

JAPANESE HEALTH AND HAPPINESS IN RELATION TO PET OWNERSHIP AND  
DEGREE OF ATTACHMENT TO COMPANION ANIMALS

By

KATHRYN GERLACH

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To Mom, Dad, Biz, and Cathy

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Abstract of Thesis Presented to the Graduate School  
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The human-animal bond has enjoyed much scholarly attention in recent years. Many studies conducted in European countries indicate that companion animals are a boon to their owners' physical and psychological health, particularly when there are deep levels of attachment. It is unclear if the relatively new practice of keeping domesticated animals in Japan results in similar physiological or emotional benefits. Secondary analysis of Japanese General Social Survey data reveals that, among this nationally-representative sample of adults living in Japan, subjective well-being is not enhanced by pet ownership, older adults' health status is not augmented by pet ownership, and pet attachment is unrelated to health for pet owners aged 60 and older. However, the data confirm that, among pet owners, attachment level is positively related to subjective well-being.

## CHAPTER 1 SPECIFIC AIMS

The goal of this research is to examine pet-keeping in the Japanese context as it relates to self-reported health and subjective well-being. Additionally, this research will explore the relationships between degree of attachment to companion animals and health and happiness for Japanese pet owners. The practice of sharing one's home with domesticated animals is already well-established in the United States. In 2006, over 70 million U.S. homes included a pet, constituting 63% of households (APPMA). In Japan, however, pet-keeping is not a majority practice as only about 38% of Japanese have companion animals. This allows for a unique research opportunity: the ability to examine differences between owners and non-owners in an industrialized country where pet-keeping is not the norm.

According to a recent Euromonitor International report on pet food and pet care in Japan, young, unmarried people; DINKS (double income no kids); and older adults tend to view their pets as surrogate family members, child-substitutes, and friends, respectively (Euromonitor International, 2007). Finding that attachment is high among childless people, Hizura Sugita at the Osaka University of Commerce recently proposed that pet dogs may function as substitute children in Japan (Sugita, 2006). This study will explore how pet ownership and degree of attachment to companion animals relates to subjective well-being and self-reported health. Using secondary data from the Japanese General Social Survey, a nationally-representative sample of adults living in Japan, I plan to address the following research questions:

1. Are pet owners happier and/or healthier than persons who do not own pets?
2. Is degree of attachment to pets responsible for the relationship between pet-keeping and health/happiness?

## CHAPTER 2 RATIONALE

I expect, based on research in the United States and Western European countries (Horowitz, 2008; Knight & Edwards, 2008) that Japanese pet owners will report higher subjective well-being than non-owners. Furthermore, I anticipate that, among Japanese pet owners, high levels of pet attachment will be associated with increased happiness. When formulating conjectures regarding the relationship between pet attachment and health, I limited hypotheses to pet owners ages 60 and older because variability in health status is quite low at younger ages (McCullough and Laurenceau, 2004; U.S. Department of Health and Human Services, 2008). Nearly all young adults are in good health and thus before middle age health is almost a constant. When younger persons do suffer from ill health, this is mainly due to accidents and congenital abnormalities for which pet ownership is unlikely to have as many ameliorating affects. However, chronic conditions that begin to appear in middle age are more likely to respond positively to increased exercise and stress reduction that can accompany pet ownership. I anticipate that pet owners (age 60+) will be healthier than respondents of the same age who do not keep pets. Furthermore, I hypothesize that, among owners, those who are more attached will have better health because a positive relationship with a companion animal may provide some intangible health benefits beyond obvious health-promoting behaviors like dog-walking. For instance, stress reduction may result from spending time with a valued pet. Once again, respondents under the age of 60 will be excluded from models predicting health because there is very little variation in health among young people: nearly everyone is in good health until the onset of chronic disease in middle age (McCullough and Laurenceau, 2004; U.S. Department of Health and Human Services, 2008).

My hypotheses are as follows:

1. Pet owners will have higher subjective well-being than non-pet owners.
2. Among pet owners, those who are more attached to their pets will have higher subjective well being.
3. Among those aged 60 and older, pet owners will be healthier than non-pet owners.
4. Among pet owners aged 60 and older, those who are more attached to their pets will be healthier.

### CHAPTER 3 BACKGROUND AND SIGNIFICANCE

The human-animal bond has enjoyed much scholarly attention in recent years. The majority of these studies have focused on the physical health benefits of contact with companion animals in therapeutic settings within the United States, England, and Australia (Hooker, Freeman, and Stewart, 2002; Graham, 2000; Stanley-Hermanns & Miller, 2002; Filan & Llewellyn-Jones, 2006; Morrison, 2007; Banks & Banks, 2002). More specifically, Graham (2000) indicates that the most notable pioneers in the area of animal assisted therapy (AAT) are from the United States. Most AAT sessions involve interaction between a patient and a trained animal, facilitated by a human handler. Therapeutic goals can include enhancing a patient's physical rehabilitation (e.g. a patient regains balance and coordination after a stroke by horseback riding) or encouraging positive feelings or behaviors (e.g. an autistic child relaxes and communicates more readily in the presence of a therapy dog). Filan and Llewellyn-Jones, scholars from the University of Sydney, wrote an extensive review article on the use of animal assisted therapy for dementia in 2006 wherein they concluded that AAT "appears to offer promise as a psychosocial intervention for people with dementia" and might reduce or eliminate the need for psychotropic medication for some dementia patients (p.13). Fewer studies have examined the possibility that pet ownership per se promotes physical health (e.g. McNicholas et al., 2005; Parslow et al., 2005; Friedmann & Thomas, 1995). There is comparatively little research on the relationship between pet ownership and subjective well-being. It has been suggested that researchers consider degree of attachment to pets as it relates to owners' health and happiness since companion animals can have a neutral effect or even become a liability rather than an asset to persons with low levels of attachment (Garrity, Stallones, Marx, & Johnson, 1989; Robb & Stegman, 1983).

For example, according to Garrity et al.'s 1989 study, pet ownership by itself was not related to either emotional or physical health status in the elderly, but strong attachment to pets was associated with less depression. The responsibility of caring for an animal to which one is only weakly bonded may nullify the potential benefits of pet ownership (such as decreased stress levels). Additionally, several scholars have emphasized the need to study the role of pets in people's daily lives outside the United States, particularly in non European countries (e.g. Al-Fayez, Awdalla, Templer, & Arikawa, 2003). For example, it is important to study attitudes towards companion animals in different contexts since they are determined by "a multitude of cultural, social, psychological, economic, [and] historical. . . variables," which vary from country to country (Al-Fayez, Awdalla, Templer, & Arikawa, 2003, p. 26). Attitudes towards companion animals may influence health and subjective well being. This issue will be addressed in subsequent sections.

### **Attachment to Companion Animals**

Identifying the motivations underlying pet ownership is crucial to understanding attachment to companion animals. Archer (1997) outlines the three most common explanations for the existence of pet attachment and proposes a fourth. The first three explanations include "the view that strong attachment to a pet indicates a poor capacity for human relationships, that it results from modern living conditions, particularly affluence, and that pet ownership confers benefits for health and psychological well-being" (p. 238). Archer asserts that these three explanations are inaccurate and that attachment to companion animals results from their ability to "manipulate human responses" (p. 237). He considers pets "social parasites" that take advantage of humans' caregiving instincts for their own offspring (p. 248). However, he does not attribute a conscious effort on the animals' part to exploit humans, rather he asserts that they evolved features, such as neotenus characteristics (retention of juvenile traits in the adults of a

species), when filling this ecological niche. Although the author implies that these explanations are mutually exclusive, they may all be valid to some degree.

Contrary to Archer's tacit assumption that the evolution of neotenous characteristics in pets is the singular variable responsible for the human-companion animal bond, it is possible that several factors simultaneously encourage this relationship. Specifically, pet owners who have a decreased capacity for relating to humans may include pets in their primary relationships. Additionally, modern living conditions, which frequently include a breakdown in contact with extended family and prolonged periods of solitary living, may create an emotional void. Finally, people may be especially inclined to nurture companion animals, realizing that pets contribute to their physical and mental health.

### **Exploring the Bond: Attachment Theory**

Several researchers have studied the relationship between pets and people in terms of "attachment" (Albert & Bulcroft, 1988; Johnson, Garrity & Stallones, 1992; Crawford, Worsham and Swinehart, 2006). Although not always stated explicitly, many of these studies rely on human attachment theory first developed by British psychoanalyst and child development expert John Bowlby (1973) and later expanded upon by Bartholomew and Horowitz (1991). The latter presented a model that identified four categories or styles of adult attachment. In a recent study (2008), Beck and Madresh use Bartholomew and Horowitz's model of attachment to test whether relationships with pets approximate relationships with people. They conclude that their study further supports the use of attachment theory in human-animal bond research because it suggests that the structure of relationships with pets may be similar to relationships with humans. Although inter-species relationships are limited, especially in regards to communication, some studies indicate that people tend to consider companion animals more steadfast and predictable than humans in terms of the social support they offer. In Beck and Madresh's web-based survey

of pet owners, relationships with animals were rated as more secure than relationships with romantic partners and pets seemed to offer a more consistent source of attachment security (2008).

Bonas, McNicholas and Collis (2003) report in their study using the Network of Relationships Inventory that in some facets of social support such as companionship, nurturance, and reliable alliance, respondents perceived that their dogs provided more support than their family members. However, this does not imply that all human-companion animal relationships are positive. As previously stated, attachment could partially explain the relationship between pet ownership and subjective well being. Providing care for an animal to which one is not emotionally bonded may become an unwelcome task and such owners may derive fewer benefits from the relationship. Furthermore, not all studies have found that pet ownership augments health/well being. For instance, after controlling for sociodemographic factors, health status, and social interaction, Ory (1983) found that the mere presence of pets in the home was unrelated to happiness for 1073 elderly women. Kingwell, Laomdal, and Anderson's (2001) experiment involving 72 subjects revealed that the cardiovascular responses of dog owners were most favorable in the presence of a dog, but that non-dog owners' cardiac responses were most favorable in the absence of a dog. These findings suggest that not everyone does benefit (or would benefit) from pet ownership. Human attitudes likely play an important role in whether exposure to animals is harmful, beneficial or inconsequential.

