Introduction and Purpose

Pets provide constant and unconditional love and affection (Brasic, 1998). Over 50% of households in the world have a pet (Bonas, 2000; Beck 1999; Fogle, 1983). There are more than 60 million pet dogs and nearly 70 million pet cats in the U.S. (AVMA, 2002). Pet owners often describe their pets as important and cherished family members who offer comfort in times of stress (Allen, 2003).

In fact, pets can decrease anxiety and sympathetic nervous system arousal by providing a pleasing external focus for attention. This can often promote feelings of safety and provide a source of contact comfort. In return, people perceive pets as important, supportive parts of their lives. They provide companionship, decrease loneliness, decrease depression, provide a source of energy (Friedmann, Thomas, & Eddy, 2000), and promote an interesting and varied lifestyle, as well as an opportunity for nurturing (Allen, Blascovich, & Mendes, 2002; Odendaal, 2002).

While the beneficial impact of pets on humans has been demonstrated, the role of human-pet attachment has not. Specifically, researchers have studied whether the presence of a pet in a family influences people, but research has not explored the extent to which the degree of attachment between the human and companion animal influences the benefits of having a pet. The present research was designed to develop a scale to measure the degree of attachment between a pet owner and his or her companion animal. In other words, the present study provides a measurement tool that will enable researchers to define human-animal attachment beyond the simple all-or-none definition used heretofore. This could support future programmatic research showing the benefits and liabilities to human welfare of developing an emotional attachment to a companion

animal. Moreover, a more sensitive definition of human-animal attachment can lead to better understanding of the psychological mechanisms underlying emotional attachments between humans and animals.

Purpose Statement

The proposed research was designed to create a quantitative instrument to measure the degree of attachment between humans and pets, and explore relations between one's score on the Pet-Attachment Scale (PATS) and measures of human happiness, gender, age, whether the participant lives with a significant other, whether the participant had a pet as a child, the number of pets the participant has, whether the participant is the most responsible for the pet, and the type of pet the participant chooses as a favorite (i.e., dog, cat, or other). A reliable and valid measure of human-pet attachment would dramatically expand the possibilities for research in this domain.

An instrument such as the one the author has developed in this study will allow researchers to explore the degree of attachment an individual feels toward a pet, and whether this attachment is related to certain variables such as the amount of responsibility the participant has for the pet, the age, the gender, the happiness of the participant, whether the participant lives with a significant other, whether the participant had a pet as a child, and the number of pets the participant has. Should the present instrument prove to be reliable and valid it will provide opportunities for follow-up programmatic research in the domain of human-pet interaction.

A variety of animals, including, birds, chinchillas, guinea pigs, hamsters, horses, ferrets, fish, rabbits, snakes, cats, and dogs, serve as pets. Much of the research literature in this area does not specify the kind of animal referred to as a "pet." The term used

throughout the research reviewed is simply "pet," leaving the role of "pet" open to any possible animal. Dogs and cats are the most common animals playing the pet role in American culture.

In this research, the investigator did not define the pet strictly as a dog or a cat. Participants were asked to list the pets in their lives and to evaluate their relationship with the pet that has been most influential. In other words, the participant chose a favorite pet. This enabled an exploration of animal type in human-pet attachment. The following questions were addressed within this research study:

1. Will the PATS vary significantly as a function of the type of animal serving as a favorite pet?
2. Will the PATS vary significantly as a function of gender and age?
3. Will the PATS vary significantly as a function of responsibility for a pet?

Specific Aims

1. To develop a measurement scale to quantify peoples' attachment to their pets;
2. To determine item consistency reliability of the Pet-Attachment Scale (PATS);
3. To conduct a factor analysis of the PATS;
4. To examine the criterion-related validity of the scale;
5. To explore relationships between personal variables (e.g., happiness, amount of caretaking, type of pet, significant other) and degree of human-pet attachment as measured by the PATS; and
6. To explore the relationship between certain demographic variables (including gender and age of pet owner) and the PATS.

Specific Research Questions

1. What is the inter-item consistency of the PATS?
2. How many factors will account for variance among the PATS items?
3. Which items load significantly enough on a factor to be retained in the final version of the PATS?
4. Will the degree of attachment between owner and pet, as measured by the PATS, vary significantly as a function of gender and age of owner and the type of pet?
5. Will the PATS have construct validity?
6. How will the PATS compare with a published scale that measures amount of individual caring for a pet (i.e., the Companion Animal Bonding Scale) (Poresky, Hendrix, Mosier, & Samuelson, 1987).
7. How will the factor analysis of the PATS compare with a factor analysis of the CABS?
8. Will the PATS and CABS have similar relationships with other variables studied (e.g., gender of owner, age of owner, type of pet listed as favorite, do owners live with their pet, degree of responsibility for the pet)?

Review of the Relevant Literature

The potential health benefits of the human-animal relationship has been explored for over 15 years with limited success. Early studies were mainly case studies, later followed by questionnaire, survey, and interview approaches. Although a considerable number of interesting studies have since been reported, in most cases the mechanisms that lie behind the results obtained are unclear (Endenburg & Baarda, 1995). While there is little empirical evidence on human/companion animal interaction, there is much more

anecdotal evidence supporting the positive effects of pets. Greater attention and future research needs to investigate the interaction between individuals and their pets (Davis & Juhasz, 1985; Roberts, 1994; Soares, 1985).

Anecdotal evidence tells us that pets often relieve loneliness, provide meaningful companionship, and offer therapeutic comfort. These various benefits of pets have been observed indicating possible relationships between pet-ownership and benefits to: self-esteem, well-being, physical needs and health, social interaction, companionship, communication facilitation, and throughout age (Davis & Juhasz, 1985; Roberts, 1994; Soares, 1985).

The value of pets for quality of human life: What the current literature suggests. Keeping a pet can be good for an individual's health (Gunter, 1999). The health benefits of living with a pet are both physical and psychological. Not only do they enhance self-esteem, improve mental health, and increase well-being, they also assist people in socializing with others (Brasic, 1998; Gunter, 1999). In fact, pet ownership is often a significant predictor of one-year survival after a heart attack (Allen 2003).

Rogers, Hart, and Boltz (1993) surveyed 29 participants between the ages of 65 to 78 and found that individuals who own dogs report a pattern of walking two times a day, whereas non-owners reported walking only once a day. Walking a dog versus walking alone can make the individual seem more inviting to others, especially if that dog sees another dog, bringing the dog owners together. This usually promotes a conversation between the individuals with the dogs. In fact, it was mentioned that for many individuals the dog is the conversational companion they often need. Such dog ownership was also

associated with fewer doctor visits. In other words, pets were seen as enhancing the physical well-being of individuals.

Benefits to self-esteem. Pet and human interaction can provide a positive and healthy dynamic in the lives of individuals (Gunter, 1999; Sussman, 1985). The pet can facilitate improvement in self-worth, interpersonal competence, life satisfaction, happiness, and marital health (Sussman, 1985). Pets also can improve a person's well-being by helping them cope with stressful life events and providing a close relationship that helps to moderate the effects of stress (Gunter, 1999).

In other words, it is likely the role a pet plays in someone's life determines the nature of the influence the pet has for that person. Roles vary in their relations to social positions (LaRossa & Reitzes, 1993). A pet can often be a replacement or a surrogate for a human relationship. Some childless couples consider their pets to be their children--loving their pets as they would their own children (LaRossa & Reitzes, 1993). Pets often have their own identity within a relationship and can be an extension of that individual. Pets can often contribute substantially to human interdependency. When communicating with a pet, it's not necessary to hide your identity. Thus, connecting with a pet has been considered simple and stress free (Eckstein, 2000).

Benefits to emotional well-being. Pets not only provide communication, facilitate improvement in life satisfaction and an improvement in an individual's effects of stress and physical health, they also provide enormous benefits to an individual's psychological well-being. It has been mentioned that pets can provide emotional comfort and help alleviate stress and distress. Individual's who own a pet, compared to individuals who do not own a pet, have been known to suffer fewer episodes of depression, enjoy life more,

experience more happiness, and are generally more satisfied with their lives (Gunter, 1999).

In many cases, for a pet to have these beneficial impressions on an individual one's emotional involvement with a pet is often as great or greater than it might be with another human being (Harker, Collis, & McNicholas, 2000; Peretti, 1990). Animals offer the kind of unconditional love that can promote a person's emotional well-being. For example, researchers of the human-pet bond report that providing individuals in retirement homes with a pet eliminates frequent episodes of depression (Kehoe, 1990). The advantage of pets is that they accept people the way they are; a pets' attachment to people is unconditional. Pets can make people feel better about themselves just by behaving in a positive way. They show loyalty and devotion in ways which other people fail to match.

In many cases, the pet can be a companion, a confidant, and a source of emotional support all rolled in one. As a result, pets become invaluable to human kind, especially for emotional well-being. They allow people to feel needed, are there for people to feel close to, provide a source of satisfaction, and offer unconditional acceptance without demands to perform in any special way. People need to be needed, to have someone to be close to and in many cases, a pet can often fulfill that need (Gunter, 1999).

Pets can show a unique concern for a human that only the owner truly understands. Emotional empathy "is the vicarious emotional response to another's emotions or states, and is regarded as distinct from perspective taking, which involves the cognitive comprehension of another's thoughts and feelings" (Paul, 2000, p. 194). Emotional empathy has been considered to apply equivalently to human and animal

targets because it has been regarded as so broadly applicable. Most people who are empathetic and caring in their views of animals will likely have the same sentiments toward people. Past and present ownership of a pet can lead to greater concern about the treatment and welfare of animals (Paul, 2000). Paul (2000) showed that those respondents who had owned pets during their childhood had significantly higher animal-oriented empathy scores than those who did not have a pet during childhood.

Eckstein (2000) developed "The Pet Relationship Impact Inventory," and found two different types of people, "those who love and adore pets as regular members of the family, and those who do not" (p. 192). The pet self-assessment questionnaire was offered to a family who completed it as a group. Interestingly, the size of the family, the structure of the family, the mother's employment status, and the children's attitude toward pets influenced whether the family had a household pet. It was also discovered that "the emotional bond and desire for proximity between children and pets is congruent with attachment behavior towards humans, yet the relationship between child and pet is considered simpler and less conflicted than human relationships" (p. 196).

Benefits to physical needs and health. Not only do pets fulfill many emotional needs for people, they also require care, exercise, food, and affection. In fact, pet owners have fewer visits to the physician's office (Brasic, 1998; Friedmann, Thomas, & Eddy, 2000). In terms of cardiovascular health, individuals with pets have an increased postmyocardial infarction survival rate, as well as significantly lower blood pressure and heart rate reactivity. Pets can buffer reactivity to acute stressors as well as diminish perceptions of distress (Allen, 2003; Gunter, 1999; Stallones, Marx, Garrity, & Johnson, 1992).

According to Dembicki and Anderson (1996) who surveyed a self-selected convenience sample of seniors ages 60 and up containing two groups, pet-owners versus non-pet owners, pet owners had significantly lower serum triglycerides than non-pet-owners. Pet owners also had significantly different blood lipids because of diet and exercise encouraged by the pet. A blood analysis was conducted on the participants and their eating and exercise habits were assessed, along with their emotional and physical health, social support, pet care, and pet attachment. Pets were seen as a promoter for self-care. The two most important components of self-care are eating and exercise. Pets can become an active time clock for those with no obligations or scheduled activities leading to a broader impact of physical activity. In addition, pets remind owners to take care of them, feed them, and exercise them, thereby prompting self-care (Dembicki & Anderson, 1996).

Benefits to social interaction. In addition to physical benefits, pets also promote positive interactions between family members, adding a substantial dose of affection to the family (Bonas, McNicholas, & Collis, 2000; Spicer, 1990; Sussman, 1985). Pets can serve as a social lubricant, increasing the quantity and quality of interpersonal communication. This is often referred to as the ice-breaking characteristic of companion animals (Serpell, 2000; Veevers, 1985). In many cases the companion animal stimulates a conversation by allowing someone to react to the pet, initiate contact with the pet, or communicate about or even to the pet. This kind of contact can promote communication within a family, among friends, or between strangers.

Benefits to companionship. Not only can a pet initiate contact between family members, friends, and others, but a pet invites contact and communication for itself. A

pet is a living organism that, in many cases, wants to be held, stroked, loved, and hugged. This is often sufficient, needed attention for some individuals. For example, by jumping on an inviting lap, a puppy can deliver desired affection to older individuals, younger individuals, children, and adults. Pets seem to pay attention and listen, sit quietly during stressful events, and provide unconditional love (Hoffman, 1991; Kehoe, 1990).

