Pet ownership, Age and Mental Health

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Declaration

‘I declare that this thesis that I have submitted to Dublin Business School for the award of BA (Hons) Psychology is the result of my own investigations, except where otherwise stated, where it is clearly acknowledged by references. Furthermore, this work has not been submitted for any other degree.

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Abstract

Mental health is an ever growing interest both within society and psychology. Because the importance of our pets plays an important and crucial part in our lives, this study set out to find significant results between our pets and positive mental health. With the use of 214 participants with 286 pets in total, the study focused on levels of Depression, Anxiety and Stress with the use of the Depression, Anxiety and Stress Scale (DASS). Participants were also asked an open ended question, “What do YOU think, the benefits of pets are?”, for qualitative results to be analysed afterwards. While the data analysis found no significant results for the first two hypothesis, our third quantitative hypothesis found a significant difference in results between the two age groups that had been examined. The qualitative results show us a more in-dept view into people’s relationships with their pets and their behaviour towards them. The answers also show the importance of qualitative research within pet studies and the contribution it can have to insignificant quantitative results.

Keywords: [Pets, Mental Health, Depression, Anxiety, Stress, age, DASS]

1. Pet ownership, Age and Mental Health

Countless studies have been made throughout time on all kinds of different topics that relate to, the very much loved, house pets. Some focus on animal therapy (E. Paul Cherniack, 2014), pets related to disabilities such as asthma (E. Eller, 2008) or depression (I. Enmarker, 2015) and some on pets' contribution towards the better mental health of humans (Herzog, 2011). Due to the many contradicting findings within research when it comes to pet ownership, it is hard to say with certainty whether pets benefit our overall mental health and wellbeing. This paper covers areas some previous studies have not fully looked at and will examine whether there are any changes at all in mental health that are because of animal ownership.

1.1 Statistics

1.1.1 Animal.

Majority of people in the world tend to own one or more pets and in America alone, over the last two years the number of pets owned has gone up in numbers according to the American Pet Products Association (2017-2018). While a lot of the pet options change, according to their statistics, from horses, types of fish or reptiles, the consistent cats and dogs can always be found in the top 3 most owned pets (AmericanPetProductsAssociation, Archive). The States are not the only country with rise in their pet population either. According to Pet Insurance (2014) there is plenty of homes with pets in Europe as well (PetInsurance, 2014). The latest data that the Pet Food Manufacturers' Association has put out has been from 2017 stating that "the pet population is around 54 million" (PFMA, 2017). With the increasing numbers of pet owners it is important to conduct research and determine how the pets affect our lives.

1.1.2 Mental Health.

Mental Health has been closely examined way before Freudian times even due to its importance within our lives. Within the last decade or two mental health issues have been on the rise. One such example is the continuingly increasing suicide rates within active soldiers (Kuehn, 2009). As Kuehn (2009) states “active-duty soldiers in the US Army reached a 28-year high in 2008, continuing a 4-year trend that has persisted despite ongoing military efforts to curb such deaths”. Despite their best efforts, they are not capable of limiting their casualties due to mental health strain on the field. Not only in soldiers but in the general population, according to Bertolote and Fleischmann (2002) and the World Health Organisation (WHO) their findings indicate that “by 2020 more than a million people will die by suicide, typically cause by mental health issues and that more than 10 times that number would have attempted suicide” (Jose Manoel Bertolote, 2002). However, in a study on suicide rates in people aged 15 – 19, by Wasserman (2005) estimates that there would be “a million people are estimated to die annually from suicide worldwide” (Wasserman, 2005 4(2)). Some of the possible explanations put forward by Wasserman include “loss of social cohesion, breakdown of traditional family structure, growing economic instability and unemployment and rising prevalence of depressive disorders”. Many of the issues such as unemployment, economic instability and others have been known to lead to high levels of stress as well (Isabelle Godin, 2004).

1.2 General Mental Health

Mental health is a an ever growing focus of psychological research due to its difficult to predict nature. While for individuals that suffer mental health issues such as post-traumatic stress disorder from having worked as soldiers in an active war zone it is easier to identify the cause of

their mental disorders, it is not always as simple as that (Kuehn, 2009). It is not as simple to identify the cause of someone's depression or anxiety disorder and often it is not one cause but many that bring an individual to their limit. Mental Health involves many separate segments of Health related issues, including Post-traumatic stress disorder, depression, anxiety, bipolar disorder, schizophrenia and even phobias (WebMD, Types of Mental Illness, n.d.). The general idea of mental health is disorders that affect the brain, "their psychological and emotional well-being" (MentalHealthIreland, What is mental health?, n.d.). "Your Mental Health is an essential part of your overall wellbeing – being comfortable, healthy and happy" (MentalHealthIreland, Mental Health Ireland). While mental health does not just mean to not have any mental disturbances, but something everyone experiences in their lives, everyone has down days and up days, it does not mean that their low points are significant to a mental disturbance. Each person's response and handling of their own mental situations is different just as different as every person is. However the wellbeing of an individual may be under strain when "negative and painful emotions" are more than they can handle, possibly causing them to develop any sort of mental illness such as PTSD, Depression, Anxiety, and others (MentalHealthIreland, Mental Health Ireland). The idea of a positive mental health describes an individual who has no difficulty in maintaining healthy relationships and handling difficult situations without having any personal strain on them. An individual with well-balanced self-esteem levels, good ability to cope in difficult situations and connecting with others at ease.

1.2.1 Causes for Mental Health Disorders.

Different mental health issues have different causes, an easy example is post-traumatic stress disorder (PTSD) in war veterans (Kuehn, 2009). Not only war veterans but any single individual can have a mental health disorder from any given experience they may have been

through in their childhood or as adults (NHS, 2018). A traumatic event can be considered anything that involves a trauma causing experience and that depends on case by case basis. Causes for mental health issues can involve both genetical predisposition as well as infections or brain injuries or poor nutrition (WebMD, Causes of Mental Illness, n.d.). Any healthy individual can suffer from a Mental Health issue if put under the right circumstances. This paper focuses on depression, anxiety and stress in particular.

1.2.01 Stress. Stress, while a normal human emotion, can reach unhealthy levels and be within the qualifications of a mental health disorder. Stress is considered a mental health issue when it reaches the levels of Chronic Stress (Maldonado, 2018). According to Maldonado, chronic stress can also lead to various other health issues, including diabetes, heart disease and cancer along with a weakened immune system. According to the APA's stress survey from 2017, only in the United States is there over 50% of individuals that experience physical symptoms of stress regularly and over 50% that experience psychological symptoms (APA, 2017).

1.2.02 Depression. Depression can be caused by many separate factors, such as self-worth issues or bullying, some factors involve having depression as a side effect to an illness or neurological disorder such as Hunters disease or Multiple Sclerosis (MentalHealthIreland, Depression). Depression has different types such as mild or major depression, post-natal depression, bi-polar disorder is classified as a depression sub type and the most common type is SAD or Seasonal Affective Disorder, typically experienced in the winter by individuals due to the decrease in vitamin D (MentalHealthIreland, Depression)**.**

1.2.03 Anxiety. Anxiety is considered a type of fear of things generally going wrong in the present or in the future and generally having an overwhelming amount of thoughts about anything that may go wrong at any given time **(MentalHealthIreland, Anxiety)**. While anxiety at normal levels, much like stress, can be healthy for individuals to deal with things such as exams or job interviews, at an unhealthy level it can be very damaging to an individual's life and health.

