

Companion Animal Attachment and Guardian Behaviors: Survey of South African Dog Guardians

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Abstract

Dogs are part of 29% of all South African households. Unfortunately, very little is known about the relationship between South African dog guardians and their canine companions. This study focuses on this relationship, with a specific focus on South African dog guardians' attachment to their canine companions and the guardians' resultant dog care behaviors. Two hundred self-completion questionnaires were distributed to adult dog guardians. The findings indicated that different care behaviors (essential, standard, enriched, and luxury) are positively related to companion animal attachment. These results suggest that dog guardians will provide basic types of care regardless of their levels of attachment to their canine companions. However, dog guardians with higher levels of attachment are more likely to provide their dogs with forms of enriched and luxury care.

Keywords: care behavior, companion animal attachment, dogs, South Africa

Introduction

Dogs are part of 29.0% of all South African households (SAARF, 2014). The proportion of “dog keeping” households, however, varies with household income. Dogs are, for example, found in only 22.9% of the poorest South African households (i.e., households with a gross monthly income of R800 or less) compared to 47.0% of the most affluent households (i.e., households with a gross monthly income of R20 000 or more). While dogs are part of many South African households, very little is known about the relationship between South African dog guardians and their canine companions and, more specifically, about the relationship between companion animal attachment and South African dog guardians’ care behaviors.

The purpose of the current study is to partially replicate previous research by Shore, Douglas, and Riley (2005) to examine the relationships between South African dog guardians’ attachment to their companion animal dogs and the guardians’ resulting care behaviors. Shore et al. (2005) investigated the relationships between companion animal attachment and 67 specific forms of companion animal care behaviors among undergraduate students in the USA. While Shore et al. (2005) surveyed both dog and cat guardians, the present study only focuses on dog guardians and collected data on 65 care behaviors from a more diverse sample of South African dog guardians, mainly in the middle to upper income brackets.

Literature Review

Nonhuman Animal Companionship

Animal companionship is an integral part of life in many contemporary societies (Dotson & Hyatt, 2008). Research indicates that interactions with companion animals in general, and with companion animal dogs in particular, provide a wide range of psychological, social, and health-related benefits

to humans (McConnell, Brown, Shoda, Stayton, & Martin, 2011; Walsh, 2009). Many dog guardians have strong emotional bonds with their canine companions (Kurdek, 2009). Dogs are often described as friends, family members, and/or as children (Charles, 2014; Phillips Cohen, 2002; Walsh, 2009). Some dog guardians report levels of attachment to their dogs that are as strong as their attachment to their best friends, children, and spouses (Dotson & Hyatt, 2008; Walsh, 2009). In this study, companion animal attachment refers to the emotional bond felt and expressed between a dog guardian and his/her companion animal dog (Budge, Spicer, Jones, & St. George, 1998).

Companion Animal Attachment and Care Behaviors of Dog Guardians

Dog guardians can express their attachment towards their canine companions through many different care behaviors. In fact, it is through caring for companion animals that humans derive some of the most fundamental emotional benefits (Stephens & Hill, 1996, p. 190).

While the benefits of human-dog companionship for humans have been widely studied, fewer studies have focused on the benefits of the human-animal bond for companion animals (Shore et al., 2005). To address this gap, Shore et al. (2005) identified 67 specific companion animal care behaviors thought to be of benefit to companion animals (Shore et al., 2005). These 67 care behaviors were subsequently grouped into four categories:

1. Essential care: The 9 care behaviors in this category reflect forms of care directed at satisfying the basic physical needs of a companion animal. For example, the companion animal is fed, has access to water at all times, is protected against the elements, and receives veterinary care when ill or injured.
2. Standard care: These 18 care behaviors reflect forms of care and attention that are usually associated with responsible “companion animal guardianship.” For example, someone

pets/scratches or plays with the companion animal every day; the companion animal is not kept on a chain or in a dog run; the companion animal is spayed/neutered; and the companion animal wears an identity tag.