Pet-human interactions can supplement human-human interactions or even substitute for certain human relationships (Veevers, 1985). Owners turn to their pets for regular companionship, which can become an interdependent and indispensable friendship. Pets can satisfy the need to feel important. They can function as an ego-extension relative to an individual's self-esteem (Brickel, 1985; Davis & Juhasz, 1985). By being a loyal friend or by eliminating loneliness a pet can positively affect an individual's self-esteem or self-image (Beck, 1999; Davis & Juhasz, 1985). Through telephone interviews of 2,001 owners of dogs and cats, Ralston Purina (2000) reported that 93% of dog and cat owners hug their pet daily. As well, 64% responded that the greatest benefit to owning a pet is the companionship they offer.

According to Peretti (1990), "their only friend" was the statement that seemed to hold the greatest significance when considering the companion/friendship aspect of the older individuals studied. A total of 64 men and 64 women participated who owned a pet and lived alone. Participants ranged in age from 64 to 82 years old. All of the subjects were matched on gender, age, and independent living conditions. The participants ranged from single to widowed to divorced, and all lived alone with their dog in non-confined quarters. An open-ended questionnaire was used to explore companionship and friendship among the participants and their best companion.

Female respondents tended to consider loyalty significantly more important in the friendship bond then did males. Additionally, 75% of men and 67% of women mentioned their dog was their only friend. Both men and women stated their dogs were loved and they considered their dogs loyal, trustworthy, and a constant source of satisfaction in their lives. The loyal and trustworthy pet was a continual source of companionship/friendship within the older individuals' lives. This is indicative of the strength and power of the human-animal friendship (Peretti, 1990).

Benefits to communication facilitation. With a strong human-animal friendship comes communication (Friedmann, Thomas, & Eddy, 2000). In several questionnaire surveys of pet owners, researchers observed a common theme. Over 50% of pet owners reported they talk to their pets frequently, as if they were people, and considered their pets to be sensitive to their moods (Friedmann & Thomas, 1985). In fact, it has been demonstrated that talking to a pet can be a therapeutic exercise. Katcher (1981) reported that nearly all pet owners talk to their pets and almost half of these individuals confide in their pets. In some cases owners tell their pets secrets (Davis & Juhasz, 1985). Katcher and Beck (1986) found that more than 70% of adolescents reported they confide in their pet.

Some people experience a decrease in blood pressure when talking to their pets and display a more relaxed state with their pet than with people (Barone, 1998; Beck, 1999; Brickel, 1985; Davis & Juhasz, 1985; Eckstein, 2000, Friedmann, Thomas, & Eddy, 2000; Serpell, 1986). This kind of attachment shows that when in need of close, affectionate contact with others, the family pet can be invaluable (Serpell, 1986). These kinds of close relationships with pets can help people cope with physical and

psychological stressors in their everyday lives (Brickel, 1985; Serpell, 1986). In addition, pets also can facilitate pleasure, fun, and exercise, and often are seen as agents of security and protection (Cain, 1985). As Spicer (1990) concludes, "Who else listens so well to irrational ranting and raving without once interrupting?" (p. 13).

Benefits across age. This kind of companion-animal friendship also can have an important developmental influence. In some cases a pet can be a playmate for children, contributing substantially to an individual's healthy progression into adulthood. If done right, caring for a pet cultivates personal responsibility while also building an important animal-human bond (Brickel, 1985; Davis & Juhasz, 1985). The family is a primary agent for exposing children to animals and instilling in them respect and love for animals. Children frequently can relate emotionally to animals. Often, the pet reciprocates by teaching the child about constructive interaction while providing a rewarding, uniformly positive experience (Brickel, 1985). Indeed, children report having intimate talks with their pets on a routine basis (Davis & Juhasz, 1985). In most cases, peoples relationships with animals are often developed early in life. Those who lived in homes with pets when they were children are generally more likely to have a pet as an adult. On the other hand, an individual's ability to form strong attachments with animals does not seem to depend upon childhood experiences (Gunter, 1999).

Several studies have documented the beneficial supportive role of pets among older individuals. In fact, older individuals who have a pet appear safeguarded against stressful life events and make fewer trips to the physicians' office (Stallones, Marx, Garrity, & Johnson, 1992). For example, in a nursing home, the impact of a pet often is to decrease anxiety, restore self-esteem, satisfy residents' desire for love, and relieve

feelings of loneliness, depression, and boredom (Crowley-Robinson, Fenwick, & Blackshaw, 1996; Hoffman 1991).

In some cases, if an older individual has outlived their significant other, their family members, relatives, or friends, they might experience a sense of loneliness, depression, and even isolation. Some individuals might experience an illness which can bring about physical discomfort and pain, and this kind of painful sensation can limit social interaction, leading to a sense of uselessness and lack of motivation. For some, this discomfort can potentially be alleviated by a pet (Crowley-Robinson, Fenwick, & Blackshaw, 1996; Dembicki & Anderson, 1996).

In Summary

In conclusion, the importance of pets in the lives of individuals is compelling. The limited research in this domain has demonstrated consistent findings, but much more empirical study is needed. The current research discusses the physiological and emotional qualities pets can offer individuals and the attachment many people have for their companion animals. Pets can increase exercise activity, add emotional support, provide constant and unconditional love, offer comfort in times of stress, decrease anxiety, provide an external focus for attention, promote feelings of safety, provide a source of contact comfort, provide companionship, decrease loneliness, decrease depression, provide a source of energy, as well as promote an interesting and varied lifestyle.

The present research was designed to develop an assessment device to measure the attachment humans develop for their companion animals. From this literature review it appears that pets can provide a unique contribution to an individual's life. This research attempted to define that unique contribution, portraying what it is that makes a pet so

important and presumably indispensable to many individuals. The Pet-Attachment Survey (PATS) developed and evaluated in the current study defined pet attachment with 34 questions that asked about the human-pet activities and the strength of the emotional connection between the companion animal and the owner.

Theoretical Framework

History of Attachment Theory

John Bowlby. Attachment theory is a well known theory of personality development across the life span, developed by John Bowlby (Bowlby, 1969/1982, 1973, 1979, 1980). Bowlby (1979) explained, "attachment theory underscores the central role of relationships in human development from the cradle to the grave" (p. 129). He believed the cognitive, emotional, and behavioral reactions that characterize each stage of development reflect the operation of an innate attachment system (Ainsworth, 1989, 1990; Simpson, 1999). A human infant will form an attachment to a caregiver as long as someone is there to interact with the infant and serve as an attachment figure (Ainsworth, 1989, 1990; Weinfield, Sroufe, Egeland, & Carlson, 1999).

Mary Ainsworth. Mary Salter Ainsworth, a developmental psychologist, tested the appropriateness of Bowlby's control systems model of infant behavior toward a caregiver (Ainsworth, 1989, 1990; Cassidy, 1999; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). She conducted two pioneering naturalistic observation studies of mothers and infants in which she applied the ethological principles of attachment theory as a framework. These inquiries provided extensive home observation data, and laid the

foundation for Ainsworth's profound contributions to attachment theory (Ainsworth, 1989, 1990; Cassidy, 1999).

Strange Situation. Ainsworth later created an assessment tool termed the "strange situation"-- a laboratory-based observation of an infant's response to brief separations and reunions with the caregiver. This triggered the productive work of the empirical study of individual differences in attachment quality (Ainsworth, 1990; Cassidy, 1999; Main & Solomon, 1990). The "strange situation" was used to assess the infant-caregiver attachment relationship and became the standard by which measures at later ages are judged. The "strange situation" was intended to be a mild-to-moderately stressful experience for an infant because several stressful elements were introduced. The premise of the situation is that multiple stressors will activate the infant's attachment behavioral system, and that individual differences in the child's expectations about the availability of the caregiver will thus be revealed. The infant's ability to balance exploration of a new environment with a need for reassurance from the caregiver is also revealed, based on the pattern of interactive behavior when the parent and infant reunite (Ainsworth, 1990; Main & Solomon, 1990; Weinfield, Sroufe, Egeland, & Carlson, 1999).

The "strange situation" consisted of a standard sequence of eight three-minute episodes in a laboratory where the mother and her infant are joined by an unfamiliar woman. There are two sequences in which the mother leaves the room and then returns. The behavior of the infant is observed and rated, allowing the researcher to classify each relationship as "secure," "avoidant," or "resistant." "Insecure-disorganized" is an additional classification now being used because some infants' exhibit unusual behaviors

that prevent them from being easily classified (Ainsworth, 1990; Bretherton, 1993; Howe & Reiss, 1993; Main & Solomon, 1990; Weinfield, Sroufe, Egeland, & Carlson, 1999).

Secure Attachment. Mothers who had responded with sensitivity during the first three months of life to their infants signals during feeding, crying, holding, and face-to-face episodes at home, were welcomed by their infant when the mother returned after the brief separation in the "strange situation." The infants approached their mothers readily, desiring interaction or close contact. They were soothed fairly quickly, and then returned to play. These infants were labeled as having a secure attachment (Ainsworth, 1990; Bretherton, 1993; Main & Solomon, 1990).

An infant classified as secure in the "strange situation" will use the caregiver as a secure base, but will still explore the room. The infant may check back once in a while for the caregiver, but will usually engage in exploration of the toys. A secure infant may be friendly with the stranger, and in some cases may feel comforted by the stranger during separation from the caregiver. But there is a clear preference for the comfort of the primary caregiver. Even when a secure infant is not distressed, they are still responsive to the return of the caregiver (Ainsworth, 1990; Main & Solomon, 1990; Weinfield, Sroufe, Egeland, & Carlson, 1999).

Insecure-Avoidant Attachment. The mother of avoidant and ambivalent infants interacted differently with them at home than did the mothers of secure infants. Mothers of infants who were classified as avoidant had provided less affectionate holding during the first three months and frequently rejected bids for close bodily contact during the last quarter of the first year. These mothers also talked about their dislike of bodily contact in

conversations with the observer (Ainsworth, 1990; Bretherton, 1993; Main & Solomon, 1990).

Insecure-Ambivalent Attachment. When mothers returned after leaving their infants, the infants responded ambivalently, seeking close bodily contact, but also showing some anger and resistance. These infants were labeled insecure-ambivalent, also known as resistant (Bretherton, 1993; Main & Solomon, 1990). Infants classified as resistant with their caregivers are unable to use the caregivers as a secure base for exploration in the "strange situation." The resistant infants seek proximity, close contact and comfort even before the separation from the caregiver (Ainsworth, 1990; Main & Solomon, 1990; Weinfield, Sroufe, Egeland, & Carlson, 1999). Mothers of ambivalent infants are inconsistently sensitive at home. Although they frequently ignore the infants' signals, they do not reject close bodily contact (Bretherton, 1993; Main & Solomon, 1990).

Disorganized-Disoriented Attachment. Main and Hesse (1990) identified the fourth classification for infants who are difficult to place into one of the other three categories (Bretherton, 1993; Main & Hesse, 1990). When put in the "strange situation," an infant classified with a disorganized-disoriented attachment will exhibit conflict and disoriented behaviors. These behaviors indicate an inability to maintain one coherent attachment strategy in the face of distress (Ainsworth, 1990; Bretherton, 1993; Main & Hesse, 1990; Weinfield, Sroufe, Egeland, & Carlson, 1999).

Adult Attachment

Secure Attachment Patterns

The current study focused on secure attachment within adult relationships, emphasizing the relationship the participant has with their pet. Each question within the survey illustrates a secure attachment. If the participant scores high on their Pet-Attachment Scale (PATS), they are said to have a secure attachment. A lower score on the PATS could demonstrate a lesser level of attachment to one's pet. This could also be a reflection on the attachment history of that participant, revealing the attachment levels that participant holds for other relationships in their life.

A central tenet of attachment theory is that a person's attachment patterns in adulthood are a reflection of his or her attachment history, beginning with the person's earliest attachment relationships (Ainsworth, 1990; Bretherton, Ridgeway, & Cassidy, 1990; Cassidy, 1990; Cicchetti, Cummings, Greenberg, & Marvin, 1990; Fraley, 2002). Once an attachment develops it continues to undergo transformations and reformations within the changes of an individual's independence and self-sufficiency. The balance and connection between others are continually renegotiated, as each individual encounters a different developmental phase of life. Attachment is a life-span task which requires continual organization and assimilation as individuals adapt to their environment (Cicchetti, Cummings, Greenberg, & Marvin, 1990; Schneider-Rosen, 1990). According to attachment theory, the way we think, behave, and feel within our adult relationships reflects the attachments we had while growing up (Ainsworth, 1990; Bretherton, Ridgeway, & Cassidy, 1990).

