

Five new care behavior questions reflecting additional forms of enriched and luxury care were added (see the corresponding sub-heading in Table 1). These five additional questions were identified during the pre-test as well as from a review of companion animal care services advertised in local newspapers.

In order to create a composite measure of dog care behaviors within each of the five care behavior categories, the number of “Yes” responses each respondent provided to the questions in each care category were summed. These composite scores could range from 0 to 8 for essential care, 0 to 15 for luxury care, 0 to 20 for enriched care, 0 to 17 for luxury care, and 0 to 5 for the five items measuring additional forms of enriched and luxury care. The five composite scores were treated as variables at an interval level of measurement.

Companion animal attachment. Companion animal attachment was measured by the LAPS, a 23-item, 5-point Likert scale (Johnson et al., 1992; Shore et al., 2005). The five scale points were labeled from 1 (“Strongly disagree”) to 5 (“Strongly agree”). Summated LAPS scores range from zero to 69 points with a higher summated score indicating a higher level of companion animal attachment (Shore et al., 2005). To create composite scores, the current study used the averaging approach, with composite scores ranging from 1 to 5.

The LAPS includes three sub-dimensions – general attachment, people substitution, and animal welfare. In terms of internal consistency reliability, the Cronbach’s alpha values for these three sub-dimensions were calculated as 0.96, 0.91, and 0.89, respectively. The Cronbach’s alpha value for the scale as a whole was 0.97.

Since the focus of the current study was on correlating an overall composite score representing companion animal attachment with composite scores for the four categories of companion animal care behaviors investigated, analyses were not conducted for each of the three sub-dimensions of the LAPS.

Consumer spending on behalf of a companion animal. This concept was measured through an open-ended question that required the respondents to provide an estimate of the monthly amount of money spent on their canine companion.

Demographic questions. The questionnaire also contained questions to determine the respondents' work status (i.e., undergraduate student / non-student), monthly disposable household income, gender, age, and race.

Monthly disposable household income was measured through a multiple-choice, single-response question with seven income categories: Below R1 500; R1 500 – R3 000; R3 001 – R6 000; R6 001 – R9 000; R9 001 – R12 000; R12 001 – R15 000; and Greater than R15 000.

Analyses

Both the hypotheses in this study were tested at a 5% level of significance (i.e., $\alpha = .05$). The first hypothesis dealt with the correlations between respondents' scores on the LAPS and their composite scores on the measures of the four categories of companion animal care behaviors. Since there was a substantial departure from normality for at least one variable involved, the non-parametric Spearman's rank order correlation was used to test the first hypothesis.

The second hypothesis dealt with differences in the average companion animal attachment scores of two groups of respondents: those who allow their companion animal dogs to sleep indoors and those who make their companion dogs sleep outdoors. This hypothesis was tested with an independent samples *t*-test.

Results

Respondent Profile

Two hundred and seven (207) respondents completed the questionnaires: 109 (52.7%) were undergraduate students and 98 (47.3%) were non-students. Of the 109 undergraduate students, 38 (34.8%) indicated that their dogs live with them, while 71 (65.2%) indicated that their dogs live with their parents. Females constituted 57% of the sample and males 43%. The racial composition of the sample was 72% white, 20% black, 5% colored, and 2% Indian. This racial categorization corresponds to the system used by Statistics South Africa in official government surveys.

In terms of monthly disposable household income, 70.1% of the non-students and 21.3% of the student respondents selected the highest monthly disposable household income category (i.e., Greater than R15 000), while 8.3% of the non-student respondents and 60.2% of the student respondents selected the three lowest income categories (i.e., Below R1 500; R1 500 – R3 000; and R3 001 – R6 000). The non-student sample is, therefore, skewed towards higher income individuals who, in principle, should have the financial means to engage in the more costly forms of enriched and luxury care should they wish to do so.

Sixty-five percent of the student respondents who selected the lowest three income categories also indicated that their dogs live with their parents. This suggests that these respondents

live on their own and have reported their personal monthly disposable incomes. The student subsample is therefore skewed towards individuals with less disposable income who consequently may not be in a position to engage in costly forms of enriched and luxury care even though they may have high levels of attachment to their companion animals. This should be considered when the findings regarding dog care behaviors are interpreted.

