

“My Dog is My Best Friend”: Health Benefits of Emotional Attachment to a Pet Dog

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Prior research shows that there are health benefits from owning a dog, that owners' attachment to their dogs influences walking with the dog, and that the presence of dogs can improve a neighborhood. This study explored the relationships between dog owners' attachment to their dogs, the amount of walking they do with their dogs, and health as measured by visits to the doctor, sick days, and self-reported physical and psychological health. Dog owners (N = 502) completed a questionnaire distributed to members of Norwegian dog owners' associations. Results showed that Winefield, Black and Chur-Hansen's Owner-Pet Relationship (OPR) Scale, modified to ask only about dogs and to have uniform four-point response options, had high reliability and had convergent validity with measures time spent with the dogs and number of dogs owned. OPR scores correlated positively with activity, perceived physical health and perceived mental health. Women had higher OPR scores and reported more psychological benefits than did men. OPR scores and time walking dogs were unrelated to sick days and doctor visits.

There are anecdotal accounts of the health benefits of dog ownership. For example, the physician/psychologist/author David Servan-Schreiber (2008) dramatically illustrated the health benefit of having a dog in his recent popular science book about his own cancer illness and treatment:

My chemotherapy was spread out over thirteen months. . . At night I slept in a separate room in the house with our dog Mishka, a white German shepherd with hazel eyes. When I woke up with nausea, and sometimes with fear in my gut, he came and put his head on my knees. I patted him gently until I felt better. In the morning, he meditated with me. (Aren't dogs always in the process of meditating, effortlessly connected to the here and now?) Then he would stretch with half-closed eyes, as if yoga came naturally to him. He would look at me, tilting his head to the side toward the street. That meant that it was time to go running together. . . We ran every morning that year, I think, and always for twenty minutes. In the snow, wrapped up in several layers of fleece and with earmuffs, in the rain with a slicker, in spring sunshine in a T-shirt, in the humid heat of East Coast summer days with a headband on my forehead to keep the sweat out of my eyes. When I didn't do it for myself, I did it for him. We kept up the same pace, but he pulled me on. . . I was very lucky to have a dog. (Servan-Schreiber, 2008, p. 190)

However, the affects of dog ownership on human health has received relatively little empirical attention. Related literature has considered, for example, a) how pets induce

emotional attachment (Stallones, Marx, Garrity & Johnson, 1990; Winefield, Black & Chur-Hansen, 2008; Brown & Katcher, 2001), b) how pets decrease loneliness (Friedmann & Thomas, 1985), and c) how pets increase physical activity (Thorpe, Kreisle, Glickman, Simonsick, Newman & Kritchevsky, 2006; Yabroff, Troiano & Berrigan, 2008; Cutt, Giles-Corti & Knuiman, 2008; Cutt, Giles-Corti, Knuiman & Burke, 2005). Direct studies of the affects of pet ownership on human health have examined specific domains of illness, for example, the effects on asthma (McConnel, Berhane, Molitor et al., 2006) and on cardiovascular health (Anderson, Reid & Jennings, 1992; Parslow & Jorm, 2003). The present survey study explores the degree to which attachment to dogs correlates with amount of physical activity, with over-all psychological and physical well-being, and with non-specific uses of medical services, all in a best-case context, namely, Norwegian society in which access to medical services is not impeded by SES restrictions.

EFFECTS OF PET OWNERSHIP

Several studies have demonstrated that owning a dog has benefits for the owners' health. Dog owners are reported to visit the doctor less frequently (Siegel, 1990) and to have lower health care costs than non-dog owners (APPMA.org, 2010). Having a companion animal can enhance social interactions between people, and this could lead to fewer depressive symptoms (Winefield et al., 2008). In a one-year longitudinal study, pet owners were more physically active and had less health deterioration than non-pet owners (Raina, Waltner-Toews, Bonnett, Woodward & Abernathy, 1999). In this way, the pets have positive effects also on non-pet owners (Wood, Giles-Corti, Bulsara & Bosch, 2007). Owning a pet often leads to improvements in psychological and physiological status (Friedmann et al., 1985). Social integration, social support and positive interactions are all associated with positive health outcomes (Cohen, 2004). Companion animals may be helpful to individuals lacking support from family or close friends (Friedmann et al., 1985 cited in Kidd & Kidd, 1980, p. 941), but that effect was not found by Peacock, Chur-Hansen and Winefield (2012).