### **Human-Animal Relationships: Demographic Factors and Country of Origin**

Just as characteristics of specific animal species affect the human-companion animal bond (ie: the "loyal" dog or "independent" cat), human characteristics also influence the relationship. Clearly, cultural differences exist in attitudes towards animals which may influence attachment. Race, ethnicity, gender, educational attainment, and country of origin can have an

impact on the roles companion animals play in human lives. Unfortunately, there is little diversity in the samples recruited for human-animal bond research. For example, most studies on this topic “have involved only Caucasians or have included other ethnic group members only incidentally” (Johnson & Meadows, 2002, p. 609). Middle-class and upper-class subjects may be over-represented as well, since many scholars recruit subjects for their studies from veterinary clinics. Pet owners of low socioeconomic status and those with low pet attachment are probably less likely to seek medical intervention for their animals.

Although not necessarily applicable to pets specifically, Wolch and Lassiter assert that there exist “significant” gender and class differences in attitudes towards animals (2004, p. 255). In their study of poor African American females in Los Angeles, they found that these women’s views of animals in general were more utilitarian and anthropocentric compared to those expressed by whites in the literature. This is perhaps demonstrated most succinctly by a focus group participant named Alice who stated “I’m very sure about animals being inferior to humans and that humans come first because animals have always been our servants. . .” (Wolch & Lassiter, 2004, p.259). Additionally, she and other participants defended the practice of eating dogs in some Southeast Asian societies on the grounds of moral relativity (Wolch & Lassiter, 2004). The authors could not make direct racial comparisons since they did not include Caucasians in their study, but did contrast the focus group results with research conducted by Kellert and Berry (1980).

Kellert and Berry’s study surveyed over 3,000 American adults regarding their attitudes towards animals and reported findings by demographic groups including age, sex, race, education, income, urban/rural residence, occupation, religious service attendance, and marital status. Kellert and Berry found that Blacks’ attitudes towards animals tend to be more utilitarian

and anthropocentric than those expressed by Whites. In their study, African Americans scored particularly high on a “negativistic” scale that measures “active avoidance of animals due to indifference, dislike, or fear” as well as a “utilitarian” scale that measures “primary concern for the practical and material value of animals or the animals’ habitat” (Kellert and Berry, 1980, p.42). When income and education were included as confounding variables, Black/White differences only existed for respondents earning greater than five thousand dollars a year with more than a sixth grade education. Less educated, poorer respondents expressed little interest in or concern about animals regardless of race. Kellert and Berry did not speculate why Whites with moderate to high levels of education and income tended to regard animals more favorably than African Americans of the same socioeconomic class. Wolch and Lassiter’s study seems to support this finding, but these authors attribute African Americans’ positions on animals to “socio-economic and cultural factors. . .or question bias. . .rather than a lack of concern for nature or animals” (Wolch & Lassiter, 2004, pp. 258-259). For example, the main theme to emerge from this study’s focus group discussion on animal practices was the notion that humans must make use of animals to live, particularly “the necessity to eat meat –often of animals or animal parts devalued by mainstream white society –in order to survive” (Wolch & Lassiter, 2004, p.256). The authors conclude that “generational and class position, urban/rural background, and membership in a historically oppressed and currently marginalized social group” influence individuals’ perspectives of animals and appropriate human-animal relations (Wolch & Lassiter, 2004, p. 260).

Other scholars concur that “there has been little research on human-animal relationships in communities of color in the United States” (Risley-Curtiss, Holley, Cruickshank, Porcelli, Rhoads, Bacchus, Nyakoe, and Murphy, 2006). It is difficult to determine if race/ethnicity is

related to attitudes towards companion animals since most studies have used all-white samples or have failed to control for socioeconomic status. In Risley-Curtiss and colleagues' ethnically-diverse sample of female pet owners (composed of nine Latinas, two Asians, two Native Americans, and two African Americans), the majority of respondents reported having "reciprocal relationships" with their companion animals (Risley-Curtiss, Holley, Cruickshank, Porcelli, Rhoads, Bacchus, Nyakoe, and Murphy, 2006, p.438). Most focus group participants (13 of 15) indicated that they consider their pets to be family members and over half said that members of their ethnic communities commonly share this view (Risley-Curtiss, Holley, Cruickshank, Porcelli, Rhoads, Bacchus, Nyakoe, and Murphy, 2006). The women "talked about the intersections of ethnicity; social class; rural, urban, or suburban residence; and national origin in describing their communities' views" (Risley-Curtiss, Holley, Cruickshank, Porcelli, Rhoads, Bacchus, Nyakoe, and Murphy, 2006, p.440).

Johnson and Meadows, in their study of older Latinos, found that respondents were very devoted to their pets and that the animals provided social support (2002). These results are similar to those involving elderly Caucasian pet owners (Smith, Seibert, Jackson, & Snell, 1992). In a study of Hispanic persons residing in a Texas-Mexico border town, free roaming dogs and an over-population of both cats and dogs was identified as a problem by the authors, in which "cultural traditions" may be at odds with United States' laws and customs. (Poss & Bader, 2007). Poss and Bader encourage additional investigation to determine whether allowing dogs to roam freely and aversion to sterilization for pets represent true cultural traditions among Hispanics, as these practices conflict with U.S. standards. In this sample, only 11% of dog owners and 27% of cat owners had their pets spayed or neutered. Also, twenty-four percent of dog owners sometimes allowed their dogs to roam freely (Poss & Bader, 2007, p. 250) even though the

practice is illegal and 83.5% of respondents in this sample were, at times, frightened by the loose dogs in their community. Residents cited free-roaming dogs as the third largest community problem after poor water quality and inadequate sanitation. Although considered cruel by the Humane Society of the United States, 63.9% of the study participants also chained their dogs outside. People born in Mexico and less educated respondents were more likely to chain their dogs rather than allowing them free access to their outdoor property or permitting them to live inside their homes. This difference likely stems, in part, from an inability to afford proper fencing, as “nearly 78% of dog guardians who chained their dogs stated they would cease chaining if they had a secure fence” (Poss & Bader, 2007, p. 251). Unfortunately, the authors were unable to assess the role of financial resources due to non-response on questions about income.

Al-Fayez, Awdalla, Templer, and Arikawa (2003) studied attitudes toward companion animals among Kuwaiti Muslims. Consistent with other Muslim countries, Kuwaiti families were less positive in their attitudes about pets than Americans. According to the authors, Islamic religious teachings generally emphasize that animals should be evaluated in terms of economic rather than emotional value (e.g. it is appropriate for dogs to hunt and guard fields, but overall they are considered “unclean” and thus not good companions). Kuwaiti fathers exerted a stronger influence than mothers did over their adolescent children’s attitudes toward animals. However, in the United States, the reverse was true. The authors, taking an international perspective, suggest that positive attitudes toward companion animals and the notion that they can be family members may be “primarily a phenomenon in Europeans and persons in countries in which the majority of citizens are of European descent” (Al-Fayez, Awdalla, Templer, & Arikawa, 2003, p. 22). One

could infer that it is the companion animal perspective which deviates from the standard view of animals as food or property.

Drews (2001) reported that approximately 68% of Costa Ricans keep wild or domestic pets. He compares these statistics to the United States (59%) and Australia (64%) collected in the same time frame. Pet-keeping in Costa Rica is wide spread, with dog ownership at 53%, cat ownership at 15%, and wild animal ownership (primarily parrots) at 24% of households.

Unfortunately, he did not address what roles these animals play in Costa Ricans' lives, nor did he suggest why cat ownership is so low in this country compared to the United States. According to Drews' article, cat and dog ownership in the United States was about equal in 2001, whereas there were about 3.6 times more pet dogs than pet cats in Costa Rica (p.114).

In Japan, 2007 marked the first year in which pets outnumbered children (Euromonitor, 2007), an issue which has brought attention to the country's shifting attitudes towards companion animals (Sugita, 2005). Based on the little research available, it appears that the Japanese are somewhat ambivalent about pets. Kanamori, Kawashima, Kuwabara, and Macer (2001) conducted a survey of 88 young people at the University of Tsukuba in which 25% of respondents said that they had at one point been cruel to their pets. However, when these same respondents were asked what their pets mean to them 36% stated that they consider them "family members" and 17% indicated that they view their companion animals as "friends," while only 10% said that they think of their companion animals as "pets." Responses for the remaining subjects were not clarified in the article. Earlier, at the same university, Kudo and Macer executed a study on attitudes towards nonhuman animals in general (1999). Based on a convenience sample of 258 respondents, they found that only 50% of participants had positive

feeling about animals, 16% disliked them, and 35% were neutral. Of those who did not keep pets, 34% disliked animals; the most common reason cited was that they are dirty and/or smelly.

In a study regarding high school teachers' thoughts on animal rights in Australia, Japan, and New Zealand, Japanese teachers provided some seemingly contradictory responses (Tsuzuki, et al., 1998). More Japanese teachers than teachers from the other two countries endorsed the statement "Animals have rights that people should not violate," but they expressed less concern about the humane treatment of laboratory animals than did respondents from Australia and New Zealand. Specifically, 87% of Japanese high school teachers agreed or strongly agreed that animals have rights that people should not violate, but only 72% of teachers in New Zealand and 69% of Australian teachers did so. Surprisingly, the concept of "humane use" of laboratory animals was expressed less in Japan than in the other two countries, and 72% of biology teachers in New Zealand, 63% in Australia and 12% in Japan said there were guidelines at their schools regarding the use of animals for instructional purposes (Tsuzuki, et al., 1998, p.119).

Gender is a significant variable in companion animal research as well. Many studies have found that girls score higher than boys on both the Companion Animal Bonding Scales (Triebenbacher, 2000) and the Child-Pet Attachment Scale (Vidovic, 1999). Several other researchers have also found women to be more deeply bonded to pets throughout the life course (Albert & Bulcroft, 1988; Johnson, Garrity, & Stallones, 1992; Kidd & Kidd, 1989). A comprehensive review of gender differences in human-animal interactions concluded that the literature from the United States, Australia, and the United Kingdom indicates women are more deeply attached to pets (Herzog, 2007). However the difference was relatively small compared to gender differences in attitudes regarding animals' rights and the propensity to abuse pets where women had much higher levels of positive behaviors and attitudes towards animals.