Companion Animal Attachment

A composite companion animal attachment score was calculated for each respondent as the average of his/her answers to the 23 items in the LAPS. These composite companion animal attachment scores ranged from 1 to 5 with a mean of 3.68 ($SD = .89$) and a median of 3.74.

Following Shore et al. (2005), respondents were next grouped into low, moderate, and high attachment groups based on their composite companion animal attachment scores, with approximately a third of the sample in each attachment group. A total of 71 respondents (34.3%) had composite companion animal attachment scores of 3.39 or less, 66 (31.9%) had composite scores from 3.40 to 4.09, and 70 (33.8%) had scores of 4.10 to 5. These companion animal attachment groups were then related to dog care behaviors as is explained below.

Dog Care Behaviors

Table 1 provides descriptive statistics for each of the 60 dog care behavior questions grouped by category of care. The individual questions in each care category are sorted in descending order based on the percentages reported in the third column labeled "Overall % Yes." The entries in this column show the overall percentage of respondents who answered "Yes" to each dog care behavior item regardless of their attachment level. For example, in the essential care category, 98.6% of the respondents indicated that someone else cares for the dog when the main caregiver is ill or away,

while 83% of the respondents indicated that their dogs are up to date with their rabies shots. The last three columns in Table 1 (labeled “Low,” “Moderate,” and “High,” respectively) indicate the percentage of respondents in each companion animal attachment group who endorsed (i.e., answered “Yes” to) a specific dog care behavior question. For example, 78.9% of the respondents in the low attachment group indicated that their dogs were up-to-date with their rabies shots compared to 76.9% in the moderate attachment group and 92.9% in the high attachment group.

The descriptive statistics in Table 1 indicate that an extremely high percentage of respondents (ranging from 83.0% to 98.6%) engaged in the 8 essential care behaviors investigated in the current study. The percentage of respondents who engaged in the 8 essential care behaviors did not differ much across the three companion animal attachment groups. In most cases, the difference in endorsement between respondents in the high and low companion animal attachment groups was 5.4% or less. These findings confirm similar results reported by Shore et al. (2005).

The overall percentage of “Yes” responses to the 15 items in the standard care category ranged from 4.3% to 98.6%. For 10 of these items, the difference in endorsement between the high and low attachment groups was 12% or more, suggesting a positive relationship between companion animal attachment and these dog care behaviors. For example, 71.4% of the respondents in the high attachment group indicated that their dogs spend most of the time in the house, compared to 28.2% of the respondents in the low attachment group (a difference in endorsement of 43.2%). The differences in endorsement were less pronounced for the remaining 5 items in this care category. Interestingly, 83.1% of the respondents in the low attachment group indicated that their dogs have an outside dog house compared to 58.6% of respondents in the high attachment group (a difference in endorsement of 24.5%). This may be because 71.4% of respondents in the high attachment group indicated that their dogs spend most of their time in the house, which largely obviates the need for an outside dog house.

The overall percentage of “Yes” responses to the 20 items in the enriched care category ranged from 21.4% to 83.6%. For 17 of these items, the differences in endorsement between the high and low attachment groups were 12% or more. The largest difference in endorsement was for the item “The dog is included in family events,” which 88.6% of respondents in the high attachment group answered in the affirmative compared to 28.6% of respondents in the low attachment group (a difference in endorsement of 61.8%). For the remaining 3 items in this care category, the differences in endorsement between the high and low attachment groups were less pronounced, ranging from 6.5% to 9.7%. The general trend in this category was that a higher percentage of respondents in the high involvement group endorsed the items compared to respondents in the low involvement group, suggesting a positive correlation between companion animal attachment and these enriched dog care behaviors. This confirms a similar finding reported by Shore et al. (2005).