Ford, Ahluwalia and Galuska (2000) reported that social relationships have a beneficial effect on multiple behaviors that affected the risk of cardiovascular disease. Health benefits arise not only from exercising with a dog, but also from simply being in the presence of a dog. Mootoka, Koike, Yokohama and Kennedy (2006) compared changes in autonomous nervous system in healthy senior individuals while walking with or without a dog, and found that walking a dog provides potentially greater health benefits because the bonding between man and dog had beneficial effects on the cardiovascular system.

According to Anderson et al. (1992), pet owners had lower systolic blood pressure and plasma triglycerides than non-owners and had lower levels of other risk factors for cardiovascular disease. Anderson et al. (1992, p. 298) stated that this was "not explicable on the basis of cigarette smoking, diet, BMI or socioeconomic profile". However, a study done by Parslow and Jorm (2003), eleven years later, did not support these findings. They found that pet ownership was not associated with cardiovascular health benefits. In their sample, the pet owners had lower education, higher diastolic blood pressure, higher BMI and were more likely to smoke cigarettes than non-pet owners. Also, mild physical

exercise was more common among pet owners; while, the non-pet owners reported moderate physical activity. After a myocardial infarction, the likelihood of 1-year survival is increased by dog ownership, by low anxiety levels and by human social support (Beck & Katcher, 2003).

Herrald, Tomaka and Medina (2002) found that people diagnosed with cardiovascular disease who owned pets were more likely to complete cardiac rehabilitation compared with non-owners. Friedmann (1988, p. 2) speculated that "Caring for a pet can promote health by giving people responsibility, providing time orientation, and promoting an interesting and a varied life style." Paul and Serpell (1996) found children in dog-owning families had fewer colds or bouts of influenza. However, for children with asthma, introducing a dog into the home increases the symptoms of bronchitis (McConnel et al., 2006).

Freidmann and Thomas (1985) found that pets can decrease owners' depression, anxiety and sympathetic nervous system arousal. They also found that touching an animal decreases an individual's anxiety and physiological arousal and can have important health effects. Playing with pets can help institutionalized and chronically ill patients to improve attention to their environment and to increase their socialization. Even staff morale in such institutions can be improved by the presence of pets. For example, Allen, Blascovich, Tomaka and Kelsey (1991) concluded that this "pet-effect" is not necessarily attributed to touch: the mere presence of pet dogs during the performance of a stressful task helped the participant cope with the physiological responses to acute stress.

EMOTIONAL ATTACHMENT TO A PET

A study done in 1990 by Siegel reported that higher levels of attachment to one's pet were associated with improved mental and physical health. Siegel found that dogs provided their owners with companionship and a focus of emotional attachment more than did other pets. When owners say their pet is a part of the family, it means that the pet is within the closest family circle (Cohen, 2002). In addition to this, Dotson and Hyatt (2008) found that the more quality time one spends with one's dog the stronger the companionship becomes.

Brown et al. (2001) found that subjects with higher pet attachment scores were much more likely than those with lower attachment to have clinical levels of dissociation. It was suggested that this result occurred because a subset of people highly attached to companion animals have histories of trauma and abuse (Brown et al., 2001). However, Stallones (1990) did not find any significant association between pet ownership, attachment to pets and the illness behavior scores or emotional distress.

One aspect of attachment is spending time together. Not everyone who owns a dog walks the dog (Thorpe, Simonsick, Brach, Ayonayon, Satterfield, Harris, Garcia & Kritchevsky, 2006). Cutt, Knuiman and Giles-Corti (2008) found that only about 60% of dog owners walk their dogs. But it has been shown that dog acquisition can have positive effects on human health behaviors (Serpell, 1991). Cutt et al. (2008) found that dog ownership can lead to 30 minutes more walking per week. It can also increase the maintenance and level

of other physical activity (Thorpe et al., 2006; Cutt et al., 2008). Many studies have shown that dog owners walk more than non-dog owners (Bauman, Russell, Furber & Annette, 2001; Brown & Rhodes, 2005; Cutt, Giles-Corti, Knuiman, Timperio & Bull, 2008; Lail, McCormack & Rock, 2011; Oka & Shibata, 2009; Owen et al., 2010; Yabroff et al., 2008). Dog walking contributes to a more physically active lifestyle (Ham & Epping, 2006).

