

The relationship between the presence of children
and the degree of attachment to dogs in Japanese households:
Using JGSS data

Hizuru SUGITA
Osaka University of Commerce

The present study examines the role of dogs as substitute children in Japanese households by using the combined data of JGSS-2000 and JGSS-2001. People who presently keep only dogs at home were chosen as the research subjects, and a series of multiple linear regression analyses was conducted to see the effects of the presence of children, children living at home, and children living away from home on the degree of attachment to dogs. The results of the data analyses revealed that the presence of children – more precisely, the presence of children living away from home – decreases the degree of attachment to dogs, while the presence and age of children living at home do not influence the degree of attachment to dogs. The findings suggest that dogs can be a source of attachment for childless people, but not for people with adolescent or adult children living at home or for people with children living away from home. Besides, the results of the data analyses showed that the respondents' sex, the size of municipality, and the number of household members influence the degree of attachment to dogs.

Key words: JGSS, Presence of Children, Degree of Attachment to Dogs

日本の家庭における子供の有無と犬に対する愛着度の関係：JGSS データを用いて

杉田 陽出

本調査は、JGSS-2000 と JGSS-2001 の合体データを用いて、日本の家庭における子供の代替としての犬の役割を検証している。現在家庭で犬のみ飼っている人を調査対象者として、子供、同居子、別居子の有無が犬に対する愛着度に及ぼす効果を調べるために重回帰分析を行った。データ分析の結果、子供の存在、厳密には別居子の存在が犬に対する愛着度を低くすること、同居子の存在や年齢は犬に対する愛着度に影響しないことが判明した。これらの結果から、子供がいない飼い主にとって犬は愛着対象になるが、青少年期や成人期の同居子がいる飼い主、あるいは別居子がいる飼い主にとって犬は愛着対象にならない可能性が示唆される。また、データ分析の結果から、調査対象者の性別、居住市郡規模、同居世帯人数が犬に対する愛着度に影響を及ぼすことが提示された。

キーワード：JGSS、子供の有無、犬に対する愛着度

1. Introduction

In Japan, approximately 37% of households own some kind of animal (Cabinet Office, 2003). Keeping pets at home became popular and people began to pay attention to pets in the period of rapid economic growth after World War II (Ukai, Nagai, & Fujimoto, 2000). Along with this, the status of pets in society began to change. Pets have further improved their social status. Nowadays the concept of what the word “pet” literally means has disappeared, and the concept that pets are family members has been widely accepted. According to a survey by the Pet Food Institute (cited in Yaseisha, 2002) conducted in 1998 with 100 Japanese respondents aged from 6 to 62, 80% chose “family member” and only 18% chose “pet” as the word to describe their pets. Pets are no longer pets; they are perceived as human beings and actually treated as such. For instance, the pet industry deals not only with food but also with clothes, restaurants, health insurance, funerals, and even wedding ceremonies for pets, and is showing remarkable development these days.

In such social circumstances, however, the relationship between Japanese people and pets has not been fully inquired into from an empirical viewpoint. Also, only a limited number of studies have explored why people perceive pets as members of human society in the Japanese cultural context. To investigate the relationship between Japanese people and pets and to ascertain why they are so attracted to pets, the present study, presenting the assumption that pets play the role of substitute children, examines how the presence of children influences owners’ attachment to dogs, the most popular pets in Japan.

2. Relationships between people and pets

Before analyzing the data, the concepts underlying the present study are discussed in this chapter. The first section discusses why people perceive pets as children. The second section discusses how pets serve as attachment figures for people on the basis of the attachment theory. The third section presents assumptions about the relationship between people and pets in relation to the presence of children in the household and proposes study hypotheses based on the assumptions.

2.1 Pets as children

Several researchers point out that people regard their pets as family members, especially as children (Albert & Bulcroft, 1988; Beck & Katcher, 1996; Cain, 1983, 1985; Katcher, 1983; Manning, 1983; Savishinsky, 1983; Soares, 1985; Veevers, 1985; Voith, 1985). Collis & McNicholas (1998) assume that because human beings do not have a set of psychological processes to serve human-animal relationships, they borrow processes used in human-human relationships for their interaction with animals. Quoting this assumption, Bonas et al. (2000) state that anthropomorphism helps increase the ability to explain and predict behavioral patterns of animals.

The ability to explain and predict others’ behavior is a key concept in Berger and Calabrese’s (1975) uncertainty reduction theory. The theory defines uncertainty as the inability to explain and predict the behavior of others and oneself and posits that people are concerned about reducing uncertainty in interactions with strangers, in which uncertainty is relatively high. The theory is about human-human relationships, not about human-animal relationships. Yet, in human-animal relationships, where there is no shared language and verbal communication is not possible, people may feel some kind of uncertainty and try to reduce it by finding familiar attributes in animals’ behavior and anthropomorphizing them. Based on this assumption, this section focuses on the view that the behavioral characteristics of pets resemble those of human children, so that people tend to compare them to children.

Human children do not show affection on demand when they grow into independent beings, but pets provide continual affection like young children, even when they are grown up. Pets always need your

care. You can touch and talk to pets in the same way you would treat young children. Especially in the case of dogs, you can discipline and restrain them as you do young children. Giving these examples, Beck & Katcher (1996) explain that pets are treated like children because behavioral patterns observed in interaction between people and pets are similar to those seen in interaction between people and young children. Using the concept of attachment (see the next section), Voith (1985) also contends that attachment behavior seen between parents and children occurs between people and pets and that pets are considered young children because pets and children share many of the same behavioral attributes. For example, pets miss you and are happy to see you when you return. Pets provide you with feelings of well-being and being loved. Furthermore, pets are raised from infancy and need your care even in adulthood. In this sense, pets are perpetual children.