1.2.2 Treatment.

Depending on what mental health issue a person has, there is different types of treatments available and more in the making. Treatment can vary from Cognitive Behaviour Therapy, drug like medications, Play Therapy or Animal therapy for all types of Mental Health issues (MentalHealthIreland, Treatment).

1.3 Pet Ownership and Depression.

When it comes to Depression, there are different types of animal assisted therapies or AAT. One study by Souter and Miller (2007) did a meta-analysis on animal-assisted activities (AAA) and how well they treat depression. They used very strict criteria when choosing which studies got the chance to be involved within their research. The chosen studies had to have random assignments, a control group, a measure of depressive symptoms and, of course, exposure to either AAA or AAT. Not only were those criteria mandatory for the chosen studies but they also had an interest within the characteristics of each study, such as balance between genders, ethnicity factors, type of publication and year as well as sample sizes along with much more (Miller, 2007). They focused on 5 studies overall, by Brickel(1984), McVarish (1994), Panzer-Koplow (2000), Struckus (1989) and Wall (1994), with the majority of the studies included female participants and most individuals were above the age of 45. Within their

findings, Souter and Miller found significant improvements of depressive symptoms within the AAT/AAA exposed groups that had been analysed. The interesting to notice that some of the examined studies by Souter and Miller had insignificant results alone but when grouped with more studies and re-examined as Souter and Miller did, altogether they showed significant results. The limitations of the original studies may have been the small sample sizes used to determine the effects. Despite that, the sample that Souter and Miller used was not too large, consisting of only 5 studies is rather small for a meta-analysis, so the results may not be entirely valid for the overall population. More so, the study has been done more than 10 years ago and the ones examined more than 20 or more years ago so the results may not be entirely valid for the same situation today. They also point out that while the results may be significant that does not mean they are necessarily effective in the correct area, as in "patients undergoing AAT/AAA are unlikely to experience a dramatic decrease in depression, they will likely experience a noticeable degree of relief" (Miller, 2007). It would be very interesting to see a similar meta-analysis be examined today with newer studies that are available to see whether there is any difference in comparison.

A different study by Enmarker et al. (2015) focused on depression in older cat and dog owners. Their cross-sectional study focused mainly on the older population, however it had over 12000 participants between the ages of 65 and 101 and the measuring method they used was a Hospital Anxiety and Depression scale or HADS. Within their demographic factors, Enmarker et al. were interested not only in gender and age but also in whether individuals were married, cohabiting or living alone to see whether that plays any factor in their depressive symptoms. From the results gathered, they were only interested in cat and dog owners however so any other pet owners were discarded as well as individuals with multiple pets. Interestingly enough, the results they

received showed that individuals with pets tended to rate higher on poor health and higher on loneliness status compared to non-pet owners. In the end their results did not prove significant in favour of the pets or gender. However, the results may have proven insignificant due to the large sample size used. Typically larger would be considered better but it can go over a limit where results would get skewed. Future recreations of the study would be good to have more of a limit on sample size and as Enmarker et al. mention themselves, “women and men, as well as the type of pet, must be studied separately. In that way, the beneficial effect of the pet could be best tailored by choice of the animal’s species and behaviour according to the older person’s needs” (I. Enmarker, 2015).

1.4 Pet Ownership and Anxiety.

For anxiety based pet studies the focus will be on a study by Hoffman, Lee, Wertenauer, Ricken, Jansen, Gallinat and Lang (2009) that examines the anxiety in hospitalized patients with major depression and how they are affected by dog-assisted interventions. AAT generally involve interaction between a patient and an animal of any type, most commonly dogs or cats, however there are farm AAT as well that involve most commonly horses but other farm type animals as well. Within the examination the tool used for measuring anxiety is the State-Trait Anxiety Inventory or STAI. The focus of Hoffman et al. was to examine the anxiety before and after treatment with the dogs to determine whether there is any difference. Within their findings they notice significant difference in the before and after results of the anxiety STAI scale at a significant difference of “p= o.o16 with dog present and p=0.327 without the dog present” (A.O.M. Hoffmann.Ah Hyung Lee, 2009). If the findings prove significant once the study is re-made, it would be a good thing to consider that “ Presence of dogs may offer an additional

therapeutic benefit that might decrease anxiety and enhance psychotherapeutic strategies and motivation of patients and therapists" (A.O.M. Hoffmann.Ah Hyung Lee, 2009). However, Hoffmann et al's. study consisted of only 12 participants and mention only of male participants while no female participants are mentioned. It is also to be considered whether the participants have pets themselves out of the hospital and feel better in the presents of animals to begin with.

A laboratory experiment by Shiloh, Sorekt and Terkel (2003) was examining whether petting of animals in a controlled environment would reduce the state of anxiety of individuals. They had 58 non clinical participants to take part in the experiment. The anxiety inducing action they were forced into for the experiment was being in the room with a tarantula spider and possible be asked to hold it, afterwards they were randomly assigned to one of five groups, petting a rabbit, a turtle, a toy rabbit, a toy turtle or a controlled group. While the study did observe reduced state of anxiety-stress in the participants, no matter whether they got to pet the "soft bunny" or the "hard shelled turtle", the "effect could not be attributed to the petting per se, since it was observed only with animals and not with the matched toys". Despite the sample size of 58, it is not mentioned the participants gender or age. Another limitation may be that despite the tarantula being a general easy go to for stress and anxiety inducing factor, not all participants may be afraid of it and some may not be affected at all. It is unknown why the soft toy categories were mentioned but not examined and whether they had the same effect as the living counterparts (S. Shiloh, 2003).

Lastly, a study by Yuko Nakano et al. examined the depression and anxiety effects in pet owners once discovering their pets have cancer. While it is not specifically animal therapy related it is to show how drastic the difference can be from a pet helping you and ending up unintentionally harming you. This study was included due to the very inconsistent results in pet

assisted therapy studies. The overall participants in the study were 99 individuals that had discovered their pets had cancer within the span of 1-3 weeks and 94 owners of healthy pets. Measurements were gathered using self-diagnosing scales, the Centre of Epidemiologic Studies Depression Scale and State–Trait Anxiety Inventory-Form JYZ. Within the results, they found it significant for individuals with pets with cancer to have significantly higher both depression and anxiety scores, however it was noted that individuals that were employed tended to have higher depression scores compared to the individuals who were unemployed despite their pets' diagnosis. High trait anxiety individuals tend to get more strongly affected by a diagnoses of cancer for their pets as well. Within this study it can be noted that it is based only in Japan and while it can be expected the results to be similar elsewhere it cannot be confirmed till tested (Nakano Y, 2019). "Pets provide great companionship…loyalty. . and are a loving members of the family. . . But loving a "fur baby" comes with its hardships, too. . potential for stress with things like adjusting to owning a new pet, training a pet, acquainting new pets and existing pets, introducing pets and children. . . the greatest anxiety has come with navigating the options, recommendations, and uncertainty after finding out my dog's health is failing." (MacCutcheon, 2017).