Internal Working Models

Bowlby presumes the individual creates mental representations that provide him/her with models of the workings, properties, characteristics, and behavior of attachment figures, the self, others, and the world (Ainsworth, 1990; Bretherton, Ridgeway, & Cassidy, 1990). Early attachment relationships are believed to become internalized and serve as basic prototypes or "internal working models" for subsequent development and interpersonal relationships (Ainsworth, 1990; Bretherton, Ridgeway, & Cassidy, 1990).

Initially, internal working models of attachment relations encode a person's current patterns of interaction with an attachment figure or figures. However, once these patterns are formed old patterns are imposed like templates onto new interactions. For this reason, old patterns of relating are not readily relinquished, even when a person's behavior begins to change (Bretherton, Ridgeway, & Cassidy, 1990; Bretherton & Munholland, 1999). Children acquire a set of knowledge structures, or internal working models over repeated interactions that continue into adulthood. These models represent those interactions and contribute to the endogenous regulation of the system. They become the primary mediators of the attachment system as children develop, shape, and maintain the quality of their social environments (Fraley, 2002). Working models become so deeply ingrained in the individual that the ways in which they influence feelings and behaviors may become automatic (Cassidy, 1990).

These structures are thought to reflect the kinds of experiences the individual has had over repeated interactions with significant others. If significant others are generally warm, responsive, and consistently available, the individual will then learn that others

can be counted on when needed. Consequently, the individual is likely to explore the world confidently, initiate warm and sociable interactions with others, and find comfort in the knowledge provided by the significant other, resulting in the individual developing a secure working model of attachment. Thus, the individual is likely to develop an internal working model of self as valued and become self-reliant (Bretherton & Munholland, 1999; Fraley, 2002).

The working models of the self differ from other working models because the focus is entirely on the self. They are similar because they are active constructs which guide behavior, perception, and feelings, and can serve a useful purpose. However, their automatic and unconscious nature renders them resistant to change, and thus potentially pathological when the model becomes outdated or inaccurate (Cassidy, 1990).

Because of their origin in transactional patterns, secure internal working models of self and significant others are complimentary, and when taken together, they represent the whole relationship (Bretherton & Munholland, 1999). Research has shown that people's working models influence the reactions they elicit from others. Such dynamics allow working models to shape the kinds of interactions the person will experience, facilitating personality stability (Bretherton & Munholland, 1999; Fraley, 2002). Individuals who grow up with a secure attachment and become relatively stable and self-reliant, as proposed by Bowlby, typically have parents who are supportive and encouraging, and promote independence and self-sufficiency (Bretherton, Ridgeway, & Cassidy, 1990).

Secure Attachment Stability

A 20-year longitudinal study by Waters, Merrick, Treboux, Crowell, and Albersheim (2000) provides data that presents strong evidence for the importance of having a secure attachment relationship in infancy into adulthood. The data also supports Bowlby's expectation that individual differences can be stable across significant portions of one's life. Throughout childhood and into adulthood attachment representations (secure, insecure, avoidant, and disorganized) remain open to change and can be altered as a function of real life experiences. For example, someone who experienced an insecure attachment as a child is able to develop a secure attachment as an adult with stable relationships. This longitudinal study presented data that provided strong evidence for the value of the secure base concept as a conceptualization of attachment relationships in infancy and adulthood. Throughout childhood and into adulthood attachment representations remain open and able to change throughout real life experiences (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000).

Attachment Theory Related to Humans and Companion Animals

Attachment has crucial importance to any species in which social relationships play a key part in its survival and development. It has been observed by veterinarians that people are often very attached to their pets. In fact, the human and the pet are significant attachment figures for each other (Gunter, 1999).

Not only does a pet offer psychological comfort, companion animals also have significant physiological effects on individuals (Gunter, 1999; Hoffman, 1991; Miller & Lago, 1990). According to Garrity, Stallones, Marx, and Johnson (1989), who studied a sample of 1, 232 people ages 65 and up from a random digit-dialing method, found

evidence for greater depression among people who were not pet owners. Life change and pet attachment remained significant predictors of the well being of the elderly. In addition, a stronger pet attachment was associated with less reported illness from the participants. In terms of the current knowledge regarding pet ownership and health, it appears older individuals who are attached to their pets are likely to experience better morale than those pet owners who are not attached. In summary, it is likely that owning and growing attached to a pet may help to: a) protect people from the health decline caused by stress factors within their lives, b) relieve loneliness, and c) provide interdependent comfort and friendship.

In an earlier study, Stallones, Marx, Garrity, and Johnson (1988) sampled 408 households with individuals over the age of 65 years. They examined pet ownership and attachment as factors supporting the health of individuals. They discovered that a positive connection occurs between human support and animal support with the quality of the animal support depending on how strongly attached the individual feels toward that animal. It was also demonstrated that people who are attached to their pets are protected against adverse effects of negative stress or distress in a way that reduces health problems. In addition, 95% of the 408 caregivers for the pets in the households viewed their pet as a friend. Among women, 74.9% said they often play with their pet, while 83.8% of the men said they often play with their pet. There were no significant differences for other attachment questions, which demonstrated the similarity of men and women regarding their attachment to their pets (Stallones, Marx, Garrity, & Johnson, 1988).

According to Gunter (1999), once a close relationship has been formed with a pet the owner might then experience some real health-promoting and physical benefits. These benefits depend on the individual, and in many cases a pet can help alleviate stress, assist in coping with emotional distress and painful experiences in a person's life, as well as with physical illness. These health benefits get more pronounced as the attachment between the animal and the owner get deeper. Petting an animal that is unknown to a person does not appear to influence the heart rate or blood pressure to the same degree as petting a familiar animal (Gunter, 1999).

In Summary

In conclusion, of the reported research addressing the attachment of pets, most do not discuss the unique connection that is often formed between individuals and their companion animals. In many cases the utility of the pet is the focus of the majority of the research, leaving out the psychological and emotional impact a pet can often have on their owners.

Attachment begins in infancy and continues throughout the course of life. An individual's mental health is often tied to relationships which contain attachment figures. These attachment figures offer emotional support and protection, and continue to thrive throughout the lifecycle. How well an attachment can fulfill its function is impacted by the quality of the interactions and the relationship which develops. Simply put, attachment behavior is conceived as any form of behavior that results in a person attaining or retaining proximity to some other differentiated and preferred entity. Attachment theory began with John Bowlby and his attempt to understand and explain the nature of a child's tie to their primary caregiver. This theory also included the impact

attachment has on subsequent adjustment and behaviors throughout the developing life cycle.

Attachment is present within many relationships, but for many people a pet acts as the attachment figure, taking on the role of a family member, companion, best friend, loyal listener, or in simple language an attachment relationship. For some, the pet is the most trusted being in a person's life-- the one with the best listening skills, best companionship, most important status, along with the most fulfilling attachment.

Development of the Current Pet-Attachment Scale (PATS)

From a review of the literature, the author found a description of three surveys that measure a construct analogous to the attachment between humans and their companion animals. Each of these scales are described below along with some relevant statistics.

The Pet-Attachment Survey. After several searches this scale was located by the present researcher. It was published in 1985 in the *Journal of the Delta Society,* volume 2, which is no longer an available journal. This 29-item survey was designed to measure the degree to which individuals are attached to their pets. Some of the items included on the survey are as follows: "You like to touch and stroke your pet," "You buy presents for your pet," "You feel sad when you are separated from your pet," and "You don't like your pet to get too close to you." The survey was divided into two sub-scales: (1) a relationship maintenance survey that assessed behaviors such as interaction, communication, and time or financial involvement with one's pet, and (2) an intimacy survey that measured such constructs as emotional importance of one's pet (Holcomb,

Williams, & Richards, 1985). Please see Appendix A for a copy of this assessment device.

The Pet Attitude Scale. The pet-attitude scale was used to measure a respondent's favorableness toward pets. It is an 18-item scale that has been found to have a Cronbach's alpha of .93 ($p < .001$) and test-retest reliability of .92 ($p < .001$). The scale includes items such as: "I really like seeing pets enjoy their food," "My pet means more to me than any of my friends," and "Having pets is a waste of money" (Templer, Salter, Dickey, Baldwin, & Veleber, 1981). Respondents answered on a 7-point Likert scale for each question. Some questions are rather ambiguous or leave room for differential interpretations. For example, "I like to feed animals out of my hand." An answer to this question depends on the situation and the animal. Someone might feel comfortable feeding a bird or a cat out of their hand, but might feel uncomfortable if the animal was a horse or a donkey. Please see Appendix B for a complete copy of the pet-attitude scale.

Companion Animal Bonding Scale (CABS). This scale was developed to provide a sensitive measure of self-reported behavior indicative of the establishment of a bond between a person and an animal. The scale includes eight items that require the respondent to answer, always, generally, often, rarely, or never. Some items included in the scale are: 1) "How often were you responsible for your companion animal's care?" 2) "How often did you clean up after your companion animal?" 3) "How often did you hold, stroke, or pet your companion animal?" and 4) "How often did your companion animal sleep in your room?" (Poresky, Hendrix, Mosier, & Samuelson, 1987). Please see Appendix C for a copy of this assessment device.

The Current Pet-Attachment Scale (PATS)

As described above and depicted in Appendix B the Pet-Attitude Scale assesses attitudes toward companion animals rather than degree of attachment. The Companion Animal Bonding Scale (CABS) also provided some insight with regard to the development of the PATS. However, as shown in Appendix C, this scale focuses on self-reported behaviors of the pet owner, and does not assess feelings or emotions between the respondent and a specific companion animal.

Consequently, the PATS was developed from a consideration foremost of attachment theory (see literature reviewed above), and secondarily from a consideration of items used by other researchers, specifically the Pet-Attachment Survey and the Pet-Attitude Scale (see Appendix A and Appendix B for copies of these scales respectively). The author developed items that could be evaluated with a 7-point Likert scale with "1" reflecting strongly disagree, "2" reflecting disagree, "3" reflecting somewhat disagree, "4" reflecting neutral, "5" reflecting somewhat agree, "6" reflecting agree, and "7" reflecting strongly agree. Certain items were selected from the Pet-Attitude Scale and the Pet-Attachment Survey, and adapted to a 7-point Liket format. It is noteworthy that respondents to the Pet-Attitude Scale were required to give a 7-point Likert answer to each question, whereas the Pet-Attachment Survey used a 4-point Likert format per question.

Rationale for Survey Instrument

Questions 1-12 ask the participant for general information, regarding their gender, age, significant other (if they have one), their pet, and whether they live with any pets at the present moment. It is important to know who the participant lives with because there

are indications of greater attachment to pets among those who have fewer close human ties, such as single and divorced people. This is because attachment appears to be diluted in larger families where there are greater opportunities to spread physical and emotional attention among members of the large support network (Holcomb, Williams, & Richards, 1985; Gunter, 1999). Question 3 assesses this by asking the participant if they live with a significant other. This provides for two groups--those who live with significant others and those who live alone.

Questions 13-15 ask the participants about the love and emotional attachment they feel towards their pet. These three questions provide a basis for the closeness the participants feel toward their pet. If a participant feels a strong attachment to the pet and feels the pet also has a strong attachment to her/him, the participant is likely to have developed an internal working model of self as valued, resulting in a stable, secure attachment with their pet (Bretherton & Munholland, 1999; Garrity, Stallones, Marx, & Johnson, 1989). The emotional involvement an individual can feel with a pet can be as great or greater than the emotional involvement that person might feel with another human being (Peretti, 1990). Animals offer unconditional love that can often promote a person's emotional well-being (Kehoe, 1990).

Questions 16 and 17 ask about the happiness between the participant and the pet. According to Friedmann, Thomas, and Eddy (2000), pets provide companionship that decreases loneliness. These two questions are aimed at assessing the relationship and whether or not the pet brings the participant happiness, and whether the participant feels he or she brings the pet happiness.

Question 18 asks the participant if he or she thinks their pet is intelligent. It can be assumed that people who value their pets and have a strong attachment to their pets, will be inclined to think they are intelligent.