The overall percentage of “Yes” responses to the 17 items in the luxury care category ranged from 1.4% to 58.9%. Overall, 7 of the behaviors in this category were endorsed by less than 10% of the respondents. For these 7 behaviors, the differences in endorsement between respondents in the high and low companion animal attachment groups were also small, ranging from zero to 10.1%. These 7 “low incidence” behaviors do not discriminate well between dog guardians in the low and high attachment groups and should perhaps be excluded from similar future studies. The other 10 luxury care behaviors were endorsed by between 16.4% and 58.9% of the respondents. These 10 behaviors also discriminate much better between respondents in the low and high companion animal attachment groups with differences in endorsement across these 10 behaviors ranging from 16.1% to 43.4%. This suggests a positive correlation between level of companion animal attachment and endorsement of these 10 luxury care behaviors.

The overall percentage of respondents who endorsed care behaviors declined consistently across the four care categories with average overall endorsement percentages of 94.8%, 63.4%, 57.8%, and 20.4% for essential, standard, enriched and luxury care, respectively.

For 39 of the 60 specific care behaviors, the difference in endorsement between the high and low attachment groups was 10% or more, and for 28 of these behaviors the difference in endorsement was 20% or more. The largest difference in endorsement between the high and low attachment groups occurred in the enriched and luxury care categories.

We also included five new forms of enriched and luxury care in the present study that were not investigated by Shore et al. (2005). Overall, four of these additional care behaviors were endorsed by less than 12% of the respondents. Only one additional care behavior (i.e., “The dog is sent for grooming at least once a month”) was endorsed by a substantial percentage (i.e., 44.9%) of respondents overall. For this behavior, the level of endorsement differed markedly across the three attachment groups with 58.5%, 42.5%, and 33.8% of the respondents in the high, moderate, and low companion animal attachment groups endorsing this behavior, respectively (a difference in endorsement between the high and low groups of 24.8%). Because of the low incidence of four of the five additional forms of care, these five items were excluded from further analyses.

Relationship Between Companion Animal Attachment and Companion Animal Care Behaviors

Following Shore et al. (2005), we did not conduct statistical tests on each of the individual dog care behavior items listed in Table 1 to examine the statistical significance of differences in item responses by attachment level, as this would lead to a substantial increase in the likelihood of Type

I errors. Instead, we used the following approach to statistically test the correlation between companion animal attachment and care behaviors.

First, we created a composite measure of dog care behaviors for each of the four care behavior categories by summing the number of “Yes” responses each respondent provided to the questions in each care category. Scores on these composite measures could range from 0 to 8 for essential care, 0 to 15 for standard care, 0 to 20 for enriched care, and 0 to 17 for luxury care and were treated as data at an interval level of measurement. Next, we correlated these four composite measures of dog care behaviors with the composite score representing companion animal attachment using Spearman’s rank order correlations. The latter test was applied because of substantial deviations from normality for at least one of the variables involved in each correlation (Field, 2009). The results of these correlations and relevant descriptive statistics are shown in Table 2.

The results in Table 2 indicate statistically significant correlations of varying magnitudes between the composite companion animal attachment score and the composite measures of care behaviors in each companion animal care category, which provide support for our first hypothesis.

The statistically significant but weak positive Spearman’s correlation ($r_s = .191, p = .003$) between level of companion animal attachment and “essential” companion animal care behaviors may seem surprising given the overall high levels of endorsement of these behaviors (7 of the 8 essential care behavior items had overall endorsement levels of 92% or more) and the fact that the three attachment groups did not differ much in their endorsement of 7 of these 8 items. However,

this weak correlation may be statistically significant simply because of the relatively large sample size ($n = 207$) involved. A sensitivity power analysis indicates that it is possible to detect a small population correlation of .17 with 80% power and $\alpha = .05$ using a one-tailed Spearman's rank order correlation with a sample size of 207.

Differences in Attachment Between Guardians Who Let Their Dogs Sleep Indoors and Those Who Make Them Sleep Outdoors

We also hypothesized that there is a significant difference in the level of attachment of companion animal guardians who let their animal companions sleep indoors, and those who make their companion animals sleep outdoors. This hypothesis was tested at a 5% level of significance, using the independent samples t -test. The results confirmed that companion animal guardians who let their dogs sleep indoors had significantly higher levels of attachment ($M = 4.03$, $SD = 0.66$) than companion animal guardians who make their dogs sleep outdoors ($M = 3.24$, $SD = 0.86$), $t(204) = -7.42$, $p < 0.001$.