Perhaps as Cohen (2002) suggests in her study of 201 pet owners in New York City, men may have been more analytical while scoring their feeling about pets than women, which may contribute to women scoring higher on kinship and intimacy scales. In other words, women may have felt freer to express their love for pets. Similarly, she found that college graduates (both male and female) had lower levels of kinship and intimacy with pets, which she attributes, in part, to a greater familiarity with standardized tests. She states “although advanced education may interfere with the ability to bond to others, this finding may also reflect a greater familiarity with procedures in standardized testing, which requires careful attention to each question” (Cohen, 2002, p. 633). Conversely, in another study conducted in New York City, Mallon (1993) found gender had little impact on people’s feelings about their pets. Prato-Previde, Falleni, and Valsecchi’s (2006) findings also supported minimal gender differences in the degree of attachment to companion animals for a sample of Italian adults. They found that both men and women tend to exhibit parental behaviors toward their pets, but women tend to be more verbal and use more “motherese.”

### **Companion Animals and Subjective Well-Being**

Currently, in the United States, most people view their pets as family members. According to a recent survey, 85% of dog owners and 78% of cat owners consider their pets to be members of their families (Pew Research Center, 2006). In a 2004 survey of 1,238 pet owners throughout the United States and Canada, 57% of respondents indicated that if necessary, they would be “very likely” to risk their lives for their pets (AAHA, 2004). Perhaps the most telling indicator of pets’ growing importance, however, comes from a Pew Research Center survey designed to gauge family intimacy. In a nationally representative sample of 3,014 adults, a greater number of respondents reported feeling close to their dogs than the number who reported feeling close to their mothers (Pew, 2006). Specifically, when asked to characterize various

relationships as “close: or “distant,” 94% of respondents reported feeling close to their dogs, while 87% felt close to their mothers, 84% felt close to their cats, and 74% of respondents said they felt close to their fathers (Pew, 2006).

Research indicates that pets have emotional significance for their owners. Contact with companion animals has been found to reduce stress and loneliness, promote relaxation, increase frequency of laughter, expand social networks and contribute to a greater sense of well being (Kraus, 2006; Shiloh, Sorek, & Terkel, 2003; Lockwood, 1983; Rossbach and Wilson, 1992; McNiholas & Collis, 2000; Wood, Giles-Corti, Bulsara, 2005; Valeri, 2006). A recent article concluded that there are “significant differences” between pet owners and those who do not keep pets based on a sample of 19,500 U.S. adults (James, McMellon, & Torres-Baumgarten, 2004, p. 70). The authors used the Simmons Market Research Bureau database, Choices II to conduct a secondary data analysis. Respondents who owned companion animals were more adventurous and independent than non-owners and they also reported that they enjoyed life more than non-owners (James, McMellon, & Torres-Baumgarten, 2004). Conversely, those who did not own pets were more conservative, fatalistic, and health conscious than pet owners. They also reported a greater concern about the environment (James, McMellon, & Torres-Baumgarten, 2004).

Pets have also been shown to reduce stress. In a sample of 1,512 people ranging in age from 14 to 83, pet owners were less stressed than non-owners (Kraus, 2006). Additionally, among pet owners, more frequent interaction with companion animals was associated with lower levels of subjective stress (Kraus, 2006). Researchers at the Tel Aviv University in Israel conducted an experiment wherein participants were told that they might be asked to hold a Tarantula spider and then assigned to one of several experimental groups. The results of the

experiment showed that petting a live rabbit or turtle reduced anxiety compared to petting a toy rabbit, a toy turtle, or being a part of the control group (Shiloh, Sorek, & Terkel, 2003).

Pets can also increase subjective well being indirectly by extending social networks. People who appear in public with pets are usually regarded as more approachable and interesting (Lockwood, 1983; Rossbach and Wilson, 1992) and several studies have recognized companion animals' ability to act as social lubricants (e.g. McNicholas & Collis, 2000; Messent, 1993; Robins & Cahill, 1991). For example, Guéguen and Ciccotti (2008) in their study of 120 French women and men found that “a dog is a powerful facilitator of social interaction” (p.346) and their results “confirm the social lubrication effect of dogs” (p.347). The results of their study suggest that the presence of a dog increases social interaction and helping behavior from strangers. Guéguen and Ciccotti posit that people accompanied by a dog may be considered “more kind, thoughtful, or sensitive” (p. 347). A survey of 339 adults in Australia found that pet owners had a greater number of people they could turn to in a crisis than did non-owners (Wood, Giles-Corti, Bulsara, 2005). They were also more civically engaged and less lonely than those who did not keep pets (Wood, Giles-Corti, Bulsara, 2005). However, not all studies reveal psychological benefits associated with pet ownership. A sample of 162 Australians showed that cat owners had significantly lower scores for general psychological health than non-pet owners (Straede & Gates, 1993). The two groups did not differ with regard to depression, anxiety, sleep disturbance, nurturance, social desirability, or life events (Straede & Gates, 1993). A longitudinal study of the relationship between pet ownership and loneliness (as measured by the UCLA-Loneliness scale) found no evidence that the acquisition of a pet decreased levels of loneliness for a sample of 59 respondents (Gilbey, McNicholas & Collis, 2007).

Although research on the potential benefits of pet-keeping is still inconclusive, clearly owners can become quite emotionally invested in their animals. It is not surprising then that grief following the death of a companion animal can be profound (Toray, 2004; Planchon, Templer, Stokes, & Keller, 2002). In a study of Canadian pet owners, approximately 30% of respondents experienced “severe grief” after the death of a companion animal (Adams, Bonnett, & Meek, 2000). Interestingly, although most subjects displayed emotional and physical symptoms of distress for six weeks after a pet’s death, more than half believed that society “did not view the death of a pet as a loss worthy of grief” (p. 1307). Additionally, Beck and Katcher (1996, p. 45) note, “pets are not only family members, they may be preferred family members, the ones we feel closest to.” In a more recent article, Valeri (2006, p. 276) concurs stating that “today, pets seem to play an especially valued role in the family.” It stands to reason that whenever relationships with pets are regarded as emotionally significant, they will exert at least some influence on one’s global sense of well being. Subjective well being is obviously of interest in and of itself, but it also has been shown to have important consequences. In a seven year prospective cohort study of middle aged and elderly people living in Japan, subjective well being was shown to be a reliable predictor of mortality (Iwasa, Kawaai, Gondo, Inagaki, & Suzuki, 2006).

### **Companion Animals and Human Health**

Extensive research supports the idea that human health benefits from relationships with animals. Pets, which are often more predictable than people (Graham, 2000), provide a free outlet for the expression of emotion. Minimal social skills are needed to obtain their attention and they can offer a refuge from the strain of human interactions (Graham, 2000). Even in ancient times, the symbiotic nature of the relationship was recognized. The Greeks and Romans encouraged depressed people to ride horses as therapy and kept dogs in their healing temples

(Newby, 1999). In more recent times, Florence Nightingale, who herself kept a pet owl, stated “a small pet animal is often an excellent companion for the sick, for long chronic cases especially” (1969, p. 102). The first record of the institutional adoption of companion animals was in 1792 (Hooker, Freeman & Stewart, 2002). The York Retreat, a progressive, English, Quaker psychiatric hospital known for treating mentally ill patients humanely, introduced companion animal as form of therapy (Furst, 2006).

Although contemporary research recognizes the significance of zoonotic disease (any disease of non-human animals that is transmissible to humans) (Robertson, Irwin, Lymbery & Thompson, 2000) and other negative consequences associated with pet-keeping (e.g. dog bites), there is a growing body of research focusing on the health-benefits of living with companion animals. It has been suggested that pets may buffer the effects of stress (Kraus, 2006). Contact with companion animals, has been shown to decrease the incidence of depression (Siegel, Angulo, Detels, Wesch & Mullen, 1999), lower blood pressure/cholesterol better than medication (Allen, Shykoff & Izzo, 2001), and reduce anxiety (Wilson & Netting, 1983). Pet ownership, like marriage, friendship or the parent-child relationship can indeed have a measurable impact on human susceptibility to physical and mental illness. Beck and Katcher (1996) found that depression increases vulnerability to disease, which may be ameliorated by an association with animals. Children who live with animals may develop stronger immune systems (Gern et al., 2004) and have a lesser chance of becoming sensitive to allergens (Ownby, Johnson & Peterson, 2002). However, some studies have found that exposure to pets can exacerbate allergies to animal dander (Wahn, U., Lau, S., Bergmann, R., Kulig, M., Forster, J., Bergmann, 1997). When therapy animals visit nursing homes and work with people who have developmental handicaps, quality of life usually improves (Graham, 2000). Pet owners made

fewer doctor visits than non-owners in several studies (e.g. Headey & Grabka, 2007; Siegel, 1990; Heady, Na & Zheng, 2008). Recently, a large scale longitudinal study on the relationship between pet ownership and human health in Germany and Australia revealed that pet owners make approximately 15% fewer annual doctor visits than non-owners even after controlling for gender, age, marital status, income, and other factors known to influence health (Headey & Grabka, 2007). The data from Germany is particularly compelling as respondents totaled over 9,500 and were interviewed every year since 1984.

As a leading cause of death, cardiovascular disease has received much scientific scrutiny. Medical researchers and scholars interested in the human-animal bond have focused on both the prevention of heart attack/stroke and reduction of mortality associated with cardiovascular disease. Modifiable risk factors for cardiovascular disease include control of hypertension, cholesterol and diabetes (MeritCare, 2008). Lower blood pressure in response to contact with an animal has been documented at several life stages. Nagengast et al. (1997) found the presence of a dog during a physical examination reduced blood pressure, heart rate and behavioral distress in preschool children. Results from a more recent study in adults demonstrated that pet owners have better autonomic modulation (heart rate and BP regulation) than non-owners (Friedmann, et al., 2003). Allen, Blascovich, and Mendes' (2002) study showed decreased cardiovascular reactivity to stress when people were in the presence of cats or dogs. Baun (1984) documented a drop in blood pressure when normotensive college students petted their own dogs. Similarly, Harris, Rinehart, and Gerstman (1993) found that older people who have previously owned a dog had lower blood pressure when home health care visits included a dog.

