



## **BSc in Psychology**

# Pet ownership, Well-being, Mental health and the Effect on Depression and Anxiety

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## Foreword and Acknowledgements

Submitted in partial fulfilment of the requirements of the BSc Psychology degree, Reykjavík University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.

### Abstract

The rate of mental health disorders has been increasing over the last years and is becoming a large societal problem worldwide. Individuals suffering from mental health disorders are believed to be less happy and evaluate their mental health to be lower than those who are not suffering. Today, depression and anxiety are the two most common mental health disorders and threaten many people's lives. Companion animals have been proposed as a prevention and a treatment measure. The aim of the study was to investigate whether pet owners were different from non-pet owners in this regard, i.e. whether they evaluated their mental health to be better than non-owners or were less likely to suffer from symptoms of depression and anxiety disorders. Also to investigate whether pet-owners who spent much time with their pets were less likely to suffer from symptoms of depression and anxiety disorders than pet owners who spent little time with their pets. Participants (N = 1.228) from a Gallup study, the researcher's Facebook friend list and undergraduate psychology and business students at the University of Reykjavík, participated in this study and their age was 18 years and older. The DASS-21 scale was used to measure depression, anxiety and stress symptoms. The results showed that there was no significant mean difference on depression and anxiety symptoms between pet- and non-pet owners. Also, there was no significant mean difference on depression and anxiety symptoms between pet owners who spent much time with their pets than those who spent little time with their pets. The results also showed that males who allowed their pets to sleep in their beds showed more symptoms of anxiety compared to females who allowed their pets to sleep in their beds.

*Keywords:* pet ownership, well-being, mental health, depression, anxiety

### Útdráttur

Á ári hverju aukast geðræn vandamál í heiminum sem stuðla að ýmsum samfélagslegum vandamálum. Einstaklingar sem þjást af geðrænum vanda eru líklegri til að meta andlega líðan sína sem verri en þeir sem ekki þjást. Þunglyndi og kvíði eru algengustu geðrænu vandamálin í heiminum í dag og ógna lífi margra einstaklinga. Gæludýr hafa verið nefnd sem möguleg forvörn og meðferðarúrræði. Markmið rannsóknar þessarar var að skoða hvort munur væri á gæludýraeigendum og þeim sem ekki eiga gæludýr hvað þetta varðar, þ.e. hvort gæludýraeigendur mætu andlega líðan sína betri, væru ólíklegri til að vera greindir með eða þjást af einkennum þunglyndis og kvíða og væru ánægðari með lífið en þeir sem ekki eiga gæludýr. Einnig að skoða hvort þeir gæludýraeigendur sem verja miklum tíma með gæludýrum sínum væru ólíklegri til að vera greindir með eða þjást af einkennum þunglyndis og kvíða en þeir sem verja litlum tíma með þeim. Þátttakendur voru 1.228 frá rannsóknarfyrirtækinu Gallup, af Facebook síðu rannsakanda og grunnemar í sálfræði og viðskiptafræði við Háskólann í Reykjavík 18 ára og eldri. DASS-21 kvarðinn (Depression Anxiety Stress Scale) var notaður til að meta þunglyndi og kvíða. Niðurstöður bentu til þess að enginn marktækur munur væri á einkennum þunglyndis og kvíða milli gæludýraeigenda og þeirra sem ekki eiga gæludýr. Einnig bentu niðurstöður til þess að enginn marktækur munur væri á einkennum þunglyndis og kvíða hjá þeim sem verja miklum tíma með gæludýrum sínum og þeim sem verja litlum tíma með þeim. Niðurstöður bentu einnig til þess að karlar sem leyfa gæludýrum sínum að sofa uppí rúmi sínu, sýndu fremur einkenni kvíða en konur sem leyfa gæludýrum sínum að sofa uppí rúmi.

*Lykilhugtök:* gæludýraeign, vellíðan, andleg líðan, þunglyndi, kvíði

### Pet Ownership and the Effect on Mental Health, Depression and Anxiety Symptoms

According to the World Health Organization (2017a), mental health has been an important concern over the last years as mental health disorders are on the rise and are becoming a large societal problem worldwide. In Europe, mental health disorders are considered to be almost 20% of all diseases and are estimated to affect about 83 million individuals (World Health Organization, 2017a). Mental health is associated with well-being, wherein individuals, for instance, realize their ability in life, can cope with normal stressful situations and are able to work successfully and accept responsibility in the community (Diener, Suh, Lucas, & Smith, 1999; World Health Organization, 2017a). Individuals suffering from mental health disorders, are believed to be less happy, are in more risk of experiencing social rejection and, therefore, estimate their own mental health lower than those who are not suffering. They are also in high risk of morbidity and mortality (Cacioppo, Hughes, Waite, Hawkey, & Thisted, 2006; Shankar, McMunn, Demakakos, Hamer, & Steptoe, 2016).