Voith (1985) describes pets as perpetual children, but pets are not always seen as children. The perceived roles of pets are influenced by several factors, such as the owners' age, life stage, role in the family and in the social environment, kind of pets, and so on (Albert & Bulcroft, 1988; Bonas et al., 2000; Covert et al., 1985; Davis & Juhasz, 1985; Levinson, 1961, 1968, 1997; Robinson, 1995; Salmon & Salmon, 1983; Veevers, 1985). The tendency to compare pets to children mentioned above is rather an adult viewpoint. Childless married couples may feel that pets are like their own children; for children, however, pets may play the role of younger siblings to take care of, older siblings to depend on, peers, or friends. Considering this, the present study uses the data of Japanese respondents aged 20 and over and examines the role of dogs in Japanese households by centering on the owners' demographic background such as marital status and the presence of children.

2.2 Pets as attachment figures

The concept of attachment is often used in discussing the relationship between people and pets. According to Bowlby (1982), attachment is defined as a strong tie between an infant and a mother. For security and comfort, infants seek and maintain proximity to a mother-figure, that is, an attachment figure. Separation from the mother-figure causes infants anxiety, anger, or grief, and they try to restore proximity by crying or following the mother-figure (attachment behavior). In response to this behavior of infants, the mother-figure also restores and maintains proximity to them (caregiving behavior). In this way, there is a complementary attachment-caregiving relationship between juvenile children and parents. As children get older, their attachment behavior toward parents appears less urgently and less frequently. When they become adolescents or adults, children begin to show attachment behavior to people outside the family or even to groups or institutions. Although parents may be relinquished as attachment figures, attachment behavior remains in adulthood as a continuation from childhood, and thus people's attachment behavior is seen throughout a lifetime.

Along with Bowlby (1982), Weiss (1982, 1991) views that the attachment relationship in adulthood is what the attachment relationship in childhood has developed into. Attachment relationships in adulthood and childhood have common properties such as proximity seeking, secure base effect, and separation protest. But different aspects are observed at the same time. In adulthood, the relationship of central importance becomes the attachment relationship, like the childhood attachment relationship, but its attachment figures vary more than in childhood. Attachment figures in childhood, who are usually parents, are seen as being wiser and stronger. On the other hand, attachment figures in adulthood are not necessarily seen in that way, and even immature children whom adults must take care of become attachment figures. This notion suggests that there exists a relationship between parents and young children in which they see each other as attachment figures and that pets whose behavioral patterns look like those of young children become attachment figures for adult owners.

Weiss (1974) states that there are six categories of relational provisions in social relationships: attachment, social integration, opportunity for nurturance, reassurance of worth, a sense of reliable alliance, and obtaining of guidance. Among these, attachment relationships are of central importance, and other relationships are integrated with attachment relationships. Relating these provisions to the relationship between people and pets, Sable (1991, 1995) argues that pets can provide people with attachment, opportunity for nurturance, and social integration and can fill people's emotional needs. Not only do pets substitute for human attachment figures, but pets themselves also become attachment figures, because separation from or loss of pets causes anxiety, grief, and mourning. As mentioned in the previous section, Voith (1985) also posits that pets become attachment figures. Pets exhibit attachment behavior like human children, so people become attached to pets and consider them children. In addition, people's emotional attachment to pets is increased in the absence of human attachment.

There are controversial arguments against Weiss's (1982, 1991) opinion that children become attachment figures for parents. For instance, Ainsworth (1989) insists that children's attachment behavior maintains proximity to parents to seek security and comfort, but parents' behavior toward children is not for security and comfort and so is not attachment behavior. However, the present study follows Weiss (1982, 1991), Sable (1991, 1995), and Voith (1985), and takes the view that children become attachment figures for parents and pets become attachment figures for owners. In the next section, study hypotheses about the relationship between people and pets are formulated.

2.3 Study hypotheses

Albert & Bulcroft (1988) conducted a survey with 436 American respondents on the relationship between the owners' life stage and their attachment to pets and on pet anthropomorphism. They found that attachment to pets is high among childless people, people without children present at home, and empty-nesters, while attachment to pets is low among people with children present at home. Further, pet anthropomorphism is high among childless people and people who have only one child, and low among people who have two or more children. According to a survey by Ajinomoto General Foods, Inc. (1996) conducted with 500 Japanese respondents, the percentage of people who answered that pets are children is highest for people in their 40s and 50s. These survey findings suggest that the presence of children, the presence of children living at home, the age of children, and the owners' life stage influence the perception of pets and attachment to pets.

Based on these surveys and the views noted in the foregoing sections, the following assumptions are made about the relationship between people and pets: When children are young, a relationship will be formed between parents and children in which they see each other as attachment figures. This attachment relationship with children will be of central importance for parents, and thus their attachment to pets will not be very strong. As children grow up and start to be independent, their attachment behavior will begin to be exposed to other objects. When grown-up children show less attachment behavior to parents, parents may seek other attachment figures to compensate for their loss of involvement with children. In such a situation, pets will become new attachment figures, whose behavioral characteristics are similar to those of young children. Pets always stay around and show continuous attachment behavior, and what is more, they never become independent. Therefore, parents' attachment to pets will become strong. This is the same in the case of parents who have children living away from home. Especially, empty-nesters who have no children present at home will be strongly attached to their pets as substitutes for children.