However, the health benefit can be questioned because the walking-pace may be slower than what is recommended for physical activity (Ham et al., 2006), and people may not walk enough to achieve the health benefits (Giles-Corti & Donovan, 2003). Dog owners are more likely to choose to do their exercise by walking their dog rather than by more strenuous activities without a dog, and obligation to care for one's dog could be an explanation for why dog owners walk more than non-dog owners (Brown et al., 2006). Toohey and Rock (2011) cautioned that the benefits of dogs for owners and non-owners is moderated by the social characteristics of the neighborhood.

The expectations dog owners have of their dogs can influence the human-animal attachment level (Serpell, 1996). Expectations might cause the owners to have more dissatisfaction and less attachment if the animal does not live up to the ideal. The dog might motivate the owner to walk more if the owner thought the dog enjoyed going for a walk (Cutt, Knuiman & Giles-Corti, 2008). If so, then to achieve a high level of walking, the attachment level should be high.

The purpose of the present study is to use psychometric measures rather than interviews or case anecdotes to further explore the relationship between owners' attachment to their dogs, the amount of time spent dog walking and doing other exercises, and several measures of health. The expectation was that more attachment would correlate with more physical exercise and with better health. The study is conducted in a social welfare state (Norway) in which all subjects have equal access to medical care and in which there is policy interest to improve the quality of life and the health of the population.

METHOD

Questionnaire

The questionnaire was comprised of an introduction explaining who the researchers were, explaining that participation was voluntary and anonymous, and indicating that respondents could contact an email site if they wished a summary of the study results. A total of 27 questions were asked: 15 inquired about attachment to the dog; 2 inquired about exercise time with and without the dog; and 5 inquired about the respondent's health, and 4 inquired about gender, age, how many dogs the respondent lived with, and which day they last walked the dogs. The final question was an optional open-ended question asking respondents for any additional comments about dog ownership, health or their physical activity.

Measure of attachment

Several measurement scales of emotional attachment between pet owners and their pets have been developed. Wilson, Netting and New (1987) have examined five scales; Cohen (2002) has examined two. This study used the Owner-Pet Relationship (OPR) Scale (Winefield, Black & Chur-Hansen, 2008) because of its brevity (15 items) and its recent development based on two 1990s scales (Staats, Miller, Carnot, Rada & Turnes, 1996; Stallones, Marx, Garrity & Johnson, 1990). The OPR Scale was first used in a sample (N = 179) of pet owners aged 60+ years in Australia. Internal reliability was high ($\alpha = .92$). Validity has been reported (Black & Winefield, 2007).

Two changes were made to the OPR Scale for use in the present study. First, the questions were all modified to ask only about “dogs” rather than about “pets” as in the original scale. Second, one OPR question had a true-false response option: “I have a photo of my pet in my purse, wallet or mobile, or on display in my office or home.” To make this consistent with the ordinal four-point response options of the other items, the item was rephrased as “I have a photo of my dog in a) handbag or wallet, or b) mobile phone, or c) framed in my office or home,” with response options of “none of these”, “1 of these”, “2 of these” or “3 of these”. The questionnaire was translated from English to Norwegian by three independent translators, and then the three translations were compared. No major differences were noted, only minor matters of synonyms and prepositions.

Measure of activity

To induce respondents to make more accurate reports of their exercise time, the questions asked how many hours they had exercised yesterday with their dog and without their dog. This was preferred to asking how many hours per week or per month which requires extended reconstructive recall and estimation. Admittedly, restricting the question to the previous day’s activities does increase the variance and may misrepresent any particular individual’s activity habits. But the aggregated data for the sample was surmised to be more accurate if only reported for the previous day’s activities.

Measures of health

The survey was conducted in March, so two questions inquired about visits to the doctor in the preceding January, and sick days from work in January. Norwegian labor laws allow all employees a limited number self-declared sick-days per year. Three other health measures asked respondents on a five-point scale from -2 to +2, what has been the effect of their dog on mental health, on physical health, and on amount of activity.