Pet ownership may be especially beneficial for the elderly. The results of a large, longitudinal study of Canadians ages 65+ indicate that pet ownership helps to maintain or even

enhance older adults' physical function –measured as the ability to perform *Activities of Daily Living* (Raina, Waltner-Toews, Bonnett, Woodward, and Abernathy, 1999). In a prospective study of 938 Medicare enrollees, pet owners reported fewer doctor visits than non-owners over the course of a year (Siegel, 1990). Furthermore, “the accumulation of prebaseline [*sic*] stressful life events was associated with increased doctor contacts during the study year for respondents without pets,” however, this was not the case for pet owners (Siegel, 1990, p.1081). In this sample of older adults, pets appeared to shield their owners' health against the damages of stressful life events (Siegel, 1990).

In the Cardiac Arrhythmia Suppression Trial (CAST) dog ownership was a significant contributor to survival in the year following a myocardial infarction (Friedmann & Thomas, 1995). CAST investigators conducted a one-year follow-up with 369 patients who underwent detailed physiological and psychosocial evaluation. Of the 20 deaths that occurred during the study, 19 of 263 patients who did not own dogs died compared with only 1 of 86 patients who did keep pet dogs (Friedmann & Thomas, 1995). In this study, cat ownership was not associated with survival benefit, but the trial only contained a small number of cat owners (n=44) and a relationship would have needed to be rather strong to reach statistical significance. Beck and Katcher (1996) found that pet ownership (any type of animal) was the best social predictor of survival in patients with severe heart disease. In a national study of 4,435 men and women in the US, which began in the 1970s and spanned 20 years, people who had never owned a cat were 40% more likely to die of a heart attack and had a 30% greater risk of dying from other cardiovascular conditions than current or previous cat owners (Morrison, 2008). The relationship between dog ownership and cardiovascular health was insignificant for this sample (Grayson, 2008). Although there are several exceptions, the research generally indicates that pet-keeping, at

least for emotionally-invested owners, is related to better health and an increased sense of well being. It remains to be seen whether this tendency is specific to European, industrialized countries or is true internationally.

### **Japan**

Most studies on the bond between humans and companion animals have been conducted in the United States and other western, industrialized countries. Nevertheless, there is a growing body of literature on pets' roles in Japan and, in recent years, the nation has experienced a "pet boom" (NPR, 1999). As mentioned previously, 2007 was the first year in which the number of pets in Japan exceeded the number of children (Euromonitor, 2007). In fact, Japan's pet population has been climbing while its fertility rate has been falling. The nation's current fertility rate of 1.3 is well below the 2.1 replacement level and is among the lowest in the world (Gubhaju, 2007). Like many industrialized countries, Japan's population is expected to continue decreasing, with some estimating that it will be 14% smaller in 2050 than today (Cohen, 2003). According to Jones (2007, p. 467), "In Japan, fertility decline started in the two decades before World War II. It was greatly facilitated by the postponement of marriage. . ." Meanwhile, over the past decade, cat and dog ownership in Japan has been growing at about 3% a year (Sapsford, 2005). The popularity of what Americans consider "traditional" companion animals is a fairly recent phenomenon in Japan: "Dogs and cats have only become popular household pets since the 1960s, although the keeping of birds and fish has a longer history" (Franklin, 1999, p.90).

Although the practice of keeping dogs and cats as pets is a relatively new phenomenon in Japan, the popularity of dogs, particularly small dogs, has increased dramatically. In 2005, there were 1.5 times more pet dogs registered in Japan than a decade ago (Broun, 2006). Not only are a greater number of Japanese choosing to keep pets, there is evidence that these animals have great emotional significance. According to Richard Chalfen, "Overall, most pet keepers in Japan

consider their household pets as family members and as psychologically very close” (2003, p. 145). In his study of Japanese pet gravesites, he found that many pet owners (mostly women) come to pray at their deceased pets’ gravesites regularly as they would for human relatives who had passed (Chalfen, 2000). However, the pet boom in Japan has had some negative consequences. Unfortunately, a large demand for “unique” dogs in Japan has led to extensive inbreeding and some of the highest rates of canine genetic defects in the world, “sometimes four times higher than in the United States and Europe” (Fackler, 2006). In recent years, small dog breeds have become very trendy with young women and childless couples for whom canines possessing unusual appearances (e.g. “rare” coat colors) sometimes function as status symbols (Fackler, 2006). Although several factors play a part in pet overpopulation and the subsequent need for companion animal euthanasia (Frank, 2004), the changing ‘trendiness’ of certain dog breeds in Japan has likely contributed to the increased number of healthy pets being taken to animal shelters (NPR, 1999).

It has been suggested that regarding pets as family members is only common “in countries in which the majority of citizens are of European decent.” (Al-Fayez et al, 2003). Economically, Japan is much like the United States in that citizens have a large amount of disposable income, but culturally, the two countries are very different. For example, the United States values individualism and Japan has typically been labeled a “collectivist” nation (Matsumoto, Kudoh, & Takeuchi, 1996). Japan is one of the only industrialized countries for which there has *not* been rapid growth in the number of one-person households since the 1960s (Sorrentino, 1990). Sorrentio (1990, p. 52) reports that 8.6% of Japanese live alone while 30.4% of Americans do so. Many Japanese live in two and three generation households (Sorrentino, 1990). Population density and traditional values encourage living with family rather than alone

or with non-relatives. Japan is generally more traditional than the U.S. in terms of family dynamics (Rindfuss, Choe, Bumpass & Tsuya, 2004). For instance, the divorce rate in Japan is about half that of the United States (Retherford et al., 2001), and childbearing outside of marriage is a rare occurrence in Japan, but not in the U.S. (Presser, 2001). According to Clayton Naff, “in prewar rural Japan, an unmarried woman who became pregnant was often expected to kill herself for the sake of *ie*” (1994, p.55). *Ie* (meaning “household”) was the basic unit of Japanese law until 1947 (Iwasawa, 1998, p.233). *Ie* treated the majority of civil and criminal matters as they pertained to families rather than individuals. Sanctions against behaviors that compromise traditional families have decreased dramatically, but divorce, out-of-wedlock childbearing, and living alone still carry social stigma, which discourages their incidence. Varying degrees of economic development and long-standing cultural traditions are likely to both contribute to the amount of emotional significance pets have for their owners and the roles companion animals play in different societies.

## CHAPTER 4 RESEARCH DESIGN AND METHODS

### **Data**

The data for the present study comes from the first wave of the Japanese General Social Survey (JGSS), collected in 2000. I will use the latest version of this survey available for download through ICPSR, last updated in April of 2007, and conduct secondary analysis. The JGSS is based on the United States' General Social Survey and was designed to solicit demographic information, as well as gauge attitudes on a broad range of issues from people living in Japan. The first wave attempted to survey 4,500 men and women ages 20 to 89, selected from 300 locations in 18 regional blocks within Japan via a two-stage stratified random sampling. The response rate was 64.9%, with a total of 2893 completed questionnaires. The final sample includes 1575 females (54.4%) and 1318 males (45.6%). Normally distributed, participants' mean age is 50.92. The sample includes respondents age 20 and over because this age marks legal adulthood in Japan. Race and ethnicity were not measured due to the homogeneous nature of the target population.

### **Procedures**

The Japanese General Social Surveys (JGSS) are designed and conducted by 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. The project is funded by a Gakujutsu Frontier Grant from the Japanese Ministry of Education, Culture, Sports, Science and Technology for the 1999-2003 academic years. Datasets are compiled with cooperation from the SSJ Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, and the University of Tokyo. All JGSS interviews are administered in Japanese. English translations of the interviews,

codebooks, and supplements are provided as a convenience for researchers. The English-version of the materials include 38 pages of self-administered questions and 36 pages of face-to-face interview items. The order in which the self-administered questionnaires and the in-person interviews were given must have varied, as there is an item regarding which part was completed first. Further procedural details have not been made available to English-speaking researchers.

## **Measures**

### **Outcome Variables**

The outcome variable for subjective well being is a scale composed of several items measuring satisfaction with different areas of life and a question about global happiness. First I created a variable called “satisfaction with different areas of life” in which I took the mean of respondents’ answers to six items concerning their satisfaction with different aspects of their lives. Specifically, this included their place of residence, their non-work activities, their family lives, their household’s current financial situation, their friendships, and their satisfaction with work or keeping house (depending on which they considered their primary occupation). The first five items were measured on a 5-point scale from satisfied to dissatisfied. The final item is a combination of employed people’s satisfaction with their jobs and homemakers’ satisfaction with their work. Both these items were also measured on a 5-point scale from “satisfied” to “dissatisfied.” The variable “satisfaction with different areas of life” is reverse coded such that higher scores mean greater satisfaction. Cronbach’s alpha for the “satisfaction with different areas of life” index was .80 and factor analysis revealed that all five variables load on one component. After the construction of this scale I then averaged it with another item measuring degree of overall happiness. The question “Are you happy?” was also measured from one to five. This variable is given more weight in my subjective well being scale because, as a global measure, it allows respondents to factor in important issues that the “satisfaction with different

areas of life” questions did not assess. The final subjective well being scale has a mean of 3.65, where one equals the lowest level of well being and five indicates the highest level. The distribution of the final variable (see Figure 4-1) is approximately normal. The Pearson correlation for the “satisfaction with different areas of life” variable and the “degree of happiness” variable (the items that make up the final subjective well being scale) is .50 ( $p < .001$ ).