On the other hand, childless people may tend to give pets the role of children from the beginning. It is pointed out that childless married couples or gay couples refer to their pets as "children" or "babies" and care for them as such (Beck & Katcher, 1996; Cain, 1983; Veevers, 1985). With regard to interaction

with dogs, childless people interact with dogs more readily, more frequently, and more complexly than do people with children (Smith, 1983). For childless people, pets will be imaginary children, and they will be strongly attached to pets.

These assumptions lead to the following hypotheses:

Hypothesis 1: People who do not have children will be more strongly attached to pets.

Hypothesis 2: People who have younger children living at home will not be more strongly attached to pets, but people who have older children living at home will be more strongly attached to pets.

Hypothesis 3: People who have children living away from home will be more strongly attached to pets.

The present study examines the role of dogs as substitute children in Japanese households by testing these hypotheses. If the hypotheses are right, the following results are expected in the data analysis comparing the degree of attachment to pets: The degree of attachment to pets is higher for people who do not have children, who have older children living at home, and who have children living away from home, while the degree of attachment to pets is lower for people who have younger children living at home.

3. Methods

3.1 Data

The combined data of JGSS-2000 (Version 6) and JGSS-2001 (Version 4)⁽¹⁾, which are the first and second surveys of Japanese General Social Surveys (JGSS)⁽²⁾⁽³⁾, were used for the present study. JGSS are research surveys that aim to provide data regarding Japanese values, attitudes, and behavioral patterns for secondary analysis. JGSS-2000 and JGSS-2001 were conducted in 2000 and 2001 respectively, with 4,500 males and females aged from 20 to 89, chosen from 300 places in 18 regional blocks in Japan by two-stage stratified random sampling. The number of completed questionnaires of JGSS-2000 is 2,893 (1,318 males and 1,575 females) and that of JGSS-2001 is 2,790 (1,283 males and 1,507 females). Thus, the total number of completed questionnaires used for the present study is 5,683 (2,601 males and 3,082 females).

3.2 Subjects

Both JGSS-2000 and JGSS-2001 include questions about pet-keeping matters such as the presence of pets at home, kind of pets, evaluation of pets, and time spent with pets. The number of respondents who answered “yes” to the question about the presence of pets at home is 2,139 (989 males and 1,150 females: pet ownership rate 37.7%), and the number of respondents who answered “no” is 3,541 (1,610 males and 1,931 females)⁽⁴⁾. In response to the question about the kind of pets asked of respondents presently keeping pets at home, respondents who own “dogs” number 1,295 (599 males and 696 females: ownership rate 22.8%); those who own “cats,” 605 (267 males and 338 females: 10.7%); “small mammals,” 215 (95 males and 120 females: 3.8%); “birds,” 216 (110 males and 106 females: 3.8%); “fish,” 423 (210 males and 213 females: 7.4%); “amphibians or reptiles,” 113 (41 males and 72 females: 2.0%); “insects,” 36 (15 males and 21 females: 0.6%)⁽⁵⁾; and “others,” 8 (5 males and 3 females: 0.1%).

In the present study, respondents presently keeping dogs at home were chosen as the research subjects for the following reasons: As the results of the data analyses noted above and a research survey by the Cabinet Office (2003) show, dogs are the most popular domestic pets in Japan. Choosing dog owners as the research subjects makes it possible to observe how pets are perceived in typical Japanese households.

It also makes data analysis easier than choosing owners of other kinds of pets, as they are limited in number. In addition, the finding that dogs are more anthropomorphized than other kinds of pets (Albert & Bulcroft's, 1988; Bahlig-Pieren & Turner, 1999, Katcher, 1983) was taken into consideration.

In JGSS-2000 and JGSS-2001, the question about the kind of pets is in multiple-answer format. Of 1,295 dog owners, 401 (186 males and 215 females) keep other kinds of pets at home, too. The kind of pets is not specified in the question items concerning evaluation of pets, which were used for making the pet attachment variable in the present study (see the next section). Therefore, it is not clear what kind of pets respondents keeping plural kinds of pets had in mind in answering the question items on evaluating pets. Some respondents might answer about dogs, but others might answer about other kinds of pets. Considering this point, of 1,295 respondents presently keeping dogs at home, 894 respondents (413 males and 481 females)⁽⁶⁾ keeping only dogs were chosen as the research subjects for the present study.

3.3 The degree of attachment to dogs

The variable concerning attachment to dogs was made based on the question items asking respondents to evaluate pets in JGSS-2000 and JGSS-2001. The question about evaluation of pets consists of eight items: "It comforts and relaxes me," "It provides vigor to my life," "It comforts my loneliness," "Caring for pet(s) helps me keep regular hours," "It makes me feel I'm needed," "It promotes conversation at home," "It is my reason for living," and "It expands my social networks." Each item offers four choices: "strongly agree (=1)," "agree (=2)," "somewhat agree (=3)," and "disagree (=4)." The numbers given to the four choices in each item were turned over, and Cronbach's (1951) alpha statistic was computed to measure the reliability of the scale used in the present study. The reliability of 8 items is $\alpha=.92$. In addition, a factor was extracted by conducting a factor analysis. Based on these results, the sum total of each item was determined as the degree of attachment to dogs in the present study. The lowest degree of attachment to dogs is 8, and the highest is 32.

