



Impact of the human-animal bond on stress

Saumya Swamy

saumyaaswamy@gmail.com

Mithibai College of Arts, Science and
Commerce, Mumbai, Maharashtra

Rhea Bedi

rheabedi25@gmail.com

Mithibai College of Arts, Science and
Commerce, Mumbai, Maharashtra

Yusra Nadeem Dawnak

yusranadeemm@gmail.com

Mithibai College of Arts, Science and
Commerce, Mumbai, Maharashtra

ABSTRACT

The animal-human bond is quite easily one of the purest bonds that exist out there. A research study was conducted by Swamy, S., Bedi, R., and Dawnak, Y. in order to establish and explore how the animal-human bond impacts an individual's general stress levels and welfare. A review of literature for some recent papers on the same topic have been included so as to understand the relationship between pets and stress better. The formulated hypothesis was – pets bring about a significant difference in general stress levels. To investigate whether having pets has an effect on an individual's stress responses, conducted a field study. A survey was conducted in order to get data that was later scored to verify our hypothesis. We identified two independent variables (IV) – sex (at two levels – male and female) and pets (at two levels – people with and without pets). The questionnaire was administered to 60 participants ($n = 60$), between the ages of 15 to 35. Equal number of males and females were randomly selected for the study ($m = 30$ & $f = 30$). Further, the number of males was divided into 15 males who are pet parents and 15 males who are not petted parents through random selection. Similarly, the number of females was divided and 15 females who are pet parents and 15 females who are not petted parents were randomly selected. In order to gather data for this study, an unstandardized questionnaire was developed. It had 11 items in total. The rating scale used to measure the responses was a 5-point-Likert-type scale (one that allows the individual to express how much they agree or disagree with a particular statement). The psychometric properties of this rating scale can be found as a result of further research. A parametric inferential statistical analysis was employed, i.e., a 2x2 ANOVA. The two independent variables identified were sex and people with pets and people with no pets. It was observed that the f value for the interaction effect between gender and pet ownership is 1.106, $p > 0.05$. This suggests that there are no significant differences between males and females who own pets and those who don't. Therefore, the results were not in line with the aforementioned research since there were no significant differences found between pets and stress. However, discussions about why that could have happened has been mentioned in the paper under the Results/Discussion section.

Keywords: Pets, Stress, Stress Levels, Human-Animal Bond, Research, Questionnaire, Likert-Scale, Psychometric, Psychology, Dogs, Cats, Animals, Relationship, Calm, Anxiety, Values, ANOVA, Unstandardized, Descriptive Statistics, Parametric, Inferential Statistics, Pet Owners, Non-Pet Owners, Sex, Population, Sample, Randomization

1. INTRODUCTION

We can't deny the fact that there is something unbelievably warm and heartening about coming back home after a long tiring day at work and being hailed with brushes past your legs or wet, sloppy kisses. For several people out there, spending time with pets or animals in general is the definitive remedy to a taxing, distressing day. In fact, in a study that was conducted by Grimshaw, when individuals were presented with distressing errands in 4 diverse situations – alone, with their partner, with their pet, or with their partner and their pet – they reported the lowest amount of stress reactivity and the most rapid recovery in the situation where they were only with their pet animal.

Now we know that robust animal-human bond more often than not results in the greatest amount of stress relief; however, even short-term happenstances with animals can help alleviate and uplift an individual's mood. In another study conducted by Grimshaw, hospital patients who spent a little amount of time with a pet dog prior to a forthcoming operation reported a 37% decrease in their anxiety levels, possibly because the dog's presence around them aided in shifting their attention from their apprehensions regarding the operation. Pets are, undoubtedly, a huge responsibility. Raising a puppy or a kitten, or any other animal for that matter, is a massive task and is no less than rearing a human baby. Right from their meal preparations to keeping fresh water available 24x7 to cleaning and bathing them occasionally, it is cumbersome. However, despite these challenges, the love and affection that a pet animal provides goes unsurpassed. If there is an unconditional love out there, it is for sure given out by a pet animal. They are a delight to have around and their weird, hilarious antics never fail to break us out in fits of laughter, which, again, is a great stress buster. Undeniably, there are many, many studies that have been conducted that indicate that pets pave a robust path to stress relief. They aid, as recorded by Grimshaw, not only in regulating our blood pressure, but also

detrimental stress hormone like cortisol, an over-production of which could lead to depression and anxiety. Conversely, they help increase the advantageous hormones like oxytocin, which is associated with joy and calmness. In fact, in one of Odenaal's studies, some individuals experienced a rise in the production of dopamine and endorphins after spending just around 5 minutes with an animal.