The second outcome variable, a health scale, is a composite of an item which asked respondents to provide an overall health rating and a question about health satisfaction. It should be noted that the item related to satisfaction with health was *not* included in the factors that make up the “satisfaction with different areas of life” variable, which I constructed as part of the subjective well being scale. The self-rated health item allowed respondents to answer between one and five, where 1= good and 5= poor. The satisfaction variable asked “How much satisfaction do you get from your health and physical condition?” and responses varied from satisfied (1) to dissatisfied (5). The final variable is an average of these two items and is reverse-coded so that higher scores mean that respondents’ have better health/are more satisfied with their health condition. The Pearson correlation for the two original variables is .80 ( $p < .001$ ). Figure 4-2 shows that the mean of this variable is 3.38 and that its distribution approximates a bell-shaped curve.

### **Independent Variables**

Pet ownership and degree of attachment to pets are the main independent variables. Pet ownership will be represented as a dummy variable, where 1= “pet owner” and 0= “non-pet owner.” Approximately 38% of the respondents in this sample keep pets (see Figure 4-3).

In order to measure attachment to pets, I created an eight-item scale. The Cronbach’s alpha for the scale is .92, which includes the following items about meaning of pets: “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.” These items were asked only to pet owners. Respondents could indicate that they “strongly agree (=1),” “agree (=2),” “somewhat agree (=3),” or “disagree (=4)” for each of the eight items. Figure 4-4 shows that attachment to pets is normally distributed. I have reversed the order of the values so that higher scores mean a deeper attachment to pets, but kept the same units for ease of interpretation. The items which make up the scale did not allow respondents to strongly disagree with the statements (and may create a “floor” effect), but because most persons who have strong negative feeling towards a pet will within a short time cease to own the pet, it is unlikely that this is a serious limitation. The mean for the pet attachment scale is 2.53, where one corresponds to the lowest attachment level and four indicates maximal attachment. Unfortunately, although respondents were asked to list the species of their pets, they were not asked to specify which of them they had in mind when answering items that comprise the pet attachment scale.

I control for age, gender, educational attainment, household income, employment status, life course position (combination of parental status and marital status), cigarette use, alcohol consumption, number of traumatic events in the past five years, experience of physical violence, the number of family members living in the home, and religious and social service group membership. In models predicting subjective well being I take health condition into account, but obviously exclude this from models in which “health scale” is the dependent variable. Because the literature suggests a nonlinear relationship between age and subjective well being in the United States and Europe (Blanchflower & Oswald, 2008), I include age-squared as an independent variable in regressions that predict subjective well being. Although McCullough and

Laurenceau (2004, p.654) found that self-rated health is relatively stable until middle age, after which there are rather “precipitous declines as people enter older adulthood,” I will not include age-squared in models where “health scale” is the dependent variable. The rationale is that regressions predicting “health scale” will be limited to respondents age 60 and older making it impossible to determine if there is a difference in slopes pre and post middle age for this population even if the variable age-squared was included in the models.

### **Data Analysis**

I used SPSS (Statistical Package for the Social Sciences) to analyze the data. T-test analyses to compare pet owners and non-owners and a series of nested linear regression models are employed to examine the effects of the independent variables on physical health and subjective well being. An alpha level of .05 is considered significant for all statistical tests.