Spending on Dog Care

In an open-ended question, respondents were asked to estimate the amount of money they spend monthly on products (including food, toys, accessories and medication) for their dogs. This question was answered by 206 respondents. Twenty of the responses were discarded; of these, 18 belonged to student respondents who, while they regard themselves as guardians of dogs, do not spend anything on the dogs. On the other end of the spectrum, two extreme outliers of R6 000 and R5 000 were also discarded. The 186 remaining respondents spent an average of R597.45 ($SD = R520.66$) per month on their dogs. As expected, the 90 undergraduate student respondents who answered this question, on average, spent less on the care of their dogs ($M = R475.00$, $Mdn = R300$, $SD =$

R457.84) compared to the 96 non-student respondents ($M = R712.24$, $Mdn = R500$, $SD = R551.374$).

Respondents also indicated their monthly disposable household income through a closed-ended multiple-choice, single-response question with seven income categories: Below R1 500; R1 500 – R3 000; R3 001 – R6 000; R6 001 – R9 000; R9 001 – R 12 000; R 12 001 – R15 000; and Greater than R15 000. A Spearman's rank order correlation of the responses to this closed-ended question and responses to the aforementioned open-ended question on spending on dog care indicates a weak, but statistically significant positive correlation ($r_s = .247$, $p = .001$, $n = 184$). This indicates that respondents' spending on dogs may increase slightly as a function of monthly disposable household income.

Discussion and Conclusion

This study investigated the relationship between companion animal attachment and dog guardians' care behaviors. To our knowledge, this relationship has not yet been researched in South Africa.

Consistent with previous research (Shore et al., 2005), the findings indicate that companion animal attachment and all categories of dog care behaviors are positively correlated. According to Cohen's classification (Pallant, 2010), the essential care behaviors of dog guardians have a weak positive correlation with companion animal attachment. Most respondents provide these basic types of care regardless of their attachment to their companion animals. Furthermore, there is a strong positive correlation between the standard, enriched, and luxury care behaviors of companion animal guardians and companion animal attachment. Brockman, Taylor, and Brockman (2008) point out

that when the emotional bonds between companion animal guardians and their companion animals increase, there is a corresponding increase in the levels of care provided.

The results relating to the second hypothesis are congruent with the findings by Shore et al. (2006), in which companion animal guardians who let their dogs sleep indoors are more attached to them than those who do not let their dogs sleep indoors. There is a statistically significant difference between the two groups. These findings suggest that a large proportion of companion animal guardians consider their companion animals as part of the family, thereby allowing them to sleep indoors.

Limitations and Recommendations for Future Research

Because the researchers did not have access to an appropriate sampling frame, a non-probability sampling method was used in this study. This limits the generalization of the results to a wider population of dog guardians in South Africa.

The sample was also limited to relatively affluent respondents in the middle to higher income brackets. Future research could investigate the level of companion animal attachment of dog guardians in poorer urban and rural communities as well as the relationship between companion animal attachment and dog guardians' dog care behaviors in these less affluent areas. Disposable income may moderate the relationship between dog attachment and more expensive forms of enriched and luxury care. Less affluent dog guardians may simply not have the disposable income to express their attachment to their companion animals through these non-essential forms of care, even if they are highly attached to their canine companions. This aspect deserves further research attention.

The specific dog care behaviors investigated in this study and the categorization of these behaviors as essential, standard, enriched, and luxury care were based on previous research by Shore et al. (2005). Since the specific care behaviors investigated in this study are not necessarily exhaustive or reflective of the actual care behaviors of dog guardians in all communities, future research should consider a mixed methods research approach to first identify relevant care behaviors and categorize these behaviors appropriately through qualitative research before exploring the relationship between dog attachment and these care behaviors quantitatively.

The findings in this study indicate that a substantial percentage of undergraduate students spend money on their canine companions, regardless of whether or not their dogs live with them, or with their parents. Future research could determine whether gender differences in spending on companion animals are significant. Other categories of companion animals, such as cats, could also be investigated.

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