Now, higher stress relief doesn't just result by spending time with four legged furry animals only. There are other pets that prove to be great stress busters as well. For instance, in a study conducted by Duncan, plainly looking at a fish tank, as opposed to a bare wall for around half an hour can prove to be beneficial for an individual's blood pressure since it helps lower it. Observing an aquarium too, as recorded by Lynch, can be an increasingly powerful relaxant as opposed to many established meditative methods. Pets act as marvelous agents of stress relief as they bring with them a plethora of joyous moments. However, taking care of a pet animal is no minor task and not catering to the pet's needs may be increasingly stressful for the pet as well. Besides, the vet bills are on the pricier end too at times and a long-term commitment for the same is required. Pet insurance could be a leeway here so that finances regarding the care of a pet don't add onto the list of stresses. Also, making mindful decision about which pet to bring home is also an important aspect. Make note of the attention, time and space you can allocate to your furry baby. Make mindful choices before entering this long-term commitment so as to make sure it doesn't add onto your stress further. It's a two-way thing, the happier your pet is, the happier the pet parent will be.

2. REVIEW OF LITERATURE

Several recent researchers have conducted studies that seek to understand and establish the relationship between pets and stress as well.

A systematic research conducted by Brooks, H. L., Rushton, K., et al., described according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), was used for navigating the management of mental health conditions was conducted by looking at 9 databases and conducting a scoping grey literature review from the most primitive record to March 2017. From the 17 studies that were included, quantitative evidence linking the benefits of pet ownership was assorted with comprised studies suggesting positive, negative and neutral influences of pet ownership. Qualitative studies highlighted the intensity of bonding people with pet animals reported, and the multiple ways in which the pets helped with the management of a mental health condition, mainly during crisis-like times. The adverse facets of pet ownership were also illuminated, counting the hands-on and emotional responsibilities of pet ownership and the psychological effect that losing a pet has. In conclusion, this review indicated that having a pet is beneficial for a person's mental health. [Brooks, H. L., Rushton, K., Lovell, K., Bee, P., Walker, L., Grant, L., & Rogers, A. (2018).]

Another study was conducted by Powell, L., Edwards, K. M., et al., that sought to examine alterations in human mental well-being succeeding pet dog acquisition. It comprised of 4 measures – psychological distress, loneliness, positive and negative affect. An 8-month controlled study was conducted which involved 3 groups (n=71) – 17 got a dog in a month of baseline (dog acquisition); 29 deferred dog acquisition until the study was completed (lagged control); and 25 had no motive of getting a dog (community control). All participants finished the UCLA Loneliness Scale (probable points 0-60), Positive and Negative Affect Schedule and Kesslet10 at baseline, 3 months and 8 months. Recurrent measure ANCOVAs were used to interpret data with pet parent age and sex as covariates. Post-hoc tests were also conducted for substantial effects ($p < 0.05$). The results of the study suggested that there was a statistically substantial group by time interaction for loneliness ($p = 0.03$), with an assessed discount of 8.41 units from baseline to 3-months and 7.12 units from baseline to 8-months in the dog acquisition group. The group by time interaction for positive affect was also substantial ($p = 0.03$), although there was zero alteration in the dog acquisition group. This study suggested that companion dog acquisition may decrease aloneness among community dog owners. Our study provides useful direction for future larger trials on the effects of dog ownership on human mental well-being. [Powell, L., Edwards, K. M., McGreevy, P., Bauman, A., Podberscek, A., Neilly, B., Stamatakis, E. (2019).]

