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An examination of the relations between human attachment, pet attachment, depression, and anxiety

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**An examination of the relations between human attachment, pet attachment,
depression, and anxiety**

by

Aaron Christopher Quinn

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Psychology (Counseling Psychology)

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Ames, Iowa

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Major Professor

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For the Major Program

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ABSTRACT

The roles of pets in families and their positive impact on mood have been reported by some studies (Becker, 1999; Garrity, Stallones, Marx, & Johnson, 1989). Additionally, some research has found that the more attached humans are to their pets, the more they feel emotionally supported (Stammbach & Turner, 1999) and the greater the decrease in depressive symptoms (Garrity et al., 1989). In the United States approximately 57.9% of all households own a pet. Thus, more homes have a pet than do not (American Veterinary Medical Association, 1992). Given the size of the American pet population, many people have exposure to pets' potentially positive impact on mood. This study had multiple purposes as it sought to examine pet attachment and demographic variables, explore the pet attachment-human attachment connection, investigate human attachment as it related to anxiety and depression, and to investigate the relation of pet attachment to anxiety and depression.

The findings from this study indicate that pet attachment is significantly different based upon the type of pet, role of the pet, amount of money participants paid for the pet, where the pet is housed, sex of the owner, and income of the owner. This study also found that attachment anxiety was significantly different based on participants' marital status, and attachment avoidance was significantly different based upon income. The findings also indicate that the constructs of attachment anxiety, attachment avoidance, anxiety, and depression do positively correlate with one another in most cases. Additionally, results indicate that in this study the pet attachment construct is not significantly correlated with attachment anxiety, attachment avoidance, anxiety, or depression.

CHAPTER 1: INTRODUCTION

The roles of pets in families and their positive impact on mood have been reported by some studies (Becker, 1999; Garrity, Stallones, Marx, & Johnson, 1989). Additionally, some research has found that the more attached humans are to their pets, the more they feel emotionally supported (Stammbach & Turner, 1999) and the greater the decrease in depressive symptoms (Garrity et al., 1989). In the United States approximately 57.9% of all households own a pet. Thus, more homes have a pet than do not (American Veterinary Medical Association, 1992). Given the size of the American pet population, many people have exposure to pets' potentially positive impact on mood.

Because there is some empirical support for pets' positive impact on mood, there is a need for further exploration in this area. One place to begin exploring the nature of pets' impact on distress is to examine known pathways of anxiety and depression. One such pathway is between anxious and avoidant attachment styles and anxiety and depression. Data show that people who enact anxious and avoidant attachments to other people are linked to higher rates of depression (Cole-Detke & Kobak, 1996; Tyrrell & Dozier, 1997) and anxiety (Fonagy, Steele, Steele, Leigh, Kennedy, & Mattoon et al., 1996). Since pets may help foster positive moods, then people's attachment to their pets may moderate the anxious/avoidant attachment style – distress relationship.

Examining pet attachment and its possible moderating properties in the human attachment-distress relationship is a unique undertaking by a counseling psychologist. In fact, I have located no studies by a counseling psychologist that have looked into pets' impact on mood. So how is pet attachment relevant to counseling psychology and how does it contribute to counseling psychology? First, counseling psychologists' three primary roles are

prevention, remediation, and development (Gelso & Fretz, 1995). Therefore, interventions that can reduce negative moods and/or interventions that may increase positive moods are useful to applied psychologists. Second, Bartholomew and Shaver (1998) point out that attachment theory and research are re-emerging as a force in the social sciences, and Dozier and Tyrrell (1998) point to the importance of understanding and working with attachment styles as they present in the therapeutic relationship. Thus, attachment theory is increasingly present as a whole in counseling psychology research and practice. Third, there is a need for mental health practitioners in Veterinary Medical settings and a growing number of psychology professionals entering this milieu (Brown & Silverman, 1999). Integrating the Veterinary Medicine population and variables from this area into the counseling psychology research will increase our understanding of the Veterinary Medical setting and subsequently enhance our effectiveness in the area. This study seeks to provide the counseling psychology field with some information in all three of these areas, as we will know more about pet attachment as it relates to human attachment styles and human affect.

Another question involves using the term “attachment” with pets since it is grounded in human relationships. Attachment theory (Bowlby, 1969) is accepted as the most probable explanation for the widespread popularity of pets, and especially their beneficial influence on owners’ health and well-being (Melson, Peet, & Sparks, 1991). Bowlby originally developed the concept of attachment in connection with the relationship between mother and child(ren). The application of the attachment concept to the human-pet relationship implies that pets are somehow seen as substitutes for, or equivalent to, children. In actuality, studies have found support for this very idea as 70% of pet owners view their pets as children (American Animal

Hospital Association, 1999). Therefore, using the term “attachment” as it applies to the human-pet relationship seems reasonable and will be used in the present study.

CHAPTER 2: LITERATURE REVIEW

In this study, the variables of human attachment, pet attachment, anxiety, and depression are going to be explored. Initially, the theoretical backgrounds of each area will be reviewed, and then the measurement properties of each construct will be reviewed. Third, the empirical findings for each relation (human attachment-pet attachment, pet attachment-anxiety/depression, and human attachment-anxiety/depression) will be reported. Fourth, there will be a brief review of the demographic characteristics that influence pet attachment. Following the review of the literature the hypotheses for this study will be stated.

Human Attachment Theory and Measurement

Human Attachment Theory. Human attachment theory stems largely from the work of John Bowlby (1969, 1973, 1980) and Mary Ainsworth (1978). Bowlby (1969) examined infants and their primary caretakers and found that infants experienced anxiety when separated from their primary caretakers. Bowlby (1969) concluded that there is an innate desire for infants to maintain close proximity to caregivers. Through this close proximity, infants have a secure base through which to explore their surroundings. Without this secure base, Bowlby (1969) found that infants will experience anxiety and despair, and will ultimately detach from caregivers if close proximity is not maintained during the infant years.

Thee desire to maintain close proximity to caregivers is a universal trait of infants, and attachment styles develop in infants based upon their history of attachment to caregivers. Ainsworth, Blehar, Waters, and Wall (1978) found that infants will develop three primary attachment styles based upon their early attachment experiences. These three styles of attachment behavior are secure, anxious-ambivalent, and avoidant. Infants with secure attachments have developed this style from the caregiver's consistent proximal availability

(Ainsworth et al.). Securely attached infants have confidence in their caregivers' availability, and because of this confidence they are able to actively explore their contexts. Securely attached infants also use their caregivers as a source of comfort. They use this secure attachment to help control and ameliorate negative emotions, therefore, their attachment to their caregiver(s) help promote positive affect (Ainsworth et al.).

Anxious-ambivalent infants are generally uncertain about their caregiver's ability to meet their needs. Often, caregivers have responded to these infants' physical and emotional needs inconsistently. These inconsistent responses from the caregiver(s) lead to increased anxiety and negative affect in the infants (Ainsworth et al., 1978).

Avoidant infants do not routinely attempt to gain support and comfort from their caregivers, as caregivers have routinely chastised and/or been unresponsive to infants' needs. These infants tend to cope with their negative emotions by internalizing their feelings. Also, these infants tend to not use other people for support as they have learned that other human are not effective resources in helping them meet their emotional needs (Ainsworth et al., 1978).

Overall, children's development of secure, anxious-ambivalent, and avoidant attachment styles are based on their caregivers' responses to their physical and emotional needs (Ainsworth et al., 1978). Children who have developed anxious-ambivalent and avoidant attachment patterns have lost confidence in the caregiver's ability to meet their physical and emotional needs. The caregivers have elicited decreased confidence in the children's security through behaviors such as prolonged separations, threats of separation, and scolding (Bowlby, 1973). Often, caregivers use conditional love as a means to gain control of their children's behaviors (Bowlby). By demonstrating love in response to desired

behaviors, and through the withdrawal of love in response to undesirable child behaviors, caregiver's become an unstable security base (Bowlby). In some circumstances, the children are "parentified" and the child becomes responsible for meeting the caregiver's emotional needs (Bowlby). Ambivalent patterns often arise when the environment is characterized by genuine love and support, but the love and support is mixed with periods of unresponsiveness, lengthy separations, and parentification. Alternately, avoidant patterns usually develop when there is no love and support available, and the child experiences coldness and unresponsiveness from the caretaker regarding the child's emotional expressions (Bowlby).

Attachment and Adults. As children develop into adults, their attachment patterns develop into pervasive and durable styles of interpersonal interaction (Bartholomew, 1990). According to attachment theory, the patterns of relating to others persist from childhood into adulthood because of the presence of stable internal working models. These models are essentially cognitive and affective schemas of one's self in relation to close others (Bartholomew). The internal working models of people affect their overall relational behaviors, expectations, and feelings. While formed early in childhood through relationships with primary caregivers, internal working models remain relatively stable into adulthood as seen in the areas of close peer/romantic relationships and parenting (Bartholomew). Thus, internal working models lead to the persistence of attachment styles into adulthood where they continue to impact interpersonal entities.

Rholes, Simpson, and Stevens (1998) report four hypotheses that relate attachment theory to adult personality and behavior. These hypotheses provide a concise summary of attachment styles in adults and their cyclical nature from early childhood attachment theory.

First, one's attachment orientation is formed via responses to interactions with primary attachment figures. Second, attachment styles remain relatively stable from childhood into adulthood. Third, one's early attachment experiences shape their adult relationships. Fourth, the attachment styles of parents' impacts their children's attachments to them. Research has examined all of these hypotheses and the results have generally been supportive of the hypotheses (Bartholomew & Shaver, 1998).

Affect Regulation. An increasing number of studies have looked into the ways that people regulate their affect in relation to their attachment styles (Fuendeling, 1998; Mikulincer, Shaver, & Pereg, 2003). If attachment styles describe the overall patterns of people in relation to others, affect regulation concerns what these patterns specifically are. It is plausible to define attachment as the theory of affect regulation, as attachment styles/patterns are employed to help manage feelings. Through affect regulation an investigation of attachment can occur at the process level. Thus, affect regulation research has looked into areas such as the mechanisms through which affect is controlled, as well as the actual processes and variations of processes that people use to manage affect (Mikulincer et al.).

The construct of affect regulation has been viewed primarily in similar ways by functionalist theories (Izard, 1993) and cognitive mediational theories (Lazarus, 1991). It is through these two theories that affect regulation has been conceptualized across multiple domains. The functionalists and cognitive mediationalists agree that affect is a biological process that drives adaptive behavior. They also agree that affect is separate from and interdependent with cognition within psychosocial functioning, and that affect involves a component of physiological arousal or change and a component of mental experience. In

addition, both theories believe that there are strong links between affect and motivation (Fuendeling, 1998). Developmentally, both functionalists and cognitive mediationalists view affect as being present in infants, and the expression of affect becomes increasingly voluntarily controlled as people get older (Fuendeling). As is the case with attachment theory, affect regulation theorists believe that children's affective responses are shaped profoundly by early parental responses.

Other areas of agreement between the functionalists and the cognitive mediationalists are in the domains of affect activation and the motivational component of affect. Both the functionalists and cognitive mediationalists agree that affect activation occurs via neural activity in people's consciousness. Affect activation also involves the person's information processing about their environmental conditions and the personal meaning attached to the situation (Fuendeling, 1998). The motivational component of affect is based on Lazarus' (1991) work. Lazarus identified people's fundamental motivation to maximize positive affect and to minimize negative affect. Thus, Lazarus feels that affect regulation strategies are all part of the coping process.

In relation to attachment, Fuendeling (1998) in his review of attachment and affect regulation studies, stated that affect regulation research showed consistency between affect regulation mechanisms and attachment styles. In particular, Fuendeling stated that the affect regulation of secure individuals comes from their effective use of appraisals in dealing with negative affect. They have low anxiety interpersonally and have low threat appraisals, which helps enhance intimate relationships. Also, they use social support when necessary, and promote and utilize mutual communication and self-disclosure. Anxious people regulate their affect through hyperattentiveness to their own emotions and hypervigilance toward stimuli

that are associated with negative affect. They make high threat appraisals across many conditions and consistently blame and criticize themselves. Anxious people also use repressive defenses such as low interoceptive awareness, a lack of noticing others' distress, and a repression of expression of hostility. Individuals who have avoidant attachment styles have high defensiveness and anxiety. Their use of repression of expression is higher than any other style, and their communication with others is marked with low support seeking, low self-disclosure, low intimacy, and a pervasive distrust of others.

Affect regulation describes the processes that people use to help manage their emotions, and helps to label the underlying behaviors of attachment styles. Fuendeling's (1998) review of the processes of affect regulation and their affiliation with attachment styles shows that certain affect regulation behaviors are associated with specific attachment styles. Thus, examining attachment styles through affect regulation provides an understanding of the direct interpersonal mechanisms that people use to manage emotions. Through affect regulation the attachment domain now has a more thorough comprehension of their constructs, which can help people understand their specific actions and their impact on mood.