1.5 Pet Ownership and Stress.

Lastly the effects pets have on people's stress levels. A study by Karen M. Allen et al. focuses on the Autonomic responses to stress in women in regards to the presence of Human friends and pet dogs. The way they did the experiment was they invited 45 women into a lab and put them in a stressful situation where only the experimenter was present, after 2 weeks they did the experiment again, however this time at home with either a female friend present, a dog or nothing else. Each participant was paid 25$ for their contribution to the study as well. The ages

of the women varied between 27 and 55 and all participants were white and self-proclaimed "lovers of dogs". Within the self-report results, the participant's attitude towards pets did not change at all no matter the given experimental situation. From the lab environment the tests showed significant results in its ability to cause stress to the participant when analysed, however no significant results when it comes to main effects and interactions the lab setting was not significant. There were significant results in the home setting however. In the home setting Allen et al. found that the "planned contrast" in the friend setting was significantly different to all other home settings. In the presents of their pet dogs, individuals showed little to no physiological reactivity compared to the friend or no presence. Overall these findings show that subjects with their dogs present felt less psychologically threatened than subjects in any other group. The results show that since the individuals were least stressed in the presence of their pet dogs it could be assumed that they could have been possibly distracted in attending to their dogs instead of fully focusing on the examination, however it could also be assumed that in the situation with the friend the subjects may have felt self-conscious or nervous and anxious of making any mistakes. The main limitations of the study would be that there are a lot of other things in one's home to reduce stress within an individual while being in a controlled, scientific, lab environment may make them more anxious without anything else. The experiment would have more clear results if the location of the test taking was the same all of the time.

Very often without realising it, people go to their pets for comfort when stressed and a study by researchers from the University of New York at Buffalo conducted a study that showed just how much going to our pets helps us with stress, more so than going to our spouses, friends or family. The study involved 240 married couples half of which owned dogs and cats while the other half did not. It showed how the individuals with no pets had higher blood pressure when

compared to the individuals with pets (Allen, 2002). Due to the high blood pressure it shows that the individuals tended to be more stressed than the ones with pets.

2. Rationale

The current study is focusing on pet ownership and people's mental health, more specifically their Depression, Anxiety and Stress levels, that are being measured with the use of the DAS21 scale (Depression, Anxiety, Stress scale). The study will be adding more information into the field of animal psychology, pet based studies and pet type therapies due to the fact that none studies mentioned above use the DAS scale for measures as well as there being an inconsistency of results throughout time (A.O.M. Hoffmann.Ah Hyung Lee, 2009) (I. Enmarker, 2015). More so, the study will focus on whether there are changes in mental health within pet owners in different age ranges, one for young adults between 18-30 and one for adults over 31. The two groups were chosen specifically for the comparison of DAS scores between individuals that are just starting out to move out of their childhood homes and go to college and get jobs and the initial overwhelming emotions of it all, versus individuals that by their age would have such things more settled down in comparison and have a more routine, stable type of life. There are multiple hypothesis that are being examined.

1. Pet owners would have significantly lower DAS scores compared to non-pet owners.
2. Cat owners would have significantly lower DAS scores than all other types of pet owners.
3. There will be a significant difference in DAS scores between the 18-30 age group and the 31+ age group.
4. A qualitative question was given to the participants in the experiment that asked them "What do YOU think the benefits of owning pets are?".

The qualitative segment of the experiment is to determine individual's opinions on their own experiences with their pets and whether there is any significant influence despite quantitative results.

3. Method

All aspects regarding methods and conduction of this experiment have been ethically approved by the ethics' board of Dublin Business School.

3.1 Research design

To gather data for the study, the use of a Google Forms Survey was utilised, as a survey was constructed with the inclusion of Demographic questions, a Mental Health Questionnaire and an open ended question alongside a coversheet at the start and a debrief sheet in the end. Due to the use of both quantitative and qualitative questions, the study qualifies as a mixed methods' design.

3.2 Participants

The overall number of individuals that took part in the study was 214 individuals. The survey was completely anonymous and spread out via the internet, so not all individuals are form within Ireland, no genders or ethnicity is known nor specifically given age. There were no restrictions to who could take part in the study, they simply needed to answer demographic questions, fill out the questionnaire and answer the open ended question.

3.3 Materials used

The materials used included the demographic questions that involved indicating one's age from an option of 2 groups. The groups were as follows:

18-30 years

31+ years.

Second demographic question was on occupation and whether the individuals were going to:

1. college

2. working

3. something else

Multiple answers were allowed.

The final demographic question regarded individuals' pet ownership, again, multiple answers could be chosen from the options:

1. Cat

2. Dog

3. Other

4. None

The Depression, Anxiety, Stress Scale (DASS): The full scale consists of 42 self-report items that are related to a negative emotional symptom such as: hopelessness, situational anxiety, irritableness and others, all of which are rated up to a four-points on the Likert scale of frequency and severity over the past week. ***(P.F.Lovibond, 1995)***. The scores range from

0 - Did not apply to me at all

1 - Applied to me to some degree/ some of the time

2 - Applied to me to a considerable degree/ a good part of the time

3 - Applied to me very much/ most of the time.

In this study the small 21 version of the scale was used, therefore in the end when calculating the total score, to get more accurate results the amount must be calculated by 2 as per the DASS scoring sheet, that also helps to determine which questions answer to which scale, depression, anxiety or stress (in appendix) (PSY, 2018).

In the end, the participants were asked a qualitative, open ended question:

"What do YOU think the benefits of owning pets are?".

After the data had been gathered, the Statistical Package for Social Sciences (SPSS) was used to calculate the results regarding the hypothesis and a programme called Nvivo was used to examine the qualitative question given to the participants.

3.4 Procedure

The survey was constructed with the use of Google Forms that consisted of 6 sections in total, the very first of which was a Coversheet for an anonymous survey that explained the reason for the survey to the participants as well as requiring their consent to continue. If they chose not to consent they would simply leave the page. After the coversheet, the pages that followed in order were demographic questions, the questionnaire, the open ended question and lastly the Debrief sheet with a list of support services for contact if necessary. The survey was then distributed via Facebook, Twitter, friends and family, for anyone interested to partake and fill out.

After all the data had been gathered, the answers were downloaded from the Google forms system into excel. Two separate excel files were made, one recoded for use in SPSS and one for Nvivo.

In SPSS, the files were then further coded for the understanding of the SPSS system. The DASS scoring sheet (included in appendix) was used to determine which questions were relevant to either depression, anxiety or stress scores. Afterwards, the separate questions were calculated into three new variables, the Total Stress score, Total Depression score and Total Anxiety score. Due to the use of only the small 21 DAS scale, every individual score was multiplied by 2 for more accurate results as the scoring sheet instructs.

For the first Hypothesis, three separate Independent sample t-tests were run to search for significance between pet owners and non-pet owners with the use of:

Independent variable (IV): DASS

Dependant variable (DV): Owning a pet demographic question.

For the second Hypothesis, a One-way ANOVA was run to determine difference between cat owners and other pet owners with the use of:

Independent variable (IV): DASS

Dependant variable (DV): Owning a pet demographic question (after re-calculation into more accurate groupings for the hypothesis)

For the third Hypothesis a MANOVA was used to determine the difference between age groups with the use of:

Independent variable (IV): DASS

Dependant variable (DV): age group

For the qualitative segment of the experiment, the qualitative data excel file was put into Nvivo for decoding into themes that would be used to make a significant connection between owners and their pets as well as their view on pets in general.

4. Results.

The descriptive statistics and calculation of the data gathered was done using the program SPSS for any quantitative data, while the open ended question was analysed with the program Nvivo for more in-dept research on the qualitative results.