Depression and anxiety are the two most common mental health disorders worldwide, whose prevalence has been increasing over the last years (World Health Organization, 2017b). Individuals suffering from depression are likely to report symptoms of anxiety at the same time, as those two disorders are related with several common factors (Byllesby, Durham, Forbes, Armour, & Elhai, 2016; Rawal et al., 2014). Individuals suffering from depression and anxiety need to confront many symptoms that can have negative effects on their lives, for instance, depressed mood, constant worries, stress, fear, sleep difficulties, reduction of energy, negative feelings, low self-esteem, and functional limitation (Jim et al., 2013; Xu & Chi, 2013).

Due to these detrimental effects that depression and anxiety disorders can have on an individual's life, it is important to provide them with effective clinical mental health treatment that can better their mental health and, therefore, minimize the damage (Jorm et al., 1997). For individuals who get mental health treatment, the chances for recovery are considered to be good (World Health Organization, 2017a). Because of difference in individual values of what makes them satisfied in life, it is significant that mental health treatments are as varied as possible to be able to meet their needs (World Health Organization, 2017a).

Animals and humans have cohabited for a long time (Kamioka et al., 2014). Today, household pets are quite common and increasing rates in developed nations show that 63% of homes in the United States and Australia have pets and half of all homes in the United Kingdom (Herzog, 2011; O'Haire, 2010; Westgarth et al., 2010). Studies demonstrate multiple different theories why individuals bring pets to their homes (Herzog, 2011).

It has been supported that pets can affect their owners mental, social and physical health in terms of how they evaluate their own well-being (Herzog, 2011; Wood, Giles-Corti, & Bulsara, 2005; Zimolag & Krupa, 2009). According to Herzog (2011), most pet owners believe that relationship with their animals is good for them. Pets are for example considered to be faithful and show unconditional acceptance, affection and consolation to a physical intimacy. Pets are also assumed to make the owners believe that they are cared for and loved (Wood et al., 2005). Pet ownership is often considered to be a prevention and a treatment strategy for individuals dealing with mental health disorders and pets have also been used in mental treatments with positive effects on patient's condition (Kamioka et al., 2014; Wood et al., 2005).

The findings of a study made by Wood and colleagues (2005) indicated a strong positive effect of pet-ownership on the owner's mental health. Pet owners were significantly more likely to report their mental health to be excellent or very good compared to non-pet

owners. The findings also indicated that the pets facilitated the owner's social interaction and their social network. The findings also indicated that pet owners were less likely to be diagnosed with symptoms of depression and anxiety disorders than to non-owners.

Supporting the findings of Woods et al. (2005), McConnell, Brown, Shoda, Stayton, and Martin (2011) examined the potential benefit of owning a pet on individual's social support and their well-being. The results from the study did not only provide evidence that pet owners evaluated their mental health better than non-owners, it also indicated that pet owners had more self-esteem and were less lonely than non-owners with similar closeness and support from the main individuals in their lives such as siblings, parents and friends.

Despite some promising results, pets might have on the owner's mental health, studies have been conflicting. A number of them have indicated some negative effects of owning a pet on the owner's health. In addition, a study by Herzog (2011) where the objective to examine whether there was a difference between pet-owners and non-pet owners regarding mental health, work and social effectiveness. The results showed that pet owners were more likely than non-owners to report symptoms of mental health disorders such as depression, anxiety and insomnia compared to non-owners. Another study by Antonacopoulos and Pychyl (2010), showed that dog owners evaluated their mental health lower than non-owners and they were also more depressed, visited doctors more often and took more medicine than non-owners. A study performed by Müllersdorf, Granström, Sahlqvist, and Tillgren (2010) on a large Swedish population showed that pet owners were more likely than non-owners to take sick leave from work and also reported more symptoms of mental health disorders such as depression, anxiety and insomnia.

In the light of those contradicting studies on how pet-ownership affects mental health, further research is needed. As according to Guðmundur B. Friðriksson and Árný Sigurðardóttir at the Public Health Department of Reykjavík City (email correspondence,

December 5, 2016), Icelandic records show increased pet ownership last years in Reykjavík, the largest city in Iceland. At the same time, OECD records show that Icelandic population has the highest level of consumption of anti-depressant medicine (Directorate of Iceland, 2015). Therefore, Iceland may offer a good setting to examine this topic. To the best knowledge to the author, the relationship between mental health issues and pet-ownership in Iceland, has received limited attention of researchers. If proven to be effective, pet-ownership could, in some cases, be offered as a noninvasive and convenient alternative to psychiatric drugs. Therefore, the aim of the study was to examine the relation between pet ownership and mental health in Iceland.

Two hypothesis were proposed based on the literature cited above. The first is that pet owners will be less likely to report symptoms of depression and anxiety disorders than non-pet owners. The second was that pet owners who spend much time with their pets, would be less likely to report symptoms of depression and anxiety than those who spend little time with their pets.

## **Method**

### **Participants**

A total of 1228 individuals (42% male, 58% female) participated in the study, consisting of three distinctive groups. The author recruited the first group by posting an online survey on her personal Facebook page, gathering 281 participants (22.8% male, 77.2% female). The second group of individuals consisted of 76 undergraduate first year psychology and business students at Reykjavík University (23.7% male and 76.3% female), enrolled in the classes “Business management”, and “Physiological psychology”. The third group of participants ( $n = 871$ , 49.8% male, 50.2% female) consisted of a randomly selected sample from a pool of participants in a so called “Opinion Panel” conducted by the Gallup research company via online web survey. The Opinion Panel is representative for the Icelandic

population of the ages 18 – 75. For all three groups, participants had to have reached the age of 18 in order to participate in the survey. This study, therefore, used a mixture of convenience and random sampling, as the first two groups were recruited because of their proximity to the researcher, but the third group was recruited randomly by Gallup.