Attachment Measurement Background. The investigation of attachment in adults commenced in the 1980s, and there were two approaches used to develop an understanding of adult attachment. The first position of Main, Kaplan, Cassidy (1985) explored the possibility that adults maintain representations of their childhood relationships with parents. These representations then influence the adults as they parent their own children, thus, impacting the attachment styles of their child(ren). The second approach was developed by Hazan and Shaver (1987). They looked at adolescent and adult loneliness as they connected to insecure attachment styles (anxious-ambivalent and avoidant). Hazan and Shaver felt that

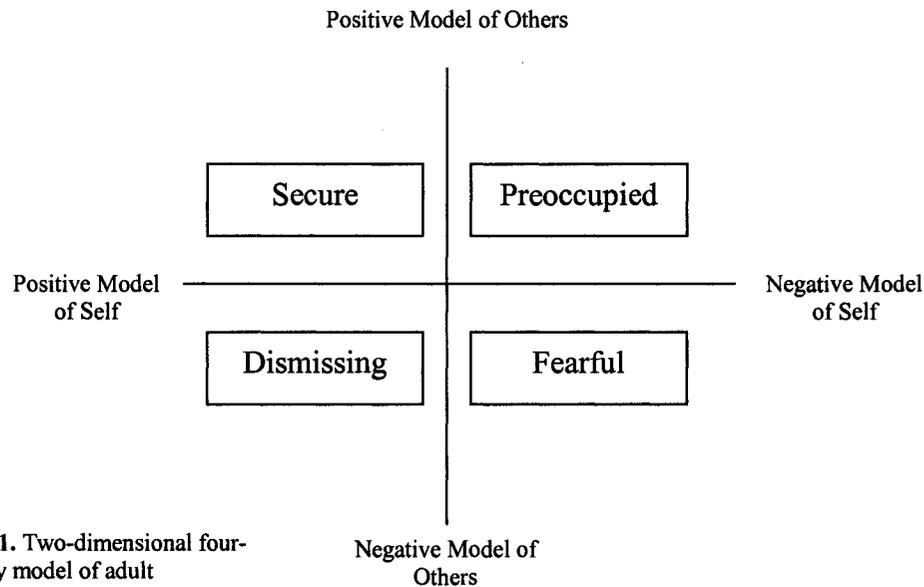
people who were lonely as adolescents and adults had trouble fostering secure romantic relationships, and this difficulty stemmed from their early attachment experiences.

In response to their theories, Main et al. (1985) and Hazan and Shaver (1987) either used existing measures or developed measures to test their predictions. Main et al. (1985) interviewed parents concerning their childhood family relationships. They then used the responses from the interview to give the parents scores on the Ainsworth Strange Situation Test (Ainsworth, et al., 1978). Subsequently, they discovered that the parents' attachment codes correlated with their assessments of their infants' attachment codes. This provided initial confirmation for their theory: adults' attachment styles influence the attachment styles of their children. Since this study, this finding has been replicated (van IJzendoorn, 1995).

Hazan and Shaver (1987) created a self-report measure based on the three attachment styles: secure, anxious, and avoidant. Coined the Hazan and Shaver Questionnaire, this questionnaire measured people's recollection of their most recent romantic relationships and had them rate aspects of their relationships across the secure, anxious, and avoidant domains. Hazan and Shaver found that there was a negative influence of insecure attachment styles on close/romantic adult relationships.

In 1985 the Adult Attachment Interview (AAI, George, Kaplan, & Main) was developed as a measure of adult attachment. The AAI was produced based on Main et al.'s (1985) line of investigation of attachment (the attachment style of adults influences the children's styles). Thus, with the development of Hazan and Shaver's measure in 1987, there were two adult attachment measures, which approached attachment from two different perspectives.

The AAI and Hazan and Shaver's questionnaire are similar in that they both measure Ainsworth's attachment categories: secure, anxious, and avoidant. They differ, though, in their measurement of attachment in three problematic ways according to Bartholomew (1990). First, people labeled as avoidant by the AAI reported low distress and low attachment needs, while avoidant individuals on Hazan and Shaver's questionnaire communicated that they had high distress and were fearful of attachment. Second, the Hazan and Shaver questionnaire focuses on people's most recent adult romantic relationships, and the AAI asks people to recall their childhood relationships with parents. Third, the AAI uses an interview format, and the Hazan and Shaver questionnaire is a self-report measure. Therefore, the AAI data rely heavily on the dynamics of internal working models that are revealed indirectly by the way a person talks about childhood relationships. The Hazan and Shaver questionnaire gathers data from feelings and behaviors that are known to the person and relatively easy for people to explain.



Based on the measurement issues that Bartholomew (1990) put forward, she developed a four-category attachment measure that defines people's styles across two dimensions (Figure 1). The two dimensions, people's model of self (positive-negative) and people's model of others (positive-negative), form four attachment categories. Bartholomew's dimensions of self ranges from a positive model of self to a negative model of self. The positive model of self means that a person has an understanding of, and belief in, their own self-worth. A negative model of self describes a lack of self-worth and a strong need for other's approval. A positive model of other's means that the person perceives that others are readily available emotionally. The negative model of other's describes the perception that others are not regularly available. The basis of Bartholomew's model is the AAI and Hazan and Shaver's questionnaire. Moreover, it takes into account the measurement problems of these two measures.

Bartholomew and Horowitz (1991) tested the convergence of their Peer Attachment Interview (an interview about past and current close friendships and romantic relationships) with the AAI and their Relationship Questionnaire (use to measure general relationship style) with Hazan and Shaver's questionnaire. Overall, Bartholomew and Horowitz (1991) found that their measures (the Peer Attachment Interview and the Relationship Questionnaire) of attachment did significantly and meaningfully converge across all attachment categories of the AAI and the Hazan and Shaver questionnaire.

Since the advent of Bartholomew's (1990) two-dimensional model of attachment (Figure 1), attachment is now measured as both a three-factor and two-dimension/four-category construct. While attachment is now measured primarily across three factors or four categories, numerous studies (Hazan & Shaver, 1987; Levy & Davis, 1988; Simpson et al., 1992) have demonstrated the overlap of Ainsworth's (1978) three factors across the two-dimension/four-category model. Brennan, Clark, and Shaver (1998) developed a diagram that demonstrates the convergence of the three-factor and two-dimension/four-category attachment constructs (Figure 2).

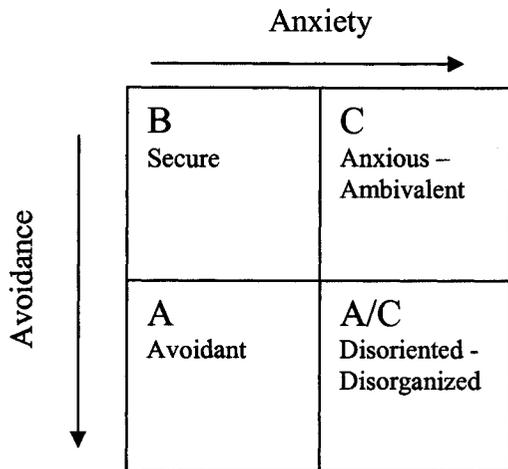


Figure 2. Overlap of three-factor and two-dimensional/four-factor structure of attachment

Attachment Measures

A portion of the adult attachment inventories will be examined based upon their relevance to the present study. Included in this review will be measures that assess adult attachment, are in questionnaire form, use close adult relationships to understand attachment, and require no training to administer. Current and recent close adult relationships are the focus because the retrospective measures of recalling attachment during childhood are not in self-report format. This review will report each measure's format, reliability, and validity information.

The author found five measures that met all of the criteria established: the Adult Attachment Questionnaire (AAQ; Hazan & Shaver, 1987), the Experiences in Close Relationships Scale (ECRS; Brennan, Clark, & Shaver, 1998), the Adult Attachment Scale (AAS; Simpson, 1990), the Revised Adult Attachment Scale (R-AAS; Collins & Read, 1990), and the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991),

Regarding their format, the AAQ is a single-item, forced-choice, self-report measure that asks persons to label their attachment behaviors as being secure, insecure-avoidant, and insecure-ambivalent. Theoretically, the AAQ is based on Ainsworth's attachment categories, and participants who take the AAQ receive scores in each of Ainsworth's (1979) three categories.

The ECRS is a 36-item questionnaire that measures a person's feelings in close, romantic relationships. Like the AAQ, the ECRS is also based on the theory and attachment dimensions labeled by Ainsworth (1979). The ECRS has two subscales (18 items each), anxiety and avoidance, and each item on the ECRS is a seven-point Likert-type scale ("disagree strongly" to "agree strongly"). Participants who take the ECRS produce scores on each dimension and scores can range from 126 (highest) to 18 (lowest).

The revised version of the AAS (R-AAS) measures feelings about romantic relationships, and is based on Ainsworth's (1979) attachment dimensions. The R-AAS has 18 items that are scored on a five-point Likert-type scale ("not at all characteristic" to "very characteristic"). The three dimensions in the R-AAS are termed "close," "depend," and "anxiety." Items in the R-AAS are distributed equally across the three attachment dimensions (six items each) and respondents produce three separate scores.

The RQ measures people's general relationship styles, and is based on Bartholomew and Horowitz's (1991) four-factor attachment style (Figure 1). The participants who take the RQ rate their similarity to four prototypes' relationship behaviors, which are measured on a seven-point Likert-type scale ("not at all like me" to "very like me"). The participants then choose out of the four styles the relationship style that most fits them. Thus, the RQ is made up of five items and scores for each attachment style are based on responses to single items.

The reliability data for the attachment measures vary. The ECRS had alpha coefficients of .91 (anxiety) and .94 (avoidance), which was the highest of any measure. The coefficients alphas for the AAS were .42-.51 (secure), .79-.80 (avoidant), and .59-.79 (anxious), while the R-AAS had three alpha ranges of .75-.84 (dependent), .52 (anxiety), and .68 (close). The RSQ had coefficient alphas that ranged from .41 - .70. No internal consistency data was reported for the AAQ and the RQ because of their formats. Test-retest reliability is as follows: AAQ (.70 for five months), ECR (.86 - .91 for two-month interval), AAS (.52 - .71 for two months), and RQ (.49 - .71 for eight months).

The construct validity of the six attachment measures was shown in a variety of ways, and all used initial factor analysis. Of the six measures, four showed initial construct validity through factor analysis: the ECRS, AAS, R-AAS, and the RQ. The ECRS's, AAS's, and RQ factor analyses supported two-factor structures labeled anxiety and avoidance, avoidance and ambivalence, and model of self and model of others. The R-AAS demonstrated three factors, closeness, dependence, and anxiety.

The ECRS was developed from a principle components factor analysis including 60 existing attachment subscales. Thus, the convergent validity data are strong for both of its factors with a mean correlation of .72 with other anxiety scales and .77 with other avoidance scales. The discriminant validity of the ECRS is demonstrated as its two-factor structure correlates at .11. While convergent and discriminant validity data are reported for the five attachment measures, only the data from the ECRS is reviewed as it contains in its development the four other attachment measures.

Summary

The adult attachment measurement domain has been historically measured from two perspectives: one's adult romantic relationships and through the adult's recollection of their parent-child relationship(s). Also, all of the measures are based on Ainsworth and Bowlby's theories of attachment, and involve some variation(s) of Ainsworth's (1978) attachment classifications of secure, anxious, and avoidant. Measurement changed slightly when Bartholomew and Shaver (1998) proposed that attachment differed along domain (family, peer, and romantic relationships), dimensionality (categories and dimensions), and method (self-report, interview, and Q-sort). In general, the different measures generally converge well as demonstrated by the development of the ECRS. This leads to the conclusion that "various forms of attachment arise from a continuous but branching tree of adult experiences, beginning in infancy and developing throughout the life course" (Bartholomew & Shaver, 1998, pg. 68).

Regarding the specific adult attachment measures, there are major flaws regarding the reliability of the AAQ, RQ, and AAS. Moreover, the construct validity of AAQ was not initially demonstrated via factor analysis. The ECRS is the newest (1998) adult attachment measure and it appears to be the most psychometrically sound given its reliability and validity data. Because of its stronger psychometric properties, the ECRS will be used as the human attachment measure in this study.

Pet Attachment Theory and Measurement

Pet Attachment Theory. The concept of pet attachment draws directly from the Bowlby's (1969) attachment theory and his idea of an internal working model. Bowlby defined attachment as "a lasting emotional tie between people such that the individual strives

to maintain closeness to the object of attachment and acts to ensure the relationship continues” (Bowlby, 1969, pg.17). This review of pet attachment will briefly re-introduce attachment theory and the internal working model notion, and then will explore the concept of pet attachment and the measurement of the construct.