4.1 Descriptive statistics.

In Table 1 below, it is described the distribution of the 214 on an overall basis. However the participants were distributed differently throughout the separate segments due to the multiple possible answer options on some questions. For age, out of the 214 participants, 114 (53.3%) were in the 18-30 age group while a 100 (46.7%) were in the 31+ group. For the occupation question 139 individuals answered that they go to work, 59 for college and 36 answered with Doing something Different. Lastly, for the owning a pet question, 135 participants answered that they have cats, 84 answered dogs, 30 said other and 37 said no pets.

Table 1: Descriptive Statistics

	N	Min	Max	Mean	Standard Deviation
Age group	214	1	2	1.47	.500
Occupation	214	1	4	2.16	.835
Owning a Pet	214	1	5	3.34	1.346

4.2 Quantitative Calculations.

The quantitative data gathered for the study was analysed in SPSS with the use of an Independent samples t-test, a One-way ANOVA and a MANOVA, respectfully for the different hypothesis.

Hypothesis 1. *Pet owners will have significantly lower DAS scores, compared to non-pet owners.*

To examine that there will be a significant difference in DAS scores between pet owners and non-pet owners, firstly a new variable was created within SPSS to distribute all pet owners into one group and put non-pet owners in another. Afterwards three separate independent samples t-tests were run and they found that

- There was NO statistically significant difference between Depression scores in individuals with no pets (M=14,61 , SD=1,91) and individuals with pets (M=15,38 , SD= ,974) (t(212) = - ,331, p= ,714, Cl[95%] -5,36 – 3,82). Therefore the null hypothesis can be accepted. (see Figure 1)
- There was NO statistically significant difference between Anxiety scores in individuals with no pets (M=9,28 , SD=8,13) and individuals with pets (M=11,58 , SD=9,66) (t(212)= -1,339, p= ,182 , Cl[95%]= 5,702 – 1,089). Therefore the null hypothesis can be accepted. (see Figure 2)
- There was a statistical difference, therefore equal variance was not assumed, which led to there being NO statistical significant difference in Stress scores between no pet owners (M=15,78 , SD=8,82) and pet owners (M=17,74 , SD= 11,014)(t(59,35)= -1,164, p= ,249, Cl[95%]= -5,339 – 1,411). Therefore the null hypothesis can be accepted. (see Figure 3)

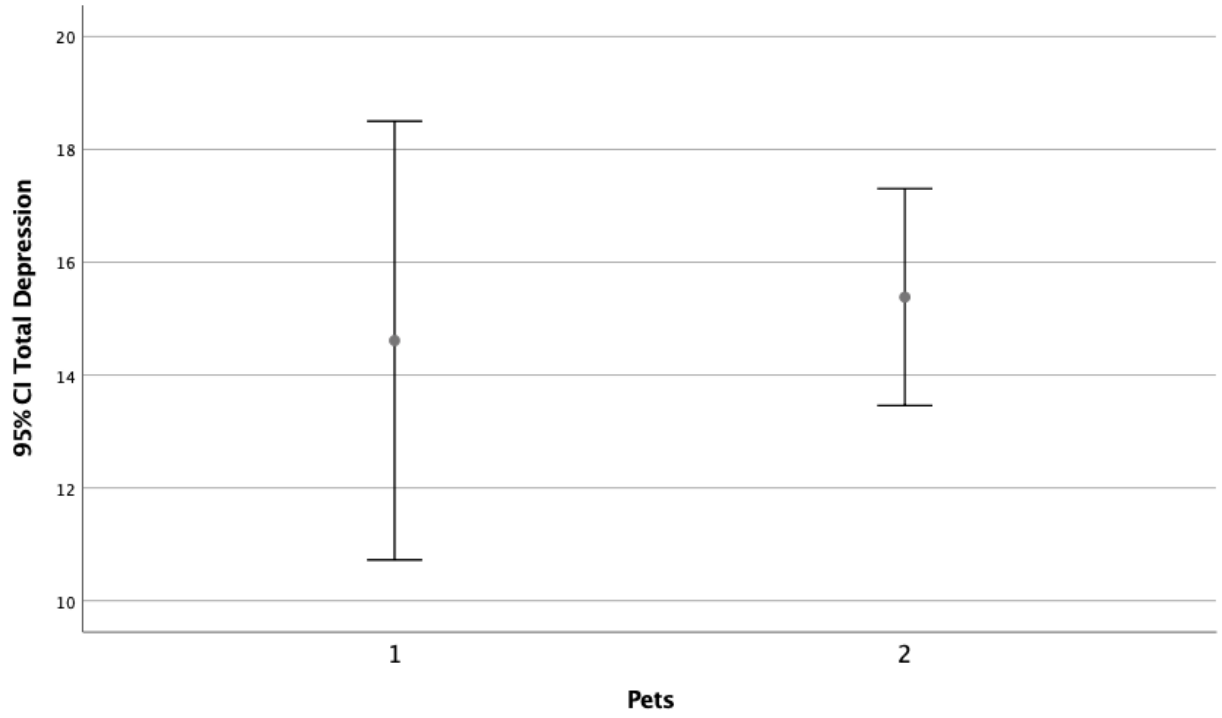

Figure 1: Showing non-significant results between pet owners and non-pet owners on Depression

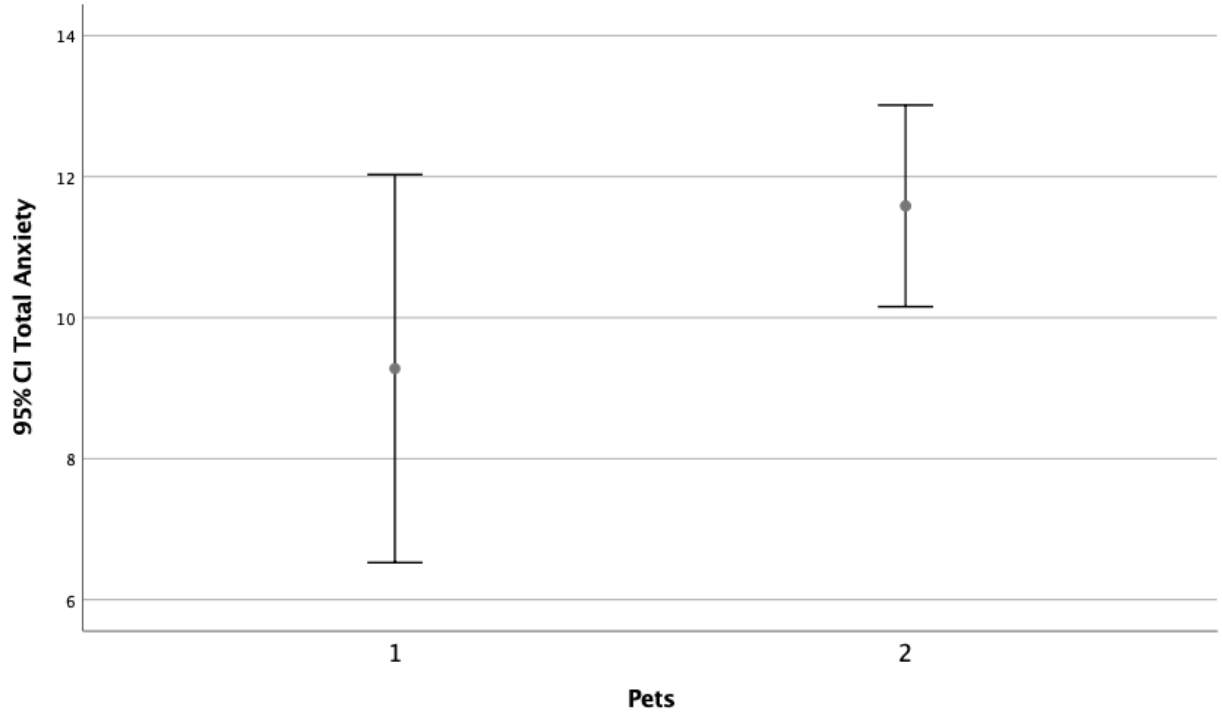

Figure 2: Showing non-significant results between pet owners and non-pet owners on Anxiety