Procedure

A pilot test was conducted with 8 participants to examine the quality of the questionnaire. No confusing instructions or wordings were identified. Then 25 paper copies were handed out to each of four pet stores and two veterinary clinics in the community. After two

weeks, these were retrieved, resulting in only 13 responses. The questionnaire was also typed into an electronic format and posted in www.surveymonkey.com. The link to the online survey was announced in the forums and homepages of four different Norwegian dog owners' associations, as well as to dog related groups in the Norwegian FaceBook. This resulted in 489 completed questionnaires. An additional 57 respondents started to answer but did not complete the questionnaire; therefore, their data were unusable.

RESULTS

Respondents

Of the total 502 respondents, 438 were women (87%) and 63 were men (13%). The mean age was 37 years ($SD = 12.8$). The youngest was 16, and the oldest was 75. The proportion of respondents who lived with only one dog was 45%, while 29% lived with two dogs and 26% lived with more than two dogs. The mean number of dogs lived with was 2 ($SD = 1.3$). Older people tended to own more dogs ($r = .19$, $N = 496$, $p < .01$) than did younger people.

Debriefing of subjects was done two ways. A 2.5 page summary of the findings, without literature review, without statistical analyses or tables, was sent by email to those who had enrolled their email address. The summary was also presented in *Hundesport*, the members' magazine for NKK (The Norwegian kennel Club).

Dog Attachment

The item scores for the Owner-Pet Relationship (OPR) Scale are shown in Table 1. Based on a response range from 1 to 4, the OPR scales scores were generally high ($M = 3.10$, $SD = .42$). However, there was wide variability in OPR scores. Three respondents answered 4 to all 15 OPR items, showing extreme attachment. On the negative side, the lowest mean OPR score was 1.47, and 40 respondents had OPR scores below the scale midpoint of 2.5. Thus, some respondents were not fond of their dogs. The highest rated items were those that anthropomorphize the dog as enjoying the owner's company, being part of the family and being loved. The lowest rated items were about interpersonal aspects of dog ownership.

The Cronbach alpha coefficient was $\alpha = .84$. The lowest inter-item correlation was $r = +.02$. The lowest item-total correlation was $r = +.18$. These all indicate strong reliability, that is, respondents answer one item similarly to the other items. This is consistent with the reliability reports of Winefield et al. (2008) who found $\alpha = .92$. Factor analysis of item scores produced a scree plot indicating a single factor solution, with eigen value of 5.0 accounting for 33% of the variance. As shown in Table 1, the factor loadings were all positive and generally high, indicating that the OPR scale measures a single coherent construct

To examine the association between level of attachment and amount of time dog walking, a quartile split by level of attachment was done. Table 2 shows that the lowest attachment quartile had a mean of 0.41 hours less walking than the highest attachment quartile. In other words, people with low attachment walked about 25 minutes less per day than

people with high attachment. As shown in Table 3, OPR scores were positively correlated with the number of dogs owned ($r = .14$, $N = 496$, $p < .01$) and with amount of time spent dog walking ($r = .19$, $N = 502$, $p < .01$). Both of these positive correlations might be considered convergent validity for the OPR measure.

Table 1.

Descriptive statistics for the modified Owner-Pet Relationship Scale, with a 1 to 4 response range. Items are rank ordered from highest to lowest mean scores.

	Mean	SD	Factor
Total scale ($\alpha = .84$).	3.10	.42	Loadings
My dog enjoys my company.	3.80	.44	.22
My dog is like a member of the family.	3.73	.46	.67
I love my dog.	3.72	.52	.69
My dog helps me get through tough times.	3.27	.83	.64
My dog relies on me for love and care.	3.21	.84	.43
I have got to know other people through having this dog.	3.20	.72	.43
My dog gives me a reason for getting up in the morning.	3.14	.73	.67
I think about my pet when it is not with me.	3.06	.71	.68
I do not like leaving my dog in someone else's care when I travel.	3.06	.82	.60
My dog is more loyal to me than the people in my life.	2.98	.73	.60
I want to take my dog along when I go to visit friends or relatives.	2.93	.77	.47
My dog knows when I'm upset and tries to comfort me.	2.75	.94	.55
My feelings toward other people are affected by how they react to my dog.	2.60	.88	.56
I have a photo of my dog in my purse, wallet or mobile, or on display in my office or home.	2.54	.83	.53
Dogs should have the same rights and privileges as family members.	2.52	.80	.70

Finally, women tended to have higher OPR scores than did men ($r = .15$, $N = 501$, $p < .01$). This finding may be tentative considering the gender imbalance in the sampling. However, others have reported women to have more attachment than men to pet dogs (e.g., Taylor, Williams & Gray, 2004).