Attachment has been described as a bond, affectional tie, or enduring relationship (Bowlby, 1969). The bond tends to be enduring and independent of specific situations (Ainsworth et al., 1978). It is through attachment behaviors in infants (eye contact, smiling, touching) that attachment first becomes evident. These attachment behaviors are used to initiate and maintain physical proximity to attachment figures, and these behaviors later serve to mediate attachment relationships (Ainsworth et al., 1978). Attachment behaviors may be manifested intermittently and may be closely related to situational factors, while attachment bond is considered to be relatively constant and affected little by situational factors (Ainsworth et al., 1978).

Bowlby’s (1969) development of an internal working model stems from people’s internal representation of attachment attachment experiences. At approximately the age of three a child develops the ability to effectively represent their attachment relations (Bowlby, 1969). These representations then exert abstract influences on people’s attachment behaviors across situations and across relationships (Bowlby, 1969). Therefore, a child’s early attachment experiences form a “blueprint” for the attachment relations entered into later in life (Bowlby, 1969).

Pet attachment is a construct that has developed based on the increasing emergence of pets in people’s lives (Archer, 1997). In fact a recent survey (AAHA, 1998) found that more than 70% of pet owners view their pets as children, 48% emotionally depend on their pet, and

83% would risk their lives for their pets. There is also evidence that pets can be used as a parent or partner substitute (Archer). For example, it is apparent from cross-cultural surveys of pet owners that pets serve a variety of roles in addition to surrogate children (Savishinsky, 1985). One veterinary researcher has even put forward the theory that dogs are primarily used as parent substitutes (Archer). A study of attachment to pet dogs found evidence for dogs filling both parent and child roles (Archer, Ireland, Mills, and Parker, 1992). Archer et al. also found that dogs helped owners feel more emotionally secure and safe from potential harm. Therefore, there is some support for the ideas, via surveys, that pets are child and parent substitutes for many, and that relationships to dogs contain a strong element of reassurance and feelings of security.

Pet Attachment Measurement. Since pets may provide security and meet the emotional needs of many pet owners in ways that resemble children and parents, pet attachment seems like a reasonable construct. In general, pet attachment has been found to be a multidimensional construct that contains degree of emotional bond, physical proximity, and caretaking (Triebenbacher, 1999). In this section the content, structure, and psychometric properties of pet attachment measures will be reviewed. Only measures that looked specifically at human's attachment to pets were included.

A search of pet attachment measures found six measures that have been created to measure attachment to pets. These are the Pet Attachment Questionnaire (PAQ; Stallones, Marx, Johnson, & Garrity, 1991), the Companion Animal Bond Scale (CABS; Poresky, Hendrix, Mosier, & Samuelson, 1987), the CENSHARE Pet Attachment Survey (Holcomb, Williams, & Richards, 1985), the Lexington Attachment to Pets Scale (LAPS; Johnson, Garrity, & Stallones, 1992), the Pet Attitude Scale (PAS; Templer, Salter, Dickey, &

Baldwin, 1981), and the Pet Relationship Scales (PRS; Lago, Kafer, Delaney, & Connell, 1988).

The content of each of the scales all were developed to measure the strength of attachment that pets owners have to their pets. Four of the measures used five-point Likert-type scales (CABS, PRS, CENSHARE-PAS, LAPS), while two used four-point Likert-type scales (PAS, PAQ). The number of factors measured in each measure ranged from one through three, although all measures reported total scores (one factor). The PAQ reported one factor, the CENSHARE-PAS and the PAS measured two factors, and the CABS, LAPS, and PRS measured three factors. The PAQ factor was labeled “attachment.” The CENSHARE-PAS reported the factors of “intimacy” and “maintenance,” and the PAS reported “affection for pets” and “dislike for pets” as its factors. The CABS reported the factors “emotional bond,” “physical proximity,” and “caretaking.” The LAPS uncovered “general attitude,” “people substituting,” and “animal welfare” as its three factors, while the PRS had the following three factors: “affectionate companionship,” “equal family member,” and “mutual physical activity.”

The psychometric properties of the measures varied greatly. All of the measures reported alpha coefficients that ranged from .75 through .93 for their total scores. Alpha coefficients were also reported in the five studies that measures multiple factors (CABS, CENSHARE-PAS, LAPS, PRS, PAS). Alpha coefficients for these factors ranged from .70 through .95. Only the CABS reported test-retest reliability data and it showed .81 reliability over a four-month period for the total score.

The validity of the measures was established via factor analysis in five of the studies (CABS, CENSHARE-PAS, LAPS, PRS, PAS). The CABS produced three oblique factors,

the CENSHARE-PAS found two oblique factors, and the LAPS showed three orthogonal factors. The final two measures, the PRS and the PAS, found three and two orthogonal factors respectively. Convergent validity data were provided for the CABS, PRS, and PAS total scores. The CABS correlated with the PAS at .50, and the PRS correlated with the PAS at .65.

A search by the author found that the PAQ had been used in three studies, the CABS in 16 studies, the CENSHARE-PAS in six studies, the LAPS in four studies, the PRS in one study, and the PAS in 14 studies. The present study will use the CABS because of its psychometric properties. The CABS showed stronger reliability and validity data in comparison to the other pet attachment measures, and was the only pet attachment measure to report test-retest reliability data.

Summary

Overall, the measures of pet attachment appear to fit with Triebenbacher's (1999) finding that pet attachment is a multidimensional construct with five out of the six measures showing a two or three factor construct. All of the measures displayed adequate alpha coefficients and construct validity data, while the CABS was the only measure to report test-retest data. Clearly, the two most used measures are the CABS and the PAS (the original pet attachment measure), and their psychometric properties support their extensive use.

Anxiety and Depression Background and Measurement

Anxiety and Depression. The present study used depression and anxiety as the mood variables. The reason for using depression and anxiety is because Bowlby (1980) suggested that depression and anxiety were the most likely negative mental health outcomes of insecure

(avoidant and anxious) attachment styles. Anxiety and distress are briefly described as constructs.

“Depression” is a class of mood disorders and episodes that Blazer, Kessler, McGonagle, & Swartz (1994) report affect 4.9% of the United States population annually. According to the Diagnostic and Statistical manual of Mental Disorders – 4th Edition (American Psychiatric Association, 2000) a Major Depressive Episode, which is a necessary and defining characteristic of depression involves at least five of the following symptoms for a two-week period: anhedonia, depressed mood, weight loss/gain, sleep disturbances, psychomotor agitation and/or retardation, fatigue, thoughts of death/suicide, and feelings of worthlessness. This Major Depressive Episode becomes a Major Depressive Disorder if there has been the presence of two or more Major Depressive Episodes, and it becomes Dysthymic Disorder if the depressed mood has persisted for at least two years.

One feature of depression that may be relevant in this study is that women are at greater risk to suffer from a depressed episode, as they may be twice as likely to suffer a depressed episode in comparison to males in the United States.

Anxiety Disorders are a class of disorders that combine to form the most common psychiatric illnesses in the United States with 19 million people suffering from an anxiety disorder annually (Anxiety Disorders Association of America, 2003). Symptoms that characterize this class of disorders present both cognitively and somatically and include apprehension, fear, worry, restlessness, fear of losing control, shortness of breath, heart palpitations, sweating, dry mouth, agitation, and feelings of impending doom (American Psychiatric Association, 2000).

Anxiety Disorders are divided into the following disorders and conditions (**number of people in US / % of US population annually**): Panic Attacks, Agoraphobia, Panic Disorder with or without Agoraphobia (**2.4 million / 1.7%**), Specific Phobias (**6.3 million / 4.4%**), Social Phobias (**5.3 million / 3.7%**), Obsessive-Compulsive Disorder (**3.3 million / 2.3%**), Posttraumatic Stress Disorder (**5.2 million / 3.6%**), Acute Stress Disorder, Generalized Anxiety Disorder (**4 million / 2.8%**) (Anxiety Disorders Association of America, 2003).

Anxiety and Depression Measurement. There are a wealth of distress measures that examine people's depression, anxiety, and stress. In fact, the task of discussing the existing measures and then selecting the most appropriate distress measure is akin to mowing Iowa's hayfields and then finding a needle in the monstrous haystack. Therefore, the author decided to approach this section by briefly reviewing some key depression and anxiety measures, and then discussing some instruments that measure both depression and anxiety.

The Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) and the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967) are the most commonly used assessments of depression in research and clinical practice. Beck et al. provide a review of the BDI and its psychometric properties between 1961 (when the BDI was initially developed) and 1986. An overall internal consistency rating of .86 was obtained for psychiatric patients and .81 for non-psychiatric patients. The HRSD has internal consistency that is acceptable with alpha coefficients between .70-.72 (Maier, Philipp, Heuser, Schlegel, Buller, & Wetzel, 1988). Rehm and Plokosh (1975) reports a test-retest reliability for the BDI of .75 for one-month, and longer time intervals between assessment result in lower reliability since major depression is of an episodic nature. Test-retest reliability for the HRSD

are similar to the BDI and are .73 for one-month. Beck et al. report a correlation of .72 between the BDI and other measures of depression, and a correlation of a correlation of .73 with the HRSD. The BDI provides a fairly balanced representation of the symptoms of depression, with a tendency to place a greater emphasis on the cognitive aspects of depression, which fits with Beck's theoretical approach (McNamara, 1992). Faravelli, Albanesi, and Poli (1986) report that the HRSD is very well balanced in terms of its coverage of depressive symptomology, while McNamara notes that the HRSD emphasizes behavioral inhibition and somatic symptoms.

The primary instrument used to measure anxiety is the State-Trait Anxiety Inventory (STAI; Spielberger, 1983). The STAI is composed of two separate inventories, one of which measures state anxiety and the other measures trait anxiety. Each scale has 20 items, each of which is on a four point scale. Spielberger reports internal consistency ratings of .86 to .95, and the STAI's test-retest correlation is from .65 to .86 for a three-month interval. Spielberger also reports on a factor analysis that suggests three factors for the state and trait inventories combined. The first factor is a cognitive anxiety factor, and the other two factors are negative affective state and positive affective state.

There are several measures that are intended to measure anxiety and depression as well as other symptoms (including stress). The Profile of Mood States (POMS; McNair, Lorr, & Droppelman, 1971) is a measure of six different dimensions of mood over a one-week period. The mood dimensions are tension-anxiety, depression-dejection, anger-hostility, confusion-bewilderment, vigor-activity, and fatigue-inertia. Internal consistency ratings for these scales range from .74 to .92, and test-retest reliability ranges from .65 to .74 for a two-day period.

The Depression, Anxiety, and Stress Scales (DASS; Lovibond & Lovibond, 1995) measures states of depression, anxiety, and stress. The DASS and its factor structure were developed from a principle components factor analysis that yielded the three oblique factors. The DASS is a 42-item instrument that is composed of three scales with 14 items on each scale. The 14 items represent common symptoms of anxiety, depression, and stress, and the DASS is primarily used as a state measure. The DASS is scored on a four-point Likert-type scale that ranges from 0 = “did not apply to me at all” to 3 = “applied to me very much, most of the time.” The summed scores from the three scales are compared to norms established by multiple clinical samples. The internal consistency of the DASS is .96 (depression), .89 (anxiety), and .93 (stress), and the test-retest correlations for a two-week period are .71 (depression), .79 (anxiety), and .81 (stress).

Lovibond and Lovibond (1995) found that the DASS depression scale correlated with the BDI ($r = .74$) and the DASS anxiety scale correlated with the Beck Anxiety Inventory (Beck & Steer, 1990) at .81. Both of these correlations are high and demonstrate the convergent validity of the DASS. Discriminant validity was demonstrated through the DASS anxiety and depression scales' correlations with the BDI ($r = .54$) and BAI ($r = .58$). Also, the DASS scales of depression and anxiety correlated at .54 with each other. Lovibond and Lovibond explain this high correlation between anxiety and depression as reflecting common causes of anxiety, depression, and stress.

Summary

This brief review of distress, and the most commonly used measures of depression and anxiety, highlighted the basic information about the mood states as well as the formats and psychometric properties of the instruments. It must be restated that this was a succinct

review given the vastness of the empirical data and measurement areas of depression, anxiety, and stress. Regarding the instruments, all of the measures evaluated show strong psychometric properties, making any of them suitable for measuring the constructs of depression and anxiety.

The DASS will be used to measure distress in the current study. The DASS was chosen based on its ability to validly and reliably measure three related distress constructs (anxiety, depression, and stress). This is advantageous in this study because few studies have examined pet and human attachment as they relate to anxiety and depression simultaneously.