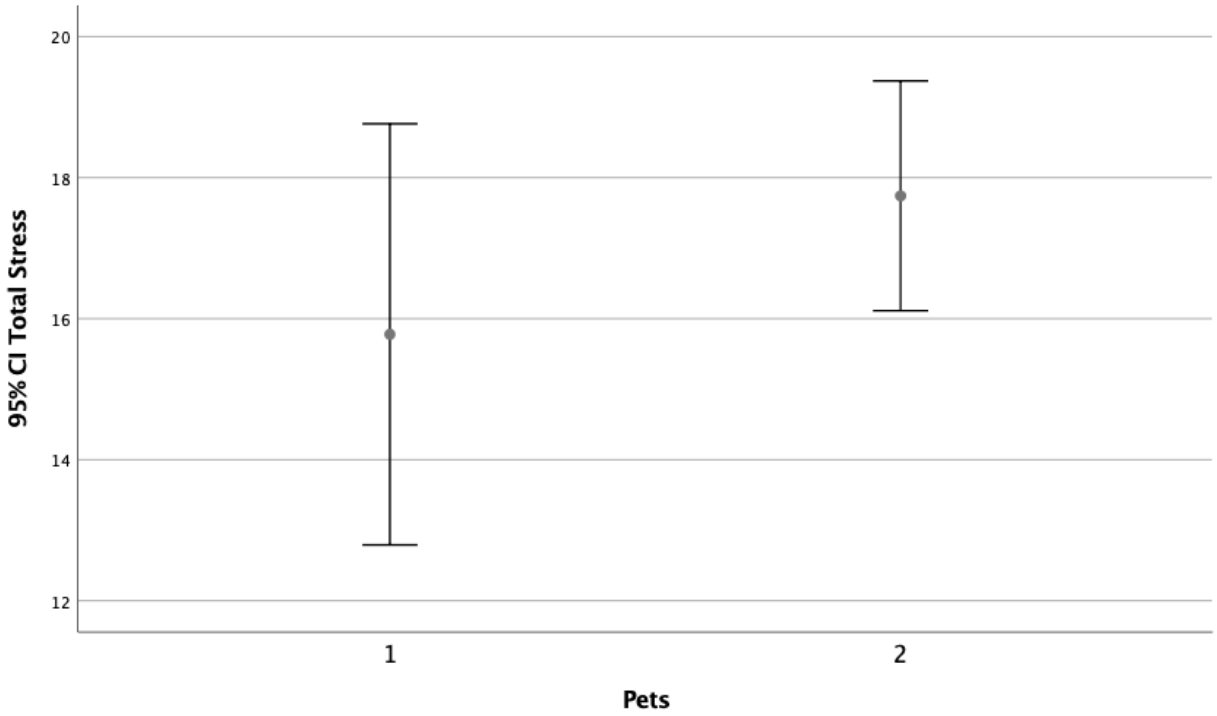

Figure 3: Showing non-significant results between pet owners and non-pet owners on Stress

Hypothesis 2. *Cat owners will have significantly lower DAS scores compared to other pet owners.*

For the second hypothesis, another new variable was created in SPSS called “Pets Only” that would put cat owners in one group and all other types of pet owners in a second group, excluding non-pet owners. Once the variable was created, three separate One-way ANOVA tests were run to determine significance of results. The tests found

- No significant difference in Depression (F(4,209)= ,731, p= ,572), Anxiety (F(4,209)= ,604, p= ,660) or Stress scores (F(4,209)= ,735, p= ,569) between cat owners and all other pet type owners. Thus highlighting that DAS scores are not significantly affected by type of pet individuals have. (see Figure 4)

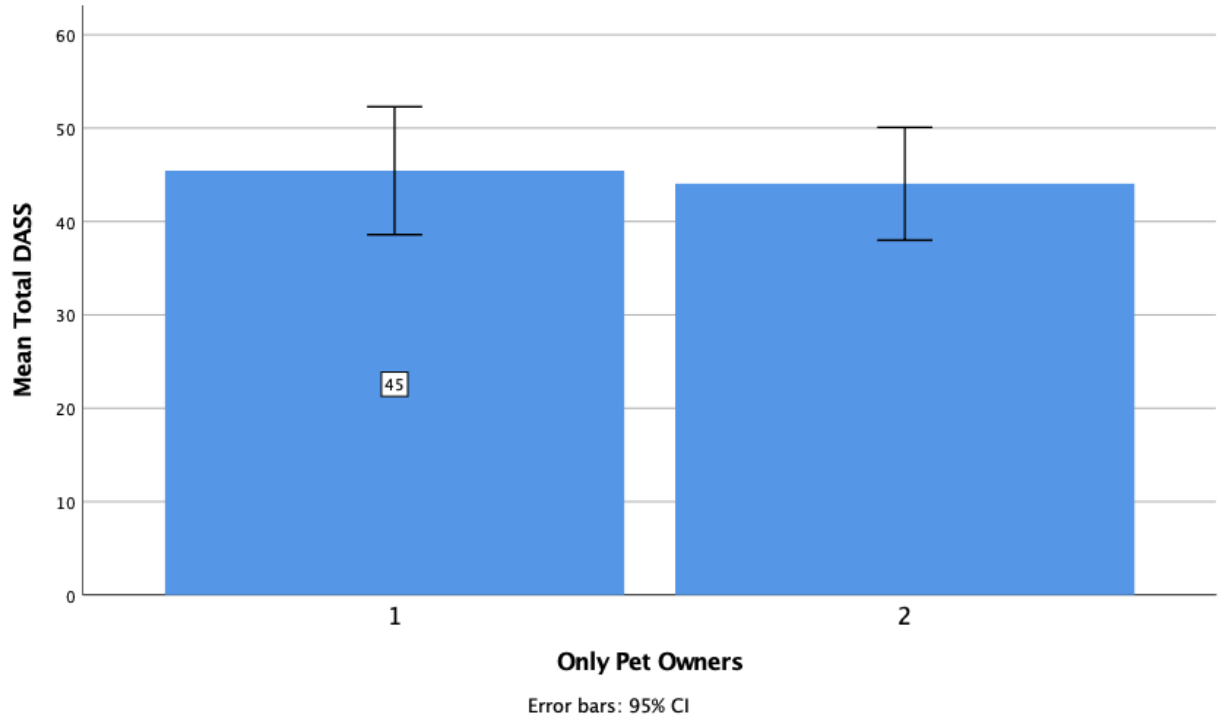

Figure 4: Showing insignificant results in Depression, Anxiety and Stress scores between cat owners and other pet owners

