of prosocial behaviours, while Lutwack-Bloom and colleagues discovered a visiting dog and a visiting person to reduce levels of depression the same. Nevertheless, Lutwack-Bloom et al. found mood to improve more in the presence of a visiting person with a pet than a visiting person without a pet, contradicting the results of this current study as the presence of a pet or no pet caused similar mood states. Hence, inconclusive findings still remain as to whether animal therapy does provide significant benefits to the elderly's mood.

When the findings of this current study are compared to the rest of the animal therapy field, no support is provided. Kramer et al. (2009) found a significant difference in social interactions between pet presence; the visiting dog causing significantly more social interactions than no dog. Whilst Banks et al. (2008) discovered a significant difference in the elderlys' loneliness levels, with a visiting dog providing a greater reduction in loneliness levels than no dog. In addition, both of these studies also identified the robotic dog, AIBO, to provide the same level of benefits as the living dog, suggesting both the living dog and robotic dog were more successful than the presence of no dog when treating social interactions and loneliness; a finding which was not recognised for pet presence on mood states.

So, when the results of this current study are related back to the whole animal therapy field, it provides its greatest support to Phelps et al. (2008), as they did not find weekly dog visits to significantly benefit the positive or negative mood of their elderly participants. Thus, similar to this current study, they both suggested that animal therapy was not significantly beneficial to elderly people's mood states. Along with this finding, Phelps et al. also established that all of their participants, apart from one, enjoyed the animal therapy sessions and wanted to take part in them again in the future, and still they did not find these animal therapy sessions to provide significant therapeutic benefits. Suggesting even though the participants liked the animal therapy sessions, thus liked animals, they were not significantly benefited by them. Therefore, had this current study analysed the data for the participants liking for animals, it may not have found those participants who liked animals to benefit more greatly from the presence of a visiting pet or a resident pet compared to the one participant who did not like animals. Instead, the data may have indicated that the participants' liking of animals did not impact on how pet presence benefited their mood states, similar to that of Phelps et al., suggesting this variable would not be a confounding variable when investigating the therapeutic effects of animal therapy on mood states.

On the other hand, it was thought that all of the participants in the study of Banks and Banks (2002, 2005) liked animals as they volunteered to take part, and because the results of their study discovered a visiting dog to significantly reduce their elderly participants' loneliness levels, it suggested that the elderly's opinion of animals could

have been one possible reason as to why the animal therapy sessions were so beneficial. Nevertheless, Banks et al. (2008) also found dog visits to significantly reduce loneliness levels, and the participants in their study did not volunteer to take part; they were chosen. Proposing not everyone in their study may have liked animals yet the findings were still positive. Therefore, it is not possible to suggest what would have been found in this current study had the participants' liking of animals been considered, as a mixture of findings exist to suggest that this variable does influence and does not influence the therapeutic benefits of animal therapy.

This study also took into consideration the participant's gender, to see whether this was a confounding variable which could account for contradictions within this area of research. Gender only had a significant main effect on tension, thus the females living in the residential homes were significantly tenser than the males. Nonetheless, even though this was found, no significant interactions between gender and pet presence were found, thus pet presence was not found to be more beneficial to one gender than the other. This does not support Perelle and Granville (1993) as they recognised animal therapy to be more beneficial to males than females. Therefore, these results do not support the idea that gender could be a possible confounding variable.

Overall, this study did not support the previous research to suggest that animal therapy should be employed in long-term care facilities. In addition, it did not find gender, or the participants liking of animals as it was not analysed, to be two possible confounding variables which could account for contradictions throughout the field of animal therapy. Thus, this field of research is still no closer to determining why contradictions are observed. Nevertheless, the reason so few significant results were found in this study could be due to several limitations within the study, sample size being one and the POMS questionnaire being another.

Sample size was not that much of a limitation for the independent variable, pet presence, because similar to Motomura et al. (2004) and Le Roux and Kemp (2009) there were eight participants in each condition. Thus there was an equal spread of participants across the three levels of pet presence. Nevertheless, it was a major limitation to the other two independent variables gender and liking of animals. There was a very unequal balance of males to females, with nearly four times more females participating than males. Therefore, the results would not have been very reliable when investigating the differences in mood states for each gender and the interaction between pet presence and gender for each mood state, as the majority of the participants were female. In addition, no males from the residential home with the visiting pet took part, meaning the effect of pet presence on the male's mood states could only be examined for the no pet and resident pet conditions. In spite of this, the data for gender was still analysed, whereas this was not the case for the participants' liking of animals. All of the participants in this study liked animals apart from one person. Therefore the results would have been extremely unreliable, as the opinion of one person cannot be generalised to the whole population.

The POMS questionnaire was a further limitation within this study. Firstly, it was very long. Thus participants may have struggled to concentrate as they neared the end of the questionnaire and as a result given the first answer which popped into their head, whether it be the truth or not. Secondly, several of the words in the questionnaire

were quite sensitive, resulting in this self-report methodology being limited as participants may have misreported their answers (Tourangeau & Yan, 2007). For example, participants may have misunderstood some of the words, such as 'bushed', and because they may not have wanted to ask for a definition for such words, they may have given any answer whether it be the truth or not. In addition, because the participants may not have wanted the researcher to acknowledge that they were upset and had a negative mood, they may have given more positive answers to words such as 'worthlessness', so that they seemed positive.

Therefore, based on this current study and its possible limitations, there is definitely space for future research to be carried out. Using a much larger sample size, but still with equal participants in each condition, the differences in mood states between each level of pet presence should be investigated once more, to examine whether the increase in pet presence does cause significantly more positive mood states. Moreover, in case this is not found and therefore the results suggest that the presence of a pet is not more beneficial than the presence of no pet, this study should also be longitudinal, in order to investigate whether the presence of a pet improves the elderly's mood states over a period of time. Furthermore, this future research should again take into account the participants' gender and opinion of animals, to identify whether one individual benefits more than another and therefore confirm whether they are possible confounding variables.

Conclusion

In conclusion, this study did not support the previous research which suggests that animal therapy provides significant positive therapeutic benefits to the elderly living in long-term care facilities, because there were no significant differences in any of the mood states between the three levels of pet presence. Therefore, these results suggest that the resident pet, visiting pet and the presence of no pet had the same effect on mood states as each other. Although not significant, trends did emerge for both males and females, to suggest that the increase in pet presence was being more beneficial to several of their moods. Moreover, the variable of gender was not identified as a confounding variable, which could have accounted for controversial findings in this area of research. Therefore, while this current study was not able to provide further evidence to suggest that animal therapy provides positive therapeutic benefits to the elderly's mood states, it was able to suggest that elderly individuals who are not given the opportunity to take part in animal therapy are not missing out!

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