Demographic Variables and Pet Attachment

Studies have looked into pet attachment differences according to various demographic variables. But, the majority of those studies have used children as the data source (Bodsworth & Coleman, 2001; Melson & Fogel, 1996; Rost & Hartmann, 1994; Stevens, 1990; Vizek-Vidovic, Vlahovic-Stetic, & Bratko, 1999). The only studies included in this section are those that used an adult sample for the data. Overall, the author found three studies (Brown, 2002; Endenberg, 1995; Poresky & Daniels, 1998) that focused primarily on adult pet attachment and demographic variables. The relation between the demographic variables and pet attachment will be reported.

Two of the studies had large sample sizes as Endenberg (1995) had 871 participants, Poresky and Daniels (1998) had 1,359 participants, while Brown (2002) had a smaller sample of 133 participants. While the Brown study had veterinary students complete questionnaires, Endenberg's study sent surveys to random samples of homes in the Netherlands and Poresky and Daniels surveyed people via phone in Kansas. In Endenberg's study, there was a 63% return rate of the questionnaires.

The attachment measures used in the three studies were the CABS (Poresky & Daniels, 1998), the PAQ (Brown, 2002), and through “direct magnitude scaling” (Endenberg, 1995). Direct magnitude scaling asks the participant to draw two lines, one showing the average strength of the attachment to the animal, the other indicating how strong the participant’s attachment is to their companion animal. The demographic variables that were examined in relation to pet attachment were type of animal owned as a child (Endenberg), reason(s) for owning a pet (Endenberg), type of pet(s) owned (Endenberg), age of owner (Poresky & Daniels), gender (Poresky & Daniels), area of residence (Poresky & Daniels), income (Poresky & Daniels), employment type (Poresky & Daniels), family size (Poresky & Daniels), marital status (Poresky & Daniels), educational attainment (Poresky & Daniels), ethnicity (Brown), number of pets (Brown). Since there was no overlap regarding demographic variables examined across the three studies, each relation will be independently reported.

Endenberg (1995) found that type of animal owned as a child (dog, cat, rabbit, rodent, fish, or birds) was usually significantly correlated with present animal type owned ($r = .23, p < .05$ for cats, $r = .15, p < .05$ for rodents, $r = .20, p < .05$ for fish, and $r = .23, p < .05$ for birds). The most important reason for owning a pet was for “companionship” (79%), and the strongest attachments (as measured using direct magnitude scaling) were to dogs and cats ($M = 2.3, SD = 1.68$ and $M = 2.0, SD = 1.17$) on an eight-point scale. Poresky and Daniels (1998) found that women had significantly higher CABS total scores than men ($M = 3.68$ to $M = 3.53; F(1,179) = 6.1, p < .05$ – standard deviations were not reported in the study), single adults had significantly higher CABS scores than those in larger families (reported in comparison to families of six people) ($M = 3.97$ to $M = 3.02; F(5,764) = 11.48, p < .001$),

and rural adults had significantly lower CABS scores than urban adults ($M = 3.45$ to $M = 3.74$; $F(4,777) = 5.05$, $p < .001$) (the CABS is scored by averaging the participant's responses to the eight questions on a five-point Likert scale – 1=never, 5=always).

Brown (2002) focused exclusively on the role of ethnicity on pet attachment and she found that White Vet Med students (57) had a significantly higher mean PAQ total scores in comparison to Black students ($M = 17.0$ to $M = 14.01$, $p < .001$).

Overall, there are very few studies that have thoroughly examined the area of pet attachment with demographic variables. Primarily these studies have focused on children, and those that have looked into the adult-pet attachment relationship have been have not engaged in broad investigations. Also, these studies' demographic variables have not overlapped one another at all, and all three have sampled markedly different populations. Therefore, little is known about the generalizability of the findings.

Relations between Human Attachment, Anxiety, and Depression

The relation of attachment style, anxiety, and depression is fundamental to the development of Bowlby's (1969) theory of attachment. He noted that infants who received differing attention from and connection to their mothers would develop distinct interpersonal patterns and develop varying moods. Overall, Bowlby theorized and found support for the notion that insecure attachments to caregivers would lead to more anxious and depressive symptoms in comparison to those who had secure attachments to their caregivers (Ainsworth, 1979). In fact, two volumes in Bowlby's (1980) classic text "Attachment and Loss" are titled "Separation: Anxiety and anger" and "Loss: Sadness and depression." Therefore, depression and anxiety are strongly affiliated with insecure attachment in theory.

This section will investigate the empirical findings regarding the attachment, anxiety, and depression relation. The author conducted an exhaustive search of the literature that explored adult attachment, anxiety, and depression. There were 34 studies found that measured both depression and adult attachment, and 46 studies that measured anxiety and adult attachment. The author, though, was able to locate only eleven studies that measured adult attachment, anxiety, and depression (DeFronzo, Panzarella, & Butler, 2001; Evans & Wortheim, 1998; Gittleman, Klein, Smider, & Essex, 1998; Lopez & Gormley, 2002; Lopez, Mauricio, Gormley, Simko, & Berger, 2001; Mikulincer, Florian, & Weller, 1993; Strodl & Noller, 2003; Priel & Shamia, 1995; Van Buren & Cooley, 2002; Wei, Heppner, & Mallinckrodt, 2003). Given the lack of investigations that concurrently measured adult attachment, anxiety, and depression, there is a need for more empirical evidence regarding the relation of these variables.

The construct of attachment was measured by the ECRS in two studies (Lopez & Gormley, 2002; Lopez, et al., 2001), therefore, attachment is expressed as “avoidant” and “anxious” by these three studies. Four studies (Gittleman, et al., 1998; Mikulincer et al., 1993; Priel & Shama, 1995; Van Buren & Cooley, 2002) measured attachment via a self-report instrument, called the BHAS, developed by Bartholomew and Horowitz (1991). This measure defined attachment through four factors: “dismissive,” “secure,” “fearful,” and “preoccupied.” Two studies measured adult attachment through the Adult Attachment Scale (AAS; Simpson, 1990) (Evans & Wortheim, 1998; Wei et al., 2003). The three dimensions in the AAS are termed “close,” “depend,” and anxiety.” One study measured adult attachment through the Attachment Styles Questionnaire (ASQ; Feeney, Noller, & Hanrahan, 1994). The

ASQ has three factors: “security,” “avoidance,” and “anxiety.” Thus, adult attachment was measured by both three- and four-factor models in the ten studies

Depression was measured in a variety of ways across the eleven studies. Depression was measured by Gittleman et al. (1998) and Lopez and Gormley (2002) by the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item self-report measure, which asks respondents to indicate their frequency of experiencing depressive symptoms using a four-point Likert-type scale (“rarely” to “most or all of the time”). Lopez et al. (2001) and Mikulincer et al. (1993) used the Depression Adjective Checklist (DACL; Lubin, 1965), which measures state depression. Respondents are presented with 34 items that contain positive and negative adjectives. They are to check all of the adjectives that describe how they feel. Four studies (Evans & Wortheim, 1998; Priel & Shamai, 1995; Strodl & Noller, 2003; Wei et al., 2003) used the Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988). There are many versions of the BDI, but all four studies used a version that contained 21 items and asked participants to indicate severity of symptoms by a four-point Likert-type scale (zero through three). Scores are then totaled and the total scores positively correlate with depression intensity.

Anxiety was measured by the State-Trait Anxiety Inventory (STAI; Spielberger, 1983) in five studies (Evans & Wortheim, 1998; Gittleman et al., 1998, Lopez et al., 2001; Priel & Shamai, 1995; Wei et al, 2003). The STAI is made up of 20 items that measure state anxiety. Clients respond to items on a four-point Likert-type scale (“not at all” to “very much so”) in terms of how closely it related to their current emotional state.

The studies that used the ECRS as the attachment measure (Lopez et al., 2001; Lopez & Gormley, 2002) found that anxious and avoidant attachment orientations were usually

significantly correlated with anxiety and depression. Lopez et al. found that depression and anxiety collectively accounted for nearly 23% of the variance in composite distress scores (DACL and STAI) (adjusted $R^2 = .266, p < .001$). Lopez et al. (2001) also reported individual correlations and found that attachment anxiety significantly positively correlated with depression ($r = .38, p < .01$) and anxiety ($r = .47, p < .01$). Attachment avoidance did not significantly correlate with depression, but did significantly positively correlate with anxiety ($r = .30, p < .05$). Lopez and Gormley (2002) found that people in the secure attachment group had significantly less depression (measured by the CES-D) than those in the anxious and avoidant attachment groups ($t(203) = -5.24, p < .001$).

The four studies that used the BHAS as an adult attachment measure (Gittleman, et al., 1998; Mikulincer et al., 1993; Priel & Shama, 1995; Van Buren & Cooley, 2002) all found that depression and anxiety changed significantly according to people's attachment styles. Gittleman et al. (1998) reported there were significant overall differences between attachment styles and depression and anxiety for women ($F(9,1232) = 10.41, p < .001$) and for men ($F(9,977) = 3.47, p < .001$). Univariate ANOVAS were also significant for depression and anxiety for women and men (Gittleman et al. only reported that all p-values were less than .001). Mikulincer et al. found significant main effects for attachment style and depression ($F(2, 120) = 6.38, p < .01$) and anxiety ($F(2,120) = 9.04, p < .01$). Duncan post hoc tests ($\alpha = .05$) showed that people with ambivalent attachment styles had significantly more depression and anxiety than people with secure and avoidant styles. Priel and Shamai found that people who were securely attached were less anxious and depressed in comparison to people who were avoidantly and ambivalently attached. Similarly, Van Buren and Cooley found that people with negative attachment styles (preoccupied and fearful) reported more

anxiety and depression in comparison to people with more positive attachment styles (dismissing and secure).

These studies all show that, when attachment is measured according to Bartholomew's (1990) model (Figure 1), there is consensus that anxiety and depression increase significantly in people with negative, avoidant, and ambivalent attachment styles.

The two studies that measured adult attachment with the AAS (Evans & Wortheim, 1998; Wei et al., 2003) found significant positive correlations between attachment styles, anxiety, and depression. Wei et al. found significant positive correlations between depression and attachment anxiety ($r = .29, p < .001$) and depression and attachment avoidance ($r = .32, p < .001$). Wei et al. also found significant positive correlations between anxiety and attachment anxiety ($r = .37, p < .001$) and anxiety and attachment avoidance ($r = .39, p < .001$).

Strodl and Noller (2003) explored the impact of attachment styles as measured by the ASQ on depression and the anxiety component of agoraphobia. They found that the insecure attachment dimensions were significantly associated with depression, and that attachment anxiety was also significantly associated with agoraphobia.

The data from these studies support that people with insecure attachment styles tend to experience the greatest amount of anxiety and depression in comparison to those who are securely attached to others. One shortcoming in this area is that few studies have used comprehensive measurement approach to understanding the psychological effects of attachment styles. This is illustrated as the author was able to find ten studies that measured anxiety, depression, and attachment style simultaneously, while 80 studies investigated attachment styles and anxiety or depression.

Relations between Human Attachment and Pet Attachment

The direct relation between human attachment and pet attachment has rarely been investigated. In fact, the author was not able to locate any studies that directly looked into the relations between these two constructs. There were, though, two articles (Blankman, 2002; Stambach & Turner, 1999) that investigated pet attachment and social support, which Bowlby (1980) said was the behavioral manifestations of one's attachment patterns (i.e., actual social connectedness reflects attachment style). These studies and their findings will be reviewed.

Peabody (1997) addressed the pet attachment-human attachment connection as she examined pets' impact on mood and affiliation. Peabody measured attachment via Bartholomew's four styles of adult attachment paradigm, while pet attachment was measured with the CABS total score. Peabody found that people in the "fearful" category of adult attachment had the highest attachment to pets.

The results from the social support literature are similar to Peabody's (1997) findings as both studies found that there were negative correlations between pet attachment and significant others (close human relationships) ($r = -.26, p < .001$) (Stambach & Turner, 1999), and pet attachment and extensiveness of social network ($r = -.22, p < .001$). These two findings offer indirect support for Peabody's results and show that there is potentially some connection between pet attachment and amount of human connection.

The sparse data regarding the relation between pet attachment and human attachment is far from conclusive. There is some preliminary evidence that pet attachment and the degree human connection negatively correlate, but more data is needed to better understand the direct relation between pet and human attachment patterns.

Relations between Pet Attachment and Distress

The relation between pet attachment and distress in adults is a domain that is garnering a great deal of attention in the veterinary/social sciences literature. Popular veterinary magazines contain articles titled “Pets Keep People Happy,” and report evidence (although it is not scientifically reported) that pets provide emotional support, increase chances of living longer after and surviving heart attacks, lower blood pressure, decrease stress, improve outlooks, ease grief, and help foster healthier marriages (Becker, 1999). The seemingly powerful positive impact of pets on humans will be examined in this section through six studies that have looked at pet attachment, depression and/or anxiety.