Hypothesis 3. *There will be a significant difference in DAS scores between 18-30-year old and 31+ year old individuals.*

For the final quantitative hypothesis, a one-way MANOVA was used to calculate the results and what it found was that

- There WAS a statistically significant difference in Depression, Anxiety and Stress scores (DASS) between the 18-30 year group and the 31+ group (F(3,210)4,39, p= ,005, effect size= ,059). Following a Bonferroni adjustment to ,017, there was still significant difference in Depression (F(1,21)7,53, p= ,007, effect size= ,034), Anxiety (F(1,21)12,98, p< ,001, effect size = ,058) and Stress (F(1,21)8,008, p= ,005, effect size= ,036). With the 31+ group reporting lower scores in Depression (M=12,74, SD= 1,05) Anxiety (M= 8,78 , SD= ,919) and Stress (M= 15,24 , SD= 1,05) compared to

the 18-30 group (Depression M=17,45 SD=1,17) (Anxiety M=13,31 , SD = ,86) (Stress M=19,31 , SD= ,98). (Figure 5)

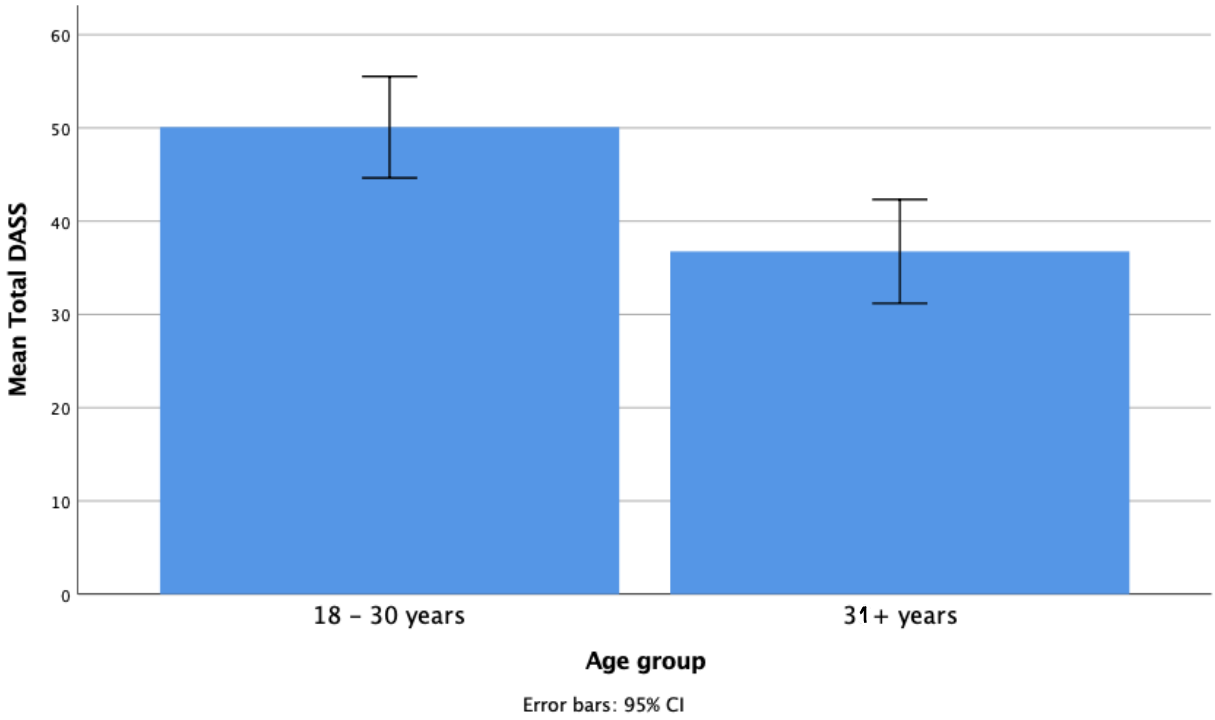

Figure 5: Bar chart showing significant difference in DAS scores between 18-30 group and 31+ group

4.3 Qualitative examinations.

The study used the thematic purposes of a program called Nvivo to get a better understanding of people's attitude towards their pets and their view on the benefits that pets provide for them. Following the outline provided by Braun and Clarke (2006) that describes the transcription of qualitative results as "most valuable stage in thematic analysis" (Braun, 2006). The researcher chose to add a qualitative question due to the interest in participant's opinions and view on animals and their use beyond mental health measures. Thanks to Nvivo, many different nodes (codes) were found between participants which were then grouped into main themes and sub themes and child nodes.

4.3.1 Themes. The coding of the nodes from all the answers gathered from the individuals that took part in the survey led to the development of four main Themes of interest. Each theme had multiple sub-themes to them, and some sub themes went further into detail with sub-themes of their own, for further clarification of the results. (See Fig 6)

Table 1. Summary of themes

Theme	Sub-themes	Sub-sub-themes
Being a Pet	• Family • Friendship • Companionship • Loyal • Cute • Good pets	• Love • Caring • Understanding, Rewarding, Mutually beneficial
Personal	• Share a bond • Amusement • No judgement • Worth of life • Sense of purpose • Ground you as a person	• Safety • Fun • Acceptance • Pride, Responsibility
Health	• Health benefits • Emotional support • Lift your mood • Mental health • Soothing	• Comfort • Focus, Happiness • Relaxing
None		

Figure 6: Table of Themes, Sub-themes and Sub-sub-themes

Theme 1: Being a Pet. Each them was named for a specific reason connected to the participants and their answers. The first theme was called Being a Pet due to the understanding of the researcher's interpretations of the qualitative results as describing things that are involved in the general idea of what it is like to be a pet from a human's perspective. A lot of the sub-themes further back up the naming of this theme as some individuals described their pets as '..cute' or simply 'fluffy', descriptions regarding the pet's appearance in most cases. However, within this theme were also put the sub-themes of Family, Friendship and Companionship due to their part in a pet's life. Majority of participants described their pets as '. . like having another family member..', 'They can be a good friend and even family', '. . they bring happiness and companionship.'. Within the first theme can be explored what owners see as the traits of a pet and how they are typically treated and looked after and what pets are considered in many cases and what people's first thought might be.

Theme 2: Personal. Within the second theme, the researcher went into the benefits individuals got from their pets and how they view them in a more personal one to one way and not just from a bystander view. In a lot of cases people did describe their pets as Fun and that being part of the Amusement theme, pets are more than just that to these individuals. The participants' responses gave a glimpse into their lives with their pets and the bonds they consider having with their cats and dogs and maybe rabbits or lizards or any pet. Some event went as far as to say '. . they give me drive to get up every day', '. . they are everything to me', 'reason to live'. The owners have shown such a strong connection to their pets through their answers it is hard to deny the love they have for their animal family. Unlike many people, animals '. . .you can talk to them without fear of judgement' and of course, 'help others understand the worth of non-human life'.

Theme 3: Health. When it comes to health, this does not involve just mental or physical health but emotional as well. Pets are known to Lift people's mood when sad much easier than another person can. Pets can '. . sense when we are upset or stressed and will try to calm us down', 'pets have helped me get over my anxious thoughts at the end of the night.' ,'Ground you as a person and give you emotional support that other people often can't'. It many regards owning a pet has helped these individuals through rough patches in their lives whether it was a break up, depression, job loss or anything else, 'my pet is one of the keys of me being mentally stable', 'happiness in a pure form', '. .can't be lazy cause you have to bring them out for walks and stuff'. Lastly within this theme, pets have been described by the participants as 'someone who depends on you and is always there for you', 'got a pet. . have 3 now. . best thing ever. . someone to think about instead of troubles. . . couldn't live without their antics now'.