3.4 Data analysis

SPSS was used for analyzing the data. A series of multiple linear regression analyses was conducted to see the effects of the presence of children, children living at home, and children living away from home on the degree of attachment to dogs. An alpha level of .05 was used for all statistical tests in the present study.

4. Results

Chart 1 shows the results of the multiple linear regression analyses. In the chart, Model 1 displays the results of an analysis in which independent variables are respondents' demographic variables such as "sex," "age," "size of municipality 1 (0=other cities or towns/villages, 1=13 largest cities)," "size of municipality 2 (0=13 largest cities or towns/villages, 1=other cities)," "job status (0=not working, 1=working)," "type of residence (0=apartment, 1=house)," "household income (1=far below average, 2=below average, 3=average, 4=above average, 5=far above average)," "position in society (1=lower, 2=lower middle, 3=middle, 4=upper middle, 5=upper)," "presence of spouse (0=no, 1=yes)," "widowhood (0=no, 1=yes)⁽⁷⁾," "number of household members." In Model 2, the variable "presence of children (0=no, 1=yes)" is added to Model 1.

In Model 3, children are classified into children living at home (CLH) and children living away from home (CLA), and two independent variables, "presence of CLH (0/1)" and "presence of CLA (0/1)⁽⁸⁾" are added to Model 2 instead of "presence of children." In Model 4, the ages of CLH are classified into

Chart 1: Results of Multiple Linear Regression Analyses

	Model 1	Model 2	Model 3	Model 4	Model 5
Sex	.20***	.20***	.19***	.19***	.19***
Age	-.00	.02	.07	.05	.07
Size of municipality 1	.10*	.10*	.09*	.09*	.09*
Size of municipality 2	.09*	.09*	.09*	.08*	.08*
Job status	.01	.02	.01	.01	.01
Type of residence	-.06	-.06	-.05	-.05	-.05
Household income	.01	.01	.01	.02	.02
Position in society	.05	.06	.05	.05	.05
Presence of spouse	-.11*	.03	-.10	-.07	-.03
Widowhood	-.09	.00	-.09	-.07	-.04
Number of household members	-.15***	-.13***	-.18***	-.18***	-.18***
Presence of children		-.16**			
Presence of CLH			.02		
Presence of CLA			-.15***	-.16***	
Presence of CLH aged 0-6				-.02	
Presence of CLH aged 7-12				-.04	
Presence of CLH aged 13-18				.04	
Presence of CLH aged 19-24				-.00	
Presence of CLH aged 25 and over				.02	
Presence of both CLH and CLA					-.19*
Presence of only CLH					-.08
Presence of only CLA					-.21**
Adjusted R ²	.08	.09	.10	.09	.10
F	7.68***	7.68***	7.60***	5.99***	7.27***

Notes : *** p<.001, ** p<.01, * p<.05

five age groups, and five independent variables – “presence of CLH aged 0-6 (0/1),” “presence of CLH aged 7-12 (0/1),” “presence of CLH aged 13-18 (0/1),” “presence of CLH aged 19-24 (0/1),” and “presence of CLH aged 25 and over (0/1)⁽⁹⁾” – are added to Model 3 instead of “presence of CLH.” In Model 5, to complement Model 3, the variable “presence of children” is further classified into three variables: “presence of both CLH and CLA (0/1),” “presence of only CLH (0/1),” and “presence of only CLA (0/1).” They are added to Model 3, deleting “presence of CLH” and “presence of CLA.”

The results of the data analysis in Model 1 revealed that sex (p<.001), the size of municipality 1 (p<.05), the size of municipality 2 (p<.05), the presence of a spouse (p<.05), and the number of household members (p<.001) have significant effects on the degree of attachment to dogs (DAD). Being female and living in the 13 largest cities or other cities increase the DAD, while having a spouse and having more household members decrease the DAD. In contrast to Model 1, the presence of a spouse does not have a significant effect on the DAD in Model 2. Instead, the presence of children (p<.01) has a significant effect on the DAD, and having children decreases the DAD. The results of Models 1 and 2 imply that “getting married and having children” decreases the DAD, not having a spouse.

As for Model 3, the presence of CLH does not have a significant effect on the DAD, but the presence of CLA (p<.001) has a significant effect on the DAD, and having CLA decreases the DAD. In Model 4, while the presence of CLA (p<.001) has a significant effect on the DAD, which is the same as in Model 3, none of the age groups of CLH have significant effects on the DAD. In Model 5, although the presence of only CLH does not have a significant effect on the DAD, the presence of both CLH and CLA (p<.05) and the presence of only CLA (p<.01) have significant effects on the DAD. Having both CLH and CLA and having only CLA decrease the DAD. The results of Models 3, 4, and 5 suggest that among

children, having CLA is a factor that decreases the DAD, but neither having CLH nor having a certain age of CLH decreases the DAD.

5. Discussion

To remind readers of the purpose of the present study, the study hypotheses are stated here again:

Hypothesis 1: People who do not have children will be more strongly attached to pets.

Hypothesis 2: People who have younger children living at home will not be more strongly attached to pets, but people who have older children living at home will be more strongly attached to pets.

Hypothesis 3: People who have children living away from home will be more strongly attached to pets.

These hypotheses will be examined in order, based on the results of the data analyses.