Questions 20-24 ask participants about the need for contact comfort from their pet. It has been demonstrated that being with a companion animal can facilitate more relaxation and stress reduction than being with other people. And, as mentioned earlier, petting a companion animal can be a therapeutic exercise, one which can also decrease blood pressure (Brickel, 1985; Davis & Juhasz, 1985; Eckstein, 2000; Friedmann & Thomas, 1985).

Questions 25-27 assess the amount of physical activity the participant engages in with his or her pet. According to Gunter (1999), once a close relationship has been formed between an individual and their pet, the owner might then experience health-promoting and physical benefits. These benefits can become more pronounced as the attachment between the animal and the owner grows stronger.

Questions 28 and 29 ask the participant how much they consider their pet a family member. In many cases the pet is not just considered a family member, but for some their pets are considered to be their own children, taking on the role of a surrogate human relationship (LaRossa & Reitzes, 1993).

Questions 30-32 ask the participant how much they communicate with their pet, as well as talking to others about their pet. Spicer (1990) concluded that pets promote positive interactions with family members and can also add substantial affection to a family. It is often easier to talk to a pet than communicating in many human

relationships, and talking to a pet is also therapeutic and relaxing (Brickel, 1985; Davis & Juhasz, 1985; Eckstein, 2000)

Questions 33-42 were derived and edited from the Pet-Attachment Survey in the 1985 manuscript by Holcomb, Williams, and Richards.

Questions 43-46 were derived and edited from the Pet-attitude scale in the 1981 manuscript by Templar, Salter, Dickey, Baldwin, and Veleber.

Questions 47-54 were derived from The Companion Animal Bonding Scale in the 1987 manuscript by Poresky, Hendrix, Mosier, and Samuelson. The CABS measures pet attachment from the perspective of physical and emotional caring of a pet. This is the only scale that was used completely as published in the current PATS. In other words, there were items selected from both the Pet-Attachment Survey and the Pet-attitude scale which were edited and rewritten for the current PATS scale, while the entire CABS scale was used. The are several reasons for this. The CABS scale is short. It consists of a total of 8 questions, and adding this scale to the current PATS would not increase the size of the scale by many questions. Both the Pet-Attachment Survey and the Pet-attitude scale are lengthy scales and adding them to the current PATS would increase the size of the scale dramatically. Using the CABS scale provides the opportunity to run a regression equation, reliability and validity, in order to determine how the PATS compares to the CABS. The CABS also examines physical and emotional care of a pet, allowing the participant to answer questions dealing with the responsibility they have for their pet.

Methodology

Participants

A 54-item questionnaire was administered to a total of 548 participants, including 271 undergraduate college students, 115 members of the Blacksburg Sports Club, and 162 residents of Blacksburg, Christiansburg, Radford, and Giles County solicited through various convenient interpersonal contacts. Of these, 398 reported having a pet. Table 1 presents the gender and total number of participants who had a pet.

Table 1
Gender split of those with a pet

Gender	Frequency	% of Total
Men	131	33
Women	267	67
Total	398	100

Table 2 depicts the age of the participants, ranging from 18 to 87. For analysis purposes the sample was split into three different age groups: 1) ages 18 to 24, 2) ages 25 to 49, and 3) ages 50 to 87.

Table 2
Age groups and sample size per group

Age Category	Sample	% of Total
Age 18 to 24	229	57.5
Age 25 to 49	77	19.3
Age 50 to 87	92	23.1
Total	398	100.0

The questionnaire completed by all participants included the following sections: a) 12 demographic questions included at the beginning of the survey (refer to Appendix

D), b) The Pet-Attachment Scale-- Questions 13-46, and c) The Companion Animal Bonding Scale-- Questions 47-54 (see Appendix C for a copy of this scale). Participants were asked to answer each of the 54 items along a 7-point Likert scale directed towards a favorite pet in their lives. Sample PATS questions include: "I feel my pet loves me," "My pet is often my best friend," and "My pet brings me happiness." In general, the PATS questions asked participants to rate companionship and emotionality they feel toward their pet and vice versa.

The final 8 questions represented the CABS (Poresky, Hendrix, Mosier, & Samuelson, 1987), which essentially address pet maintenance and involvement issues. Sample CABS questions include: "How often were you responsible for your companion animal?" "How often did you feel that your companion animal was responsive to you?" and "How often did you travel with your companion animal?"

Procedure

The administration of the PATS was straightforward. A total of 271 surveys were administered to five different undergraduate human development courses. An additional 115 were administered to members of the Blacksburg Sports Club. The remaining 162 surveys were obtained by making surveys available at local businesses, pet clinics, car dealerships, churches, and clubs in Blacksburg, Christiansburg, Radford, and Giles County. In each of these cases, the investigator made a personal appearance at the location to solicit thoughtful participation and explain the importance of the research. To do this, surveys were given out to businesses, churches, clubs, organizations, clinics, the vet school, and other places within Blacksburg, Christiansburg, Radford, and Giles County, in order to acquire a large, diverse sample. A copy of a research project and

contact information sheet were provided to every participant and business location. This form had relevant phone numbers and research information located on it for interested participants (please see Appendix E).

Participants were asked to consider each survey item carefully, and to return the survey upon completion. Some participants took the surveys home and returned them the next day, while others completed the survey on the spot.

Independent variables. A number of dichotomous and continuous variables were assessed and correlated with the PATS scores. The dichotomous predictor variables are:

1. Gender (Male, Female)
2. Does the respondent live with a pet? (Yes, No)
3. Does the respondent care for a pet? (Yes, No)
4. Does the respondent live with a significant other? (Yes, No)
5. Type of pet

The continuous predictor variables include:

1. Age of the respondent
2. Age of the pet
3. Length of human/pet relationship in years
4. Total number of pets in the household
5. Score on the Companion Animal Bonding Scale

The correlation between the PATS and the Companion Animal Bonding Scale (CABS) was a measure of concurrent, convergent, and construct validity. More specifically, the CABS essentially measures how much time an individual spends caring for a pet. From attachment and behavioral theory, a direct relationship is predicted

between one's score on the PATS and the CABS. Therefore, a significant negative correlation between the PATS and the CABS will provide construct validity for the PATS.

Type of pet

Respondents were asked to identify the kind of animal considered their favorite pet (e.g., dog, cat, fish, bird, horse, reptile, and other). The favorite pets listed were then separated into four different groups. The first group was the group that chose all their pets as their favorite without choosing one in particular. They said they had a pet, but did not identify a certain pet as their favorite. The second group was the group that listed dog as their favorite. The third group was the group that listed cat as their favorite pet. And the fourth and final group consisted of those who listed anything other than a dog or cat as a favorite pet. This group was labeled as exotic pets. Table 3 presents frequencies of the different pet categories chosen as a favorite pet.

Table 3
Percentage of different pets listed as favorite pet

Pet	Frequency	% of Total
All pets chosen as favorite	48	12.1
Dog	229	57.5
Cat	98	24.6
Exotic pets	23	5.8
Total	398	100

The exotic group of pets listed as a favorite and the frequency of participants listing each pet were as follows: bird (n=3), donkey (n=1), ferret (n=1), fish (n=5), guinea pig (n=1), horse (n=2), iguana (n=1), llama (n=1), mouse (n=1), rabbit (n=2), rat (n=1), snake (n=2), squid (n=1), and turtle (n=1).

Results

Reliability

An inter-item consistency analysis was performed on the PATS and the overall Chronbach's Alpha was .96. An inter-item consistency analysis was performed on the CABS and the overall Chronbach's Alpha was .86. Table 4 depicts the correlations between all variables in this study, including the total PATS and CABS scores. An examination of the correlations suggests concurrent validity for the PATS, as described in the next section.

Validity

The correlation between the PATS and CABS was -.68 ($p<.001$), indicating a high amount of overlapping variance (i.e., 46%). This reflects significant concurrent, convergent, and construct validity for the PATS. In addition, most of the variables that correlated with the PATS also correlated with the CABS. Some of the correlations were as hypothesized, while others were not predicted but were nevertheless interesting. More specifically, having a pet now (variable 9), number of pets in household (variable 10), whether you live with your pet (variable 12), and feeling responsible for your pet (variable 13) all correlated significantly with the PATS and the CABS in the hypothesized and intuitive directions. In other words, participants who currently had a pet, lived with their pet, and felt responsible for their pet felt greater attachment to their pet. Furthermore, the greater the number of pets in a household the greater the attachment to a favorite pet.

The correlation with gender was unexpected but intriguing. Specifically, women showed greater attachment to their pets (PATS) and were more involved with their pets

(CABS). Also interesting; was the positive correlation found between the significant other variable and the PATS and CABS. Contrary to expectations, participants who lived with a significant other were more attached to their pet (PATS) and were more involved with their pet (CABS). The absence of significant correlations between happiness and pet attachment (PATS) and between happiness and pet involvement (CABS) is noteworthy.

Table 4
Correlation variable table for PATS total and CABS total

Variable	PATS Total	CABS Total
1. PATS Total	--	-.677**
2. CABS Total	-.677	--
3. Gender	-.181**	.160**
4. Age	.098	-.158**
5. How long have had pet	.001	.063
6. Live with significant other	.118*	-.190*
7. Happy	.064	.033
8. Pet when child	.036	-.066
9. Have a pet now	.125*	-.183**
10. Number of pets	.178*	-.153*
11. Favorite Pet	-.284**	.153*
12. Live with pet	.209*	-.372**
13. Responsible for pet	.370**	-.469**

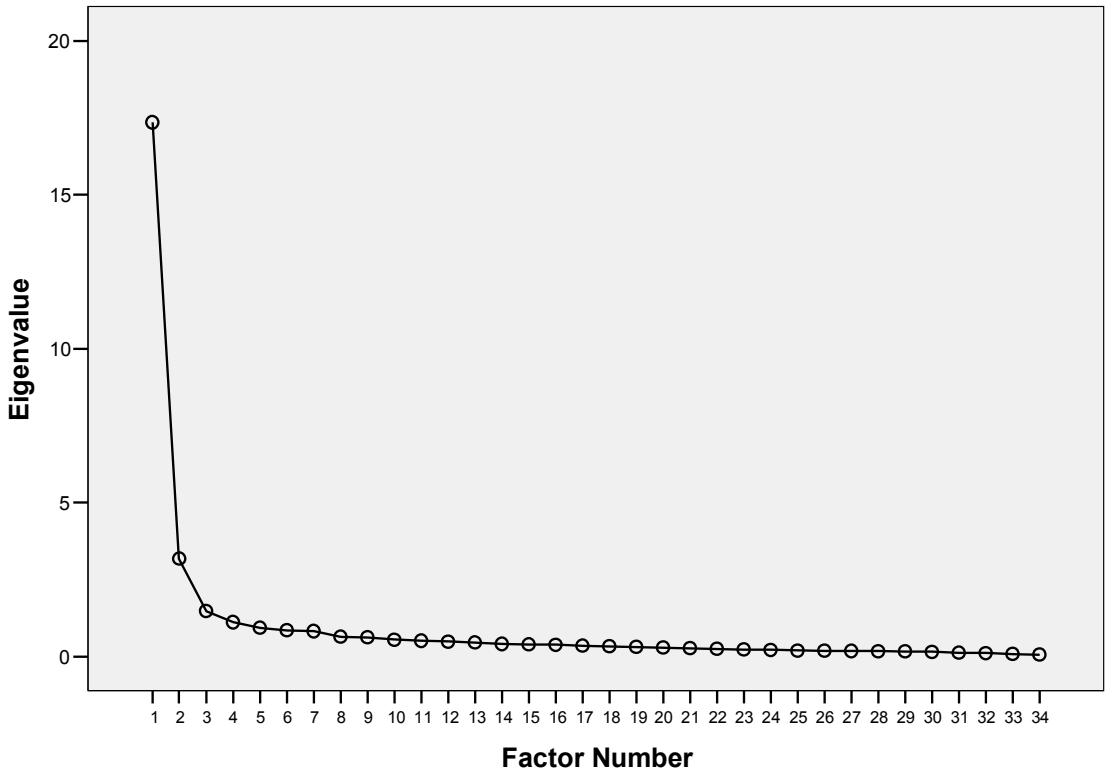
* p<.05
** p<.01

Factor Analysis for the PATS

A factor analysis was conducted in order to determine how many factors were assessed with the PATS, as well as to eliminate uncorrelated items. The factor validate the PATS by demonstrating that its constituent items load on the same factor and to drop proposed scale items which cross-load on more than one factor. The factor analysis also identified clusters of cases and/or possible outliers. The factors with .60 loadings were retained. The factor analysis reduced the PATS from 34 to 19 items. A maximum likelihood approach was used for the factor analysis. Please see Appendix F for a list of the final question retained from the PATS.