3. Enriched care: These 22 care behaviors reflect forms of attention, activities, and/or other resources that facilitate close human contact and create a stimulating environment for the companion animal. For example, the companion animal is welcome in most areas of the home, is included in family events, has his/her own toys, and has received training.
4. Luxury care: These 18 care behaviors reflect indulgences that may be considered superfluous, extravagant, and/or expensive. For example, the companion animal receives holiday gifts; I/we celebrate the companion animal's birthday; the companion animal is taken to events for companion animals; the companion animal is included in someone's will; and the dog has his/her own clothing.

Because of the large number of care behaviors investigated in their study and the resulting high likelihood of Type I errors, Shore et al. (2005) did not use statistical significance tests to examine the relationships between companion animal attachment and companion animal care behaviors. Instead, they divided respondents into low, medium, and high companion animal attachment groups based on their summed scores on the Lexington Attachment to Pets Scale (LAPS: Johnson, Garrity, & Stallones, 1992) with approximately a third of the respondents in each companion animal attachment group. Next, they calculated the percentage of respondents in each companion animal attachment group who reported that they engaged in each of the 67 companion animal care behaviors investigated. Finally, for each companion animal care behavior, they compared the percentage of respondents in the three companion animal attachment groups to determine whether the percentage of respondents who engage in a specific companion animal care behavior increased across the low, medium, and high companion animal attachment groups.

Based on these descriptive (i.e., non-inferential) results, Shore et al. (2005) concluded that levels of companion animal attachment and care behaviors are positively related, but that this correlation is weak (Shore et al., 2005, p. 9). They also discovered that a very high percentage of respondents (90% on average) engaged in essential care behaviors with minimal or no differences in the prevalence of these care behavior across the three companion animal attachment groups. Attachment level was more discriminating for standard, enriched, and luxury care behaviors “with more highly attached pet [guardians] providing their pets with a richer environment in terms of opportunities to interact with their human family and the provision of material resources” (Shore et al., 2005, p. 9).

Finally, the percentage of respondents endorsing care behaviors declined consistently across the companion animal care behavior categories from standard to luxury care. These declines also occurred within each companion animal care behavior category with a smaller percentage of low attached companion animal guardians reporting standard, enriched, and luxury care behaviors compared to moderate or highly attached companion animal guardians. This suggests a stronger positive relationship between companion animal attachment and companion animal care behaviors in the standard, enriched, and luxury companion animal care behavior categories.

While most of the care behaviors investigated by Shore et al. (2005) do not require direct financial expenses by a companion animal guardian, some, especially in the enriched and luxury care categories, may require a substantial financial expense (e.g., someone buys toys for the companion animal; the companion animal usually eats premium/special food; when planning a trip, we look for companion animal-friendly accommodations; the dog goes to day care; and I/we have animal health insurance). Some dog guardians who have a strong attachment to their companion animal dogs may want to engage in these potentially expensive forms of companion animal care,

but may not have the financial means to do so. This should be considered when the relationships between companion animal attachment and companion animal care behaviors are investigated, especially among companion animal guardians with limited levels of disposable income.

However, the fact that Shore et al. (2005) included potentially expensive forms of enriched and luxury companion animal care behaviors in their study confirms that many highly attached companion animal guardians, especially more affluent ones, are increasingly willing to spend time, energy, and money on the care of their companion animals (Chen, Hung, & Peng, 2012; Dotson & Hyatt, 2008; Dotson & Hyatt, 2012). Boya et al. (2012), for example, note that growth in the US companion animal industry is "... being driven by high-income earners" (p. 135). A similar trend is also evident in South Africa (Durham, 2011).

The segmentation study by Boya et al. (2012) provides further empirical support for a positive relationship between companion animal attachment and non-essential forms of companion animal care behaviors. In this study, the researchers used cluster analysis to form three segments of dog guardians based on responses to eight Likert scale statements reflecting respondents' companion animal-related consumption behaviors.