Participants were asked to indicate their age by selecting the appropriate age group, therefore, age is an ordinal variable in this study. The age ranged from a minimum of 18-20 years old to a maximum of 65 years and older. For the Facebook participants, 36 years and older was the most common age group, or 68% of the total participants. For the undergraduate business and psychology students, the most common age group was 21-23 years old, or 63% of the total participant. For the Gallup participants, 65 years old and older was most common, or barely 20% of the total participants.

All participants in the study were volunteers and no reward was offered, except for the first year undergraduate psychology students as they were offered course credit for participation in BSc projects. The students could earn 10% toward their final course grade in selected courses for 3 hours of research participation, whereby participation in this current study was worth 20 minutes.

## **Measures**

To test the hypotheses, this study used two sets of questionnaires. First, the same questionnaire was administered to the Facebook and the university students. The questionnaire contained 29 questions on participants' background, pet ownership and pet involvement (Appendix A). It also contained questions about anxiety, depression and stress symptoms from the short version of the Icelandic Depression Anxiety Stress scale (*DASS-21*). *DASS-21* scale is a self-report questionnaire with seven questions for each scale of anxiety (i.e. "I experienced difficulties breathing"), depression ("I couldn't seem to experience any positive feelings at all"), and stress symptoms (i.e. "I found it hard to wind down") (Henry &



Crawford, 2005). The second questionnaire was administered via online web survey by Gallup and it contained two questions. The first was about participants' evaluation of their mental health ("How good or poor do you evaluate you own mental health?") and the second was about participants' pet ownership ("Do you have pets?") (Appendix B).

**Background information.** Participant's background information was assessed with questions on demographic factors (i.e. gender, age, education, residence) as well as one question about participants' self-evaluation on their general mental health. The questions were mostly on three to seven point ordinal scales (Appendix A).

**Pet ownership and pet intimacy information.** Participants' pet ownership and pet intimacy information were assessed with questions about whether or not they owned a pet, time spent with pets and a question about whether the pets sleeps in the owner's bed or not. The ordinal questions were on four to seven-point scales. In the statistical analysis, participants were divided into two groups, pet owners and non-pet owners. Furthermore, pet-owners were divided into two groups, those who spent much time with their pets (>1 hour a day) and those spent little time with their pets (<1 hour a day). Pet-owners were also divided between those who allowed their pets to sleep in their beds and those who did not.

**Depression Anxiety Stress scale (DASS-21).** Depression, anxiety and stress were measured using the Icelandic short version of the DASS scale (*DASS-21*), which was translated by Þórarinn Tyrfingsson (Ingimarsson, 2010). The DASS-21 scale is a self-report questionnaire that consists of 21 questions about the respondent's emotional experience during the past week and is the shorter version of the 42 question DASS scale (Henry & Crawford, 2005). The DASS-21 scale consists of seven questions that measure each scale, depression, anxiety and stress. It included questions like "I couldn't seem to experience any positive feeling at all" for the depression scale, "I experienced breathing difficulty" for the anxiety scale and "I found it hard to wind down" for the stress scale. The response options for

each question were on a four point ordinal scale ranging from 0 (*did not apply to me at all*) to 3 (*did apply to me very much, or most of the time*). High score indicates more depression, anxiety and stress symptoms. In statistical analysis, each scale, i.e. for depression, anxiety and stress, each scale consisted of seven variables (Appendix C). The DASS-21 scale has proven to have an excellent internal reliability. The translated Icelandic version of the DASS-21 scale has been proven to be as valid and reliable as the original DASS-21 scale (Ingimarsson, 2010). The DASS-21 scale has been proven to be compatible with the DASS-42 scale with a very high correlation ( $r = .81$ ) (Lovibond & Lovibond, 1995).

### **Procedure**

The first step was to inform the Data Protection Authority about the study, once permission was obtained, the process began. The second step was to share the questionnaire online on the researcher's Facebook page in late February 2017, using the online survey program "Survey Monkey". Her Facebook partners, 18 years of age or older, were asked to participate in a study. When participants opened the study, they were taken to the first page which included an explanation about the purpose of the study. On the same page, participants were informed about the study (Appendix D) and then the questions were asked.

The third step was to administer the questionnaire in paper-form to first year undergraduate university students in business and psychology. This was done in two classes, one for each department, at Reykjavík University in early March 2017. All students who attended class that day participated. Before the questionnaires were delivered, the purpose of the study was explained with other important information about the study (Appendix D). After the students had answered the questions, the researcher collected the questionnaires and only the psychology students were asked to sign their names on a separate sheet. This was done in order for them to gain the course credit, offered for participation in BSc research projects. The fourth step was to contact the research company Gallup and send them two

questions, one about pet ownership and one about participant's self-evaluation of their mental health. The two questions were included in their Opinion Panel in early March 2017.