Eigenvalues, also called characteristic roots, measures the variance in all the variables which is accounted for by that factor. The ratio of eigenvalues is the ratio of exploratory importance of the factors with respect to the variables. If a factor has a low eigenvalue, then it is contributing little to the explanation of variances in the variables and may be ignored as redundant with more important factors. Thus, the Eigenvalues will measure the amount of variation in the total sample accounted for by each factor in the PAS scale. The Eigenvalues with a value of one or more will be retained. An initial Scree test was run to identify the key factors measured by the PATS. Figure 1 depicts the results of the Scree test which identified two factors with eigenvalues above 1.

Figure 1
Scree test on PATS factors that remain



Factor 1 had an eigenvalue of 17.4 and represented 51% of the variance in the PATS, and Factor 2 had an eigenvalue of 3.2. Overall these two factors represented 60.3% of the variance in the total PATS score. Table 5 depicts the total variance and cumulative percentage for each factor.

Table 5
Results of the Factor Analysis for the PATS

Factor	Total Eigenvalue	% of variance	Cumulative %
1	17.352	51.035	51.035
2	3.180	9.352	60.386

Extraction Method: Maximum Likelihood

Table 6
Reflecting Questions Retained in Factor 1

Questions retained	Mean	Factor 1	Factor 2
Q20. I would be lost without my pet	4.5	.635	.434
Q21. I count on my pet being there when I need comfort	4.8	.679	.466
Q22. My pet is often my best friend	4.2	.775	.338
Q23. I am emotionally dependent on my pet	3.6	.810	.195
Q34. I prefer to be with my pet more than others	3.6	.751	.202
Q36. I talk to my pet as a friend	4.7	.691	.371
Q37. I confide in my pet	3.8	.745	.185
Q38. I spend time each day training my pet	3.2	.613	.109
Q39. I show photos of my pet to my Friends	4.2	.607	.252
Q40. When I feel bad I seek my pet for comfort	4.2	.788	.290
Q41. I feel sad when I am separated from my pet	4.3	.753	.342
Q44. My pet means more to me than most of my friends	3.4	.826	.131

Extraction Method: Maximum Likelihood
Rotation Method: Varimax with Kaiser Normalization

Factor 1

Factor 1 consisted of 12 questions from the PATS. The Cronbach's Alpha for these 12 items was .96. Table 6 lists the questions that were retained in Factor 1, the mean score, and the loadings for Factor 1 and Factor 2.

Factor 2

Factor 2 consisted of seven questions from the PATS. The Cronbach's Alpha for these seven items was .96. Table 7 lists the questions retained in Factor 2, along with the mean score and the loadings for Factor 1 and Factor 2.

Table 7
Reflecting Questions Retained in Factor 2

Questions retained	Mean	Factor 1	Factor 2
Q13. I love my pet	6.4	.123	.915
Q14. My pet loves me	6.2	.196	.832
Q15. I feel emotionally attached to my pet	6.1	.292	.862
Q16. My pet is emotionally attached to me	6.3	.340	.755
Q17. My pet brings me happiness	6.1	.226	.915
Q18. I bring happiness to my pet	5.8	.307	.819
Q45. My pet adds happiness to my life	6.0	.372	.772

Extraction Method: Maximum Likelihood
Rotation Method: Varimax with Kaiser Normalization

Overall the factor analysis revealed a significant goodness of fit, $\chi^2(494, N=383)=2108.17$, $p<.001$. The items identified as Factor 1 appear to measure companionship between the participant and a favorite pet. In other words, all of the items for Factor 1 cluster around the concept of providing a special comradery. In contrast, the seven items accounting for Factor 2 reflect emotional fulfillment and happiness provided

by a pet. Thus, Factor 1 is labeled Companionship and Factor 2 is labeled Emotional Fulfillment.

Factor Analysis for CABS

A factor analysis was also performed on the CABS survey. A maximum likelihood approach was used to reduce the CABS from eight items to three items. An initial Scree test was run in order to identify factors measured by the CABS. Figure 2 depicts the Scree test and indicates only one factor for the CABS. This factor had an eigenvalue of 4.2 and represented 53% of the variance among the CABS items. Table 8 dipicts the total variance and cumulative percentage for the factor.

Figure 2
Scree test on CABS factors that remain

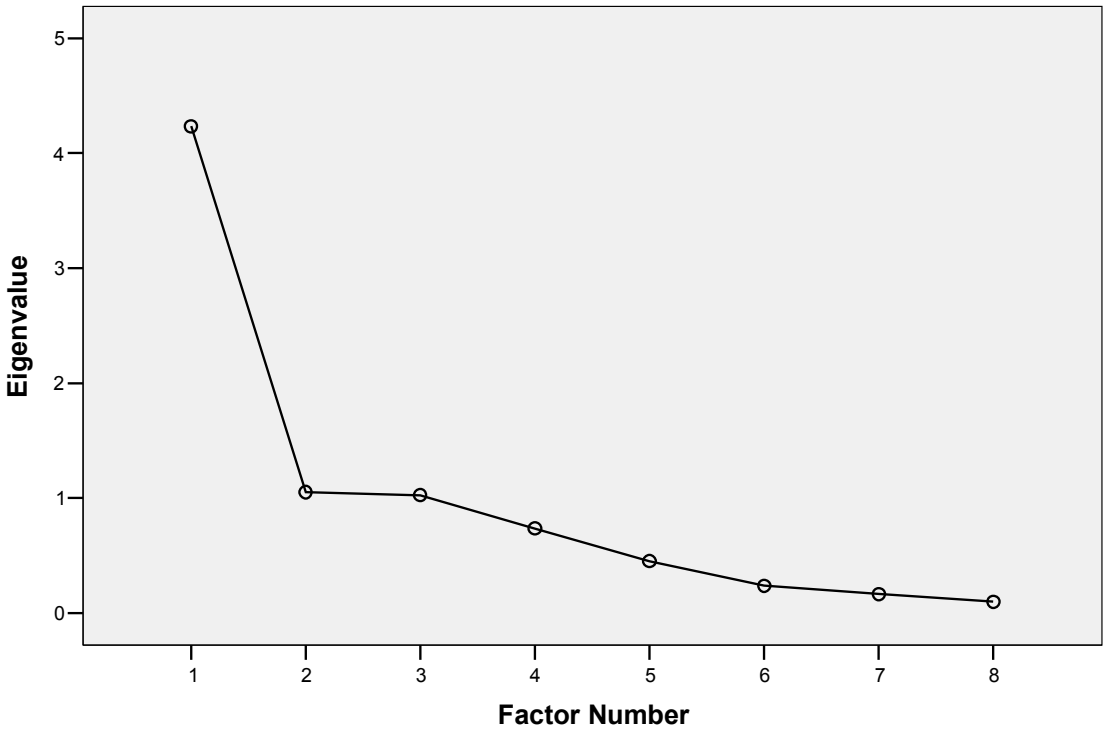


Table 8
Total Variance

Factor	Total Eigenvalue	% of variance	Cumulative %
1	4.234	52.919	52.919

Extraction Method: Maximum Likelihood

Factor 1

Factor 1 consisted of three questions from the CABS. Overall the factor analysis did not reveal a significant goodness of fit, $\chi^2(7, N=383)=10.90$, $p=.143$. Table 9 lists the questions retained for Factor 1, including the mean score and the factor loadings.

Table 9
Rotated Factor Matrix

Questions retained	Factor 1
Q49. How often did you hold, stroke, or pet your companion animal?	.651
Q51. How often did you feel that your companion animal was responsive to you?	.704
Q52. How often did you feel that you had a close relationship with your companion animal?	.879

As depicted in Table 9, the three questions for this factor are those that do not reflect caretaking behavior. The other questions reflect caretaking for one's pet. Thus, this Factor of CABS seems most related to Factor 1 of the PATS, or the Companionship Factor.

Stepwise Regression

Separate stepwise regression analyses were conducted on both the PATS and the CABS. For the PATS, three variables significantly predicted the criterion (i.e., the total PATS score). The most significant predictor of the PATS score was responsibility, $F(1,363)=56.0$, $p<.001$. In other words, how responsible a person felt for their pet

accounted for 13.2% of the variance in the PATS scores. Additionally, the favorite pet a participant chose and the participants' gender were also significant predictors of the PATS score, respectively, $F(2,363)=58.30$, $p<.001$and $F(3,363)=42.4$, $p<.001$. Overall these three variables accounted for 26% of the variance in the PATS scores.

A stepwise regression was also conducted on the CABS. Four predictor variables were significant. Most significant was responsibility, $F(1,362)=92.9$, $p<.001$. In addition, the favorite pet chosen, whether or not the participant lives with this pet, and gender were also significant predictors of the CABS score, respectively, $F(2,362)=58.01$, $p<.001$, $F(3,362)=40.95$, $p<.001$, and $F(4,362)=32.67$, $p<.001$. Overall these four predictors accounted for 26% of the variance in the CABS score.

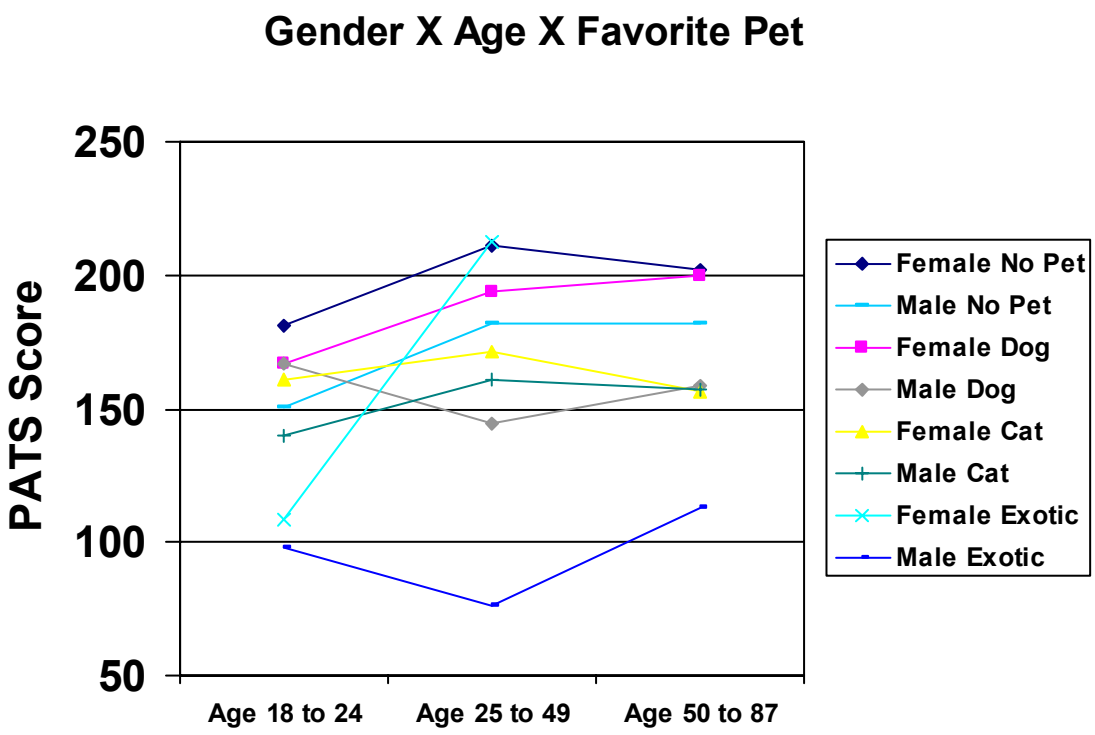
Analysis of Variance (ANOVA) for the PATS

A 2 Gender X 3 Age Category X 4 Favorite Pet Category ANOVA was conducted on the PATS scores. The age of the participants was split into three groups: a) 18 to 24, b) 25 to 49, and c) 50 to 87. The favorite pet group was divided into four groups: a) the participants who selected all pets as their favorite, b) the participants who selected dog as their favorite, c) the participants who selected a cat as their favorite, and d) the participants who selected an exotic pet as their favorite.