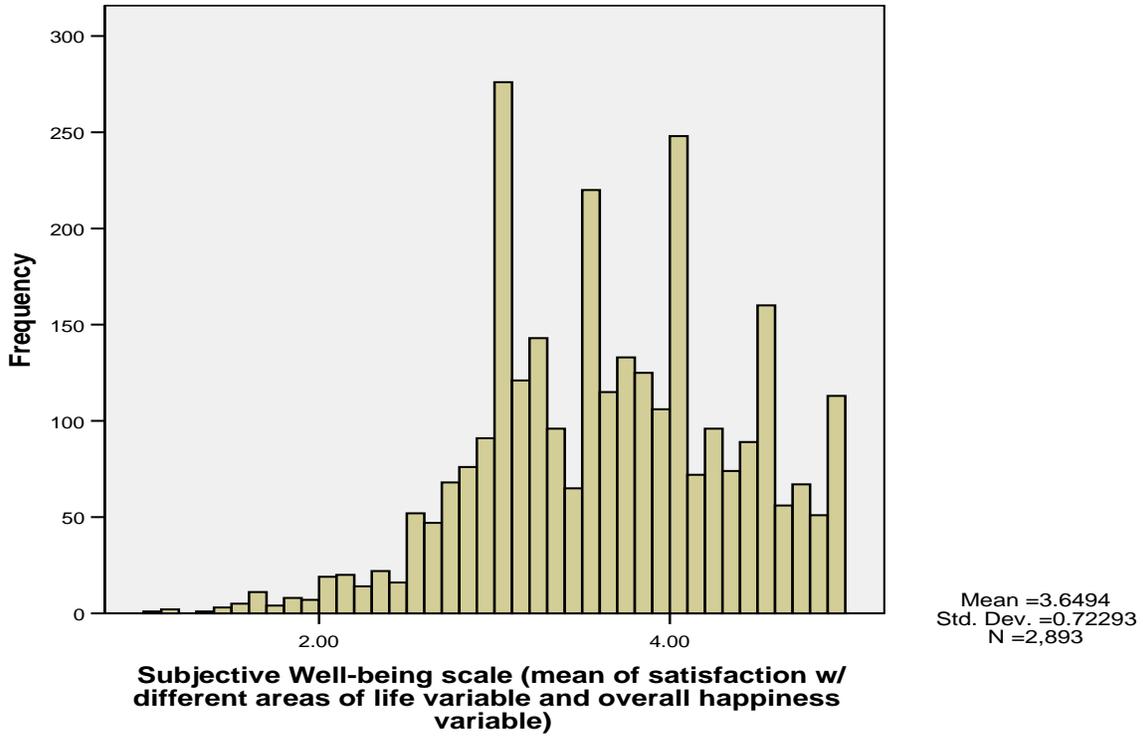


Figure 4-1. Distribution of Subjective Well Being scale

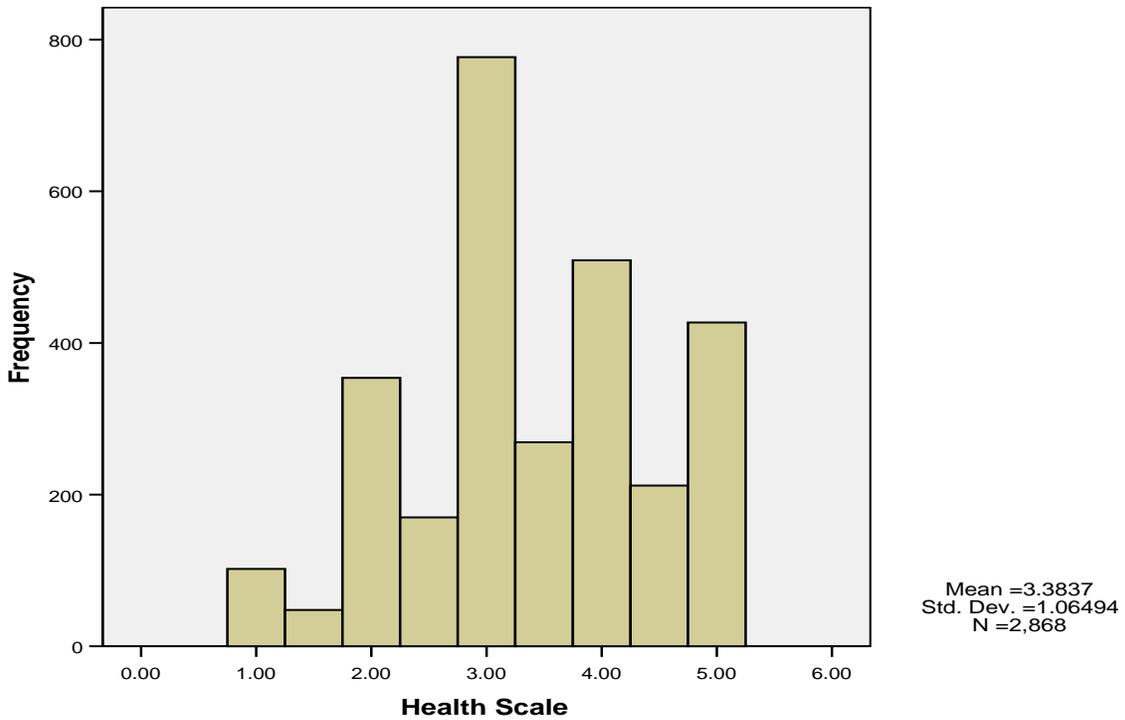


Figure 4-2. Distribution of Health scale

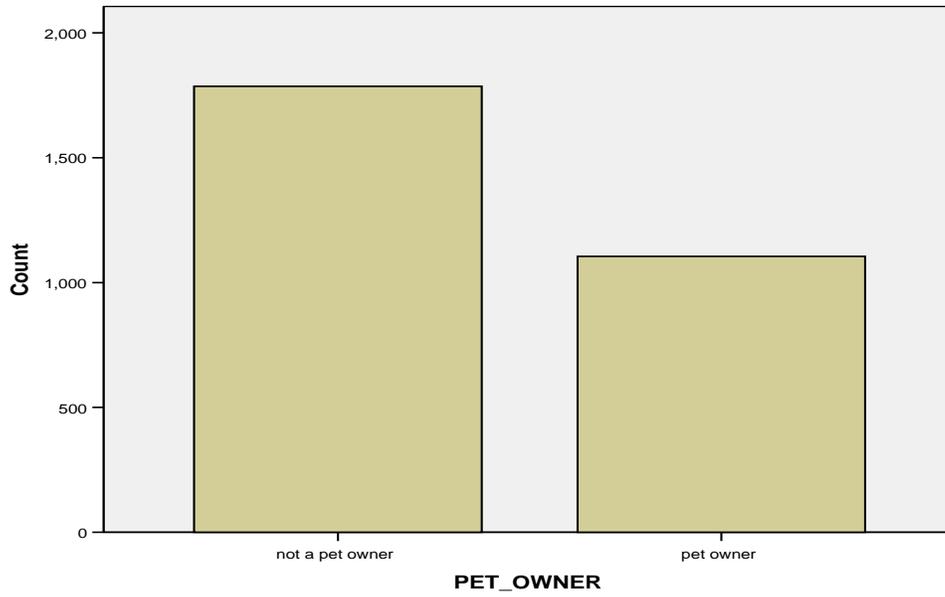


Figure 4-3. Prevalence of Pet Ownership

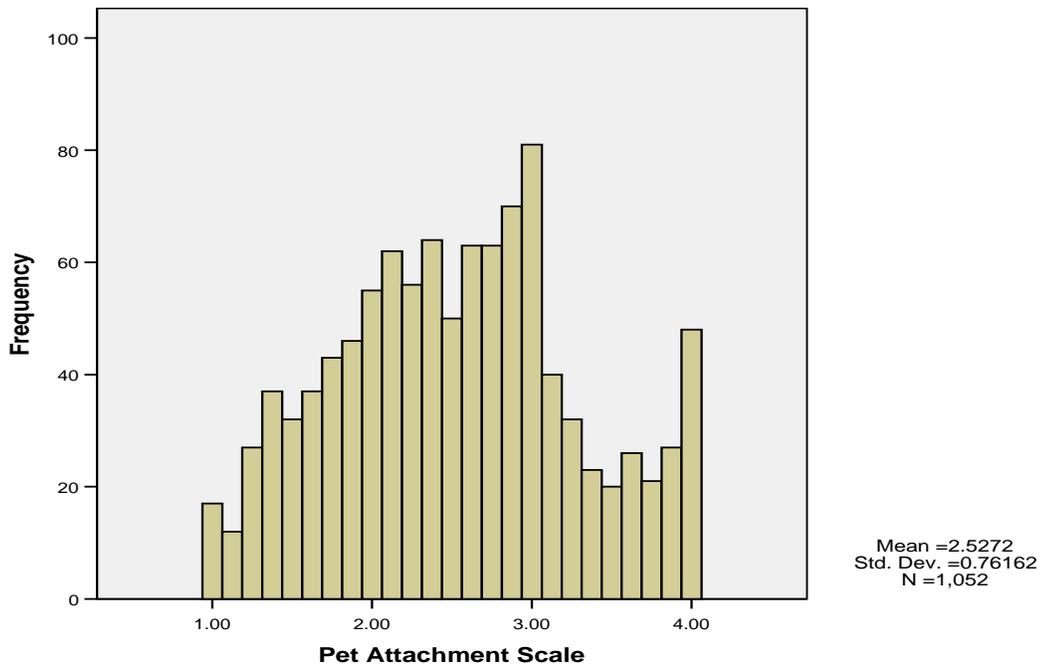


Figure 4-4. Distribution of Pet Owners' Attachment

## CHAPTER 5 RESULTS

### **Bivariate**

In order to compare pet owners and non-owners a series of independent sample t-tests was performed. Although pet keeping is unrelated to gender, educational attainment, likelihood of victimization, and religious group membership, there are statistically significant differences between pet owners and non-owners for the remaining study variables. Specifically, pet owners are generally younger, have higher annual household incomes, and tend to live with a greater number of family members. Pet owners are more likely to be married, parents, employed, and volunteer with a social service group. The incidence of traumatic events in the last five years was higher for pet owners than for respondents who did not keep pets. Finally, pet owners are less likely to smoke cigarettes and consume alcohol less frequently than non-owners.

Bivariate correlations are found in tables six through nine. The association between pet ownership and subjective well-being in Table 5-2 is not significant ( $p$ -value = .12), however, the direction of the relationship is positive –as anticipated. Multivariate analyses will determine whether controlling for independent variables strengthens or weakens the relationship between pet ownership and subjective well-being.

The associations in tables 7 and 8 *are* statistically significant at the .05 level. Table 5-3 shows that, among pet owners, those who are more attached to their pets report higher subjective well-being than those who are less attached. Although the strength of the relationship is weak, it is highly statistically significant ( $p$ -value = .000). Without taking into account other variables, it is clear that deeper pet attachment among owners is related to higher subjective well-being.

The association between pet ownership and health among respondents aged 60 and older is significant and positive, but very weak (see Table 5-4). Among respondents aged 60 and over,

pet owners tend to have better health than non-pet owners. After controlling for independent variables, this association may change or lose significance.

The final bivariate relationship displayed in Table 5-5 demonstrates that, among pet owners aged 60 and older, pet attachment is unrelated to health. The p-value value is quite high at .609 and it seems unlikely that pet attachment will significantly predict health status among older pet owners in multivariate analyses. In summary, bivariate results indicate that the *direction* of the relationships stated in the hypotheses may be accurate, but the strength of some of the associations may be too weak to reach statistical significant at the .05 level.

### **Multivariate**

Multivariate analyses are found in tables ten through thirteen. The results of the linear regressions in Table 5-6 indicate that pet ownership does *not* significantly predict respondents' well-being for the sample as a whole. The variable does not reach statistical significance in any of the seven models. Hypothesis 1 is not supported, as pet owners are no happier than respondents who do not keep companion animals regardless of which other independent variables are controlled for in the model. In fact, very few variables significantly predict respondents' subjective well-being (SWB). Although over a quarter of the variation in the dependent variable (SWB) is explained, almost all of this is accounted for by one variable; namely, self-rated health. Before the introduction of self-rated health, approximately four percent of the variation in SWB is explained. After the introduction of self-rated health, the adjusted  $R^2$  jumps dramatically to .23 and does not increase much with the addition of other variables. The coefficient for self-rated health decreases somewhat with the addition of other independent variables. However, the greatest amount of variation that can be explained (25.3% in model 7) is only marginally better than the health variable's explanatory power alone.

Household income is significantly related to SWB until “contact with people” variables are included in the final model. Specifically, while those with higher household incomes would seem to be happier, this relationship loses significance when the number of family members living in the home and religious/social service group memberships are taken into account. Life course position and negative life events (the number of traumatic events in the last five years and the experience of violence) are also related to SWB, but do not explain much variation. The typical “happy” Japanese adult may be one who is married, healthy, lives with several family members, volunteers, and has not been victimized, or experienced any traumatic events in the last five years. Alternatively, if one were to picture an “unhappy” Japanese adult, he or she would be unmarried and sick, living alone, not active in a social service group, a victim of violence and would have experienced many traumatic events in the last five years. None of this is particularly noteworthy as one might anticipate these relationships. It is perhaps surprising that so few of the other variables are related to Japanese SWB. Age, gender, educational attainment, household income, employment status, being a smoker, alcohol consumption, and religious group membership are not related to subjective well-being in the final model.

The results in Table 5-7 indicate that among pet owners, stronger attachment is related to higher subjective well-being after controlling for other variables. Pet attachment significantly predicts SWB among pet owners in all seven models. These findings support hypothesis 2 that among pet owners, those who are more attached to their pets are happier. However, the *amount* of variation in SWB that pet attachment explains is rather small (4%). The coefficient for pet attachment decreases slightly from model to model as other independent variables are included. Self-rated health is the only other significant variable in any of the models predicting pet owners’ SWB. All together, the variables explain almost a quarter of the variation in the dependent

variable. As was the case for the sample as a whole, health status accounts for the majority of explained variation in pet owners' happiness. Interestingly, "self rated health" and "pet attachment" are the only significant variables in any of the models predicting pet owners' SWB. Apparently, even fewer independent variables are related to happiness among pet owners than for the sample as a whole. For Japanese pet owners, demographic characteristics, life course position, being a smoker, alcohol consumption, negative life events, and the amount of contact with people negligibly influence subjective well-being. It is interesting that different (i.e. fewer) variables are related to pet owners' subjective well being compared to the entire sample.

Hypothesis 3 is not supported by the findings in Table 5-8, as pet ownership is not a significant predictor of health among respondents aged 60 and older after other variables are included in the model. Even in the first model, where pet ownership is statistically significant, it explains a minimal amount of the variation in older adults' health. All the variables together explain less than seven percent of the variation in health for adults aged 60 and older. One of the most interesting findings is that taking alcohol consumption into account reveals a hidden relationship between gender and health. In models one through four, it appears that Japanese women are no healthier than Japanese men. After the addition of alcohol consumption in model five, the coefficient for gender more than doubles, gaining statistical significance at the .01 level. After taking alcohol consumption into account, it becomes apparent that Japanese women are generally healthier than Japanese men.

Education, employment status, alcohol consumption, the number of traumatic events in the last five years, the number of family members living in the home, and membership in a social service group are all related to Japanese older adults' health. The "healthiest" profile is that of a highly educated, employed female who abstains from alcohol, lives with several family

members, volunteers with a social service group, and has not experienced any traumatic events in the past five years. Alternatively, the profile of an “unhealthy” person could be described as an uneducated, unemployed man who drinks heavily, lives alone, does not volunteer, and who has experienced many traumatic events in the last five years. These characterizations should be interpreted with caution since the final model explains a mere 6.9% of the variation in older adults’ health. Pet ownership, age, household income, life course position, being a smoker, victimization, and religious group membership are all unrelated to health among respondents aged 60 and older.

The final table illustrates which variables significantly predict the health of pet owners aged 60 and older. The data do not support hypothesis 4, as pet attachment is not significant in any of the models. Pet owners who are more attached to their companion animals are no healthier than owners who report low attachment levels. As is the case for the entire sub-sample of persons aged 60+, pet-owning older adults are healthier when they volunteer in a social service group, are more educated, and have experienced fewer traumatic events in the previous five years. One unusual finding is that although being female is related to better health after controlling for alcohol consumption in model five, gender loses significance in the next model only to regain it in the final model. This finding differs from the relationship between gender and alcohol consumption that appeared in the previous table predicting the health of adults aged 60 and older, wherein controlling for alcohol consumption reveals a significant association between gender and health which maintains statistical significance in both of the subsequent models.

Another noteworthy difference in the predictive power of the independent variables for the health of all older adults and pet-owning older adults is that fewer variables are statistically

significant for predicting the health of pet owners 60 and older compared to the entire subsample of older adults. Specifically, employment status and alcohol consumption do not influence older pet owners' health, but are significantly related to the health status of older adults in general. Although it would seem that the number of family members living in the home is unrelated to pet owners' health, a non-significant finding in this case is actually due to decreased sample size. According to the final model, the epitome of a healthy, older Japanese pet owner is a highly educated woman who volunteers and has not experienced traumatic events in the last five years. Conversely, diminished health among older Japanese pet owners is associated with being an uneducated man who is not a member of a social service group and has experienced many traumatic events in the previous five years. The data indicate that pet attachment, age, household income, employment status, life course position, being a smoker, alcohol consumption, victimization, number of family members living in the home, and membership in a religious group do not significantly affect the health of Japanese pet owners aged 60 and older.