First, as seen in the results in Models 1 and 2, the degree of attachment to dogs is higher for childless people. This finding is consistent with Albert and Bulcroft's (1988) research, in that attachment to pets is high among childless married people. However, as shown in the results in Models 3 and 4, among children, having children living away from home decreases the degree of attachment to dogs, but not having children living at home. In other words, there are no significant differences in the degree of attachment to dogs between childless people and people having children present at home. Thus, Hypothesis 1 was supported under the condition of the comparison with people who have children living away from home.

Also, the results in Models 1 and 2 suggest that regardless of their marital status, childless people are more strongly attached to dogs. That is, not only for married people but also for singles, dogs become objects of attachment. As noted in Chapter 2, it is pointed out that childless married couples or gay couples refer to their pets as "children" or "babies" and care for them as such in the Western cultural context (Beck & Katcher, 1996; Cain, 1983; Veevers, 1985). This could be the case for childless married people in Japan. Instead of caring for human children, they may take care of dogs, which tend to be more anthropomorphized and described as children (Albert & Bulcroft's, 1988; Bahlig-Pieren & Turner, 1999, Katcher, 1983). So their attachment to dogs may become stronger. Then what about unmarried people?

Sugita's (2005) study, using the same data as the present study, reports that the dog ownership rate in Japanese households⁽¹⁰⁾ increases as the number of children living at home increases. The dog ownership rate also increases as the age of children living at home increases, and it is highest for people with children aged 19 to 24. These findings indicate that dogs tend to be kept in Japanese households with children present at home, which is often pointed out in Western cultures, too (Beck & Katcher, 1996; Fifield & Forsyth, 1999; Veevers, 1985). They also imply that grown-up children may keep dogs for themselves, and that would explain why unmarried people's attachment to dogs is stronger. But it would be unwise to conclude that single people grant dogs the role of children. As mentioned in Chapter 2, pets are not always seen as children. According to the owners' age, life stage, and other factors, the roles of pets vary.

Still, a Cabinet Office (2003) survey presents the possibility that pets are perceived by the unmarried as objects to take care of, like younger children. In the survey conducted with 2,202 Japanese respondents, 27.2% answered, "It is fun to raise them" as a benefit of keeping pets at home. The ratio of respondents giving this answer is higher for the respondents in their 20s (31.6%), 30s (32.5%), 40s (31.5%), and 50s (29.0%). Although neither marital status nor the presence of children is specified in this survey report, there are no large differences among the percentages for the four age groups. So it is assumed that some 20-somethings, for whom the unmarried rate is supposed to be higher⁽¹¹⁾, may be

involved in the suspected child care. Or at least they may consider pets as objects to protect or care for. This assumption would apply to the case of dogs.

Second, the results in Models 3 and 4 showed that neither the presence nor the age of children living at home influences the degree of attachment to dogs. People with infants are not less strongly attached to pets, nor are people with adolescent or adult children more strongly attached to dogs. Thus, Hypothesis 2 was not supported.

To complement this finding, Hypothesis 2 was examined from another viewpoint. Ajinomoto General Foods, Inc. (1996) reports that Japanese respondents in their 40s and 50s tend to call their pets “children.” Concerning the respondents in the present study, the rate of having children aged 13 to 24 living away from home, which corresponds to the age group facing psychological and physical independence from their parents, is higher for people in their 40s and 50s⁽¹²⁾. Based on this, separately from the multiple linear regression analyses in Chart 1, which showed that the respondents’ age does not have significant effects on the degree of attachment to dogs, another series of multiple regression analyses was conducted to see the effects of the respondents’ age groups on the degree of attachment to dogs.

The respondents were divided into six age groups: 20s, 30s, 40s, 50s, 60s, and 70 and over. In the analyses, six variables concerning whether the respondents belong to each of the age groups were added to the independent variables in Chart 1 instead of the respondents’ “age.” The results revealed that none of the age groups have significant effects on the degree of attachment to dogs. This means that people in their 40s and 50s are not more strongly attached to dogs, and it leads to the conclusion that dogs do not become substitutes for grown-up children. Furthermore, the results showed that people belonging to the age group with infants – that is, people in their 20s and 30s⁽¹³⁾ – are not less strongly attached to dogs. In this way, even examined in terms of the respondents’ age groups, Hypothesis 2 was not supported.

Finally, Hypothesis 3 was not supported, either. If dogs become objects of attachment in place of children who are independent and live away from home⁽¹⁴⁾, the degree of attachment would be expected to be higher for people with children living away from home. But having children living away from home was found to decrease the degree of attachment to dogs as seen in the results in Models 3 and 4. The degree of attachment to dogs is lower for people with children living away from home, contrary to expectation.

The data was further analyzed to provide more details about the relationship between the presence of children living away from home and the degree of attachment to dogs. In a survey by Albert & Bulcroft (1988), the degree of attachment to pets is high among empty-nesters with no children at home. In addition, Adkins & Rajecki (1999) found in their research that if parents have other children present at home or newborn babies after the death of children, their evaluation of pets and attachment to pets become lower. In the present study, the respondents grouped as people with children living away from home in Models 3 and 4 include those who have children living at home at the same time. Suspecting that children present at home had some effects on the results, an additional data analysis was conducted by classifying two independent variables, “presence of CLH” and “presence of CLA” into three more detailed variables: “presence of both CLH and CLA,” “presence of only CLH,” and “presence of only CLA” (see Model 5).