Two interactions were significant: the Gender X Age Category X Favorite Pet Category, $F(5,398)=2.87$, $p<.05$, and the Gender X Age Category $F(2,398)=3.43$, $p<.05$. In addition, there was a main effect of Gender, $F(1,398)=22.83$, $p<.001$, Favorite Pet Category $F(3,398)=7.56$, $p<.001$, and Age Category, $F(2,398)=5.72$, $p<.01$. These data are graphed in Figure 3. The observed relationships in the figure are confusing to decipher because of inconsistent relationships for the exotic pet category. The dog and cat

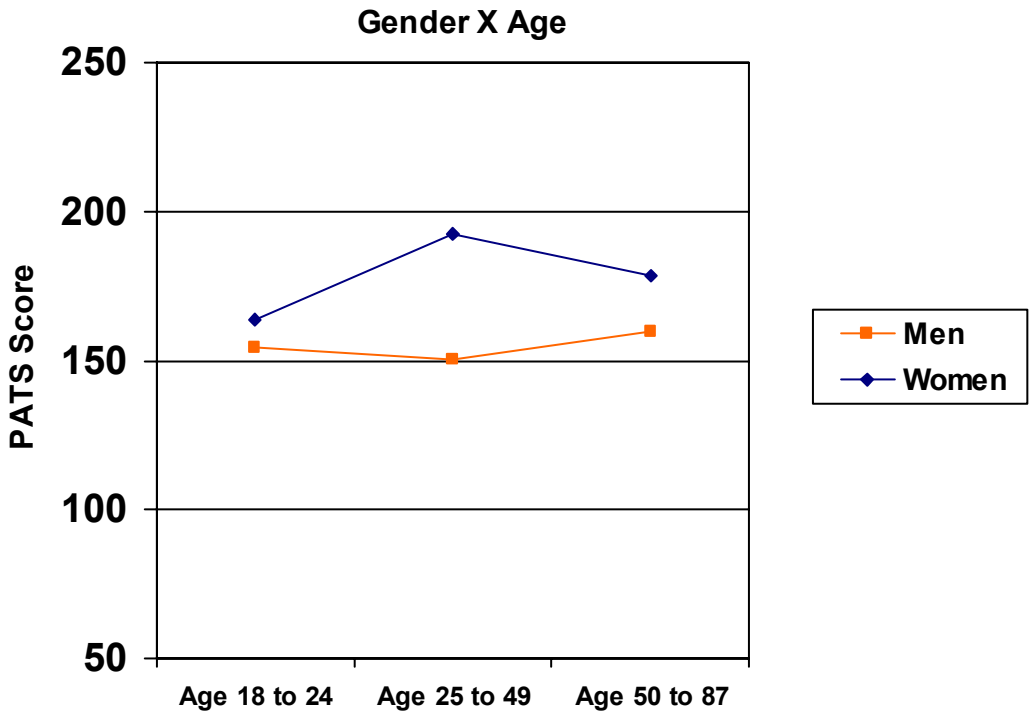
data appear fairly consistent, showing an increase in PATS scores as a function of age category.

Figure 3
ANOVA on PATS for Gender, Age Category, and Favorite Pet



To investigate these data further, a 2 (Gender) X 3 (Age Category) ANOVA was conducted. The ANOVA revealed a Gender X Age Category interaction, $F(2,398)=3.43$, $p<.05$. In addition, significant main effects for Gender and Age Category were found, respectively, $F(1,398)=22.86$, $p<.001$ and $F(2,398)=5.72$, $p<.01$. The effect of Age Category on the PATS scores was largely due to women in the middle age category (25 to 49), revealing that they were most attached to their pets. This is reflected in the Gender X Age Category interaction depicted in Figure 4.

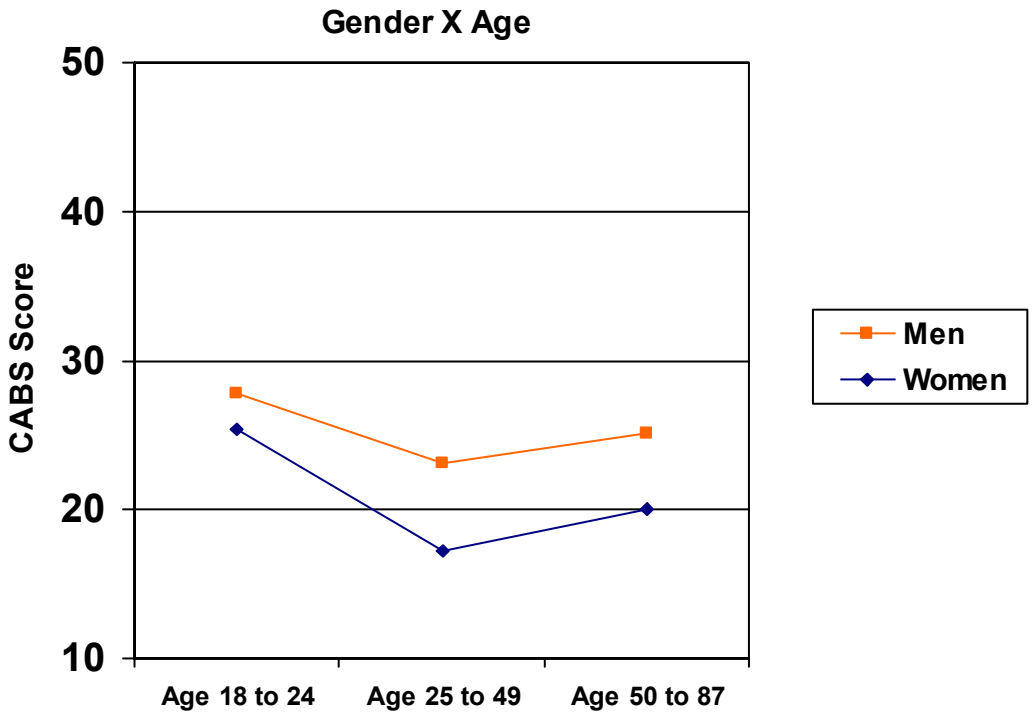
Figure 4
ANOVA on PATS for Gender and Age Category



Analysis of Variance (ANOVA) for the CABS

A 2 Gender X 3 Age Category ANOVA was run on CABS scores. The Gender X Age Category interaction was not significant ($p>.10$). But the main effects of Gender and Age Category were both significant, respectively, $F(1,397)=15.5$, and $F(2,397)=12.4$, p's$<.001$. These main effects are depicted in Figure 5, and reflect more pet involvement or caretaking for women and for the middle age category. Please note that a lower score on the CABS reflects more pet caretaking or involvement.

Figure 5
ANOVA on CABS for Gender and Age Category



Discussion and Conclusions

A total of 548 individuals participated in this evaluation of a scale to measure human-pet attachment. Of these 548 participants, 398 had a pet and completed two measures of human-pet companionship. The Companion Animal Bonding Scale (CABS) was designed to measure human-pet caretaking (Poresky, Hendrix, Mosier, & Samuelson, 1987), whereas the Pet-Attachment Scale (PATS) was designed to measure human-pet attachment. It was expected that scores on the CABS would correlate with scores on the PATS, because both scales measure human-pet companionship. This indeed was the case, thereby demonstrating concurrent, convergent, and construct validity.

However, there were some notable differences between the PATS scores and the CABS scores. Specifically, a factor analysis revealed two factors for the PATS, but only one factor for the CABS. Factor 1 of the PATS was labeled Companionship and this factor is most analogous to the single CABS factor-- caretaking or pet involvement. The second factor of the PATS (i.e., Emotional Fulfillment) seems to tap a different aspect of human-pet connection. This distinction is clearly worthy of follow-up research.

The factor analyses suggest shortened versions of both the PATS and the CABS. More specifically, the PATS was reduced from 34 items to 19 items while the CABS was reduced from eight items to three items. Please see Appendix F for the final version of the PATS. These findings suggest that follow-up research with these measurement devices can use shorter survey forms.

The regression analyses revealed similar predictors for both the PATS and the CABS, although one predictor was significant for the CABS and not for the PATS. Specifically, whether or not a person lived with their pet influenced the CABS scores, but not the PATS scores.

More importantly, the amount of responsibility a person feels toward their pet was the strongest predictor of both PATS and CABS scores. This finding is intuitive, and provides construct validity for the PATS. The other predictors in the regression analysis were the favorite pet chosen and gender. Interestingly, those participants who did not choose a favorite pet scored highest on both the PATS and the CABS, followed by dog lovers and then cat lovers. Those who had a pet other than a cat or a dog (labeled exotic) showed the least amount of attachment (PATS) and caretaking (CABS) toward their pets. The finding of greater attachment among those who selected all pets as their favorite

suggests that those with more than one pet experience greater human-pet attachment. This is supported by the significant positive correlation between number of pets owned and the PATS score.

Gender was a significant predictor in the regression analyses for both the PATS and CABS scores. Women showed greater attachment to their pets (PATS) and more caretaking for their pets (CABS). This latter finding was supported by the analysis of variance on both the PATS and CABS scores.

The ANOVA also revealed intriguing effects of age category. Specifically, the broad range of ages among the participant in this study enabled a three-group classification of ages. The middle age group (i.e., 25 to 49) showed the greatest attachment to their pets (PATS) and the most caretaking (CABS). However, these relationships for attachment were complicated by an interaction between age and gender. Specifically, women in the middle age group showed the most attachment to their pets. Since this interaction was not found for the CABS, it is apparent the PATS measures an aspect of human-pet companionship that goes beyond caretaking. This is likely due to the emotional fulfillment factor of the PATS that is not measured by the CABS.

The theme of this research- the power of pets- is illustrated by the demonstration from several participants who found emotional fulfillment and companionship from their pets. This supports earlier findings by Sable (1995), who showed dogs and cats have the potential to provide an emotional bond of attachment that promotes a sense of well-being and security. In other words, pets uniquely fill a combination of emotional needs. In some cases, substituting for an absence of human attachment and providing feelings of comfort and companionship (Sable, 1995). Similarly, Gunter (1999) claims pets meet many

fundamental human needs for their owners, providing companionship and feelings of security and affection. Pets give owners something to care about, provide a special friendship, and offer an opportunity for humans to experience bonding. This reflects the emotional fulfillment factor revealed in the factor analysis of the PATS.

In the present study, some participants actually reported emotional fulfillment from a fish, a squid, and a snake. It is noteworthy, however, that several questions on the survey could only be answered in a specific way when these organisms serve as someone's pet. For example, one can certainly not sleep with one of these pets, train this kind of pet, walk this type of pet, and so on. Therefore, with certain pet selections the range of responses to the PATS was severely restricted.

In another context, researchers found that viewing aquarium fish lowered blood pressure (Gunter, 1999). Apparently pets that can not always be touched can provide a soothing, relaxing atmosphere for some people. Clearly much more research needs to be performed on the types of pets people find to be most emotionally fulfilling, and that provide the best companionship. One would question how does a squid provide companionship and emotional fulfillment.

The present research suggests dogs provide more of these benefits than do cats. Is this because dogs require more care and are less independent? Or perhaps the behavior of dogs is more conducive to the development of an animal-human bond. Follow-up qualitative research is needed to explore these possibilities. Sable (1995) also implies that dogs were favored over cats. He suggests dogs show more affection toward their owners and enable more opportunities for human-animal interaction. Obviously, dogs engage in a wider range of activities conducive to human involvement (Gunter, 1999). According to

Gunter (1999), dog owners were able to take their pets on more errands then were owners of other pets. Dog owners also reported feeling the most secure with their animal.

It was interesting that the participants in the present study who did not choose a particular favorite pet showed the most attachment. This could mean that these individuals had more than one pet and thus could not choose among them. Perhaps the more animals' one has in their household the greater the level of attachment experienced. In fact, there was a significant positive correlation between number of pets and PATS scores ($p<.05$). Future research needs to address this issue. Is there a direct relationship between pet attachment and number of pets? Or perhaps the relationship between number of pets and pet attachment is an inverted U-shaped function. In other words, more than one or two pets could increase attachment, but after three or more pets attachment might decrease. This will likely depend, of course, on the amount of care given the pets, as measured by the CABS (Poresky, Hendrix, Mosier, & Samuelson, 1987).

There was also a significant correlation revealed between whether or not a participant lived with a significant other, $r=.118$ (PATS) and $r=-.190$ (CABS). This suggests that individuals who lived with someone had higher attachment (PATS) and higher caretaking (CABS) for their pet. This is contrary to previous research findings. Specifically, Gunter (1999) reported greater attachment to pets among those with fewer close human ties, such as single and divorced people, when compared to families with children. Likewise, Sable (1995) reported pet attachment was particularly important among divorced, never married, and widowed people.