These three segments — labeled "strongly attached," "moderately attached," and "basic" guardians — differed significantly in their levels of agreement with the eight companion-animal-related consumption statements. Respondents in the strongly attached segment agreed most strongly that price is no object when it comes to their dogs and also spent a lot of money on special products for their companion animals. These respondents also indicated that their choice of a vehicle and their home setup are affected by their dogs. Furthermore, members of this segment liked to buy gifts for their dogs, spent a premium on the healthiest food for their dogs, and made frequent visits to

their veterinarians. Respondents in the moderately attached segment agreed with six of the companion-animal-related consumption statements, but did not agree that price is no object when it comes to their dogs or that their dogs influence their choice of a vehicle. Further, their level of agreement with the other six statements is not as strong as that of the strongly attached dog guardians. Finally, respondents in the basic guardians segment disagreed with most of the eight companion-animal-related consumption statements and seem to only be concerned with meeting their dogs' basic needs (Boya et al., 2012).

Boya et al. (2012, p. 138) next profiled the three consumption-related segments on 21 items reflecting three companion-animal-attachment-related factors, namely (a) the centrality of dog guardianship to the respondents' lifestyle or "dog-oriented lifestyle"; (b) the extent to which dog guardians attribute human characteristics to their dogs and treat them as family members or "anthropomorphism"; and (c) the extent to which dog guardians want to be with their dogs or "companionship boundaries." Many of these 21 items correspond to items in the LAPS, suggesting that the items measure aspects of companion animal attachment.

A comparison of the aforementioned three consumption-related segments on the three companion-animal-attachment-related factors confirmed that the strongly attached dog guardians, who are most willing to spend money on the care of their companion animals, also scored highest on the three companion-animal-attachment-related factors compared to dog guardians in the other two consumption-related clusters. This supports the hypothesis of a positive relationship between companion animal attachment and non-essential forms of enriched and luxury companion animal care behaviors, especially among more affluent dog guardians. Similarly, Kurdek (2008) found a statistically significant positive correlation ($r_s = .62, p < .01$) between dog guardians' levels of

involvement in caring for their companion animal dogs and their overall attachment to their canine companions.

Sleeping Arrangements

This study also aims to determine whether companion animals sleep indoors or outdoors, especially since research indicates that companion animal guardians are more attached to companion animals that live indoors (Shore, Douglas, & Riley, 2006). When a companion animal is allowed inside, the guardian enjoys the benefit of companionship (Hirschman, 1994). This is an example of a mutually beneficial relationship between a companion animal guardian and his/her companion animal.

Research suggest that humans who share their beds with a companion animal are more likely to be emotionally involved with the companion animal, more willing to make special arrangements to accommodate the companion animal, and more willing to expend shopping efforts on the companion animal (Shore et al., 2006).

Hypotheses

The following two hypotheses flow from the preceding discussion:

H1: Dog guardians' companion animal attachment is positively correlated with the extent to which they engage in standard, enriched, and luxury care behaviors.

H2: There is a significant difference in the level of companion animal attachment of dog guardians who let their canine companions sleep indoors, and those who make their companion animal dogs sleep outdoors.

Materials and Methods

Participants and Procedure

The target population for this study consisted of two groups: (a) undergraduate students at University of Pretoria and (b) non-student dog guardians who visited selected companion animal care establishments in Pretoria, South Africa.

The questionnaire was based on the measures used by Shore et al. (2005) and was pre-tested among 10 participants recruited from the target population (i.e., 4 undergraduate students and 6 non-student dog guardians). The changes resulting from the pre-test are described below.

Data for the main study were collected during September and October 2012 through a central-location intercept survey using a self-completion questionnaire. A convenience sample of respondents was intercepted on the University of Pretoria's main campus, and at four companion animal care establishments in Pretoria East and Pretoria North. Potential respondents were first asked a screening question: "Do you own a dog?" Only those respondents who answered in the affirmative were invited to complete the questionnaire.