Statistical analysis was processed with the Statistical Package for the Social Science (SPSS) for the Facebook and the undergraduate university results but the Gallup results were sent to the researcher by email.

### **Design and Data Analysis**

The study design was quantitative, where a cross-sectional anonymous self-report questionnaire was used to compare the difference between pet- and non-pet owner's depression, anxiety and stress symptoms. This study used data from three groups of participants. Two of them, the Facebook and university groups, got an identical questionnaire and are analyzed together. Because the Gallup's participants were only used as a comparison to the Facebook and university participants, only two questions were included for this study and the data obtained from Gallup was analyzed separately.

For the data obtained from the Facebook and university questionnaires, the independent variables were gender, age, residence, education, pet ownership, time spent with their pets, and pet involvement and the dependent variable were depression and anxiety symptoms.

An exploratory Factor Analysis was used to test the construction of the DASS-21 scale to see whether the 21 variables loaded on their intentional factors i.e. the Depression scale, the Anxiety scale and the Stress scale. A Varimax-rotation method was used to minimize the numbers of the variable that had high loadings on more than one factor (Afzal et al., 2016).

In the Gallup study the independent variable was pet ownership. A comparison was made between pet- and non-pet owners on self-evaluated mental health (the dependent variable).

To test hypothesis 1, i.e. whether pet owners were less likely to suffer from symptoms of depression and anxiety symptoms than to non-pet owners, a univariate analysis of variance of one-way ANOVA (*Analysis of variance*) was used. A Levene's test was used to examine the assumption of homogeneity of the variance. The results of the test indicated that there was no significant difference between the variance of the symptoms of depression and anxiety for pet- and non-pet owners,  $F(1, 344) = 1.026, p = .312$ . Therefore, the assumption of equal variance between the two groups was met.

To test hypothesis 2, i.e. whether pet owners who spent much time with their pets were less likely to suffer from depression and anxiety symptoms compare to those who spent little time with their pets, a univariate analysis of variance of one –way ANOVA was used. The Levene's test was used to examine the assumption of homogeneity of the variance. The results of the test indicated that there was no significant difference between the variance of the pet owners who spent much time with their pets and for those who spent little time with their pets,  $F(1,129) = 2.120, p = .148$ . Therefore, the assumption of equal variance between the two groups was met.

## **Results**

### **Sample Characteristics and Descriptive statistics**

A total of 1.228 individuals participated in the study, including the Gallup participant's. In total, 58% of the participants was female and 42% male. A majority of the participants, 65%, were in the age group 36 years and older or 65%. Pet owners were 37% of the participants, and non-pet owners were 63%. Most of the pet owners were 36 years old or older or approximately 36% of all pet owners. About 72% of the pet owners were female compared to 28% of them being male. However about 49% of the pet owners in the Facebook and the university groups were female compare to 51% of them being male.

Figure 1 shows how the participants in all three groups evaluated their own mental health. The Gallup participants were used as a comparison group to the Facebook and the university groups. In general, the majority of all of the participants in the study including the Gallup participants evaluated their own mental health to be very good or rather good, or 70.8%. However, the distribution was more even in the Gallup group, as 38% reported it “very good” and then regressing to 2% reporting it “very bad”. In the other groups, the most common answer was “rather good”, and only around 20% reported it “very good”.

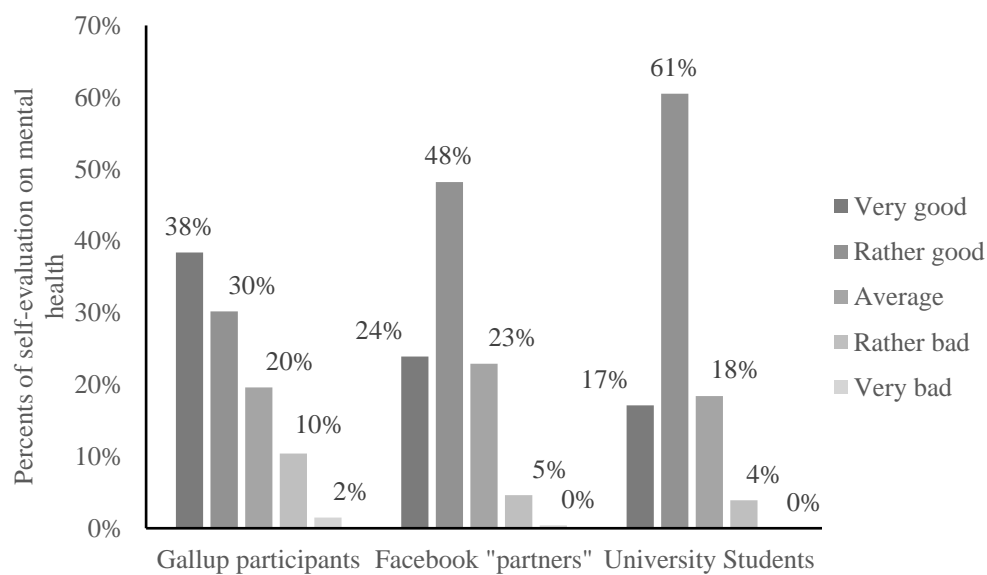


Figure 1. Participant’s evaluation on their own mental health.