Theme 4: None. The final theme is a simple None because no matter how many positive experiences there may be out there because of pets, some individuals simply do not see a benefit of them, possibly because they have not experienced one just yet in life. No single thing is universal for everyone and there is always people who won't see a benefit or a positive in something everyone else does. It is part of being different. While pets may not be beneficial to everyone, there is people that can't imagine life without them. Many of the reasons for which lie right within a pet owners' opinion on their pets, many of which also lie within these qualitative answers and how common they might be within the word cloud bellow. (See Figure 7)

Figure 7: Word frequency from qualitative analysis

5. Discussion.

Pets have been thoroughly noted as part of human life and are being implemented into more and more therapies to help with mental health such as the Animal Assisted Therapy (AAT) mentioned by Miller and Souter when examining the animal assisted activities and the results they had on people with depression. Many of the meta-analysis that they took and examined, Miller managed to find significant improvements within the patients used for the prior studies, majority of which showed insignificant at the time of investigation. That shows how far Animal Assisted Activities and Animal Assisted Therapy has come in the last few years. Not only in regard to depression either, with the ever-growing anxiety disorders today (AnxietyAndDepressionAssosiationOfAmerica, n.d.), and the facts from the World Health Organisation (WHO) that state that "1 in 13 globally suffer from anxiety". Thanks to the study by Hoffman et al, we already know that hospitalised patients that experience anxiety symptoms and have dog assisted interventions have lower anxiety scores compared to the patients that don't have dog assisted interventions. When put in a new environment like being hospitalised in the case it is easy to get anxious and animals showed to be able to reduce that anxiety (A.O.M. Hoffmann.Ah Hyung Lee, 2009).

This study focused on the full combination of Depression, Anxiety and Stress with the use of DAS scale. Three hypothesis were developed along with a qualitative question to analyse to what extent pets may assist in the reduction of these mental health issues.

5.1 Interpretation of Findings.

The first hypothesis predicted that we would find lower Depression, Anxiety and Stress scores in individuals with pets compared to individuals with no pets. Three independent samples t-tests were run to investigate the results that concluded with negative results for depression

(t(212) = - ,331, p= ,714, Cl[95%] -5,36 – 3,82), anxiety (t(212)= -1,339, p= ,182 , Cl[95%]= 5,702 – 1,089) and stress (t(59,35)= -1,164, p= ,249, Cl[95%]= -5,339 – 1,411), therefore in the end the null hypothesis was accepted. Unlike the study by Miller (2007), there were no significant results within our findings. While they managed to see positive improvement in hospitalized patients exposed to animals, it is possible that it is a different situation when it comes to your own pets. Miller et al. also pointed out that while their results ended up significant, they might not have been in the correct area of choice, therefore when put into other areas the results could be different. Much like with Miller, the focus of Hoffman's (2009) research was also focused on treatment within the clinic. Because of their significant results it could be assumed that in a hospital setting individuals end up having a boost in mood when introduced to a furry therapy friend even for a small amount of time. In comparison, our study focused on pets at home and how they help outside of a hospital setting. However, the literature review also showed signs of insignificant results found in experiments before. The experiments conducted by Enmarker (2015) as an example. Their study on depression in older pet owners did not show significant results at all in comparison to the other studies. This study as well further adds information towards the inconsistent results from pet-based studies despite using a new measure.

The second hypothesis stated that cat owners would have lower depression, anxiety and stress scores in comparison to other pet owners. Similar to the first hypothesis three separate tests were run to be extra thorough in the examination, three one-way ANOVA tests to be precise. For further examination, three separate independent samples t-tests were run that were not mentioned within the results section due to their further insignificant findings. Due to the large sample and multiple separate options, for the second hypothesis multiple different ways were used to look

into more detailed results. The pet group was divided into cat and other pets, involving the multiple pets group the first time and into cats and other pets without involving the multiple pets group the second time. Despite the in-depth examination and multiple different tests and combinations made and calculated for the hypothesis none ended up having any type of significant results. Because none ended up showing anything different only the initial ANOVA test was mentioned within the results section with non-significant results in depression ($F(4,209)= ,731$, $p= ,572$), anxiety ($F(4,209)= ,604$, $p= ,660$) and stress ($F(4,209)= ,735$, $p= ,569$). There would have simply been no point in adding the result from the extra tests that were run that simply wielded the same results.

The third and final hypothesis stated that there would be a significant difference between the 18-30 age group and the 31+ age group. A one-way MANOVA ended up finding significant difference in depression results ($F(1,21)7,53$, $p= ,007$, effect size= ,034), stress results ($F(1,21)8,008$, $p= ,005$, effect size= ,036) and strongly significant in anxiety results ($F(1,21)12,98$, $p< ,001$, effect size = ,058). This specific result shows the possible explanation behind Enmarker's (2015) insignificant findings of depression in older pet owners. According to the One-way MANOVA, the 31+ group have significantly lower DAS scores compared to the 18-30 group. The speculation mentioned within the rationale proves correct. While there is no backing up proof that the 31+ group has lower scores due to their handle on a more routine, stable day to day life in comparison to the younger group that starts off at just about leaving secondary school/ high school. It can be assumed it is a leading factor of stress, anxiety and depression when forced to move into a different country or home for college and the need to find a job to support yourself is always a stressful experience on its own (Hansung Kim, 2008).

5.2 Qualitative implications.

The qualitative aspect of the study was added due to the interest of individuals' opinion and behavior towards their pets and their view on pets in general. Because no studies using qualitative measurements could be found, there is unfortunately no comparison available. However, when it comes to the qualitative side of things, going through all the answers of the participants really made it show how deep of a connection a lot of them have with their animals and the extraordinary bond they share with their pets. In many responses, individuals had mentioned how more dependable and calming their pets are compared to other people and that's not uncommon either. As the participants in the study said so themselves, 'pets don't judge you' while in many cases people will, even if they don't show it. Despite the multiple insignificant results on the quantitative side of this study, going through all the answers of the individuals shows that while they may be struggling with depressive, anxiety and stress based symptoms, their pets help calm them down through their negative episodes and help them take care of themselves without realizing it by "giving routine to my life" as one individual had said or "give me a reason to get up in the morning" another stated. The qualitative results help to show that despite negative or insignificant results, there's always more to see that you can't examine through numbers and questionnaires. They are a glimpse into the behavior of the owners towards their pets and towards themselves as well. Bradley Smith (2012) states that "people keep pets for companionship, recreation and protection, rather than for the specific purpose of enhancing their health, however. . . companion animals can improve overall quality of life, including physical, social and psychological health" and that phenomena is known as the "pet effect". Not only that but due to the significant attachment between pet and owner that the qualitative study provides a glimpse into, multiple Behavioral theories can be applied to a relationship between humans and

pets that despite not having necessarily significant results on people's health, pets are still highly valued due to the level of attachment people develop towards them.

5.3 Strengths and Limitations.

The study took time to be fully thought out to every detail and every part that would be included for examination along with what tests, questions and statistics to look for and use. It took time to determine what questionnaire to use before settling on the DAS scale. It was however an easy decision to use a qualitative question due to the lack of research out there using qualitative results in regards to pet studies.