As a result, the degree of attachment to dogs was found to be lower for people having only children living away from home and for people having both children living at home and children living away from home. That is, regardless of whether children are present at home or not, people with children living away from home are less strongly attached to dogs. This finding contrasts with the finding by Albert & Bulcroft (1988) and also contradicts the finding by Adkins & Rajecki (1999). The author has

not pinpointed the exact cause of the results about the relationship between the presence of children living away from home and the degree of attachment to dogs. Yet, the findings of the present study deny the role of dogs as objects of attachment both for people with children living away from home and for empty-nesters.

To summarize, having children or not – or, more precisely, having children living away from home or not – is a crucial factor in determining attachment to dogs. Dogs can be a source of attachment for childless people, but not for people with adolescent or adult children living at home or for people with children living away from home. The perspective of the present study is based on the assumption that dogs become attachment figures in place of children according to the age or living conditions of children. The findings concerning Hypotheses 2 and 3, however, are negative about this assumption. Rather, they suggest that for parents, attachment to children is not interchangeable with attachment to dogs or that dogs do not easily compensate for the absence of human children. However similar dogs' behavioral patterns may be to those of young children, dogs cannot replace children. For parents, dogs and children may be basically situated in totally different psychological dimensions, or more complicated psychological factors may be at work in the recognition of dogs in relation to human children. Further research will be needed to clarify this point.

In addition to examining the study hypotheses, the present study found that females are more strongly attached to dogs than males. This is consistent with the earlier studies in that attachment to pets, concern for pets, and bonding with pets is stronger for females than for males (Adkins & Rajecki, 1999; Herzog et al., 1991; Johnson et al., 1992; Kellert & Berry, 1987; Robertson et al., 2004). Sex of respondents is suggested to be a key factor in Japanese human-animal relationship research as well as in the studies done in the Western cultural context.

Besides the respondents' sex, the number of household members was found to influence the degree of attachment to dogs, and people with fewer household members are more strongly attached to dogs. The dog ownership rate in Japanese households increases as the number of household members increases (Sugita, 2005), but the degree of attachment to dogs increases as the number of household members decreases. As well as supporting the idea that pets are considered family members, this finding implies that owners may perceive dogs as complements to human family members.

Furthermore, the respondents' residential area was found to have effects on the degree of attachment to dogs. People living in towns or villages are less strongly attached to dogs than people living in the 13 largest cities or other cities. Differences in time spent with dogs in urban areas and in rural areas are among the probable factors that lead to this finding. For the respondents in the present study, the degree of attachment to dogs is positively correlated with time spent with dogs ($r=.35$, $p<.001$). The ownership rate of dogs kept indoors is higher ($p<.001$), which may be due to housing conditions, and time spent with dogs is longer ($p<.001$) in the 13 largest cities or other cities than in towns or villages⁽¹⁵⁾. So it is assumed that people living in urban areas who spend more time with dogs are more strongly attached to dogs and that people living in rural areas who spend less time with dogs are less strongly attached to dogs.

When the author interviewed a veterinarian who had working experience in some places in Japan, he said that in general people living in rural areas seemed to perceive dogs as being more thing-like and less person-like than people living in urban areas. He further added that in rural areas, the traditional perceived role of dogs as working animals such as hunting or guard dogs rather than as family members might still remain in some degree. This opinion provides the possibility that factors other than time spent with dogs cause differences in attachment to dogs between urban areas and rural areas. Further research on the perceived role of dogs among residential areas will help figure out the relationship between

people and dogs.

6. Conclusion

According to a survey by the Asahi Shimbun Company (2001) conducted with 1,100 Japanese respondents, 6.7% chose pets as partners with whom they want to spend their old age. This percentage is not large, but this result indicates that pets are considered lifelong partners for people and that some people prefer to live with pets rather than with human partners when they are old. The present study found that childless people are more strongly attached to dogs. Considering these findings, it is assumed that pets will be playing a more and more important role in Japanese society, which faces concerns about rapid aging and low birthrate. More empirical studies are expected about the relationship between people and pets in the Japanese cultural context, seeking a glimpse into Japanese society and its people.

[Notes]

- (1) A series of general linear models was conducted to see the interaction effects between the variable “the research year” and each variable used in the data analyses in the present study. No significant interaction effects were found between “the research year” and each variable except “the presence of CLH aged 25 and over.” Based on these results, two data were combined and used for the present study.
- (2) The Japanese General Social Surveys (JGSS) are designed and carried out at the Institute of Regional Studies at Osaka University of Commerce in collaboration with the Institute of Social Science at the University of Tokyo under the direction of Ichiro TANIOKA, Michio NITTA, Hiroki SATO and Noriko IWAI with Project Manager, Minae OSAWA. The project is financially assisted by Gakujutsu Frontier Grant from the Japanese Ministry of Education, Culture, Sports, Science and Technology for 1999-2003 academic years, and the datasets are distributed by SSJ Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo.
- (3) The data for this secondary analysis, “Japanese General Social Surveys <JGSS-2000>, the Institute of Regional Studies at Osaka University of Commerce and the Institute of Social Science at the University of Tokyo” and “Japanese General Social Surveys <JGSS-2001>, the Institute of Regional Studies at Osaka University of Commerce and the Institute of Social Science at the University of Tokyo” were provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo.
- (4) The number of “no answer” is 3 (2 males and 1 female).
- (5) The choice “insects,” which is included in the question in JGSS-2001, is not included in the question in JGSS-2000. The author recoded 9 answers of “others” in JGSS-2000 and extracted 6 answers of “insects” from them. Thus, 36 answers of “insects” is the sum of 6 answers in JGSS-2000 and 30 answers in JGSS-2001. Along with this recoding, the number of “others” becomes 3 in JGSS-2000.
- (6) In the question about the kind of pets in JGSS-2000 and JGSS-2001, the choice of “dogs” is classified into two: “dogs kept indoors” and “dogs kept outdoors.” Of 894 respondents presently keeping only dogs at home, 575 (279 males and 296 females) keep dogs indoors only, 297 (126 males and 171 females) keep dogs outdoors only, and 22 (8 males and 14 females) keep dogs both indoors and outdoors. It is often pointed out that there are differences in time spent with owners, dog-care conditions, and body size between dogs kept indoors and outdoors. Therefore, they may need to be analyzed separately. However, it was anticipated that doing so would reduce the number of respondents and make data analysis more difficult. Thus, all of the dog owners were combined as the research subjects for the present study.
- (7) The respondents belonging to the “yes” group of the variable “widowhood” are defined as people who have been married but do not have a spouse presently because of separation or bereavement, while the respondents