**Factor Analysis on the Icelandic Version of the Depression, Anxiety and Stress scale.**

To test the factor construct of the Icelandic version of the *DASS-21 scale*, a principal component analysis was conducted on the 21 items for the three factors with an orthogonal rotation (varimax). The first factor was depression symptoms and explained 19.7% of the variance in the variables, the second was anxiety symptoms which explained 15.3%, and the third was stress symptoms which explained 13.2%, total explanation was just over 48% in the variables. These three factors make up the *DASS-21 scale*.

The Kaiser-Meyer-Olkin test which measures the sampling adequacy, indicated that the sample was sufficient with,  $KMO = .934$ , which is according to Field (2013) is extremely good. The result of the Bartlett's test (*e. Bartlett's Test of Sphericity*) showed that the correlation between the variables were good for factor analysis as the results were significant,  $X^2(210) = 3328.610, p < .001$ .

All three factors had good internal reliability in the present study, or (Cronbach's  $\alpha = .892$ ) for the depression factor, (Cronbach's  $\alpha = .817$ ) for the anxiety factor, and (Cronbach's  $\alpha = .835$ ) for stress factor. These results indicated that the Icelandic *DASS-21* scale does measure three independent factors, i.e. depression, anxiety and stress, thus, these three subscales, will be used in further analysis.

### **Hypothesis 1: Pet Owners and Symptoms of Depression and Anxiety.**

In all cases, non-pet owners had higher mean score on depression, anxiety and also stress symptoms. Figure 2 shows the mean depression symptoms between the pet owners group ( $M = 10.24, SD = 3.48$ ) and non-pet owners group ( $M = 10.67, SD = 3.48$ ). However, there was no significant mean difference between the two groups,  $F(1,344) = 1.077, p = .300$ .

Figure 2 shows also the mean anxiety symptoms between the pet owners group ( $M = 8.73, SD = 2.79$ ) and the non-pet owners group ( $M = 8.96, SD = 2.99$ ), which shows that there was no significant mean difference between the two groups,  $F(1,346) = 5.16, p = .473$ .

Therefore, the results did not support the first hypothesis.

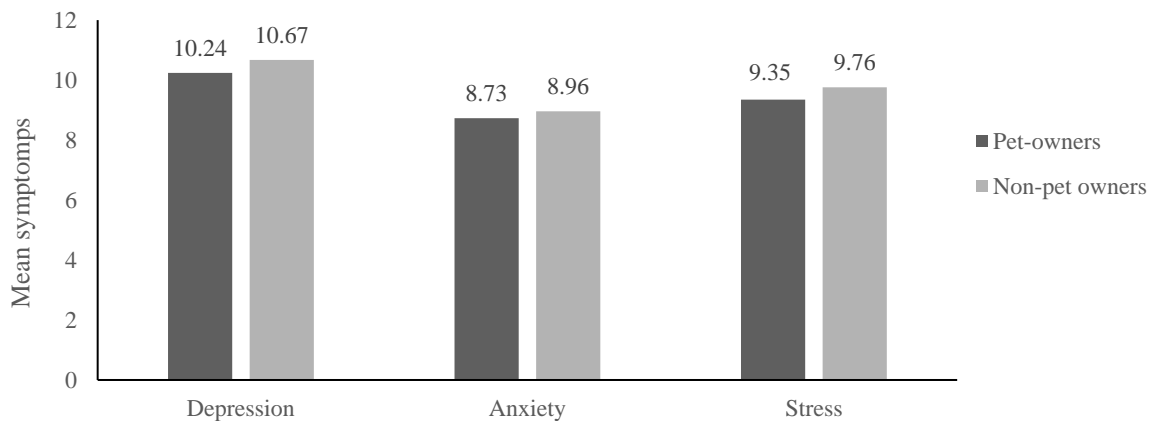


Figure 2. Mean depression, anxiety and stress symptoms between pet-owners and non-pet owners.

### Hypothesis 2: Time Spent with Pets and Symptoms of Depression, Anxiety and Stress.

In all cases, pet owners who spent much time with their pets had higher mean score on depression, anxiety and also stress symptoms. Figure 3 shows the mean depression symptoms for the pet owners who spent much time with their pets ( $M = 10.75$ ,  $SD = 3.95$ ) and the pet owners who spent little time with their pets ( $M = 9.58$ ,  $SD = 2.66$ ). This difference was marginally significant,  $F(1,127) = 3.590$ ,  $p = .060$ .

Figure 3 also shows the mean anxiety symptoms for the pet owners which spent much time with their pets ( $M = 9.10$ ,  $SD = 3.15$ ) and the pet owners which spent little time with their pets ( $M = 8.73$ ,  $SD = 2.51$ ). There was no significant mean difference between the two groups,  $F(1,129) = 2.065$ ,  $p = .153$  and therefore the results did not support the second hypothesis.