Table 5-1. Comparison of Pet Owners and Non-owners

Variables	Pet owners (n= 1094-1105)		Non-owners (n= 1771-1786)		t-value	p-value
	M	SD	M	SD		
Age	49.75	15.37	51.63	17.20	-3.05	.002
Female	.54	.50	.55	.50	-0.36	.723
Education	3.03	1.11	3.00	1.22	0.95	.342
Household Income	14.46	7.00	13.33	7.67	4.00	.000
Employed	.71	.46	.61	.49	5.17	.000
Married	.76	.43	.70	.46	3.63	.000
Parent	.81	.39	.77	.42	2.74	.006
Smoker	1.65	.48	1.71	.46	-3.25	.001
Alcohol consumption	3.67	2.30	4.01	2.32	-3.85	.000
Number of traumatic events in past 5 years	1.28	1.24	1.14	1.18	3.17	.002
Victim of violence	.27	.45	.26	.44	0.76	.450
Number of family members living in the home	3.86	1.55	3.22	1.55	10.78	.000
Religious group membership	.08	.27	.06	.24	1.63	.104
Social service group membership	.09	.29	.07	.26	1.98	.048

Table 5-2. Correlation between Pet ownership and Subjective Well-being for entire sample

		Pet Owner	Subjective Well-being
Pet Owner	Pearson Correlation	1	.03
	Sig. (2-tailed)		.120
	N	2891	2891
Subjective Well-being	Pearson Correlation	.03	1
	Sig. (2-tailed)	.120	
	N	2891	2893

Table 5-3. Correlation between Pet Attachment and Subjective Well-being among Pet Owners

		Pet Attachment	Subjective Well-being
Pet Attachment	Pearson Correlation	1	.12
	Sig. (2-tailed)		.000
	N	1052	1052
Subjective Well-being	Pearson Correlation	.12	1
	Sig. (2-tailed)	.000	
	N	1052	2893

Table 5-4. Correlation between Pet Ownership and Health among Respondents aged 60 and older

		Pet Owner	Health
Pet Owner	Pearson Correlation	1	.07
	Sig. (2-tailed)		.045
	N	953	940
Health	Pearson Correlation	.07	1
	Sig. (2-tailed)	.045	
	N	940	940

Table 5-5. Correlation between Pet Attachment and Health among Pet Owners aged 60 and older

		Pet Attachment	Health
Pet Attachment	Pearson Correlation	1	.03
	Sig. (2-tailed)		.609
	N	274	274
Health	Pearson Correlation	.03	1
	Sig. (2-tailed)	.609	
	N	274	940

Table 5-6. Results of Linear Regressions Predicting Effect of independent variables on Subjective Well-being

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Pet Owner	.04(.02)	.06(.04)	.03(.02)	.02(.01)	-.01(-.01)	.00(.00)	-.04(-.02)
<u>Demographics</u>							
Age		.00(.18)	.00(.37)	.00(.11)	.00(-.38)	-.00(-.46)	-.00(-.59)
Age <sup>2</sup>		.00(-.05)	.00(-.25)	.00(.04)	.00(.51)	.00(.57)	.00(.70)
Female		.04(.03)	.03(.02)	.09(.06)	.01(.01)	-.03(-.02)	-.02(-.01)
Education			-.01(-.01)	-.00(-.01)	-.03(-.05)	-.03(-.05)	-.03(-.05)
Household Income			.01(.10)**	.01(.09)**	.01(.08)**	.01(.09)**	.01(.05)
Employed			.05(.03)	.04(.03)	-.07(-.04)	-.01(-.05)	-.08(-.05)
<u>Life Course Position</u>							
Unmarried, childless <sup>a</sup>				-.55(-.14)***	-.49(-.13)***	-.48(-.12)***	-.42(-.11)***
Unmarried, parent <sup>a</sup>				-.15(-.08)*	-.14(-.08)*	-.13(-.08)*	-.11(-.06)
Married, childless <sup>a</sup>				.12(.02)	.03(.01)	.00(.00)	.06(.01)
<u>Health</u>							
Smoker					-.01(-.01)	-.01(-.01)	-.01(-.01)
Alcohol consumption					.01(.03)	.01(.03)	.01(.03)
Self-rated health					.27(.45)***	.26(.43)***	.25(.42)***
<u>Negative Experiences</u>							
# of traumatic events in past 5 years						-.06(-.10)***	-.07(-.11)***
Victim of violence						-.14(-.08)*	-.15(-.08)**
<u>Contact with People</u>							
# of family members living in the home							.04(.09)**
Religious group membership							.03(.01)
Social service group membership							.15(.06)*
Adjusted R <sup>2</sup>	.00	.01	.02	.04	.23	.25	.25
F	.54	4.00**	4.10***	5.08***	22.35***	21.05***	18.28***

Notes: \*\*\*p<.001; \*\*p<.01; \*p<.05 2000 Japanese General Social Survey N= 2893 (total sample) Standardized coefficients in parentheses

a. Married, parents are the reference group

Table 5-7. Results of Linear Regressions Predicting Effect of independent variables on Subjective Well-being among Pet Owners

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Pet Attachment	.18(.20)**	.17(.19)*	.17(.18)*	.16(.18)*	.13(.14)*	.13(.15)*	.14(.15)*
<u>Demographics</u>							
Age		.00(1.17)	.00(1.44)	.00(1.43)	.00(1.11)	.00(1.03)	.00(.89)
Age <sup>2</sup>		-.00(-.97)	-.00(-1.21)	-.00(-1.20)	-.00(-.91)	-.00(-.84)	-.00(-.71)
Female		.05(.03)	.06(.04)	.08(.05)	-.02(-.01)	-.03(-.02)	-.05(-.03)
Education			.03(.04)	.02(.03)	-.03(-.04)	-.03(-.05)	-.03(-.05)
Household Income			.01(.05)	.00(.04)	.00(.03)	.00(.04)	-.00(-.02)
Employed			.09(.06)	.09(.06)	.03(.02)	.03(.02)	.02(.02)
<u>Life Course Position</u>							
Unmarried, childless <sup>a</sup>				-.90(-.11)	-.69(-.08)	-.69(-.08)	-.65(-.08)
Unmarried, parent <sup>a</sup>				-.02(-.01)	-.02(-.01)	-.01(-.01)	.02(.01)
Married, childless <sup>a</sup>				.08(.01)	.34(.03)	.36(.03)	.46(.04)
<u>Health</u>							
Smoker					.03(.02)	.02(.01)	.03(.02)
Alcohol consumption					.00(.01)	.00(.01)	.01(.02)
Self-rated health					.26(.44)***	.26(.44)***	.26(.43)***
<u>Negative Experiences</u>							
# of traumatic events in past 5 years						-.02(-.04)	-.03(-.05)
Victim of violence						-.03(-.02)	-.05(-.03)
<u>Contact with People</u>							
# of family members living in the home							.04(.09)
Religious group membership							-.06(-.03)
Social service group membership							.11(.05)
Adjusted R <sup>2</sup>	.04	.07	.07	.07	.25	.24	.25
F	10.96**	6.15***	3.79**	2.92**	7.73***	6.70***	5.80***

Notes: \*\*\*p<.001; \*\*p<.01; \*p<.05 2000 Japanese General Social Survey N= 1052 (pet owners) Standardized coefficients in parentheses

a. Married, parents are the reference group

Table 5-8. Results of Linear Regressions Predicting Effect of independent variables on the Health of Respondents aged 60+

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Pet Owner	.16(.07)*	.14(.06)	.13(.05)	.13(.05)	.11(.04)	.14(.06)	.09(.04)
<u>Demographics</u>							
Age		-.01(-.06)	.00(.02)	.01(.03)	.01(.05)	.01(.03)	.01(.03)
Female		.06(.03)	.13(.06)	.15(.07)	.31(.14)**	.24(.11)*	.26(.12)**
Education			.09(.08)*	.09(.09)*	.09(.08)*	.09(.09)*	.09(.09)*
Household Income			.00(.02)	.00(.01)	.00(.01)	.00(.02)	-.00(-.02)
Employed			.31(.13)***	.32(.13)***	.30(.12)***	.28(.11)**	.27(.11)**
<u>Life Course Position</u>							
Unmarried, childless <sup>a</sup>				-.26(-.04)	-.25(-.04)	-.22(-.04)	-.12(-.02)
Unmarried, parent <sup>a</sup>				-.03(-.01)	-.02(-.01)	-.00(-.00)	.03(.01)
Married, childless <sup>a</sup>				.29(.04)	.31(.04)	.26(.03)	.36(.05)
<u>Health</u>							
Smoker					-.08(-.03)	-.08(-.03)	-.06(-.02)
Alcohol consumption					-.06(-.14)***	-.06(-.14)***	-.06(-.13)**
<u>Negative Experiences</u>							
# of traumatic events in past 5 years						-.14(-.15)***	-.14(-.16)***
Victim of violence						-.18(-.06)	-.16(-.06)
<u>Contact with People</u>							
# of family members living in the home							.07(.10)**
Religious group membership							.01(.00)
Social service group membership							.29(.08)*
Adjusted R <sup>2</sup>	.00	.01	.02	.02	.03	.06	.07
F	4.03*	2.64*	4.40***	3.28**	3.90***	5.44***	5.24***

Notes: \*\*\*p<.001; \*\*p<.01; \*p<.05 2000 Japanese General Social Survey N= 953 (respondents aged 60+) Standardized coefficients in parentheses

a. Married, parents are the reference group

Table 5-9. Results of Linear Regressions Predicting Effect of independent variables on the Health of Pet Owners aged 60+