- belonging to the “yes” group of the variable “presence of spouse” are defined as people who are married and presently have a spouse.
- (8) In the present study, CLA includes children temporarily living away from home for reasons such as work, school attendance, or hospitalization.
 - (9) As the age of CLH, the age of the youngest CLH was used for the present study. The age of the youngest CLH varies from 0 to 64.
 - (10) In the analyses concerning the dog ownership rate, respondents who presently keep other kinds of pets in addition to dogs are included in the research subjects.
 - (11) In the data of JGSS-2000 and JGSS-2001, the rate of unmarried people is highest for people in their 20s (75.0%: 71.6% for males and 79.3% for females) compared with other age groups of the study respondents.
 - (12) Compared with other age groups, the percentage of people having CLH aged 13-18 is highest for people in their 40s (42.9%: 29.6% for males and 53.3% for females). The percentage of people having CLH aged 19-24 is highest for people in their 50s (26.1%: 30.8% for males and 21.1% for females).
 - (13) Compared with other age groups, the percentage of people having CLH aged 0-6 is highest for people in their 30s (27.9%: 25.0% for males and 30.4% for females) and secondly highest for people in their 20s (11.6%: 9.5% for males and 13.8% for females).
 - (14) In the present study, the age of the youngest CLA varies from 3 to 69. The number of respondents who have CLA is 454, and the rate of CLA aged 19 and over is more than 93% (423 respondents). This suggests that going to college, getting a job, or getting married marks the start of children’s becoming independent and living separately from their families.
 - (15) The ratio of dogs kept indoors is 56.2 % in the 13 largest cities, 40.3% in other cities, and 18.0% in towns or villages. On the other hand, the ratio of dogs kept outdoors is 49.5 % in the 13 largest cities, 61.4% in other cities, and 84.7% in towns or villages. The average time spent with dogs is 336 minutes in the 13 largest cities, 196 minutes in other cities, and 105 minutes in towns or villages.

[References]

- Adkins, S. L., & Rajecki, D. W. (1999). “Pet’s role in parents’ bereavement.” *Anthrozoös*, 12, 33-41.
- Ainsworth, M. D. S. (1989). “Attachments beyond infancy.” *American Psychologist*, 44, 709-716.
- Ajinomoto General Foods, Inc (Ed.). (1996). *Heisei heikin pet zou: Pet wa kodomo! wagaya no ichiin* [The average image of pets in the Heisei era: Pets are children! Members of my family].
- Albert, A., & Bulcroft, K. (1988). “Pets, families, and the life course.” *Journal of Marriage and the Family*, 50, 543-552.
- Bahlig-Pieren, Z., & Turner, D. C. (1999). “Anthropomorphic interpretations and ethological descriptions of dog and cat behavior by lay people.” *Anthrozoös*, 12, 205-210.
- Beck, A., & Katcher, A. (1996). *Between pets and people*. Purdue University Press.
- Berger, C. R., & Calabrese, R. J. (1975). “Some exploration in initial interaction and beyond: Toward a developmental theory of interpersonal communication.” *Human Communication Research*, 1, 99-112.
- Bonas, S., McNicholas, J., & Collis, G. M. (2000). “Pets in the network of family relationships: An empirical study.” In A. L. Podeberscek, E. S. Paul, & J. A. Serpell (Eds.), *Companion animals & us* (pp. 209-236). Cambridge University Press.
- Bowlby, J. (1982). *Attachment and Loss Vol.1 Attachment*. The Hogarth Press.
- Cabinet Office (Ed.). (2003). “Doubutsu aigo” [Animal protection]. *Gekkan yoron chousa* [Monthly public opinion survey], 415.
- Cain, A. O. (1983). “A study of pets in the family system.” In A. H. Katcher & A. M. Beck (Eds.), *New*