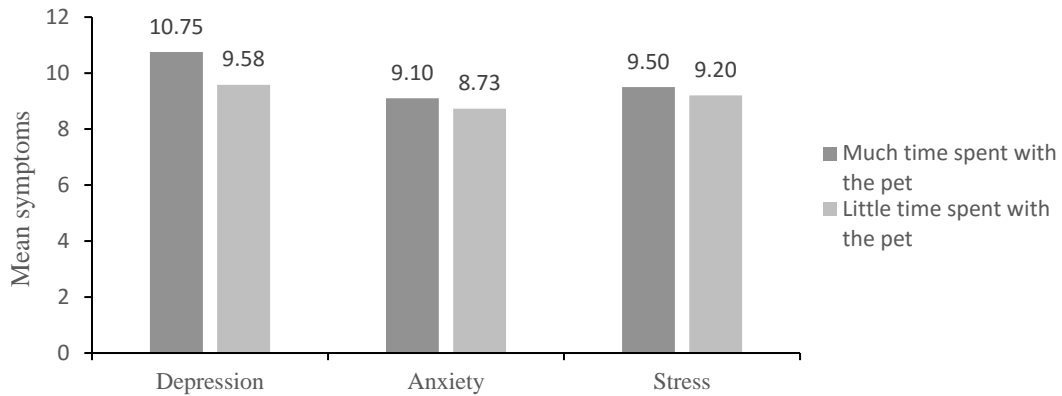


Figure 3. Mean scores of depression, anxiety and stress symptoms between participants who spend much time with their pets and those who spent little time with their pets.

As Figure 4 shows, there was a significant mean difference between females and males who allowed their pets to sleep in their beds on anxiety symptoms. That is, males ( $M = 10.18$ ) who allowed their pets to sleep in their beds showed more symptoms of anxiety than females ( $M=8.55$ ) who allowed their pets to sleep in their beds  $F(4,731) = 3.133, p = .004$ .

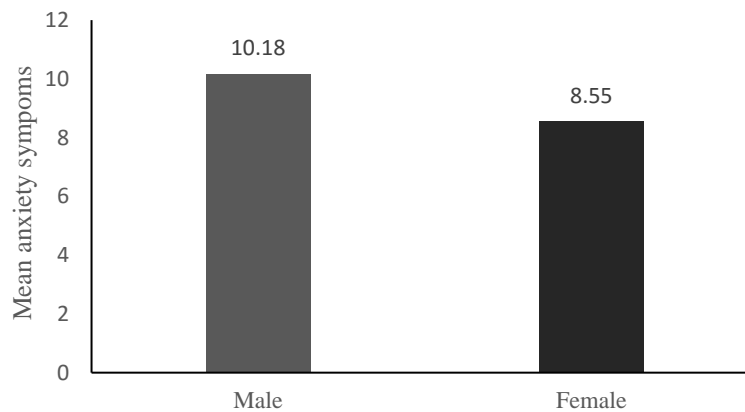


Figure 4. Mean gender difference on anxiety symptoms within the pet-owners group who allow their pets to sleep in their beds.



## Discussion

The current study offered an insight into the relationship between pet ownership and well-being. The main aim of the present study was to examine whether pet owners were different from non-pet owners in regards of mental health, i.e. whether pet owners evaluated their own well-being better than non-pet owners and were less likely to suffer from symptoms of depression and anxiety disorders. It was also a goal to examine if time pet-owners spent with their pets, had an effect on the owner's mental health.

The first hypothesis proposed that pet owners would be less likely to report symptoms of depression and anxiety than non-pet owners. Even though the results showed that non-pet owners showed more symptoms than pet owner, there was no significant mean difference between the two groups. Many researchers have studied the topic and are conflicting, the studies show either positive or negative effects of owing a pet on the owner's depression and anxiety symptoms (Jim et al., 2013; McConnell et al., 2011), and, therefore, these findings are contradictory. In the light of these results, it could be beneficial if future studies applied a longitudinal design. That is, to examine the mental health of individuals before pets move into their homes, and have a control group without pets, i.e. to investigate how pet ownership influences owners' mental health stage during the time, pets live in the owners' homes. To the researcher best knowledge, studies have failed to investigate this relationship.

The second hypothesis proposed that pet owners who spent much time with their pets, were less likely to report symptoms of depression and anxiety than those who spent little time with their pets. Even though the results showed that pet owners who spent much time with their pets showed more symptoms, there was no significant mean difference between the two groups. One possible explanation for these results might be failure of examining the attachment style individuals reported spending with their pets rather than hours spent. That is, like earlier study by El-Alayli et al (2006) showed that if the pet-owners felt more attached to

their pets such as consider them to be their friends or family members, they were less likely to report symptoms of depression and anxiety than those who did not feel attached to their pets.

Other notable results in the present study concerned the observed gender difference in anxiety symptoms for the pet owners who allowed their pets to sleep in their beds. That is, males who allowed their pets to sleep in their beds, showed more symptoms of anxiety than females who allowed their pets to sleep in their beds. These findings are important to investigate further, especially because they cannot be explained with gender difference in pet ownership. That is, as the results showed, there was no participant gender different on pet ownership in the Facebook and the university groups as 49% of the pet owners were female and 51% being male. These findings are important, as to the researcher's best knowledge, no previous studies have examined the gender differences in this regard.