Garrity et al. (1989) were the first to empirically investigate pet attachment and mental health. Through a phone survey of 1,243 people, they asked pet owners a variety of questions including questions about pet attachment and depression. Garrity et al. found that there was a significant negative correlation between pet attachment and depression ($r = -.19$, $p < .05$). This provided preliminary evidence that pet attachment may attenuate psychological problems.

Stallones (1994) investigated the influence of pet attachment on depression during human bereavement process (loss of a pet). She found through a multiple regression analysis that pet attachment (measured by the CABS) was not significantly associated with higher depression (measured by the CES-D). Thus, through these data, Stallones found that pet attachment did not increase depression while parents were grieving the loss of another pet.

In 1991, Stallones et al. explored pet ownership and health in US adults. They found that there was a significant positive correlation between pet attachment (measured by the CABS) and depression (measured by the CES-D) ($r = .15$, $p < .05$). They did state that this

relation was small, but important, since it went against their belief that there would be a negative correlation between the two variables.

Budge et al. (1998) examined depression (measured by the BDI) and pet attachment (measured by the CABS), and found that there was no significant correlation between the two constructs. This neither provides evidence for nor against pet attachment helping owners psychologically. Instead, the Budge et al. data show that pet attachment does not significantly affect on depression.

Only one study was located that measured anxiety (measured by the STAI) in relation to pet attachment (measured by the Companion-Animal Attachment Scale) (Watson & Weinstein, 1993). This study measured 42 women pet owners' and depression (measured by the BDI) and anxiety as they related to attachment to pet(s). They reported no significant correlations between pet attachment and anxiety.

Adkins and Rajecki (1999) looked into the ways that pets can help alleviate depression (measured by the BDI) and anxiety (measured by the STAI) in pet owners who had experienced a recent death of a child (human) ($N=64$). They found that people who developed higher attachments to their pets found pets significantly more helpful ($r = .47, p < .01$), and that pet attachment was significantly associated with the "distraction" ($r = .69, p < .01$) and "comfort" ($r = .73, p < .01$) coping strategies. Therefore, Adkins and Rajecki built on Stallones' (1994) as they also looked into pet attachment as it affects grief.

Overall, there is mixed data surrounding pets' impact on owners' psychological health. Garrity et al.'s (1989) study is the only study that found that pet attachment negatively relates to depression. Adkins and Rajecki (1999) found that pet attachment helps coping with grief, but they did not report on specific anxiety and depression reduction. Three

studies (Budge et al., 1998, Stallones, 1994, Watson & Weinstein, 1993) reported no significant findings, and one study reported that pet attachment increased depression (Stallones et al., 1991). Because of these inconclusive findings it is not possible at this point to make any conclusions regarding pet attachment in relation to anxiety and depression.

Summary

The review of the literature described the theoretical backgrounds of human attachment, pet attachment, and anxiety and depression. Next, the measurement of each of the constructs was discussed. There was a brief analysis of demographic variables and pet attachment, and finally the findings of the outcome studies for each relation were reviewed. There were four major holes that were discovered in the review of the literature. First, there has been no comprehensive investigation of pet attachment and demographic variables. Specifically, no study had investigated large animal attachment, most had used children as the participants, and none reach consensus in their findings. Second, the relation of pet attachment to human attachment was unknown. There had been no direct explorations into this possible association, and empirical support for any interrelations between the constructs is absent. Third, I found that investigations into human attachment and distress had routinely focused on either depression or anxiety, and had not simultaneously measured both constructs. Fourth, empirical studies were not conclusive regarding pet attachment as it relates to human anxiety and depression.

The present study had multiple purposes as it sought to examine pet attachment and demographic variables, explore the pet attachment-human attachment connection, investigate human attachment as it related to anxiety and depression, and to investigate the relation of pet attachment to anxiety and depression.

Hypotheses

- 1) Females will be significantly more attached to pets than males.
- 2) Single adults and separated/divorced adults will be significantly more attached to pets than married adults.
- 3) Caucasian-Americans will be significantly more attached to pets than African-Americans.
- 4) Attachment anxiety and avoidance will be significantly positively correlated with depression and anxiety.

Rationale for Hypotheses

The four hypotheses are based upon previous research that has demonstrated the proposed relations. Specifically, females have been found to be significantly more attached to pets than males (Poresky and Daniels, 1998). Single adults have been found to be significantly more attached than married persons (Poresky and Daniels, 1998). Caucasian-Americans were found to be significantly more attached to pets than African-Americans (Brown, 2002). Finally, attachment anxiety and avoidance have shown significant positive correlations with depression and anxiety (e.g., Lopez et al., 2001; Lopez and Gormley, 2002).

Exploratory Hypotheses

- 5) Pet attachment will be significantly negatively correlated with anxiety.
- 6) Pet attachment will be significantly negatively correlated with depression.
- 7) Pet attachment will significantly change the relation of anxious attachment and depression with increased pet attachment leading to decreased depression.

- 8) Pet attachment will significantly change the relation of anxious attachment and anxiety with increased pet attachment leading to decreased anxiety

Rationale for Exploratory Hypotheses

The four exploratory hypotheses are based on inconsistent empirical results. For Exploratory Hypotheses 5 and 6, there is some evidence suggesting that pet attachment does negatively relate to depression (Garrity et al., 1989). There is no present evidence suggesting that pet attachment moderates the relation between human attachment and anxiety or depression (Exploratory Hypothesis 7 and 8). This relation will be examined only if significant correlations are found between: a) pet attachment and human attachment, b) pet attachment and anxiety and/or depression, and c) human attachment and anxiety and/or depression.

CHAPTER 3: METHODS

The following section describes the participants who were used in the study. Then there is a brief review of the measures that were used for human attachment, pet attachment, distress, and for demographic variables. Following a description of the measures, there is a description of the procedures that were used.

Participants

A total of 305 participants took part in the present study. Only people who were owners of dogs, cats, and horses were eligible, based upon these animals' being the most likely large and small animal pets (Poresky & Daniels, 1998). Prior to the study a power analysis was used to determine that 300 participants were needed to reach a power = .80 as recommended by Cohen (1988). All of the participants were clients of Iowa State University's (ISU) Veterinary Medicine Hospital (both the small and large animal hospitals), clients of veterinary medical facilities in the Des Moines, Iowa area, and a horse barn. Clients (human clients) present with their pets at veterinary medical facilities for a variety of issues ranging from vaccinations to emergency services. Thus, it was expected that there will be a wide range of client presenting issues in the present study. To qualify for this study the participants had to be at least 18 years old and they had to be present pet owners.

The average age of the participants was 42.6 years and there was the ages ranged from 18 to 81 years. The participants totaled 305 and there were 187 female and 118 male participants. Cat owners totaled 106, dog owners 99, and horse owners also totaled 100. The ethnicity of the participants was primarily Caucasian-American ($n = 292$), while nine were African-American, two Hispanic-American, and one Asian-American. The

participants also were from six sites ISU Veterinary Medicine Hospital ($n = 57$), the Valley Park Stables ($n = 129$), Animal Hospital West ($n = 42$), Jordan Creek Veterinary ($n = 16$), Bryan Animal Hospital ($n = 53$), and Moffett Park Stables ($n = 8$). Additionally, the marital status of the participants was single ($n = 136$), married ($n = 121$), and divorced/separated ($n = 48$) (see Tables 1 and 2 for all of the demographic information).

Measures

Human Attachment. Attachment orientation will be measured with the *Experiences in Close Relationships Scale* (ECRS; Brennan, Clark, & Shaver, 1998). The ECRS is a 36-item self-report adult attachment measure that asks individuals to respond to a seven-point Likert-type scale that ranges from 1= “disagree strongly” to 7= “agree strongly.” (See Appendix I). Participants rate how well the statement describes their typical feelings in close relationships. The ECRS was developed from the 14 available attachment measures and data was collected from over 1,000 participants. The results of a confirmatory factor analysis revealed two orthogonal continuous attachment dimensions: anxiety and avoidance. The attachment anxiety subscale (18 items) taps into fears of rejection and preoccupation with abandonment. The attachment avoidance subscale (18 items) assesses fear of intimacy and discomfort with getting close to others. Participants who take the ECRS produce scores on each dimension and scores can range from 126 (highest) to 18 (lowest). Higher scores on each of the subscales indicate higher attachment anxiety and attachment avoidance respectively. Brennan et al. reported alpha coefficients of .91 and .94 for the anxiety and avoidance subscales respectively. The convergent validity data are strong for both of its factors with a mean correlation of .72 with other anxiety scales and .77 with other avoidance scales. The two-factors appear to be non-redundant as they correlate nominally ($r = .11$) (Brennan et al.). In

the present study the ECRS demonstrated an internal consistency of .89 in the anxiety scale and .87 in the avoidance scale.

Pet Attachment. Attachment to pets will be measured with the *Companion Animal Bonding Scale* (CABS; Poresky et al., 1987). The CABS is a eight-item measure that uses a five-point Likert-type scale for its responses: from to 1 = “never” to 5 = “always”. Higher scores represent higher levels of pet attachment (See Appendix I). The CABS assesses people’s attachment to their pets across three factors: emotional bond, physical proximity, and caretaking and also produces a composite attachment score that is computed by the addition of the three factors. The composite attachment score will be used in this study. The presence of these three oblique factors was shown through an exploratory factor analysis and a confirmatory factor analysis by Triebenbacher (1999). An alpha coefficient of .80 was gained by Triebenbacher for the composite CABS score (1999). Convergent validity was demonstrated by comparing the CABS to the Pet Attitude Scale (PAS; Templer et al., 1981). The CABS correlated significantly with the PAS ($r = .51; p < .001$). No discriminant validity was available. In the present study, the CABS demonstrated an internal consistency of .81.

Anxiety and Depression. The construct of distress will be measured by the *Depression, Anxiety, and Stress Scales* (DASS; Lovibond & Lovibond, 1995). The DASS measures the three negative affective states of depression, anxiety, and stress. In this study, only the depression and anxiety scales will be used (See Appendix I). The DASS is a 42-item instrument that is composed of three scales with 14 items on each scale. The 14 items represent common symptoms of anxiety, depression, and stress, and the DASS is primarily used as a state measure. The DASS is scored on a four-point Likert-type scale that ranges from 0 = “did not apply to me at all” to 3 = “applied to me very much, most of the time,”

with summed scores being compared to norms established by multiple clinical samples. Scores range from 0-3 for each of the 42 items and total scores for each scale can range from 0-42. Scores in the depression scale are categorized in the following manner: “normal” = 0-9, “mild” = 10-13, “moderate” = 14-20, “severe” = 21-27, and “extremely severe” = 28+ (Lovibond & Lovibond, 1995). Scores in the anxiety scale are categorized as “normal” = 0-7, “mild” = 8-9, “moderate” = 10-14, “severe” = 15-19, “extremely severe” = 20+ (Lovibond & Lovibond, 1995).

The internal consistency of the DASS is .96 (depression), .89 (anxiety), and .93 (stress), and the test-retest correlations for a two-week period are .71 (depression), .79 (anxiety), and .81 (stress) (Lovibond & Lovibond, 1995). Lovibond and Lovibond (1995) found that the DASS depression scale correlated with the Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) ($r = .74$) and the DASS anxiety scale correlated with the Beck Anxiety Inventory (Beck & Steer, 1990) at .81. Both of these correlations are high and demonstrate the convergent validity of the DASS. Discriminant validity was demonstrated through the DASS anxiety and depression scales' correlations with the BDI ($r = .54$) and BAI ($r = .58$) respectively. Also, the DASS scales of depression and anxiety correlated at .54 with each other. In the present study the DASS depression scale had an internal consistency of .82, while the DASS anxiety scale had an internal consistency of .77. The depression and anxiety scales correlated at .59.

Demographic Information. A demographic questionnaire asked participants to report the following information: participant's age, participant's sex, participant's income, participant's ethnicity, presenting veterinary medical site, pet's role, where pet resides, amount paid for pet, participant's marital status, number of pets presently owned, and

whether the participant has ever had the same medical issue as the pet at the same time (See Appendix I).

Procedures

Initially this study was submitted to the Institutional Review Board for approval. Each participant received an envelope containing an instruction sheet, informed consent information/form (See Appendix I.) (Everything used in study is included in Appendix I, and a six-page questionnaire containing demographic questions, the ECRS, the CABS, and the DASS). The participants were approached by the author and were asked if they were willing to complete a questionnaire that asks for responses regarding pet attachment, mood, and attachment to other people. If participants agreed to take part in the study they were given an envelope containing the informed consent/information form and the questionnaire, along with a pencil to be used to endorse responses. Participants completed the packets in one of the waiting rooms of the Veterinary Hospital or applicable Veterinary Medical facility. Upon completion of the questionnaires, which took participants approximately 20-30 minutes, the folders were turned in to a receptionist at the respective facility. The participants were clients of the ISU Veterinary Medical Hospital, veterinary medical facilities in the Des Moines area, or at a Des Moines horse barn.