- perspectives on our lives with companion animals* (pp. 72-81). University of Pennsylvania Press.
- Cain, A. O. (1985). "Pets as family members." In M. B. Sussman (Ed.), *Pets and the family* (pp. 5-10). The Haworth Press, Inc.
- Collis, G. M., & McNicholas, J. (1998). "A theoretical basis for health benefits of pet ownership: Attachment versus psychological support." In C. C. Wilson & D. C. Turner (Eds.), *Companion animals in human health* (pp. 105-122). Sage Publications, Inc.
- Covert, A. M., Whiren, A. P., Keith, J., & Nelson, C. (1985). "Pets, early adolescents, and families." In M. B. Sussman (Ed.), *Pets and the family* (pp. 95-108). The Haworth Press, Inc.
- Cronbach, L. J. (1951). "Coefficient alpha and the internal structure of tests." *Psychometrika*, 16, 279-334.
- Davis, J. H., & Juhasz, A. M. (1985). "The preadolescent/pet bond and psychosocial development." In M. B. Sussman (Ed.), *Pets and the family* (pp. 79-94). The Haworth Press, Inc.
- Fifield, S. J., & Forsyth, D. K. (1999). "A pet for the children: Factors related to family pet ownership." *Anthrozoös*, 12, 24-32.
- Herzog, H. A., Betchart, N. S., & Pittman, R. B. (1991). "Gender, sex role orientation, and attitudes toward animals." *Anthrozoös*, 4, 184-191.
- Johnson, T. P., Garrity, T. F., & Stallones, L. (1992). "Psychometric evaluation of the Lexington Attachment to Pets Scale (LAPS)." *Anthrozoös*, 5, 160-175.
- Katcher, A. (1983). "Man and the living environment: An excursion into cyclical time." In A. H. Katcher & A. M. Beck (Eds.), *New perspectives on our lives with companion animals* (pp. 519-531). University of Pennsylvania Press.
- Kellert, S. R., & Berry, J. K. (1987). "Attitudes, knowledge, and behaviors toward wildlife as affected by gender." *Wildlife Society Bulletin*, 15, 363-371.
- Levinson, B. M. (1961). "The dog as a co-therapist." *Mental Hygiene*, 46, 59-65.
- Levinson, B. M. (1968). "Interpersonal relationships between pet and human being." In M. W. Fox (Ed.), *Abnormal behavior in animals* (pp. 504-522). W. B. Sanders.
- Levinson, B. M. (1997). *Pet-oriented child psychotherapy*. Charles C Thomas • Publisher, Ltd.
- Manning, A. (1983). "Ethological approaches to the human-companion animal bond." In A. H. Katcher & A. M. Beck (Eds.), *New perspectives on our lives with companion animals* (pp. 7-16). University of Pennsylvania Press.
- Robertson, J. C., Gallivan, J., & MacIntyre, P. D. (2004). "Sex differences in the antecedents of animal use attitudes." *Anthrozoös*, 17, 306-319.
- Robinson, I. (Ed.). (1995). *The Waltham book of human-animal interaction: Benefits and responsibilities of pet ownership*. Pergamon.
- Sable, P. (1991). "Attachment, loss of spouse, and grief in elderly adults." *OMEGA*, 23, 129-142.
- Sable, P. (1995). "Pets, attachment, and well-being across the life cycle." *Social Work*, 40, 334-341.
- Salmon, P. W., & Salmon, I. M. (1983). "Who owns who?: Psychological research into the human-pet bond in Australia." In A. H. Katcher & A. M. Beck (Eds.), *New perspectives on our lives with companion animals* (pp. 244-265). University of Pennsylvania Press.
- Savishinsky, J. S. (1983). "Pet ideas: The domestication of animals, human behavior, and human emotions." In A. H. Katcher & A. M. Beck (Eds.), *New perspectives on our lives with companion animals* (pp. 112-131). University of Pennsylvania Press.
- Soares, C. J. (1985). "The companion animal in the context of the family system." In M. B. Sussman (Ed.), *Pets and the family* (pp. 49-62). The Haworth Press, Inc.
- Smith, S. L. (1983). "Interactions between pet dog and family members: An ethological study." In A. H.

- Katcher & A. M. Beck (Eds.), *New perspectives on our lives with companion animals* (pp. 29-36). University of Pennsylvania Press.
- Sugita, H. (2005). "A study of dog's role as substitute children: From the data of JGSS." *JGSS Monographs*, 4, 111-129.
- The Asahi Shimbun Company (Ed.). (2001). "Dokusha ga egaku 'jibun no rougo' to 'oya no kaigo'" [Readers' description of 'my old age' and 'care of parents']. *Weekly Asahi Extra Number*, 106, 10-16.
- Ukai, M., Nagai, Y., & Fujimoto, K. (Eds.). (2000). *Sengo nihon no taishuubunka* [Mass culture of Japan in the postwar era]. Shouwado.
- Veevers, J. E. (1985). "The social meanings of pets: Alternative roles for companion animals." In M. B. Sussman (Ed.), *Pets and the family* (pp. 11-30). The Haworth Press, Inc.
- Voith, V. L. (1985). "Attachment of people to companion animals." *Veterinary Clinics of North America: Small Animal Practice*, 15, 289-295.
- Weiss, R. S. (1974). "The provisions of social relationships." In Z. Rubin (Ed.), *Doing unto others* (pp. 17-26), Prentice Hall.
- Weiss, R. S. (1982). "Attachment in adult life." In C. M. Parkes & J. Stevenson-Hinde (Eds.), *The place of attachment in human behavior* (pp. 171-184). Basic Books.
- Weiss, R. S. (1991). "The attachment bond in childhood and adulthood." In C. M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.), *Attachment across the life cycle* (pp. 66-76). Tavistock / Routledge.
- Yaseisha (Ed.). (2002). *Pet data nenkan* [Pet data yearbook]. Yaseisha.