Table 2.
Hours of dog walking for quartiles of the OPR measure of attachment.

	Attachment level		Hours of dog walking	
	M	SD	M	SD
1 st Quartile (N = 123).	2.54	.26	1.17	.86
2 nd Quartile (N = 145).	3.00	.92	1.33	.84
3 rd Quartile (N = 123).	3.30	.07	1.53	.77
4 th Quartile (N = 111).	3.62	.15	1.58	.95

Health Measures

The descriptive statistics of all of the measures, including OPR, are shown in bottom of Table 3. Respondents had more sick-days home from work ($M = .77$, $SD = 1.52$) than they had visits to the doctor ($M = .49$, $SD = .83$), and these two variables were positively correlated ($r = .43$, $N = 501$, $p < .05$), which attests to their validity. In light of the fact that women tend to have more health problems than men, and that older people tend to have more health problems than younger people, the health correlations were also computed as partial correlations controlling for gender and age. These are shown in Table 3 below the diagonal. After covariate control for gender and age, doctor visits were unrelated to OPR Scale scores.

As shown in Table 3, the three self-reported beneficial health effects of dog ownership were all high. With a response range of -2 to +2, activity level, physical health, and mental health all had mean scores of about 1.5. These three measures were positively inter-correlated with one another ($r = +.61$, $r = +.35$, $r = +.40$, $N = 502$, $p < .01$). However, none of these measures were strongly related to the number of doctor visits or the number of sick days. Thus, self reports of health benefits are relatively independent of discrete sickness events. This may be due to a time-lag effect, with the discrete sickness events being reported for a period two months prior to the self-estimation of health benefits.

Age and gender effects

Age was unrelated to the three self-report health measures and unrelated to the number of doctor visits and to the number of sick days. Gender was also unrelated to doctor visits, sick days, activity level, and physical health. However, women tended to report more psychological benefits of dog ownership than did men ($r = .18$, $N = 501$, $p < .01$).

Walking with dog

Almost all of the respondents did walk their dog (93%) for at least 15 minutes, and 77% walked one hour or more. There was no significant relationship between hours of dog walking the number of sick days or number of doctor visits, nor with age or gender. However, as might be expected, hours of dog walking was positively related to activity benefits of dog ownership ($r = .12$, $N = 502$, $p < .01$) and to physical health benefits ($r = .22$, $N = 502$, $p < .01$).

As shown in Table 3, the number of dogs owned was not related to the amount of time spent walking the dogs. However, the number of dogs owned was positively related to reported physical health ($r = .14$, $N = 496$, $p < .01$) and to mental health ($r = .12$, $N = 496$, $p < .01$).

Table 3.

Correlations between questionnaire measures (N = 502), with means and standard deviations along the bottom of the table. Correlations above the diagonal are first-order correlations, and those below the diagonal are partial correlations controlling for age and gender.

	1	2	3	4	5	6	7	8	9	10
1. OPR Scale	--	.14*	.19*	.34*	.33*	.50*	.13*	.06	-.10	.15*
2. Number of dogs	.16*	--	-.09	.09	.14*	.12*	.10	.04	.19*	.00
3. Hours dog walking	.16*	-.09	--	.12*	.22*	.11	.08	-.04	-.05	.10
Reported beneficial influence on:										
4. Activity level	.35*	.07	.13*	--	.61*	.35*	.09	.03	.10	.06
5. Physical health	.34*	.12*	.22*	.60*	--	.40*	.04	-.01	.11	.11
6. Mental health	.49*	.12*	.09	.35*	.39*	--	.09	-.02	-.05	.18*
7. Doctor visits	.11	.10	.06	.08	.01	.07	--	.43*	.02	.09
8. Sick days	.04	.05	-.05	.03	-.01	-.04	.42*	--	-.08	.04
9. Age									--	-.17*
10. Gender (0 = M 1 = F)										--
MEAN	3.10	2.05	1.40	1.52	1.50	1.55	0.49	0.77	37.13	0.87
STANDARD DEVIATION	0.42	1.27	0.87	0.64	0.61	0.61	0.83	1.52	12.80	0.33

* $p < .01$

Optional Open-Ended Comments

There were a total of 104 responses to the optional open-ended question at the end of the questionnaire, asking if the respondent had any comments, positive or negative, about the questions concerning their dog and their health. Thus, 21% of the respondents made comments. One-fourth (26%) of these 104 responses were not useful for the purposes of this study, for example, "I have a Rottweiler."