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Pet Attachment	.04(.03)	.04(.03)	.04(.03)	.05(.03)	.06(.04)	.07(.05)	.07(.05)
<u>Demographics</u>							
Age		-.00(-.02)	.01(.07)	.01(.08)	.02(.09)	.01(.06)	.02(.09)
Female		.17(.07)	.25(.11)	.29(.13)	.38(.17)*	.32(.14)	.36(.16)*
Education			.16(.15)*	.16(.16)*	.17(.16)*	.16(.15)*	.16(.16)*
Household Income			-.00(-.01)	-.00(-.02)	-.01(-.03)	-.00(-.01)	-.01(-.08)
Employed			.15(.06)	.16(.07)	.14(.06)	.13(.06)	.09(.04)
<u>Life Course Position</u>							
Unmarried, childless <sup>a</sup>				-.88(-.07)	-.81(-.06)	-.79(-.06)	-.68(-.05)
Unmarried, parent <sup>a</sup>				-.03(-.01)	-.04(-.01)	.00(.00)	-.07(-.03)
Married, childless <sup>a</sup>				-.76(-.04)	-.82(-.05)	-.69(-.04)	-.43(-.02)
<u>Health</u>							
Smoker					.09(.03)	.06(.02)	.10(.04)
Alcohol consumption					-.05(-.11)	-.04(-.10)	-.04(-.08)
<u>Negative Experiences</u>							
# of traumatic events in past 5 years						-.11(-.14)*	-.11(-.13)*
Victim of violence						-.21(-.08)	-.30(-.11)
<u>Contact with People</u>							
# of family members living in the home							.08(.12)
Religious group membership							.02(.01)
Social service group membership							.63(.20)**
Adjusted R <sup>2</sup>	-.00	-.00	.01	.00	.01	.02	.06
F	.26	.60	1.37	1.11	1.13	1.50	2.06*

Notes: \*\*\*p<.001; \*\*p<.01; \*p<.05 2000 Japanese General Social Survey N= 274 (pet owners aged 60+) Standardized coefficients in parentheses

a. Married, parents are the reference group

## CHAPTER 6 DISCUSSION

To summarize, the findings from this study do not support hypotheses one, three, and four. Hypothesis two is not rejected based on statically significant outcomes. Specifically, the data indicate that subjective well-being is not enhanced by pet ownership, older adults' health status is not augmented by pet ownership, and pet attachment is unrelated to health for pet owners aged 60 and older in this Japanese population. However, the data confirm that, among pet owners, attachment level is positively related to subjective well-being. Together, the independent variables explain approximately 25% of the variation in the subjective well-being of pet owners and the overall sample (though fewer factors are significantly associated with pet owners' happiness). The models explain a considerably smaller amount of variability in health status, as the independent factors account for less than seven percent of the health variation in adults aged 60 and older (for pet owners and the entire sub-sample of older adults). Fewer independent variables significantly predict the health status of older pet owners compared to the number related to the health status of all adults aged 60 and older.

There are several possible interpretations for the lack of associations among key independent variables and health/subjective well-being. The regressions in Table 5-6 indicate that pet-keeping does not increase the subjective well-being of Japanese adults. This result, coupled with the finding that stronger attachment to pets is related to higher SWB among owners, suggests that mere pet ownership is not enough to bolster happiness. Pets may enhance owners' sense of well-being, but only among owners who establish a strong emotional connection with their animals. Ory and Goldberg interviewed 1,073 white, married women aged 65 to 75 living in Washington County, Maryland (1983). Their results are consistent with the current study as pet owners were no happier than non-owners and pet attachment was positively

related to happiness among those who kept companion animals. Ory and Goldberg separated owners into two groups based on level of pet attachment finding that “slightly more respondents who have pets and feel very attached to them report the highest levels of happiness” as compared to owners with low attachment levels and persons who do not keep pets (Ory and Goldberg, 1983).

Alternatively, a lack of association could also be explained by the myriad of costs associated with pet ownership. In Japan, it may be that, for the majority of owners, pets are more of a liability than as asset. Podberscek notes “there are good and bad aspects to keeping companion animals” (2006, p.24) Excessive noise, destructive behaviors, the time, energy, and money associated with pet care, bites/scratches, and zoonotic diseases may cancel out some of the positive aspects of pet ownership. It is also possible that some unhappy people acquire pets to fill a void in their lives. Depending on the prevalence on this behavior, the relationship between pet ownership and subjective well-being could be greatly affected. Furthermore, not all respondents who indicate that they are pet owners interact frequently with the animals living in their homes. A pet owner may do little more than share a dwelling with a companion animal if it really “belongs” to another household member.

There may be similar reasons for the lack of support for hypotheses three and four. Pet ownership in the older adult population and pet attachment among older pet owners are both unrelated to health status. First, it is possible that many active (i.e. healthy) older adults do not acquire pets because they do not wish to be restricted by pet-care responsibilities. Among the Japanese aged 60 and older who do keep pets, the healthier, more active owners may not spend enough time at home to develop deep connections with their animals. Conversely, a portion of the least healthy and active older adults may become pet owners due to an unmet need for

companionship. Some strongly-attached pet owners may also be less active and healthy. The time they spend at home (fostering deep connections with their pets) may be a product of compromised health status.

Another reason for the lack of significance in the final tables may be that pets do not carry the same emotional significance in Japan that they do in Western, industrialized nations. The history of pet-keeping in Japan spans only a few decades (Franklin, 1999) whereas pet-keeping in the United States spans centuries (Grier, 2006). The reasons for acquiring a companion animal and the bond between person and pet may be much different in Japan than in the U.S. The evolution of the pet from possession to family member was a slow process in North America (Kennedy & McGarvey, 2008). It is possible that the significance of companion animals in Japan may increase in the future such that pet ownership and/or pet attachment will be related to enhanced health status.

Finally, the results of this study support hypothesis two. Pet attachment among Japanese owners is significantly and positively related to subjective well-being. Although a causal relationship cannot be established using cross sectional data, the findings may indicate that pets lead to an enhanced sense of well-being when the human-animal bond is strong. An alternative explanation is that certain pet owners are happier people who have the capacity to bond more deeply with companion animals. As mentioned previously, pets may benefit their owners both directly by improving mood and indirectly by expanding social networks. A recent study of Japanese dog owners provides evidence that the bonds between people and pets have direct neuro-chemical benefits for humans (Nagasawa, Kikusui, Onaka, & Ohta, 2009). Fifty-five pet owners were recruited from dog-training classes for the research. The authors found that interaction with one's own dog was associated with an increase in urinary oxytocin

concentrations (Nagasawa, Kikusui, Onaka, & Ohta, 2009). When dogs stared into their owners eyes it prompted the release of a chemical associated with social bonding (Nagasawa, Kikusui, Onaka, & Ohta, 2009). Dubbed “the neuropeptide of love” (Neumann, 2007), oxytocin is associated with bonding and attachment in people and animals (Zeki, 2007). It modulates social behaviors including human trust and decreases anxiety (Neumann, 2007). Logically, the increases in oxytocin experienced by attached pet owners could influence their sense of well-being. Nagasawa, Kikusui, Onaka, and Ohta (2009, p. 441) assert that their research may have identified “the neural mechanisms by which associations with dogs affect the physical and mental health of humans.” It remains to be seen whether oxytocin increases following interactions with animals other than one’s own dog or with species besides *Canis lupus familiaris*.

This study expands on what is currently known about the determinants of subjective well-being and health in Japan. Results indicate that, among owners, pet attachment is positively related to subjective well-being. According to Sugita (2005), pets will play an increasingly important role in Japanese society. Because Japanese culture is unique and must be understood on its own terms (Kawamura 1994), the human companion-animal relationship deserves further investigation in this context and in other non-western societies.

### **Limitations**

Because this study analyzes data collected at one point in time, it is not possible to establish the causal direction of most relationships. It is certainly possible that individuals who are happier and healthier have a greater capacity to care for companion animals and are more emotionally available to foster deep bonds with pets. In other words, even if all the hypotheses had been supported, a greater sense of well-being and better health may precede the acquisition of a pet and also influence degree of attachment to the animal.

### **Suggestions for Future Research**

In future studies, it may be fruitful for researchers to focus on pet attachment as it relates to well-being rather than pet ownership per se since results from the current study indicate that Japanese who are less attached to their companion animals do not benefit from pet keeping in terms of subjective well-being. It would also be interesting to control for the type of pet when examining if pets influence human health/happiness. Additionally, the person who is primarily responsible for the care of the animal would likely be more affected by pet ownership than persons whose pet “ownership” merely consists of living in the same home. When designing survey items, the question “are you primarily responsible for the care of your pet?” may constitute an important follow-up to the pet ownership question.

Finally, the data suggest that pet owners and non-owners are different. Pet owners tend to be younger, have higher annual household incomes, and live with a greater number of family members. Pet owners are also more likely to be married, parents, employed, and volunteer with a social service group. The incidence of recent traumatic events is higher for pet owners than for respondents who do not keep pets, but they are less likely to smoke cigarettes and they consume alcohol less frequently than non-owners. Variables measuring life course position, frequency of traumatic events, victimization, number of family members living in the home, and social service group membership do significantly predict subjective well-being for the sample as a whole, but are not related to pet owner’s happiness. Similarly, the variables measuring employment status, alcohol consumption, and number of family members living in the home are all related to older adults’ health in the general sample, but do not significantly predict the health of pet owners aged 60 and older. As noted earlier, however, lack of significance between number of family members living in the home and older pet owners’ health is caused by decreased sample size.

Future studies may be necessary to explore whether pet owners in Japan differ

fundamentally from non-owners in terms of subjective well-being and health since it is not clear in the current study whether this stems from fundamental differences between the groups or reduced sample size. Independent sample t-test findings would tend to support the former explanation since they show that pet owners and non-owners differ significantly for most study variables. According to Arluke and Sanders, human-companion animal relationships are “fertile” areas for sociological exploration (1996, p.2).

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## BIOGRAPHICAL SKETCH

Kathryn Gerlach, the eldest of three children, was born in Orlando, Florida. After graduating summa cum laude from University of Florida with a Bachelor of Arts in Sociology, Kathryn was awarded an Alumni Fellowship to continue her education. She completed her M.A. in August 2009.