In the present study participants were asked: "Do you live with a significant other (e.g., husband, wife, boyfriend, or girlfriend)?" This was not a significant predictor of

how a participant would score on the PATS, but it did correlate significantly with PATS and CABS scores. The question remains, however, whether pet ownership is influenced by living alone versus living with someone else? Question 9 asked the participants: "Do you currently live with this pet?" This was positively correlated r=.209 (PATS) and r=-.372 (CABS), suggesting that participants who currently live with their pets scored higher on the PATS and CABS. In fact, participants who live with their pets was one of the predictor variables in the CABS stepwise regression. Simply put, constant contact and daily caretaking can increase the companionship between individuals and their pets. As reported by Harker, Collis, and McNicholas (2000), the most common role a pet can satisfy is that of a friend or companion. The general term companionship usually translates into partaking in shared activities with the pet, such as walking the dog or playing with the cat.

Recall that the PATS and the CABS measure companionship, while the PATS also addresses emotional fulfillment. Companionship is reflected by the PATS items "I talk to my pet as a friend," and "My pet is often my best friend." These two questions represent a camaraderie between an individual and their pet. Companionship and friendship go hand-in-hand. According to Harker, Collis, and McNicholas (2000), the general term companionship usually translates into shared activities with one's pet. For example, riding a horse, walking a dog, playing with a cat, singing with a bird, and things of that nature, are shared activities. This suggests that individuals who scored high on this PATS factor have a strong sense of companionship with their pets. They like to do things with their pets, they enjoy the company of their pets, and they have a genuine friendship with their pets.

The second Factor of the PATS, emotional fulfillment, reflects more of an emotive attachment to the pet. For example, Question 15 asks, "I feel emotionally attached to my pet," and Question 16 asks, "My pet is emotionally attached to me." According to Bowlby, attachment is a lasting emotional tie (Endenburg, 1995). Attachment behaviors are indicative of a lasting emotional connection between the individual and the object of attachment (Eckstein, 2000). This factor of Emotional Fulfillment is not always seen as a separate entity in a human-animal relationship. But, according to the PATS, it is. In other words, some people have more of a companionship with their pets, while some may have more of an emotional attachment. In many cases, an individual can feel both these attachment factors. In other words, it is possible to have both companionship and an emotional fulfillment from a companion animal. It is also possible to have just one or the other. In many cases, pets and the concomitant attachment function as an alternative to human support networks (Stallones, Marx, Garrity, & Johnson, 1988). In this case, a person has formed an attachment to an animal in order to compensate for the lack of a human support system. Once an attachment is formed, it is exclusive and persistent, and not easily relinquished or redirected to others. This simply means an individual has a positive "working model" of one's self and the attachment object, in this case, the pet (Sable, 1995).

In Conclusion

The current study developed a useful tool for measuring the attachment between people and their pets. The two Factors of this PATS suggest two functions of pets; namely they provide companionship and emotional fulfillment. While the survey results suggest these are two distinct benefits of pets, further research is needed to define

operational differences between companionship and emotional fulfillment. Can a pet be a companion and not fulfill emotional needs? Can the emotional fulfillment of a pet occur without substantial caretaking? Is pet companionship a necessary condition for emotional fulfillment, or can a pet provide emotional fulfillment without companionship? Do certain kinds of pets provide more companionship versus emotional fulfillment? Are certain independent variables predictive of companionship but not emotional fulfillment, and vice versa? Do these two factors of human-pet relationships mirror factors of human-human relationships?

Furthermore, what personality or mood states are influenced by the companionship and/or emotional fulfillment of a pet? For example, to what extent does a person's perception of personal control, optimism, or self-efficacy influence the companionship and/or the emotional fulfillment of a pet? Again, it seems interesting and useful to distinguish between the impact of pet companionship and the emotional fulfillment provided by a pet. Prior to this research this distinction was not considered, but this research suggests the validity of this dichotomy. Further research is warranted and needed to verify the validity and utility of distinguishing between the companionship and emotional fulfillment provided by a pet. Perhaps such research could provide insight into understanding the complexity of relationship development and relationship termination among humans.

Caveats

The demand characteristics of the test-taking situation were variable and not controlled. In other words, the participants took the survey under a variety of conditions uncontrolled by the researcher. The context in which the participants took the survey was

not consistent. Some people took it in a group setting with the researcher present, while others took the survey in the privacy of their own home with no researcher available to provide instruction and answer questions.

Some participants did not select a favorite pet making it impossible to evaluate which kind of pet influenced the survey results. Follow-up research should require the selection of a specific pet and thereby enable a complete evaluation of what kind of pet influences emotional fulfillment versus companionship.

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APPENDICES

Appendix A

The Pet-Attachment Survey

(Holcomb, Williams, & Richards, 1985)

1. Within your family, your pet likes you best

-almost always -often -sometimes -almost never

2. You like to touch and stroke your pet

-almost always -often -sometimes -almost never

3. You are too busy to spend time with your pet

-almost always -often -sometimes -almost never

4. You prefer to be with your pet more than with most people you know

-almost always -often -sometimes -almost never

5. You spend time each day playing with or exercising your pet

-almost always -often -sometimes -almost never

6. Your pet comes to greet you when you arrive

-almost always -often -sometimes -almost never

7. When your pet misbehaves, you hit him/her

-almost always -often -sometimes -almost never

8. You talk to your pet as a friend

-almost always -often -sometimes -almost never

9. Your pet is aware of your different moods

-almost always -often -sometimes -almost never

10. Your pet is a nuisance and a bother to you

-almost always -often -sometimes -almost never

11. Your pet pays attention and obeys you quickly

-almost always -often -sometimes -almost never

12. You confide in your pet

-almost always -often -sometimes -almost never

13. You consider your pet to be a member of your family

-almost always -often -sometimes -almost never

14. You play with your pet when he/she approaches

-almost always -often -sometimes -almost never

15. You spend time each day training your pet

-almost always -often -sometimes -almost never

16. You show photos of your pet to your friends

-almost always -often -sometimes -almost never

17. When you feel bad, you seek your pet for comfort

-almost always -often -sometimes -almost never

18. You spend time each day grooming your pet

-almost always -often -sometimes -almost never

19. You feel sad when you are separated from your pet

-almost always -often -sometimes -almost never

20. You ignore your pet when he/she approaches

-almost always -often -sometimes -almost never

21. When you come home, your pet is the first one you greet

-almost always -often -sometimes -almost never

22. You like to have your pet sleep near your bed

-almost always -often -sometimes -almost never

23. You like to have your pet sleep on your bed

-almost always -often -sometimes -almost never

24. You have your pet near you when you study, read, or watch TV

-almost always -often -sometimes -almost never

25. Your pet tries to stay near you by following you

-almost always -often -sometimes -almost never

26. You buy presents for your pet

-almost always -often -sometimes -almost never

27. You don't like your pet to get too close to you

-almost always -often -sometimes -almost never

Appendix B

The Pet-Attitude Scale

(Templer, Salter, Dickey, Baldwin, & Veleber, 1981)

1. I really like seeing pets enjoy their food.
2. My pet means more to me than any of my friends.
3. I would like a pet in my home.
4. Having pets is a waste of money.
5. Housepets add happiness to my life (or would if I had one).
6. I feel that pets should always be kept outside.
7. I spend time every day playing with my pet (or I would if I had one).
8. I have occasionally communicated with a pet and understood what it was trying to express.
9. The world would be a better place if people would stop spending so much time caring for their pets and started caring more for other human beings instead.
10. I like to feed animals out of my hand.
11. I love pets.
12. Animals belong in the wild or in zoos, but not in the home.
13. If you keep pets in the house you can expect a lot of damage to furniture.
14. I like housepets.
15. Pets are fun but it's not worth the trouble of owning one.
16. I frequently talk to my pet.
17. I hate animals.

18. You should treat your housepets with as much respect as you would a human member of your family.

Appendix C

The Companion Animal Bonding Scale

(Poresky, Hendrix, Mosier, & Samuelson, 1987)

1. How often were you responsible for your companion animal's care?

   -Always -Generally -Often -Rarely -Never

2. How often did you clean up after your companion animal?

   -Always -Generally -Often -Rarely -Never

3. How often did you hold, stroke, or pet your companion animal?

   -Always -Generally -Often -Rarely -Never

4. How often did your companion animal sleep in your room?

   -Always -Generally -Often -Rarely -Never

5. How often did you feel that your companion animal was responsive to you?

   -Always -Generally -Often -Rarely -Never

6. How often did you feel that you had a close relationship with your companion animal?

   -Always -Generally -Often -Rarely -Never

7. How often did you travel with your companion animal?

   -Always -Generally -Often -Rarely -Never

8. How often did you sleep near your companion animal?

   -Always -Generally -Often -Rarely -Never

Appendix D

Pet-Attachment Scale

The following is completely voluntary

If you are interested in being contacted for more information about this project please put your email address or phone number here:_____

1. What is your Gender? Female_____ Male____ 2. What is your Age? _____ years.

3. Do you live with a significant other (e.g. husband, wife, boyfriend, or girlfriend)? Yes_____ No_____

	Strongly Disagree			Neutral			Strongly Agree
4. I am generally a happy person?	1	2	3	4	5	6	7

5. Do you currently have an animal companion you consider a pet? Yes_____ No_____ (if you answer no to this question, you may return the survey, thank you).

6. Did you have an animal companion/pet when you were a child? Yes_____ No_____

7. How many pets do you have? _____

8. Please list the type of animals in your household you consider pets and circle your favorite pet (e.g. dog, cat, bird). _____

_____

If you have more than one pet, please choose your favorite for the rest of this survey.

9. Do you currently live with this pet? Yes_____ No _____

	Strongly Disagree			Neutral			Strongly Agree
10. I am the person totally responsible for caring for this pet?	1	2	3	4	5	6	7

11. How long have you had this pet? _____ 12. Please estimate the age of this pet. _____ years.

Please circle the scale value after each item that best describes your feelings at this time:

1 Strongly disagree 2 Disagree 3 Somewhat Disagree 4 Neutral 5 Somewhat agree 6 Agree 7 Strongly agree

	Strongly Disagree			Neutral			Strongly Agree
13. I love my pet	1	2	3	4	5	6	7
14. My pet loves me	1	2	3	4	5	6	7
15. I feel emotionally attached to my pet	1	2	3	4	5	6	7
16. My pet is emotionally attached to me	1	2	3	4	5	6	7
17. My pet brings me happiness	1	2	3	4	5	6	7
18. I bring happiness to my pet	1	2	3	4	5	6	7
19. My pet is intelligent	1	2	3	4	5	6	7
20. I would be lost without my pet	1	2	3	4	5	6	7
21. I count on my pet being there when I need comfort	1	2	3	4	5	6	7
22. My pet is often my best friend	1	2	3	4	5	6	7
23. I am emotionally dependent on my pet	1	2	3	4	5	6	7
24. My pet sleeps in my bed or close to me	1	2	3	4	5	6	7
25. I engage in activities that involve my pet	1	2	3	4	5	6	7

26. I like physical contact with my pet	1	2	3	4	5	6	7
27. If I go for a walk or ride I like to take my pet	1	2	3	4	5	6	7
28. My pet appears in my family photos	1	2	3	4	5	6	7
29. I consider my pet to be a regular member of the family	1	2	3	4	5	6	7
30. I talk to others about my pet	1	2	3	4	5	6	7
31. My pet knows how I feel	1	2	3	4	5	6	7
32. I talk to my pet	1	2	3	4	5	6	7
33. Within my family, my pet likes me best	1	2	3	4	5	6	7
34. I prefer to be with my pet more than others	1	2	3	4	5	6	7
35. My pet greets me when I arrive	1	2	3	4	5	6	7
36. I talk to my pet as a friend	1	2	3	4	5	6	7
37. I confide in my pet	1	2	3	4	5	6	7
38. I spend time each day training my pet	1	2	3	4	5	6	7
39. I show photos of my pet to your friends	1	2	3	4	5	6	7
40. When I feel bad, I seek my pet for comfort	1	2	3	4	5	6	7
41. I feel sad when I am separated from my pet	1	2	3	4	5	6	7
42. I like to have my pet sleep near me	1	2	3	4	5	6	7
43. I like seeing my pet enjoy food	1	2	3	4	5	6	7
44. My pet means more to me than any of my friends	1	2	3	4	5	6	7
45. My pet adds happiness to my life	1	2	3	4	5	6	7
46. I spend time every day playing with my pet	1	2	3	4	5	6	7
47. How often were you responsible for your companion animal's care?	1	2	3	4	5	6	7
48. How often did you clean up after your companion animal?	1	2	3	4	5	6	7
49. How often did you hold, stroke, or pet your companion animal?	1	2	3	4	5	6	7
50. How often did your companion animal sleep in your room?	1	2	3	4	5	6	7
51. How often did you feel that your companion animal was responsive to you?	1	2	3	4	5	6	7
52. How often did you feel that you had a close relationship with your companion animal?	1	2	3	4	5	6	7
53. How often did you travel with your companion animal?	1	2	3	4	5	6	7
54. How often did you sleep near your companion animal?	1	2	3	4	5	6	7

(Questions: "The Pet-Attachment Scale" # 33, 34, 35, 36, 37, 38, 39, 40, 41, & 42 (Holcomb, Williams, & Richards, 1985)

(Questions: "Pet Attitude Scale" # 43, 44, 45, & 46, (Templar, Salter, Dickey, Baldwin, & Veleber, 1981)

(Questions: "The Companion Animal Bonding Scale" # 47, 48, 49, 50, 51, 52, 53, 54 (Poresky, Hendrix, Mosier, & Samuelson, 1987)

Appendix E

VIRGINIA TECH INSTITUTE AND STATE UNIVERSITY

Title of Project: Quantifying the power of pets: The development of a scale to measure the attachment between humans and companion animals

Principle Investigator: Krista S. Geller

I. **THE PURPOSE OF THE STUDY**

You are invited to participate in a study on pets that will explore the attachment between humans and their pets. The purpose of this study is to construct and test a survey that reflects the importance a pet can have on someone's life.