Comments were categorized by the researchers into broad common post-hoc themes, as

follows. But because a minority of respondents made comments, they were not coded or used for quantitative analysis.

Criticisms of the questionnaire comprised 14% of the comments. One common complaint was that the question about taking sick days from work presumed that the respondents were employed. Unemployed respondents might not properly answer that question. There were 16 respondents who declared themselves to be unemployed, and all of them answered that question, 10 answering 0 sick days, one answering 4 sick days, and 5 answering 5 sick days, the maximum allowable. Another common complaint was that people would have preferred a “don’t know” or “not applicable” response option for some questions.

The majority of comments, 69%, were explanations of the positive effects of dog ownership. For example, “Keeping a dog has had great positive effect on the family.” “People with dogs seem to be generally more relaxed when challenges appear”. In this category, 16% of the comments were about dog ownership being helpful in medical rehabilitation or coping with physical illness, such as fibromyalgia, terminal cancer, chronic pain, diabetes, and rheumatism. For example, one long comment said,

“I have been out of work a year now after a car accident. My training has been following the puppy’s activity level: at first out in the garden, later, walks in the woods for one hour. She is very important for me in my rehabilitation. I could not have completed my training without her. Out in all kinds of weather, at all times. Last but not least, it is wonderful to wake up to a happy puppy everyday instead of being alone at home for a whole year without being able to do anything. That would have been terrible!”

In 17% of the comments, people noted that benefit of dog ownership for their mental health problems, such as depression or anxiety. People commented that they would not be where they are today without their dog, and that their dog makes every day easier. For example, “I would not have been where I am today if it was not for my dog. I suffer from depression and anxiety. It was my dog that got me out of the house and made me believe in myself again.” Another person said, “I am alive today thanks to my dogs and a good therapist”. Another comment of this type, “I don’t work because I’m depressed. Nothing but my dogs keep me on my feet”. In 22% of the comments, there were clear statements about strong attachment between the owners and their dogs. For example, “The dog is man’s best friend,” or, “Without a dog, I don’t see the reason in living”.

Comments about the dog helping the owner get exercise appeared in 8% of the responses. For example, one long comment to this effect was,

“I’m convinced that I wouldn’t have achieved a tenth of the walks if I didn’t have dogs. They make me get exercise whether I want to or not. This makes me feel good about myself, so it influences my mental health. Working with dog breeding and with shows makes me get in contact with a lot of people.”

Another person wrote, "I started to walk to work and exercise in the gym because I realized what a terrible shape I was in when I started to walk my dog. My dog is now 2 years, and I'm in much better shape".

A few people (3%) noted that they were not able to compare their life with a dog to a life without a dog because they had always had dogs. Another 3% of the comments claimed that their level of exercise was the same as before obtaining a dog, but the way to achieve exercise had changed. For example, "After obtaining a dog, I believe I became better at going for walks, but earlier I did other things for exercise. So basically the activity has just changed form".

Negative aspects of having a dog were mentioned in 5% of the comments. The two most common negative comments were about grieving when the dog dies and about dog care responsibilities interfering with the ability to do other kinds of activities.

DISCUSSION

Limitations of the Study

The sample was largely obtained from dog owner associations, such that respondents probably had high commitment to pet ownership. Thus, the results here may arise in part from the self-selection, first, to join a dog club, and second, to agree to participate in a study. Future studies might consider sampling methods that would not entail such self-selection, if that is possible.

The sample was comprised of many more women than men, and this may be a source of some bias in the results. Because of this, and because gender differences were statistically marginal, the analyses here did not dwell on gender effects. Future studies might use stratified sampling to assure a balance in gender, or perhaps directly examine why women more than men tend to participate in this kind of survey.