Hypotheses

- 1) Females will be significantly more attached to pets as measured by the CABS with females' mean scores being significantly higher than the males' CABS mean scores.
- 2) Single adults and separated/divorced adults will be significantly more attached to pets as measured by CABS with the single adults' and separated/divorced adults' CABS mean scores being significantly higher than the married adults' CABS mean score.
- 3) Caucasian-Americans will be significantly more attached to pets as measured by the CABS with Caucasian-American's mean scores being significantly higher than African-American's CABS mean scores..
- 4) Attachment anxiety and avoidance as measured by the ECRS will be significantly positively correlated with depression and anxiety as measured by the DASS.

Hypotheses Analyses

- 1) This will be measured by an independent t-test, with sex being the independent variable and pet attachment (CABS) mean scores being the dependent variable.
- 2) This will be measured by an independent sample one-way Analysis of Variance (ANOVA), with marital status being the independent variable and pet attachment (CABS) mean scores being the dependent variable.
- 3) This will be measured by an independent t-test, with ethnicity being the independent variable and pet attachment (CABS) mean scores being the dependent variable
- 4) This will be measured by a Pearson product-moment correlation.

Exploratory Hypotheses

- 5) Pet attachment scores as measured by the CABS will be significantly negatively correlated with depression scores as measured by the DASS.

- 6) Pet attachment scores as measured by the CABS will be significantly negatively correlated with anxiety scores as measured by the DASS.
- 7) The variance in the DASS depression score will be significantly predicted by the interaction of the ECRS attachment anxiety score and the CABS pet attachment score.
- 8) The variance in the DASS anxiety score will be significantly predicted by the interaction of the ECRS attachment anxiety score and the CABS pet attachment score.

Exploratory Analyses

- 5) This will be measured by Pearson product-moment correlation.
- 6) This will be measured by a Pearson product-moment correlation.
- 7) This hypothesis will be tested with a hierarchical multiple regression. The criterion variable is the DASS depression score. The predictor variables are entered in the following order: a) the ECRS attachment anxiety score, b) the CABS pet attachment score, and c) the interaction term of the ECRS attachment anxiety score * the CABS pet attachment score. If the interaction term is significant, then the CABS score will be a moderator.
- 8) This hypothesis will be tested with a hierarchical multiple regression. The criterion variable is the DASS anxiety score. The predictor variables are entered in the following order: a) the ECRS attachment anxiety score, b) the CABS pet attachment score, and c) the interaction term of the ECRS attachment anxiety score * the CABS pet attachment score. If the interaction term is significant, then the CABS score will be a moderator.

CHAPTER 4: RESULTS

The goal of this study was to examine various relations between demographic characteristics, pet attachment, human attachment, and mood (anxiety and depression). The majority of research involving the pet attachment construct has focused on pet attachment in relation to demographic variables (e.g., race, sex, and marital status). This study looked to further investigate pet attachment in relation to demographic characteristics, while also exploring pet attachment in relation to the constructs of human attachment and mood. The results of this study will be reported in the following order: the descriptive results (i.e., means, standard deviations, frequencies, percentages, etc.) of the demographic variables and measures, the results regarding the both the hypotheses and exploratory hypotheses, and other results of interest in the data.

Descriptive Results

Normative Comparisons. The participants in this study completed one pet attachment measure (CABS), one human attachment styles measure (ECRS), and one anxiety/depression measure (DASS). In this section the scores of these participants on the three measures were compared to the scores from the norm groups for each measure (Table 3).

The measures and subscales had the following means and standard deviations: ECRS avoidance scale ($M = 51.73$, $SD = 16.17$); ECRS anxiety subscale ($M = 66.68$, $SD = 20.05$); CABS ($M = 18.65$, $SD = 6.45$); DASS depression scale ($M = 12.09$, $SD = 8.64$); DASS anxiety scale ($M = 11.82$, $SD = 7.15$). The current sample of 305 had mean scores in attachment anxiety and avoidance (ECRS) that are not significantly different from the mean scores of the ECRS's normative sample of 1,086 undergraduate college students (682 females and 403 males) from the University of Texas (Brennan, Clark, and Shaver, 1998).

The mean scores from this study in depression and anxiety (DASS) were significantly different from the DASS depression ($t(303) = 13.60, p < .01$) and anxiety ($t(303) = 22.98, p < .01$) scores from Lovibond and Lovibond's (1995) depression and anxiety scores from a "normal" population of 717 undergraduate students (486 females and 231 males) from the University of South Wales, Australia. The scores from this study in DASS depression and anxiety were not significantly different from DASS depression and anxiety scores of a clinical adult sample (mean age 36.10 years) of 437 patients of an Australian mental health clinic who presented with a variety of anxiety and mood disorders (Brown, Chorpita, Korotitsch, and Barlow, 1997).

The CABS pet attachment scores for the participants in this study were not significantly different from the CABS pet attachment scores from the CABS norm group of 1,359 adults (mean age 44.68, $SD = 16.59$) from Kansas who were labeled as pet owners by veterinary clinics and who consented to a phone interview regarding their attachment to pets. There norm group was comprised of 51% females and 49% males (Poresky, Hendrix, Mosier, and Samuelson, 1987).

In short, this sample was made up of 305 participants (187 females and 118 males) with a mean age of 42.59 ($SD = 15.16$). All of the participants in this study were also present pet owners. In comparison to the norm samples this study differed from both the ECRS and DASS "normal" group in that both of those norm groups were undergraduate college students. The norm samples from the DASS "clinical" group and the CABS were adult samples.

Sex Differences. Tables 4 and 5 present the frequencies and the means of the dependent variables by sex. There were significant sex differences for CABS pet attachment

mean scores in this study ($t(303) = 2.68, p < .01$) and these sex differences match findings from other studies where females have demonstrated higher pet attachment as measured by the CABS in comparison to males (Poresky et al., 1987; Poresky and Daniels, 1998) (these results will be described in more detail concerning hypothesis 1). There were no significant sex differences for DASS depression and anxiety mean scores, and ECRS attachment anxiety and attachment avoidance means scores in the present study. In two studies that used the DASS as a depression and anxiety measure (Brown et al., 1997; Lovibond and Lovibond, 1995), sex differences also were not significantly different. Regarding sex differences of attachment anxiety and avoidance as measured by the ECRS, Brennan et al. (1998) did not find significant sex differences between male and female scores. There were no significant sex differences for DASS depression and anxiety mean scores, and ECRS attachment anxiety and attachment avoidance means scores in the present study.

Pet Type Differences. Tables 6 and 7 present the frequencies and the means of the dependent variables by pet type (dog, cat, and horse). As shown by Table 6 there were significant pet type differences for CABS pet attachment mean scores ($F(2,302) = 138.67, p < .01$). Using a post-hoc Bonferroni test, significant differences were found between horses and dogs ($p < .01$), between horses and cats ($p < .01$), and between dogs and cats ($p < .01$). Pet Attachment (CABS) mean scores were highest for horses, followed by cats, and the lowest mean scores were for dogs. There have been no studies to date that have reported pet attachment scores for dogs, cats, and horses, therefore, these results can not be compared to any other study.

Hypotheses

First Hypothesis. Females will be significantly more attached to pets as measured by the CABS than males. An independent samples t-test showed that the males and females in this study did differ significantly in their attachment to pets $t(303) = 2.68, p < .01$, with females' CABS mean score ($M = 19.35, SD = 6.21$) being significantly higher than males' CABS mean score ($M = 17.33, SD = 6.71$) as shown in Table 4.

Because of the significant differences by pet attachment, a second analysis was conducted to further explore sex differences. A 2 (Sex: Female/Male) X 3 (Pet Type: Dogs/Cats/Horses) ANOVA was conducted in which CABS was the dependent variable. Table 8 presents the degrees of freedom, Sums of Squares, F statistic, and p values. As shown in Table 8, the sex main effect has disappeared and there is no sex by pet type interaction. There is a main effect for pet type. Because there were three levels of the independent variable, post hoc follow-up tests were conducted. Because the error variances were not equal across the groups ($p < .01$), the post hoc comparisons reported include the Dunnett T3 and the Tukey, test statistics in Table 9. Table 10 presents the means for sex by pet type and overall by pet type and Table 9 presents the 95% confidence intervals and the test statistics for the post hoc comparisons. As seen by Tables 9 and 10, women and men are most attached to horses ($M = 24.59, SD = 4.54$), followed by cats ($M = 17.46, SD = 5.40$) and dogs ($M = 13.69, SD = 3.96$), and all mean differences are significant at $p < .01$.

Results from Hypothesis One. In the present study sex differences were originally found for pet attachment (CABS) mean scores with females being significantly more attached to pets than males, which support Hypothesis One. But, when both sex and pet type were analyzed regarding their effect on pet attachment (CABS) mean scores there was no

main effect for sex but was a main effect for pet type. In short, this hypothesis was not supported when also considering pet type.

Second Hypothesis. Single adults will be significantly more attached to pets as measured by the CABS than married adults and divorced/separated adults. A one-way analysis of variance (ANOVA) showed that there were no significant differences, $F(2,303) = 1.20, p < 3.03$, between CABS mean scores of the participants who are married, single, and divorced/separated.

Results from Hypothesis Two. Hypothesis Two was not supported as there were no significant pet attachment (CABS) mean score differences between participants' marital status.

Third Hypothesis. Caucasian-Americans will be significantly more attached to pets as measured by the CABS than African-Americans. The results available relating to this hypothesis were limited because of a restricted number of participants in ethnic groups other than Caucasian (of the 305 participants, 292 were Caucasian, nine were African-American, two were Hispanic-American, and one was Asian-American). An independent samples t-test, accounting for unequal cell sizes, yielded no significant differences between Caucasians and African-Americans for pet attachment. However, when the ethnic groups were collapsed into two groups, "Caucasian-American" ($n = 292$) and "Racial and Ethnic Minority American" ($n = 12$) there were significant pet attachment differences between groups, $t(302) = 2.37, p < .05$, with Racial and Ethnic Minority Americans ($M = 22.91, SD = 8.06$) scoring higher on pet attachment than Caucasian-Americans ($M = 18.40, SD = 6.36$) as shown by Table 11. This is contrary to the third hypothesis.

Because of the significant differences by pet attachment, a second analysis was conducted to further explore ethnicity. A 2 (Ethnicity: Caucasian-American/Racial and Ethnic Minority American) X 3 (Pet Type: Dogs/Cats/Horses) ANOVA was conducted in which CABS was the dependent variable. Table 12 presents the degrees of freedom, Sums of Squares, F statistic, and p values. As shown in Table 12, the ethnicity main effect disappeared and there is no ethnicity by pet type interaction. Given a sample size of 12 Racial and Ethnic Minority participants, there was insufficient power to adequately address the differences within pet type. As shown previously, there was a main effect for pet type. As shown by Tables 9 and 10, women and men are most attached to horses ($M = 24.59$, $SD = 4.54$), followed by cats ($M = 17.46$, $SD = 5.40$) and dogs ($M = 13.69$, $SD = 3.96$), and all mean differences are significant at $p < .01$.

Results from Hypothesis Three. This hypothesis was not supported as Caucasian-Americans and African-Americans did not have significantly different pet attachment (CABS) mean scores. But, when ethnicity was collapsed into two categories, “Caucasian-American” and “Racial and Ethnic Minority American,” Racial and Ethnic Minority Americans had significantly higher pet attachment (CABS) mean scores than Caucasian-Americans. But, when both ethnicity and pet type were analyzed regarding their effect on pet attachment (CABS) mean scores there was no main effect for ethnicity but there was a main effect for pet type. Thus, significant differences based upon ethnicity were not present when also considering pet type. Insufficient sample size of racial and ethnic minority participants was noted.

Fourth Hypothesis. Attachment anxiety and avoidance as measured by the ECRS will be significantly positively correlated with depression and anxiety as measured by the DASS.

Using Pearson product-moment correlations, the participants' ECRS scores and DASS scores were positive and significantly related in three of the relations as seen in Table 13.

Attachment anxiety was significantly positively correlated with depression, $r(305) = .45, p < .01$. Attachment anxiety was significantly positively correlated with anxiety, $r(305) = .37, p < .01$. Attachment avoidance was significantly positively correlated with depression, $r(305) = .23, p < .01$. Attachment avoidance was not significantly correlated with anxiety, $r(305) = .05, p < .39$.

Exploratory Hypotheses

Fifth Hypothesis. Pet attachment as measured by the CABS will significantly negatively correlate with anxiety as measured by the DASS. Using the Pearson product-moment correlation, the participants' scores on the CABS and the DASS Anxiety scale did not correlate significantly as shown in Table 13. Additionally, when pet attachment (CABS) scores and anxiety (DASS) scores were examined for each pet type (dog, cat, and horse) there were no significant negative correlations as seen in Tables 14, 15 and 16.