Some limitations of this study must be mentioned. First, the sample size is rather small, with only 357 participants, along with 871 Gallup participant used as a comparison to the Facebook and the undergraduate university participants. It has been proven that a larger sample size gives the study more power and increases the chance of finding a significant mean difference (Fritz & MacKinnon, 2007). Also that the study relied on a convenience sample, not a randomly selected sample, as is most often feasible (Bowen et al., 2009). Because of these limitations, it is possible that the study was unable to identify a mean difference between the groups. Second, the measures of the study were self-reported and a number of studies have shown that might be a bias to the results. That is, self-report data might lead to biases, such as a lack of insight individuals might have (Fritz & MacKinnon, 2007).

However, the study has also an important strength, making it unique to the literature. To the researcher best knowledge, very few previously published studies have used a general sample, like this study did. Most previous studies have examined pet interventions for groups

with specific conditions, such as the elderly, mentally ill, college students and Alzheimer patients so, therefore, it is difficult to generalize the results of those studies to the general public. In this study, the participants were from different groups and the answering age range was wide so, therefore, it is easier to generalize them into the general public. That is, 68% of the Gallup and Facebook participants were 36 years old and older and 63% of the university participants were 21—23 years old. Another strength is that there were very few studies found on an Icelandic sample that have examined the relation between pet ownership and mental health so, therefore, the study might be considered important in Iceland.

In conclusion, before making a large assumption based on the results of the current study, we cannot determine causality. The relationship needs to be analyzed further as the direction of the association needs to be understood. Individuals who choose to have pets in their homes, might be different from those who do not choose to have pets. A study made by Wisdom, Saedi and Green (2009) showed that pet owners had a different personality and attribute than non-owners. Pet owners were more conscientious, more extraverted, less fearful, less preoccupied and their attachment style was also greater than non-pet owners.

Further studies should continue to examine the relation between pet ownership and mental health to gain more information about the matter, studies should rely on a larger samples and longitudinal research design.

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## Appendix A

## Questions for Facebook- and university participants

**1. Hvert er kyn þitt?**

*Merktu aðeins í EINN reit.*

- Karlmaður
- Kvenmaður
- Annað

**2. Hver er aldur þinn?**

*Merktu aðeins í EINN reit.*

- 18-20 ára
- 21-23 ára
- 24-26 ára
- 27-29 ára
- 30-32 ára
- 33-35 ára
- 36 ára eða eldri

**3. Hverjir eftirfarandi búa heima hjá þér?**

*Merktu má við FLEIRI en einn reit.*

- Maki/sambýlismaður/kona
- Börn og maki/sambýlismaður/kona
- Barn/börn
- Aðrir
- Ég bý einn/ein

**4. Hver er menntun þín?**

*Merktu aðeins í EINN reit.*

- Ég hef lokið grunnskólaprófi eða minna
- Ég hef lokið framhaldsskólanámi – eða iðnnámi
- Ég hef lokið háskólanámi

**5. Hversu vel eða illa líður þér almennt andlega?**

*Merkja má við FLEIRI en einn reit.*

- Mjög vel
- Fremur vel
- Í meðallagi
- Fremur illa
- Mjög illa

**6. Átt þú gæludýr?**

*Merkja má við FLEIRI en einn reit.*

- Nei, ég á ekki gæludýr
- Já, ég á hund/a
- Já, ég á kött/ketti
- Já, ég á annað gæludýr

**Spurning 7 á aðeins við um þá sem eiga gæludýr:**

**7. Hversu mörgum klukkustundum að meðaltalið verð þú með gæludýri þínu á sólarhring (hér er átt við stundir sem þú átt í “samskiptum” við dýrið (klappa, klóra, tala við, fæða dýrið, ganga með það, leika við það).**

*Merktu aðeins í EINN reit.*

- Skemur en 30 mín
- 30 mín – 1 klst
- 1-2 klst
- 2-3 klst

- o 3-4 klst
- o 4-5 klst
- o Lengur en 5 klst

Hér fyrir neðan eru spurningar þar sem þú ert beðinn um að merkja við aðeins eina fullyrðingu sem átti við í þínu tilfelli **síðustu vikuna**. Það eru engin rétt eða röng svör. Eyddu ekki of miklum tíma í að velta hverri fullyrðingu fyrir þér.

### **8. Mér fannst erfitt að ná mér niður.**

*Merktu aðeins í EINN reit.*

- o Átti alls ekki við mig
- o Átti við mig að einhverju leyti eða stundum
- o Átti töluvert vel við mig eða drjúgan hluta vikunnar
- o Átti mjög vel við mig eða mest allan tímann

### **9. Ég fann fyrir munnþurrki.**

*Merktu aðeins í EINN reit.*

- o Átti alls ekki við mig
- o Átti við mig að einhverju leyti eða stundum
- o Átti töluvert vel við mig eða drjúgan hluta vikunnar
- o Átti mjög vel við mig eða mest allan tímann

### **10. Ég virðist alls ekki geta fundið fyrir neinum góðum tilfinningum.**

*Merktu aðeins í EINN reit.*

- o Átti alls ekki við mig
- o Átti við mig að einhverju leyti eða stundum
- o Átti töluvert vel við mig eða drjúgan hluta vikunnar
- o Átti mjög vel við mig eða mest allan tímann