Due to the researcher's interest in pet related studies, as well as people's interest in them it was not difficult to find participants. Overall the impressive amount of 214 participants ended up being a blessing and a curse. While it's always good to have a larger sample size, due to the un-even distribution it caused several insignificant results within the study that may have been significant with more evened our groups. When it came to comparison of pet groups to the non-pet group, there was only a mere 37 participants without pets in comparison to more than 150 pet owning individuals. Secondly, because the survey was posted in a cat based group, the second hypothesis had unevenly distributed groups as well with 135 participants with cats towards merely a 100 with other types of pets. While more evenly distributed, it would still be better if the groups were closer together in numbers.

Another limitation would be that because of its distribution via the internet, there is a possibility of a language barrier when it comes to the DASS questionnaire. Many participants may have been interested in taking part but due to the phrasing of the mental health questions they may have given up trying. However, the fact that it was available to anyone from anywhere

is also a strength within the study. It's not location, gender, race or culture specific, therefore has a wider sample of individuals. It could have been made more specific for more precise results on a specific area or possibly gender if gender was involved within the study or possibly age should not have been made within groups but simply an input number instead for further details.

Many of the participants also reached out due to interest in results and interest in the study, because not many studies have been made in the last couple years that are pet based on mental health, especially using DASS. With the growing interest in mental health within society, it is curious to see results from such a study having been made, on people's beloved pets.

5.4 Future Research.

For future research that may recreate this study or do something similar it would be interesting to make more specific demographic questions, possibly involve gender and more thorough age identification than this one. It would also be very positive to see more studies be done that involve qualitative results due to the insight they provide, possibly behaviour based studies because of the qualitative results even. Future studies should also make note of the limitations mentioned above and as difficult as it might be, try to get groups that are as close as possible to number size. Otherwise it would be interesting in future studies to see whether pet based opinions or mental health are area based and focus possibly only on Irish pets or American pets or possibly European pets in general but to narrow down the field would help with narrowing down results and possibly finding significance and reasons for it.

5.5 Conclusion.

To conclude, within the quantitative studies, two out three hypothesis ended up being incorrect while our last hypothesis proved true. The study found no significant results in DAS scores between pet owners and non-pet owners and no significant results between cat owners and

other pet type owners. However, the study did find significant results in DAS scores between age groups, leading to the possibility of further investigation between more precise ages. The results of the first two hypothesis were not as expected but looking into the limitations of the study it is possible to determine why that may be the case. When it comes to the qualitative segment of the study a lot of information was gathered through the responses to the open ended question that were not anticipated at the start. Many behaviour analysis options opened up because of the findings within the qualitative study and because of the insignificant findings of the questionnaire of DAS scores, it furthers the more in-depth search for behaviour, qualitative responses. While the study was not necessarily an innovative idea, it does however add to the ever growing pool of pet based studies that contribute to mental health research and finding more and more ways to help individuals with such issues. Due to the use of the DAS scale it adds an extra part into research that had not been done often beforehand, more so, because of its use of a qualitative segment, something not commonly seen in pet based studies at all, it opens up the possibility for more in-depth types of pet studies using qualitative data instead of quantitative.

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Appendices.

Information sheet and Consent Form

Coversheet For Anonymous Survey

My name is Teodora and I am conducting research in the Department of Psychology that explores Mental health regarding pet ownership and age. This research is being conducted as part of my studies and will be submitted for examination.

You are invited to take part in this study and participation involves completing and submitting the following anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been submitted.

The questionnaires will be securely stored and data from the questionnaires will be stored on a password protected computer.

It is important that you understand that by completing and submitting the questionnaire that you are consenting to participate in the study.

Should you require any further information about the research, please contact

Teodora Ivanova, xxxxxxx@mydbs.ie. My supervisor can be contacted at xxxxxxx@dbs.ie

Thank You so much for taking part in my study! ^^

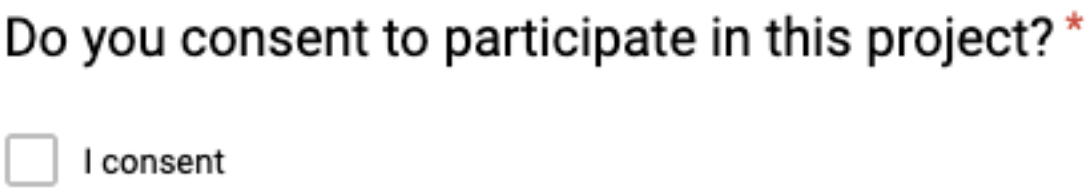

Figure 8: Consent form taken from Google Forms questionnaire

Survey

Demographic questions

On the 'Occupation' and 'Owning a pet' questions you may tick multiple answers*

Age:

- 18 – 30
- 31+

Occupation:

- Work
- College
- Different

Owning a pet:

- Cat
- Dog
- Other
- None

Questionnaire:

Please read each statement and select a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to a considerable degree, or a good part of time

3 Applied to me very much, or most of the time

1. I found it hard to wind down

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

2. I was aware of dryness of my mouth

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

3. I couldn't seem to experience any positive feeling at all

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

5. I found it difficult to work up the initiative to do things

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

6. I tended to over-react to situations

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

7. I experienced trembling (eg., the hands)

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

8. I felt that I was using a lot of nervous energy

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

9. I was worried about situations in which I might panic and make a fool of myself

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

10. I felt that I had nothing to look forward to

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

11. I found myself getting agitated

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

12. I found it difficult to relax

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

13. I felt down-hearted and blue

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

14. I was intolerant of anything that kept me from getting on with what I was doing

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

15. I felt I was close to panic

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

16. I was unable to become enthusiastic about anything

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

17. I felt I wasn't worth much as a person

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

18. I felt that I was rather touchy

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

19. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

20. I felt scared without any good reason

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

21. I felt that life was meaningless

Did not apply to me AT ALL	**0**	**1**	**2**	**3**	**Applied to me VERY MUCH**

Your Opinion!

Finally, if I may ask you for your personal opinion for a quick second. Thank You!

What do YOU believe the benefits of owning pets are?

Debrief sheet

Thank You so much for taking part in my study.

I chose this topic due to my love of animals and my interest in animal psychology and how our furry friends benefit our lives. ^^

I am very grateful for your participation.

Thank You and I hope you have a nice day!

Support Services:

If you felt any disturbance at any of the questions I greatly apologise.

Please seek help on any of the help lines, websites offered below or look up your local help line.

Irish specific help line: Pieta House (Suicide & Self-harm)

National Suicide Helpline (Pieta House) 1800 247 247

www.pieta.ie

Tel: 01 623 5606

Turn2Me.org (Online one to one or group counselling)

Grow (Mental Health support and Recovery)

www.grow.ie

Tel: 1890 474 474

If you are from outside of the Republic of Ireland and require help or assistance please search for your local helplines or go to any online services such as:

Online help and support: https://www.7cups.com/member/

DASS Scoring Template

DASS	Scoring Template
	S
	A
	D
	A
	D
	S
	A
	S
	A
	D
	S
	S
	D
	S
	A
	D
	D
	S
	A
	A
	D

Apply template to both sides of sheet and sum scores for each scale.
For short (21-item) version, multiply sum by 2.