Results from Hypothesis Five. The scores from the participants in the present study did not support this hypothesis as there were not significant negative correlations between CABS scores and anxiety scores.

Sixth Hypothesis. Pet attachment as measured by the CABS will significantly negatively correlate with depression as measured by the DASS. Using the Pearson product-moment correlation, the participants' scores on the CABS and DASS Depression scale did not correlate significantly as shown in Table 13. Additionally, when pet attachment (CABS) mean scores and depression (DASS) mean scores were examined for each pet type (dog, cat, and horse) there were no significant negative correlations as seen in Tables 14, 15, 16.

Results from Hypothesis Six. The scores from the participants in the present study did not support this hypothesis as there were not significant negative correlations between CABS scores and depression scores.

Seventh Hypothesis and Eighth Hypothesis. *Pet attachment as measured by the CABS will significantly change the relation of attachment anxiety as measured by the ECRS to both anxiety and depression as measured by the DASS, with increased pet attachment leading to decreased anxiety and depression.* The hypothesized relations were not examined in this study because there were no significant correlations found between the participants' pet attachment mean scores as measured by the CABS and depression and anxiety mean scores as measured by the DASS. Additionally, a Pearson product-moment correlation was used and showed that pet attachment as measured by the CABS did not correlate significantly with either attachment anxiety or attachment avoidance as measured by the ECRS as shown by Table 13.

The moderating characteristics of pet attachment were also examined using a multiple regression analysis. Multiple regressions of pet attachment and human attachment styles (attachment anxiety and avoidance) on depression and anxiety showed that there were no significant relations for pet attachment. Thus, pet attachment did not change the relation between human attachment (anxiety and avoidance) and mood (depression and anxiety).

Results from Hypotheses Seven and Eight. These hypotheses were not supported in this study.

Additional Analyses Concerning Pet Attachment

Additional significant pet attachment (CABS) mean scores effects were found for the following demographic variables: income ($F(9,295) = 3.43, p < .01$); amount paid for pet

($F(8,295) = 7.31, p < .01$); role of pet ($F(2,301) = 10.13, p < .01$); and where pet is housed ($F(3,301) = 47.63, p < .01$) as shown by Table 17.

Income consisted of ten categories (from less than \$20,000 through greater than \$100,000 at \$10,000 intervals). Regarding pet attachment (CABS) mean scores there was a significant effect found for income, $F(9,295) = 3.43, p < .01$. Using the Bonferroni post-hoc test, significant differences were found between people who earned less than \$20,000 and those who earned more than \$100,000 ($p < .03$), with people who earned more than \$100,000 ($M = 18.57, SD = 6.47$) scoring higher than those earning less than \$20,000 ($M = 15.61, SD = 4.97$). Additional significant differences were found between those who earned \$20,000-\$30,000 ($p < .03$) and those who earned \$90,000-\$100,000 ($p < .01$), and between those who earned \$20,000-\$30,000 and those who earned more than \$100,000 ($p < .01$). Those who earned \$90,000-\$100,000 ($M = 20.82, SD = 6.27$) scored higher than those who earned \$20,000-\$30,000 ($M = 15.62, SD = 6.11$), and those who earned more than \$100,000 ($M = 18.57, SD = 6.47$) also scored higher than those who earned \$20,000-\$30,000 ($M = 15.62, SD = 6.11$).

Because of the significant differences for pet type by pet attachment, a second analysis was conducted to further explore income. A 3 (Pet Type: Dog/Cat/Horse) X 10 (Income: < \$20,000 through > \$100,000 at \$10,000 intervals) ANOVA was conducted in which CABS was the dependent variable. Table 18 presents the degrees of freedom, Sums of Squares, F statistic, and p values. As shown in Table 18, the income main effect disappeared and there was no income by pet type interaction. There was a main effect for pet type, $F(2,276) = 103.02, p < .01$. The post-hoc comparisons for pet type have been previously explained in text and are presented in Tables 9 and 10.

The variable “amount paid for pet” consisted of nine categories (from “\$0-\$100” through “greater than \$20,000”). The means for pet attachment by amount paid is shown in Table 2. There was a significant effect for pet attachment found for “amount paid for pet,” $F(8,295) = 7.31, p < .01$. Employing the Bonferroni post-hoc test, significant differences were found between amounts paid \$0-\$100 ($M = 16.80, SD = 5.59$) and \$1,000-\$2,000 ($M = 21.45, SD = 6.08$) ($p < .01$), \$2,000-\$5,000 ($M = 24.84, SD = 4.94$) ($p < .01$), \$10,000-\$20,000 ($M = 23.70, SD = 3.52$) ($p < .02$), and over \$20,000 ($M = 27.14, SD = 6.67$) ($p < .01$). Participants who reported paying amounts \$0-\$100 ($M = 16.80, SD = 5.59$) had lower pet attachment than those who reported paying \$1,000-\$2,000 ($M = 21.45, SD = 6.08$), \$2,000-\$5,000 ($M = 24.84, SD = 4.94$), \$10,000-\$20,000 ($M = 23.70, SD = 3.52$), and over \$20,000 ($M = 27.14, SD = 6.67$). Significant differences were found between amounts paid \$100-\$250 and \$2,000-\$5,000 ($p < .01$), and over \$20,000 ($p < .01$), with those who reported paying \$100-\$250 ($M = 17.57, SD = 6.16$) scoring lower than those who reported paying \$2,000-\$5,000 ($M = 24.84, SD = 4.94$) and over \$20,000 ($M = 27.14, SD = 6.67$). Significant differences were also found between \$250-\$500 and \$2,000-\$5,000 ($p < .01$), and over \$20,000 ($p < .01$), with those who reported paying \$250-\$500 ($M = 17.13, SD = 6.36$) scoring lower than those who reported paying over \$20,000 ($M = 27.14, SD = 6.67$). There were no significant differences between any other combinations of “amount paid for pet.

Again, because of the significant differences for pet type by pet attachment, a second analysis was conducted to further explore “amount paid for pet.” A 3 (Pet Type: Dog/Cat/Horse) X 9 (Amount Paid) ANOVA was conducted in which CABS was the dependent variable. Table 19 presents the degrees of freedom, Sums of Squares, F statistic, and p values. As shown in Table 19, the “amount paid” effect disappeared and there is no

“amount paid” by pet type interaction. There was a main effect for pet type, $F(2,286) = 71.64, p < .01$ which has been previously described in text..

“Role of pet” was broken into three categories (companion, performance, and breed). Regarding pet attachment (CABS) mean scores there was a significant effect for role of pet, $F(2,301) = 10.13, p < .01$ as can be seen by Table 2. Employing the Bonferroni post-hoc test, significant differences were found between the pet roles of companion and performance ($p < .01$), with pet attachment being higher for pets who were performers ($M = 24.28, SD = 5.48$) than those who were companions ($M = 18.07, SD = 6.36$). There were no significant differences found between any other combinations of pet roles.

A second analysis was conducted to further explore role of pet by pet type. A 3 (Role: Companion/Performance/Breed) X 3 (Pet Type: Dogs/Cats/Horses) ANOVA was conducted in which CABS was the dependent variable. Table 20 presents the degrees of freedom, Sums of Squares, F statistic, and p values. As shown in Table 20, the pet’s role main effect disappeared and there is no pet’s role by pet type interaction. There was a main effect for pet type, $F(2,297) = 11.77, p < .01$.

The category “where pet is housed” consisted of three categories (house, barn, outdoors). There was a significant effect for pet attachment based on where the pet was housed,” $F(3,301) = 47.63, p < .01$ as shown by Table 2. Using a Bonferroni post-hoc test, there were significant differences found ($p < .01$) for every “where pet is housed” combination except between “kennel” and “house.” Participants were most attached to pets housed in “barns” ($M = 24.85, SD = 4.80$), followed by “outdoors” ($M = 21.21, SD = 5.83$), “house” ($M = 15.73, SD = 5.28$), and “kennel” ($M = 12.33, SD = 2.16$).

A second analysis was conducted to further explore “where pet is housed.” A 3 (Housed: House/Barn/Outdoors) X 3 (Pet Type: Dogs/Cats/Horses) ANOVA was conducted in which CABS was the dependent variable. Table 20 presents the degrees of freedom, Sums of Squares, F statistic, and p values. As shown in Table 21, the “where pet is housed” main effect disappeared and there is no “where pet is housed” by pet type interaction. There was a main effect for pet type, $F(2,298) = 25.86, p < .01$ which has been previously described.

Additional Analyses for Attachment Anxiety and Attachment Avoidance

Additional analyses were run to examine effects of this study’s participants’ demographic variables on attachment anxiety and attachment avoidance (ECRS) mean scores. For attachment anxiety mean scores there was only one significant effect, that of marital status of the participants ($F(2,302) = 3.51, p < .03$) (Table 22). Using a Bonferroni post-hoc test, significant differences were found between single and married participants ($p < .04$), with single participants reporting more attachment anxiety ($M = 69.18, SD = 21.34$) than married participants ($M = 62.96, SD = 17.43$). There were no significant differences found between any other combinations of marital status as shown by Table 2.

For attachment avoidance (ECRS) mean scores there was one significant effect, namely the site where the questionnaire was taken (Valley Park, ISU Vet Med, Bryan Animal Hospital, Animal Hospital West, Jordan Creek Veterinary, and Moffett Park) by the participant, $F(5,299) = 2.28, p < .05$, as seen in Table 22 or 23. Employing the Bonferroni post-hoc test, significant differences were found between Bryan Animal Hospital and Jordan Creek Veterinary ($p < .02$), with participants at Bryan Animal Hospital ($M = 57.03, SD = 19.45$) reporting more attachment avoidance than participants from Jordan Creek Veterinary

($M = 42.25$, $SD = 13.71$) as seen in Table 2. There were no significant differences found between any other combinations of sites.

Additional Analyses for Depression and Anxiety

Depression (DASS) mean scores did not appear to differ significantly by any of the demographic variables as shown in Table 24. For anxiety (DASS) mean scores there was a significant effect only for marital status ($F(2,302) = 4.20$, $p < .02$ as seen in Table 25. Using a Bonferroni post-hoc test, significant differences were found between single and divorced/separated participants ($p < .02$), with single participants scoring higher on anxiety ($M = 12.54$, $SD = 7.13$) than divorced/separated participants ($M = 9.14$, $SD = 5.93$). There were no significant differences found between any other combinations of marital status.

Pearson product-moment correlations were used to further explore correlations between attachment anxiety and avoidance (measured by ECRS) and anxiety and depression (measured by DASS). The correlation between attachment anxiety and attachment avoidance (measured by the ECRS) was not significant. The correlation between anxiety and depression (measured by the DASS) was significant, $r(305) = .55$, $p < .01$ as shown by Table 13. Interestingly, as tables 14-16 illustrate, the relation between avoidant attachment and depression was significant for dog owners and horse owners but not cat owners.

Tables.