**11. Ég átti í erfiðleikum með að anda (t.d. alltof hröð öndun, mæði án líkamlegrar reynslu).**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**12. Mér fannst erfitt að hleypa í mig krafti til að gera hluti.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**13. Ég hafði tilhneigingu til að bregðast of harkalega við aðstæðum.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**14. Ég fann fyrir skjálfta (t.d. í höndum).**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**15. Mér fannst ég eyða mikilli andlegri orku.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**16. Ég hafði áhyggjur af aðstæðum þar sem ég gat fengið hræðslukast (panic) og gerði mig að fífl.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**17. Mér fannst ég ekki getað hlakkað til neins.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**18. Mér fannst ég vera mjög pirruð/pirraður.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**19. Mér fannst erfitt að slappa af.**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**20. Ég var döpur/dapur og niðurdreginn.**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**21. Ég átti erfitt með að umbera truflanir á því sem ég var að gera.**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**22. Mér fannst ég gripin(n) skelfingu.**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**23. Ég gat ekki fengið brennandi áhuga á neinu.**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**24. Mér fannst ég ekki vera mikils virði sem manneskja.**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**25. Mér fannst ég frekar hörundsár.**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**26. Ég varð var/vör við hjartsláttinn þótt ég hefði ekki reynt á mig**

**(t.d. hraðari hjartsláttur, hjartað sleppti úr slagi).**

Merktu aðeins í EINN reit.

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**27. Ég fann fyrir ótta án nokkurrar skynsamlegrar ástæðu.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**28. Mér fannst lífið vera tilgangslaust.**

*Merktu aðeins í EINN reit.*

- Átti alls ekki við mig
- Átti við mig að einhverju leyti eða stundum
- Atti töluvert vel við mig eða drjúgan hluta vikunnar
- Átti mjög vel við mig eða mest allan tímann

**Spurning 29 á aðeins við um þá sem eiga gæludýr:****29. Sefur gæludýrið þitt upp í rúmi þínu á næturnar ?**

*Merktu aðeins í EINN reit.*

- Alltaf
- Stundum
- Sjaldan
- Aldrei



## Appendix B

## Questions for Gallup participants

**Spurning 1: Hversu vel eða illa líður þér almennt andlega?**

- Mjög vel
- Fremur vel
- Í meðallagi vel eða illa
- Fremur illa
- Mjög illa

**Spurning 2: Átt þú gæludýr?**

- Nei, ég á ekki gæludýr
- Já, ég á hund/a
- Já ég á kött/ketti
- Já, ég á annað gæludýr

## Appendix C

### Depression, anxiety and stress scales with each variable

#### **Depression variables**

Ég virðist alls ekki geta fundið fyrir neinum góðum tilfinningum.

Mér fannst erfitt að hleypha í mig krafti til að gera hluti.

Mér fannst ég ekki getað hlakkað til neins.

Ég var döpur/dapur og niðurdreginn.

Ég gat ekki fengið brennandi áhuga á neinu.

Mér fannst ég ekki vera mikils virði sem manneskja.

Mér fannst lífið vera tilgangslaust

#### **Anxiety variables**

Ég fann fyrir munnþurrki.

Ég átti í erfiðleikum með að anda (t.d. alltof hröð öndun, mæði án líkamlegrar reynslu).

Ég fann fyrir skjálfta (t.d. í höndum).

Ég hafði áhyggjur af aðstæðum þar sem ég gat fengið hræðslukast (panic) og gerði mig að fífli.

Mér fannst ég gripin(n) skelfingu.

Ég varð var/vör við hjartsláttinn þótt ég hefði ekki reynt á mig

(t.d. hraðari hjartsláttur, hjartað sleppti úr slagi).

Ég fann fyrir ótta án nokkurrar skynsamlegrar ástæðu.

#### **Stress variables**

Mér fannst erfitt að ná mér niður.

Ég hafði tilhneigingu til að bregðast of harkalega við aðstæðum.

Mér fannst ég eyða mikilli andlegri orku.

Mér fannst ég vera mjög pirruð/pirraður.

Mér fannst erfitt að slappa af.

Ég átti erfitt með að umbera truflanir á því sem ég var að gera.

Mér fannst ég frekar hörundsár.

## Appendix D

## Information about the study

Tilgangur rannsóknarinnar er lokaverkefni BSc nemenda í sálfræði við Háskólann í Reykjavík.

Rannsóknin er framkvæmd til að meta tengsl gæludýraeignar við andlega líðan.

Ábyrgðarmaður rannsóknarinnar er Dr. Þorlákur Karlsson, Sálfræðisvið Háskólans í Reykjavík.

Rannsakandi er Björk Ólafsdóttir, netfang [bjork14@ru.is](mailto:bjork14@ru.is)

Áður en byrjað er ber að upplýsa þig um að þér er hvorki skylt að svara einstökum spurningum né spurningarlistanum í heild. Farið verður með öll svör sem trúnaðarmál og þau eru ekki rekjanleg til einstaklinga.

Vinsamlegast leitið til rannsakanda ef einhverjar spurningar vakna.

Takk fyrir þátttökuna.