The information respondents were given at the start of the survey may have induced a response set, or a compliance bias (Orne, 1962). Informed consent requires that respondents be told what the study is about; thus, they might have surmised that the researchers were looking for an association between attachment, dog walking, and health. Future studies might try to embed the questions of interest amongst distraction items to reduce the likelihood of such reactivity.

The question about sick days taken in January had several problems. One, as noted by respondents' open-ended comments, was that the question presumes that people are employed. Another problem was a ceiling effect on the response options, the highest option being "5+", a response made by 8% of the respondents. Future studies should either make this an open-ended question or have a larger range.

The question about how much people walked their dog was limited to the day before the questionnaire was completed. This was done to encourage a more factually accurate

answer, not one based on constructing an estimation. But this also results in the vagaries of events on one day having a very strong influence on each individual's answer. Future studies might consider asking how much people walked their dog in the previous 7 days.

Dog Ownership and Health

Winefield et al. (2008, p. 307) examined eight self-report measures of health as the dependent variables to be predicted by pet ownership and by OPR Scale scores after covariate control for five demographic measures, two measures of health habits, and six measures of social support, concluding that "neither pet ownership nor attachment made significant contributions to explained variance in any measure of health". In contrast, the present study found that respondents experienced health benefits from their attachment to their dogs. This was found both in the two health self-report measures and in the open-ended question. The difference in the findings of the two studies might arise from Winefield et al. (2008) studying a geriatric sample, mean age 70, only 55% of whom were dog owners. The others owned cats, birds, lizards and other less affectionate pets. The present study questioned a much younger sample, mean age 37, 100% of who were dog owners.

Some of these effects can be supported by findings reported in the literature about how being in the presence of, or touching an animal decreases anxiety and physiological arousal in an individual, which in turn has a beneficial effect on health (Friedmann et al., 1985; Allen et al., 1991). Several respondents in the present study commented about how their dogs had helped them cope with illnesses such as terminal cancer, fibromyalgia, chronic pain, diabetes and rheumatism, and how they would not have been able to complete rehabilitation without their dog. These kinds of statements were fortuitous because the questionnaire did not ask directly about specific illnesses or specific health effects. Because these statements are quite substantial, future research might focus on specific illness or rehabilitation groups, comparing dog-owners with non-owners, to determine if and to what degree attachment and care of a dog benefits people suffering from specific illnesses.

According to Serpell (1991) dog acquisition was associated with a reduction in minor health problems over a 10-month period. Even though this study did not find any significant correlations between hours of dog walking and doctor visits or sick days two months prior, respondents did perceive that dog ownership did have positive effects on both their general activity level and their physical health. The older were the respondents in this study, the greater were the perceived benefits. Future studies might consider using different measures of health to explore this association.

The majority of respondents reported that they had gotten to know other people through having their dog. Earlier studies claim that this enhancement in social interactions can lead to fewer depressive symptoms (Winefield et al., 2007), and can have beneficial effects on multiple behaviors that affected the risk of cardiovascular disease (Ford et al., 2000). Attachment to the dogs and the number of dogs owned both correlated positively with perceived benefits in psychological health. This finding was further supported by the open-

ended comments, by those suffering from depression and anxiety claiming that they would have suffered more from these problems if it were not for their dog.

In the present study, several respondents wrote about how their everyday life is enriched because of their dogs. Servan-Schreiber (2008) also described how he felt his dog contributed to make his days easier, and he pointed out that knowing his dog enjoyed going out for a walk, or in this case, a run, motivated him. Cutt et al. (2008) reported a similar finding. This is further supported by Hanson's (1997) suggestion about the quality of life among pet owners being higher than for non-pet owners.

Physical exercise

Only 7% of the respondents did not walk with their dog the day before they were answering the questionnaire. Thus, 93% of dog owners in this study reported walking with their dogs at least 15 minutes, and 77% of these walked one hour or more. This is a very high compared to the findings of Cutt et al. (2008), who stated that up to 40% of dog owners did not walk their dog. Dog owners in this study were generally doing more dog walking in the middle of the week with the peak on Wednesday, compared with the weekends. People seem to walk the least on Mondays and Sundays. Weekends would seem to be the time when people would be able to give their dogs the most attention. A reason for the results could be that since weekends in general have less "routines" than the other days of the week, the routine of walking the dog also ends up suffering from suppression.