Measures

Care behaviors of dog guardians. Respondents' essential, standard, enriched, and luxury care behaviors were measured with the 60 dichotomous ("Yes"/"No") questions adapted from the 67 companion animal care behavior questions originally developed by Shore et al. (2005) (see Table 1). Three of the original care behavior questions applied to cats only and were excluded. Where necessary, the care behavior questions were worded to refer to "the dog." Respondents were specifically instructed to think of their "favorite pet dog" when answering these questions. The original wordings of a few questions were slightly changed to ensure clarity or to adapt the items to

South African circumstances without changing their underlying meaning. The following more substantial changes were also made:

1. One original indicator of essential care (i.e., “The pet acts differently when sick”) used by Shore et al. (2005) was excluded because it does not, on face value, reflect a specific care behavior on the part of a dog guardian. Participants in the pre-test found this question confusing.
2. Two original indicators of standard care (i.e., “Receives heartworm prevention medication” and “The dog is licensed”) were not relevant in a South African context and were therefore excluded.
3. Two further original indicators of standard care (i.e., “The pet lives in the house” and “The pet spends most of its time inside, wherever it wants to go”) used by Shore et al. (2005) were combined into a single question, “The dog spends most of the time in the house,” because the original question “The pet spends most of its time inside, wherever it wants to go” overlaps greatly with an indicator of enriched care used in the present study (i.e., “The dog is welcome to come and go in most areas of the home”).
4. One original indicator of enriched care (“When I/we travel the pet always, sometimes goes along”) was omitted because participants in the pre-test were unsure about the reference to “always, sometimes” and also about the exact meaning of the word “travel.”

Table 1: Dog Care Behaviors Measured in the Present Study

Essential care	<i>n</i>	Overall % Yes	Low	Moderate	High
1. When the main care giver is ill or away, someone else cares for the dog.	207	98.6	97.2	98.5	100.0
2. The dog has access to drinking water at all times.	207	98.6	98.6	97.0	100.0
3. When everyone is away from home for more than one day, the dog is cared for.	207	98.6	98.6	97.0	100.0
4. In bad weather the dog is protected.	207	97.6	94.4	98.5	100.0
5. In very cold or hot weather the dog is protected.	207	97.6	94.4	98.5	100.0
6. We have a veterinarian.	207	92.3	90.1	92.4	94.3
7. The dog is mostly fed dog food.	206	92.2	93.0	89.4	94.2
8. The dog is up to date with its rabies shots.	206	83.0	78.9	76.9	92.9

Standard care	<i>n</i>	Overall % Yes	Low	Moderate	High
9. When outside, the dog is free to roam in the yard.	207	98.6	97.2	98.5	100.0
10. Someone shows physical affection to the dog, by for example petting or scratching it.	207	97.1	93.0	100.0	98.6
11. Our yard is completely fenced in.	207	95.2	97.2	93.9	94.3
12. Someone plays with the dog every day.	207	80.2	64.8	78.8	97.1
13. When the family is home, the dog is with them most of the time.	207	77.3	56.3	77.3	98.6
14. The dog receives medication to prevent ticks and fleas.	207	77.3	70.4	74.2	87.1
15. In the last year, the dog has visited a vet for routine medical check-up.	207	72.5	59.2	69.7	88.6
16. The dog has an outside dog house.	207	68.6	83.1	63.6	58.6
17. The dog is spayed/neutered/sterilised.	207	64.3	57.7	65.2	70.0
18. I/we have changed our home or yard to make it safer for the dog.	207	52.2	31.0	57.6	68.6
19. The dog wears an identification tag.	207	50.2	46.5	51.5	52.9
20. The dog spends most of the time in the house.	207	48.3	28.2	45.5	71.4
21. The dog's nails are trimmed at least once a month.	207	44.4	32.4	45.5	55.7
22. Household objects are used as toys for the dog.	207	20.3	9.9	19.7	31.4
23. When outside, the dog is kept on a chain.	207	4.3	5.6	6.1	1.4

Enriched care	<i>n</i>	Overall % Yes	Low	Moderate	High
24. The dog is bathed at least once a month.	207	83.6	76.1	89.4	85.7
25. The dog gets treats.	207	81.6	63.4	87.9	94.3
26. The dog has its own dog bed.	207	81.2	74.6	84.8	84.3
27. The dog usually eats premium/special dog food.	207	76.8	73.2	71.2	85.7
28. The dog is welcome to come and go in most areas of the home.	207	76.3	64.8	74.2	90.0
29. The dog is alone fewer than 8 hours a day.	207	72.0	66.2	69.7	80
30. I/we have looked for advice about the dog.	206	70.9	54.9	69.7	88.4
31. The dog has its own toys.	207	68.1	43.7	69.7	91.4
32. The dog often stays at someone's side.	207	63.3	40.8	59.1	90