Another study conducted by Washington State University scientists, Pendry, P., & Vandagridd, J.L., found that spending about 10 minutes with animals can also have a substantial impact on an individual's physiological health. This is the very first research study that has presented a decrease in students' cortisol levels during an actual intervention instead of a lab setting. The study included 249 college going students and divided them into four groups. The first group was made to interact with cats and dogs in small groups for about 10 minutes. They could play, cuddle, pet and general spend some time with the fur babies as they felt comfortable. In order to draw a comparison between the effects of different exposures to pet animals, the second group was made to spectate the others playing with and petting the animals while they waited in queue for their chance. The third group was made to watch pictures of the same pet animals available during the intervention, while the last group was "waitlisted". Those students patiently waited for their chance to play with the animals without their phones or any other stimuli, but they were informed that they would have an animal encounter soon. Salivary cortisol samples were collected from every participant, beginning in the morning when they awoke. The results suggested that the students who played with the pets showed less cortisol in their saliva after the interaction. These findings were discovered bearing in mind that some participants may have had very high or low levels to start with. This study indicates that even brief interaction with pets help decrease stress almost instantly. [Pendry, P., & Vandagriff, J. L. (2019).]

A study conducted by Mwenya, Mubanga et al., aimed to clarify the association of dog ownership with CVD and mortality by studying 3,432,153 Swedish adults followed through nationwide register linkage over a 12-year period (mean age- 57 years). All Swedish residents aged 40 to 80 years on January 1, 2001 were eligible for this study. The independent variable was the absence/presence of dogs. The cardiovascular disease outcomes, that is, the four levels of dependent variables were: (1) acute myocardial infarction; (2) heart failure; (3) ischemic stroke and (4) haemorrhagic stroke. Any occurrence of these diagnoses was

additionally considered as a composite CVD outcome. Researchers further added a time-updated variable for two variants of the socioeconomic index, the international socio-economic index (ISEI) and the European Socioeconomic index (ESeC) in those with sufficient information. indicate that in age and sex-adjusted analysis, dog ownership was inversely associated with risk of acute myocardial infarction, ischemic stroke, heart failure, and composite CVD. After multivariable adjustment, associations with CVD outcomes were attenuated, but remained significant in acute myocardial infarction. Dog ownership was inversely associated with cardiovascular mortality, and all-cause mortality. In the breed group analysis, it is found that ownership of a dog from breeds originally bred for hunting was associated with a lower risk of CVD. One mechanism by which dog ownership could reduce CVD risk and mortality is by alleviating psychosocial stress factors, such as social isolation, depression and loneliness – all reportedly lower in dog owners. Findings therefore show that dog ownership is associated with a lower risk of cardiovascular disease and with a reduced risk of cardiovascular and all-cause death. [Mubanga, M., Byberg, L., Nowak, C., Egenvall, A., Magnusson, P. K., Ingelsson, E., & Fall, T. (2017).]

Another study was conducted by Tanaka, A., Saeki, J., et al., which studied the effect of pets on human behaviour and stress in disaster. There is no doubt that people get stressed during disasters but there not many studies related to how having a pet can affect the post-traumatic stress (PTSD) scores of people who survived a natural calamity. A study was done relating to the earthquake in 2011 in Japan. PTSD score was investigated in the city of Sendai to evaluate the effect of pets on emotional state in disaster recovery. The score was measured using a self-rating scale after traumatic events. In this study, the Japanese-language version of the Impact of Event Scale-Revised (IES-R-J) was employed, which has been used to assess workers with lifetime mixed traumatic even, survivors of an arsenic poisoning case, survivors of the Hanshin-Awaji earthquake, and survivors of the Tokyo Metro sarin attack to investigate its reliability and validity. Stress levels of people with and without pets were compared. Questionnaires were administered and interviews were also conducted. The Japanese-language version of the revised Impact of Event Scale was used to evaluate PTSD from the disaster. PTSD scores were higher in pet-owners compared to non-pet owners immediately after the earthquakes, but were lower in pet-owners compared to non-pet owners 4.4 years following the disaster. During disasters it is usually thought that pets can be risk factors but this study showed that pets can actually play an important and positive roll for the victims during these tough times. [Tanaka, A., Saeki, J., Hayama, S., & Kass, P. H. (2019).]

3. OBJECTIVES

The main objective of our study was to explore how the animal-human bond impacts an individual's general stress levels and welfare.

4. HYPOTHESIS

Based on the many studies done until now, we formulated a hypothesis - pets bring about a significant difference in general stress levels.