Ham et al. (2006) questioned the health benefits of walking with dogs, because of the slow walking-pace. Still almost all of the respondents in the current study claimed to have experienced beneficial health effects from having their dog. According to the U.S. Department of Health and Human Services (1996), the recommended amount of physical activity should be at least 150 minutes per week. The mean amount of walking in one day for this study's respondents was 84 minutes. If the respondents were to do this amount of walking every day, they would achieve 588 minutes of physical activity in one week only through walking with their dogs. This would keep these dog owners far above the minimum level of recommended physical activity.

Attachment

In this study there was a positive correlation between how attached people were to their dog (OPR Scale), and how many hours they walked their dog. In sum, dog owners' attachment to their dogs predicts how much exercise they get walking the dogs, which again is supported by the study done by Cutt et al. (2008). The quartile of respondents with the lowest level of attachment walked almost 25 minutes less than those with the highest level of attachment.

The association in this study between time of walking and level of attachment might be explained by Dotson et al.'s (2008) study that suggested that the more quality time one spends with one's dog the stronger the companionship becomes. It is possible that people who walk more with their dog get more attached to it, simply because of the time spent

together. However, Scheibeck, Pallauf, Stellwag and Seeberger (2011) found that the amount of time spent dog walking was most related to whether or not the owner had a backyard.

The responses were generally high for the OPR Scale, which indicates that people in this sample were well attached to their dogs. Reports about very strong attachment were also stated in the optional open-ended responses. The highest rated OPR items were those that anthropomorphize the dog as enjoying its owner's company, being part of the family and being loved. The lowest rated items were about interpersonal aspects of dog ownership, such as getting to know other people.

This study expected that greater attachment to a dog would correlate with more exercise with the dog and that this in turn would have beneficial health effects for the owner. Results showed that the more attached people are to their dogs, the more time they spend walking their dogs, and the more they experienced physical and mental health benefits. However, there was no association between people's sick days or doctor visits, and level attachment or hours of dog walking. This maybe due to the inadequacy of the measures of dog walking and of sickness, as already discussed. Or, it is possible that having a dog does not prevent illness but helps ill people cope with illness and have better rehabilitation.

Dog Acquisition

The reason for obtaining a dog could also effect how high the attachment level would be. People seem to acquire dogs for a variety of reasons: perhaps one would like to have company and security if living alone, or would like to have a dog as a replacement for a child or partner. Some may want to be more active, and obtain a dog to motivate exercise, or maybe one is very physically active and would like to have someone to exercise with. Another reason could be that one wants to get in contact with other people, and sees the dog as a possible icebreaker for conversation, or simply just wants the dog as a hobby in the form of dog for sports or for dog show competitions. Future studies should consider acquisition motivations to be a plausible variable for explaining attachment and its relationship to exercise and health.

People who are strongly attached to their dogs may have a well-developed empathy for their dogs if it, for example, does not get to go out for a walk when it really wants to. The obligation to care for the dog can lead to more walking (Brown et al., 2005). People who spend more time with their dogs walking, get more attached to their dogs, because quality time with dogs results in higher level of attachment (Dotson et al., 2008). This can be especially true for people who do not have a job, and therefore spend very much time at home with the dog.

Possible Implications

The positive correlations between dog attachment, dog walking and self-reported physical and psychology health supports the belief that dog ownership is beneficial to one's well being. The open-ended comments presented some well-worded testimonials supporting

this. If these kinds of studies can be replicated, then community bylaws and parks might strive to be more dog-friendly, for example, by providing more dog parks and less costly dog licensing. It seems that some people in medical or social distress benefit particularly well from attachment to, and caring for, a dog. Homes for the elderly and out-patient services for chronic diseases might begin to routinely suggest acquiring a dog, or to somehow make dog care and attachment possible.

CONCLUSION

Clearly, there is ample opportunity, and need, for more research on dog ownership and health benefits for the owners. This present study has made a modest contribution to this domain of study. The OPR Scale as modified for this study was shown to be a reliable and valid measure. Most dog owners were shown to be attached to their pets. Greater attachment to a pet was shown to correlate positively with greater amount of exercise with the dog and with greater perceived physical and mental health benefits.

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