33. Someone buys toys for the dog.	207	62.8	38	63.6	87.1
34. The dog is included in family events.	207	58.0	26.8	59.1	88.6
35. The dog gets scraps from the table.	207	57.5	52.1	62.1	58.6
36. When I/we go to sleep, the dog sleeps in the house.	206	54.9	31	54.4	79.7
37. When someone exercises, the dog goes along.	206	45.6	32.4	53.8	51.4
38. The dog is walked every day or a few times a week.	206	42.7	28.2	46.2	54.3
39. The dog often stays on someone's lap.	207	42.0	18.3	40.9	67.1
40. When I/we travel, the dog always or sometimes goes along.	207	32.9	19.7	31.8	47.1
41. When planning a trip, we look for pet-friendly accommodation.	207	32.9	15.5	30.3	52.9
42. The dog has received socialisation or obedience training.	207	32.4	25.4	30.3	41.4
43. In a 24-hour day, the dog is outside fewer than 4 hrs.	206	21.4	8.5	12.1	43.5

Luxury care	<i>n</i>	Overall % Yes	Low	Moderate	High
44. The dog has toys to provide it with stimulation.	207	58.9	35.2	63.6	78.6
45. The dog receives dental care.	206	43.2	31	38.5	60
46. The dog does agility work.	207	34.3	22.5	42.4	38.6
47. I/we celebrate the dog's birthday.	207	29.0	4.2	22.7	60
48. There is a pet door on the premises.	207	28.5	19.7	30.3	35.7
49. The dog receives holiday gifts.	207	27.1	11.3	15.2	54.3
50. The dog has its own clothing.	207	27.1	11.3	18.2	51.4
51. The dog has a microchip.	207	25.1	12.7	22.7	40
52. Someone in the household knows pet first-aid.	207	24.2	11.3	24.3	37.1
53. Someone makes toys for the dog.	207	16.4	7	12.1	30
54. I/we have animal health insurance.	207	8.7	5.6	10.6	10
55. The dog is taken to events for pets.	207	7.7	2.8	7.6	12.9
56. The dog is included in someone's will/testament.	207	5.8	1.4	4.5	11.4
57. I/we have invisible pet fencing.	207	4.3	2.8	4.5	5.7
58. The dog goes to day care.	207	2.4	1.4	3	2.9
59. The dog is a therapy dog.	207	1.9	2.8	1.5	1.4
60. I/we own videos to entertain the dog.	207	1.4	1.4	1.5	1.4

Additional forms of enriched and luxury care	<i>n</i>	Overall % Yes	Low	Moderate	High
61. The dog is sent for grooming at least once a month.	207	44.9	33.8	42.5	58.6
62. I/we carry the dog in a carry bag when we go out.	207	11.6	1.4	1.5	31.4
63. When I/we go to a beauty therapist, the dog goes along for its own treatment.	207	6.3	0	6.1	12.9
64. The dog has its own <u>tailor-made</u> clothing.	207	3.9	1.4	0	10
65. We pay someone to walk the dog.	207	1.9	0	3	2.9

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 sub-sample 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,

Table 2: Spearman's Rank Order Correlations Between Companion Animal Attachment and Composite Dog Care Behavior Scores ($n = 207$)

Variable	Descriptive statistics			Spearman's rank order correlations	p -value
	Range of possible scores	M	SD		
Companion animal attachment	1-5	3.68	0.85	-	-
Essential care behaviors	0-8	7.57	0.95	.191**	.003
Standard care behaviors	0-15	9.51	2.22	.518**	.000
Enriched care behaviors	0-20	11.56	4.44	.651**	.000
Luxury care behaviors	0-17	3.46	2.66	.640**	.000

Note. Where the p -value is indicated as .000, the actual p -value < 0.001 .

**The correlations are statistically significant at the 0.01 level (1-tailed).

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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