5. METHODOLOGY

To investigate whether having pets has an effect on an individual's stress responses, we conducted a field study. A survey was conducted in order to get data which was later scored to verify our hypothesis. We identified two independent variables (IV) – sex (at two levels – male and female) and pets (at two levels – people with and without pets).

6. SAMPLE DETAILS

The questionnaire was administered to 60 participants (n = 60), between the ages 15 to 35. Equal number of males and females were randomly selected for the study (m = 30 & f = 30). Further, the number of males was divided into 15 males who are pet parents and 15 males who are not pet parents through random selection. Similarly, number of females was divided and 15 females who are pet parents and 15 females who are not pet parents were randomly selected.

7. INSTRUMENT/TOOLS

In order to gather data for this study, an unstandardized questionnaire was developed. It had 11 items in total. The rating scale used to measure the responses was a 5-point-Likert-type scale (one that allows the individual to express how much they agree or disagree with a particular statement). The psychometric properties of this rating scale can be found as a result of further research.

8. RESULT AND DISCUSSION

The main objective of this study was to find a significant difference between general stress levels and how pets help have an impact on those levels.

Table 1: Shows descriptive statistics

Descriptive Statistics			
Dependent Variable: Stress			
GenderPets	Mean	Std. Deviation	N
1.00	33.7333	6.49689	15
2.00	33.2667	8.33638	15
3.00	33.8667	7.69848	15
4.00	29.8667	4.89704	15
Total	32.6833	6.99998	60

According to the descriptive statistics (table 1), it is observed that the mean stress scores of male pet owners is 33.73 (SD=6.49), male non-pet owners is 33.2667 (SD=8.33638), female pet owners is 33.8667 (SD=7.69848), and female non-pet owners is 29.8667 (SD=4.89704).

Sum total of the mean as recorded is 32.6833 and sum total of the standard deviation scores according to the descriptive statistics are as follows:

The main objective of this study was to find out if pets brought about a significant change in peoples' stress levels. A parametric inferential statistical analysis was employed, i.e., a 2x2 ANOVA. The two independent variables identified were sex and people with pets and people with no pets. The results are observed in Table 2.

Tests of Between-Subjects Effects

Dependent Variable: Stress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	161.650 ^a	3	53.883	1.106	.355
Intercept	64092.017	1	64092.017	1315.029	.000
GenderPets	161.650	3	53.883	1.106	.355
Error	2729.333	56	48.738		
Total	66983.000	60			
Corrected Total	2890.983	59			

a. R Squared = .056 (Adjusted R Squared = .005)

It is observed in Table 2 that the f value for the interaction effect between gender and pet ownership is 1.106, $p > 0.05$. This suggests that there are no significant differences between males and females who own pets and those who don't.

Therefore, it is visible that the above results were not in line with the aforementioned research since there was so significant differences found between pets and stress. This could be because of the small sample size that was randomly selected for the study. Another, confounding variable could be the individual's baseline stress levels, which could be high generally as well, irrespective of whether they have a pet or not. Personality differences could also skew the data since some people may generally be calm regardless of whether they have a pet or not. Life events like exams, occupational and family stress could also play a role in the results that were found. Also, limitations pertaining to online questionnaires like the environment in which the person filled the questionnaire could also have an impact on the scores.

9. CONCLUSION

The results of our study suggest that there were no substantial differences between the stress levels of people with pets and people without pets, regardless of what sex group they belonged to. However, earlier research has demonstrated that pets do, in fact, help alleviate our stress and aid in uplifting our mood. It is also very highly recommended that people, with generally higher levels of stress spend time with animals, even if it is a brief encounter, in order to help distract or help ease out their stress responses. A strength of this study, according to us, is the framing and scoring of questions since we now have an idea about what might have skewed our results. A larger sample size of, for example, 60 participants per IV, could have made the study more credible.

10. LEARNINGS

This research undoubtedly provided us with several learning experiences. It helped us enhance our skills as a group. The meticulous research articles that we read up on helped us expand our knowledge horizons about how pets facilitate a healthier lifestyle and decrease stress levels significantly. It provided us with opportunities to explore, learn about, and research the between differences between pets and stress. Further, we strongly believe that this project will aid us in our further research experiences and will ease our forthcoming journey in the field of psychology. This project also helped us improve our time management skills and strengthened our bond as a group.

11. REFERENCES

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