II. **PROCEDURE**

You are being asked to fill out a survey that will ask questions about your life and the pets in your life. You are asked to choose your favorite pet when answering the majority of the questions. If you don't have any pets, or you never did, you only have to answer the first portion of the survey or choose not to answer the survey at all.

III. **RISKS**

No risk is intended. Questions in the survey are about everyday life experiences.

IV. **BENEFITS OF THE STUDY**

Participation of this study will give you an opportunity to express and share your thoughts and feelings about your pet and the relationship you share with a favorite pet in your life.

Your participation in this project will provide information that will be helpful to understanding the attachment between people and their pets.

V. **EXTENT OF ANONYMITY AND CONFIDENTIALITY**

Your responses will be kept strictly confidential. All identifying information will be removed and code numbers or code names will be assigned to all information and written reports.

VI. **COMPENSATION**

I offer you my sincere gratitude and appreciation for participating in my study and will provide you with a summary of the results when available (if you are interested).

VII. **FREEDOM TO WITHDRAW**

You are free to withdraw from this study at any time.

VIII. **APPROVAL OF RESEARCH**

This research has been approved, as required, by the Institutional Review Board for projects involving human subjects at Virginia Polytechnic Institute and State University, and by the Department of Family Studies in Human Development.

Contact information:

Krista Geller Investigator	540/231-5668 (Graduate office) kgeller@vt.edu (email, best way to contact)
Fred Piercy Faculty Advisor/Chair	540/231-6110 (office)
David Moore IRB Chair	540/231-4991 (office)

Appendix F

Pet-Attachment Scale

The following is completely voluntary

If you are interested in being contacted for more information about this project please put your email address or phone number here:_____

1. What is your Gender? Female_____ Male____ 2. What is your Age? _____ years.

3. Do you live with a significant other (e.g. husband, wife, boyfriend, or girlfriend)? Yes_____ No_____

	Strongly Disagree			Neutral			Strongly Agree
4. I am generally a happy person?	1	2	3	4	5	6	7

5. Do you currently have an animal companion you consider a pet? Yes_____ No_____ (if you answer no to this question, you may return the survey, thank you).

6. Did you have an animal companion/pet when you were a child? Yes_____ No_____

7. How many pets do you have? _____

8. Please list the type of animals in your household you consider pets and circle your favorite pet (e.g. dog, cat, bird). _____

If you have more than one pet, please choose your favorite for the rest of this survey.

9. Do you currently live with this pet? Yes_____ No _____

	Strongly Disagree			Neutral			Strongly Agree
10. I am the person totally responsible for caring for this pet?	1	2	3	4	5	6	7

11. How long have you had this pet? _____ 12. Please estimate the age of this pet. _____ years.

Please circle the scale value after each item that best describes your feelings at this time:

1 Strongly disagree 2 Disagree 3 Somewhat Disagree 4 Neutral 5 Somewhat agree 6 Agree 7 Strongly agree

Emotional Fulfillment	Strongly Disagree			Neutral			Strongly Agree
13. I love my pet	1	2	3	4	5	6	7
14. My pet loves me	1	2	3	4	5	6	7
15. I feel emotionally attached to my pet	1	2	3	4	5	6	7
16. My pet is emotionally attached to me	1	2	3	4	5	6	7
17. My pet brings me happiness	1	2	3	4	5	6	7
18. I bring happiness to my pet	1	2	3	4	5	6	7
19. My pet adds happiness to my life	1	2	3	4	5	6	7
Companionship							
20. I would be lost without my pet	1	2	3	4	5	6	7
21. I count on my pet being there when I need comfort	1	2	3	4	5	6	7
22. My pet is often my best friend	1	2	3	4	5	6	7
23. I am emotionally dependent on my pet	1	2	3	4	5	6	7
24. I prefer to be with my pet more than others	1	2	3	4	5	6	7

25. I talk to my pet as a friend	1	2	3	4	5	6	7
26. I confide in my pet	1	2	3	4	5	6	7
27. I spend time each day training my pet	1	2	3	4	5	6	7
28. I show photos of my pet to your friends	1	2	3	4	5	6	7
29. When I feel bad, I seek my pet for comfort	1	2	3	4	5	6	7
30. I feel sad when I am separated from my pet	1	2	3	4	5	6	7
31. My pet means more to me than any of my friends	1	2	3	4	5	6	7

Appendix G

Curriculum Vita

Krista Scott Geller

Cumulative through April, 2005

Personal Information
Date of Birth: 09/18/1978
Place of Birth: Roanoke, Virginia

Address and Phone Numbers

Home Address:
833 McBryde Drive
Blacksburg Virginia, 24060
Home Phone: (540) 953-0707
Cell Phone: (540) 392-7782

Education

- Graduate School at Virginia Tech. Attending 8/02 for Doctorate in Human Development concentration in Family Studies with a certificate in Gerontology. Graduation date 5/05.
- Overall GPA: 3.7 on a 4.0 scale.
- Graduate School at Virginia Tech. Attended: 8/00 to 5/10/02 for a Masters in Human Development with a concentration in Family Studies.
- Overall GPA: 3.7 on a 4.0 scale
- Radford University, Radford VA
  Attended: 9/9/96 to 5/6/00, with a major in: Psychology, GPA: 3.8 on a 4.0 scale and a major in: Media Studies, GPA: 3.8 on a 4.0 scale

Strengths

- 2 years teaching experience:
  - 1 year teaching experience. Principles of Human Services, Fall 2004/Spring 2005
  - 1 year teaching experience. Undergraduate Human Sexuality, Fall 2003/Spring 2004
- Two and a half years of Media Experience
- Seven years of Theatre Experience
- Seven years of behavioral science research experience
- Interpersonal and group communication skills

Honors and Awards

Kappa Omicron Nu: Initiated into the Omicron Beta Zeta Chapter Nov. 2003
Inducted into the Radford University Honor Society April 2000
Member of Psi Chi Honor Society April 1999 to present
University Deans list: Spring 1997, Fall 1997, Spring 1998, Summer 1998, Fall 1998, Spring 1999, Summer 1999, and Fall 1999

Scholarships

The Family Studies/Therapy Scholarship award for 2003

Professional Research Paper Presentations

Bolstridge, A., Maus, C., Geller, K., & Clarke, S. W. (November, 1996). *Effects of media exposure on availability of cigarettes to minors.* Poster presentation at the 12th Annual Convention of the Southeastern Association for Behavior Analysis, Charleston, SC.

Click, R. D., Geller, K. S., England, K. J., & Geller, E. S. (March 2000). *Reducing road rage: Developing and testing an inter-vehicular communication system.* Symposium presentation at the 46th Annual Meeting of the Southeastern Psychological Association, New Orleans, LA.

Geller, K. S., Click, R. D., Geller, E. S., & Beasley, J. (April 2000). *Social validity of the potential of an inter-vehicular communication device to reduce road rage.* Paper presentation at the Annual Meeting of the Virginia Psychological Association, Vienna, VA.

Geller, K. S., Geller, K. H., & Geller, E. S. (April 2000). *How available are cigarettes to minors? A community-based field study.* Paper presentation at the Annual Meeting of the Virginia Psychological Association, Vienna, VA.

Geller, K. S., Bensenhaver, S. L., Marshall, D. T., & Geller, E. S. (May 2001). *Does having a date influence risk of intoxication? Comparisons within fraternity parties.* Paper presentation at the 27th Annual Meeting of the Association for Behavior Analysis, New Orleans, LA.

Fruhauf, C., Jarrot, S. E., Geller, K., Lavery, K., & Rhody-Scott, D. (2001, September). *Aging in a welfare state: Lessons learned while traveling in Sweden.* Paper presented at the Virginia Polytechnic Institute and State University Center for Gerontology Forum Series, Blacksburg, VA.

Teaching Experience

- Spring 2005 I was offered the opportunity to continue teaching HD 2335 Principles of Human Services with 29 students. Summer 2005 I will be teaching Human Sexuality for summer II.
- Fall 2004 I taught HD 2335 Principles of Human Services with 46 students.
- Spring 2004 I taught undergraduate Human Sexuality (HD 3314) with 108 students.
- Fall 2003 I was a graduate assistant for a professor teaching undergraduate Human Sexuality. I was given the opportunity to teach chapters and conduct many classes on my own, including management of participation from the class of 250 students.

Job Experience

- Adjunct Faculty position with Virginia Tech teaching Principles of Human services, HD 2335, with 46 students — Fall 2004
- Teaching position for HD 3314, Human Sexuality, with 108 students — Spring 2004
- GTA position with Dr. Katherine Allen for HD 3314 Human sexuality with 250 students — Fall 2003
- Volunteer training and volunteer work at the Women's Resource Center — Summer 2003
- Volunteer at Adult Day Services in Wallace Hall — Summer 2003
- Front desk attendant for the Town of Blacksburg Aquatic Center — 1998 to present
- Assistantship to Dr. Lenore McWey in Human Development (MFT) — Sep. 2002 - May 2003
- Assistantship to Dr. Tammy Henderson in Human Development (FS) — Oct. 2002 - Dec. 2002
- *Data recorder and researcher at Virginia Tech* — *1996-2000*
- Production Assistant at WDBJ7 — 1999-2000

Professional Research Experience

- Conducting a survey for my dissertation which was administered to 548 participants. Running analyses and writing up the results and discussion in order to complete and defend my dissertation entitled "Quantifying the Power of Pets: The Development of an Assessment Device to Measure the Attachment Between Humans and Companion Animals"
  2005
- Conducted an open-ended survey to 102 college students from Radford University and Virginia Tech assessing the power of pets within their lives.
  2002
- Assessing the influence alcohol has over Virginia Tech students on a date.

Determining the differences in the drinking behaviors for those students on a date versus those who are not on a date. 2001

- Working with Virginia Tech students, collecting data on their drinking behaviors at fraternity parties and downtown. 2000-2001
- Working with the development of an inter-vehicular communication device to reduce road rage. 2000
- Educating parents on the risks of improperly installing a child safety seat. 2000
- Developing educational interventions to reduce alcohol abuse at fraternity parties. 1997
- Helping graduate students implement behavior-based safety programs at a beverage bottling company (Coke) and a mining operation. 1997
- Conducted a field study to determine whether merchants in the Blacksburg community would sell cigarettes to minors. 1995

References

Dr. Fred Piercy
Department Head
Development
Virginia Polytechnic Institute and State University
366 Wallace Hall
231-4794
piercy@vt.edu

Dr. Cosby Rogers
Professor of Child

Virginia Tech
305 Wallace Hall
951-2657
rogersco@vt.edu

Dr. Michelle Stevenson
Assistant Professor
Human Development
Sciences
231-3194
mstevens@vt.edu

Dr. Marie Suthers-McCabe
Associate Professor
Small Animal Clinical

231-7133
msuthers@vt.edu

Dr. Peggy Meszaros
Human Development
Psychology
231-9428
meszaros@vt.edu

Dr. Kent Glindemann
Research Scientist,

231-4287
kglindem@vt.edu