TABLE 1. Frequencies and Percentages of Demographic Variables (N = 305)

	<i>n</i>	%
Sex	305	100
Female	187	61.1
Male	118	38.9
Type of Pet	305	100
Cat	106	34.6
Dog	99	32.4
Horse	100	33.0
Ethnicity	305	100
Caucasian	292	95.8
Af. Am.	9	2.9
Hispanic	2	0.6
Asian-Amer.	1	0.3
Site	305	100
Valley Park	129	42.3
ISU Vet Med	57	18.7
Bryan	53	17.4
AH West	42	13.8
Jordan Creek	16	5.2
Moffett	8	2.6
Marital Status	305	100
Single	136	44.8
Married	121	39.5
Div./Sep.	48	15.7
Role of Pet	305	100
Companion	276	90.5
Performance	21	6.9
Breed	8	2.6

TABLE 1 (cont.). Frequencies and Percentages of Demographic Variables (N = 305)

	<i>n</i>	%
Where Pet is Housed	305	100
House	171	55.9
Outdoors	80	26.1
Barn	49	16.0
Kennel	6	2.0
Experienced Same Medical Issue as Pet at Same Time	305	100
No	288	94.4
Yes	17	5.6
Income (\$)	305	100
<20,000	19	6.2
20,000-30,000	29	9.5
30,000-40,000	28	9.2
40,000-50,000	29	9.5
50,000-60,000	53	17.4
60,000-70,000	23	7.5
70,000-80,000	26	8.5
80,000-90,000	36	11.8
90,000-100,000	41	13.4
>100,000	21	6.9
Amount Paid for Pet (\$)	305	100
0-100	89	29.2
100-250	87	28.5
250-500	50	16.4
500-1,000	14	4.6
1,000-2,000	31	10.2
2,000-5,000	13	4.3
5,000-10,000	3	1.0
10,000-20,000	10	3.3
>20,000	7	2.3

TABLE 1 (cont.). Frequencies and Percentages of Demographic Variables (N = 305)

	<i>n</i>	%
Number of Pets Currently Owned	305	100
1	250	82.0
2	32	10.5
3	5	1.6
4	6	2.0
5	7	2.3
6	2	0.7
7	1	0.3
8	1	0.3
9	1	0.3
10 or more	0	0.0
Amount (\$) Spent on Medical Issues	305	100
0-100	38	12.5
100-250	106	34.8
250-500	53	17.4
500-1,000	34	11.1
1,000-2,000	49	16.1
2,000-5,000	16	5.2
5,000-10,000	3	1.0
10,000-20,000	4	1.3
>20,000	2	0.7

TABLE 2. Means and Standard Deviations of Participants' Scores on Measures by Demographic Variable

	<i>n</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Anxiety (DASS)	Depression (DASS)
Sex						
Female	187	19.35 ^a (6.21)	67.67 (19.74)	51.93 (16.52)	11.91 (7.45)	12.45 (8.78)
Male	118	17.33 ^b (6.71)	65.12 (20.53)	51.41 (16.52)	11.66 (6.67)	11.51 (8.42)
Type of Pet						
Dog	99	13.69 ^a (3.96)	64.66 (20.49)	51.79 (18.47)	11.64 (6.56)	12.60 (9.17)
Cat	106	17.46 ^b (5.40)	70.49 (21.48)	51.22 (15.65)	11.74 (6.87)	12.21 (8.67)
Horse	100	24.59 ^c (4.54)	64.64 (17.50)	52.20 (15.32)	12.08 (8.01)	11.45 (8.08)
Ethnicity						
Cauc.	292	18.40 ^a (6.36)	66.72 (20.06)	51.56 (16.68)	11.80 (7.17)	12.20 (8.70)
Racial/ Eth. Min.	12	22.91 ^b (8.06)	65.44 (14.51)	57.25 (8.66)	11.58 (6.80)	7.91 (3.60)

TABLE 2 (cont.). Means and Standard Deviations of Participants' Scores on Measures by Demographic Variable

	<i>n</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Anxiety (DASS)	Depression (DASS)
Site						
V. Med	57	18.60 (5.90)	62.46 (21.11)	51.03 ^a (13.01)	10.91 (7.26)	10.70 (8.41)
Vall. P.	129	19.13 (6.13)	67.16 (19.83)	51.37 ^a (17.36)	11.71 (7.10)	12.61 (8.14)
Bryan	53	18.66 (7.20)	69.35 (20.95)	57.03 ^a (19.45)	11.96 (6.51)	12.20 (9.37)
Jord. C.	16	16.50 (5.22)	63.20 (24.57)	42.25 ^b (13.71)	10.12 (7.36)	10.00 (8.77)
A. West	42	17.11 (4.60)	67.43 (16.51)	50.54 ^a (13.45)	13.09 (7.53)	11.90 (8.37)
Moffett	8	20.62 (7.96)	74.33 (16.01)	52.50 ^a (14.36)	15.87 (8.45)	18.00 (12.86)
Marital Status						
Single	136	18.27 (6.76)	69.18 ^a (21.34)	50.86 (17.50)	12.54 ^a (7.13)	12.93 (8.94)
Marr.	121	19.22 (6.67)	62.96 ^b (17.43)	51.61 (15.03)	12.07 ^a (7.41)	11.80 (8.28)
Div./S.	48	17.73 (4.82)	69.00 ^a (21.40)	54.52 (16.92)	9.14 ^b (5.93)	10.45 (8.54)

TABLE 2 (cont.). Means and Standard Deviations of Participants' Scores on Measures by Demographic Variable

	<i>n</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Anxiety (DASS)	Depression (DASS)
Role						
Comp.	276	18.07 ^a (6.36)	66.42 (19.92)	51.93 (16.45)	11.77 (7.13)	11.94 (8.55)
Perf.	21	24.28 ^b (5.48)	66.57 (22.73)	49.95 (13.42)	12.52 (7.33)	14.52 (9.73)
Breed	8	21.12 ^{a,b} (4.12)	71.50 (15.22)	51.87 (25.67)	10.50 (7.92)	10.11 (9.08)
Housed						
House	171	15.73 ^a (5.28)	66.61 (20.60)	50.71 (17.39)	11.55 (6.90)	12.22 (8.87)
Barn	49	24.85 ^b (4.80)	64.50 (16.93)	53.02 (16.98)	12.18 (8.28)	10.83 (7.99)
Outd.	80	21.21 ^c (5.83)	69.15 (20.59)	52.79 (14.29)	12.28 (7.15)	12.59 (8.64)
Kennel	6	12.33 ^{a,d} (2.16)	53.50 (17.53)	56.00 (13.37)	10.16 (4.87)	11.83 (7.98)

TABLE 2 (cont.). Means and Standard Deviations of Participants' Scores on Measures by Demographic Variable

	<i>n</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Anxiety (DASS)	Depression (DASS)
Income (\$ in thousands)						
< 20	19	15.61 ^{a,c} (4.97)	80.12 (25.21)	44.57 (19.02)	16.68 (8.81)	15.05 (10.49)
20-30	29	15.62 ^{a,c} (6.11)	66.27 (23.77)	53.75 (16.79)	10.10 (5.27)	12.24 (10.43)
30-40	28	18.60 ^{a,c} (5.98)	65.35 (19.88)	49.78 (15.01)	11.46 (7.76)	11.03 (8.90)
40-50	29	18.65 ^{a,c} (7.97)	67.30 (18.79)	50.17 (16.62)	10.03 (5.16)	11.02 (5.77)
50-60	53	17.88 ^{a,c} (6.95)	68.40 (21.00)	48.81 (15.50)	11.98 (6.73)	11.90 (8.07)
60-70	23	16.60 ^{a,c} (5.63)	58.95 (15.58)	48.52 (18.62)	9.52 (6.63)	9.47 (5.15)
70-80	26	17.77 ^{a,c} (6.42)	65.65 (19.73)	57.03 (14.30)	12.03 (7.69)	13.30 (10.75)
80-90	36	20.41 ^{a,c} (5.40)	69.83 (19.63)	55.47 (18.79)	12.55 (6.94)	14.00 (9.90)
90-100	41	20.82 ^{a,d} (6.27)	62.42 (17.12)	54.46 (15.95)	12.19 (7.42)	11.63 (8.14)
> 100	21	18.57 ^{b,d} (6.47)	64.33 (15.75)	52.75 (12.09)	12.61 (8.71)	11.57 (7.33)

TABLE 2 (cont.). Means and Standard Deviations of Participants' Scores on Measures by Demographic Variable

# Pets	<i>n</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Anxiety (DASS)	Depression (DASS)
1	250	18.55 (6.60)	66.57 (20.20)	51.31 (16.48)	11.85 (7.11)	12.09
2	32	17.70 (5.18)	71.15 (15.83)	54.09 (17.14)	11.78 (7.08)	12.21
3	5	20.60 (8.56)	67.00 (24.62)	50.40 (21.78)	11.60 (8.73)	12.77
4	6	18.66 (8.89)	65.83 (35.93)	52.33 (16.89)	13.16 (10.51)	15.33 (11.01)
5	7	19.14 (5.55)	52.42 (10.59)	59.14 (11.23)	9.28 (6.55)	10.99 (4.88)
6	2	19.50 (4.94)	63.50 (7.77)	61.50 (9.19)	7.50 (7.07)	12.00 (7.07)
7	1	26.00	92.00	42.00	25.00	19.00
8	1	25.00	45.00	46.00	8.00	3.00
9	1	21.00	58.00	28.00	16.00	8.00

TABLE 2 (cont.). Means and Standard Deviations of Participants' Scores on Measures by Demographic Variable

	<i>n</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Anxiety (DASS)	Depression (DASS)
Amt. Paid (\$)						
0-100	89	16.80 ^{a,c} (5.59)	68.80 (20.10)	52.41 (14.69)	11.69 (7.10)	12.36 (8.96)
100-250	87	17.57 ^{a,c} (6.16)	66.34 (20.02)	53.83 (17.01)	12.28 (6.26)	12.43 (8.14)
250-500	50	17.13 ^{a,c} (6.36)	71.30 (22.76)	48.07 (17.75)	11.64 (7.92)	13.70 (10.51)
500-1,000	14	19.01 ^{a,c} (7.04)	64.57 (22.03)	48.50 (15.84)	13.42 (5.80)	7.99 (5.64)
1,000-2,000	31	21.45 ^{b,c} (6.08)	60.35 (15.84)	51.12 (18.33)	10.35 (6.75)	10.22 (8.68)
2,000-5,000	13	24.84 ^{b,d} (4.94)	65.13 (17.68)	57.69 (19.47)	14.23 (10.48)	12.15 (7.86)
5,000-10,000	3	23.25 ^{a,c} (3.52)	54.33 (17.50)	47.66 (17.21)	8.00 (10.00)	11.33 (4.61)
10,000-20,000	10	23.70 ^{b,c} (3.52)	58.36 (15.61)	46.70 (14.82)	10.40 (6.25)	9.90 (6.50)
> 20,000	7	27.14 ^{b,d} (6.67)	59.71 (18.60)	51.00 (10.13)	13.14 (11.32)	12.00 (4.32)

TABLE 2 (cont.). Means and Standard Deviations of Participants' Scores on Measures by Demographic Variable

	<i>n</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Anxiety (DASS)	Depression (DASS)
Amt. Spent on Med. Issues						
0-100	38	19.00 (6.62)	65.21 (19.51)	51.92 (15.72)	12.31 (7.30)	11.44 (9.02)
100-250	106	18.36 (6.53)	67.54 (20.32)	51.16 (14.81)	11.43 (6.37)	11.73 (8.30)
250-500	53	17.11 (5.61)	72.71 (21.04)	54.27 (19.03)	11.84 (7.01)	13.67 (8.45)
500-1,000	34	19.45 (6.89)	61.68 (21.34)	47.14 (15.72)	11.20 (7.79)	10.79 (9.08)
1,000-2,000	49	19.14 (6.25)	65.16 (16.30)	53.14 (16.79)	11.79 (8.00)	11.65 (7.90)
2,000-5,000	16	19.33 (7.23)	66.31 (23.25)	56.37 (16.69)	14.62 (9.45)	14.50 (11.44)
5,000-10,000	3	17.75 (8.34)	53.34 (9.02)	59.30 (29.74)	13.32 (5.50)	19.33 (11.37)
10,000-20,000	4	27.50 (9.19)	59.75 (20.59)	39.50 (14.52)	13.25 (2.87)	11.22 (8.03)
> 20,000	2	20.10 (7.37)	48.50 (4.94)	31.00 (1.44)	6.00 (2.82)	6.00 (7.07)

Note. In each column means are presented followed by standard deviations (in parentheses)

Note. Superscripts are used to show significant differences at $p < .05$. Means that do not share the same superscripts are significantly different.

TABLE 3. Means, Standard Deviations, and Means Differences for Sample In this Study and for Norm Groups for the Five Dependent Variables

Variable	<u>Current Sample</u> (N = 305)		<u>Norm Samples</u>		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Pet Attachment (CABS)	2.32	0.81	2.47	0.80	3.02
Attachment Anxiety (ECRS)	66.68	20.05	65.70	17.60	0.64
Attachment Avoidance (ECRS)	51.73	16.17	49.40	18.80	1.64
Depression (DASS - Normal)	12.09	8.64	6.30	6.90	13.60*
Anxiety (DASS - Normal)	11.82	7.15	4.70	4.90	22.98*
Depression (DASS - Clinical)	12.09	8.64	10.65	9.30	1.80
Anxiety (DASS - Clinical)	11.82	7.15	10.90	8.12	1.36

* $p < .01$

Note: Information regarding the norm groups follow:

- *CABS*. (Poresky, Hendrix, Mosier, and Samuelson, 1987). Sample of N = 1,359, mean age 44.68, *SD* = 16.59, from Kansas Veterinary Clinics.
- *ECRS*. (Brennan, Clark, and Shaver, 1998). Sample of 1,086 undergraduate students from University of Texas.
- *DASS Normal*. (Lovibond and Lovibond, 1995). Sample of 717 undergraduate students (486 females and 231 males) from the University of South Wales, Australia.
- *DASS Clinical*. clinical adult sample (mean age 36.10 years) of 437 patients of an Australian mental health clinic who presented with a variety of anxiety and mood disorders

TABLE 4. Means Differences by Sex for the Five Dependent Variables

Variable	<u>Males (n = 118)</u>		<u>Females (n = 187)</u>		<u>Total (N = 305)</u>		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Pet Attachment (CABS)	17.33	6.71	19.35	6.21	18.57	6.48	2.68*
Attachment Anxiety (ECRS)	65.12	20.53	67.67	19.74	66.68	20.05	1.08
Attachment Avoidance (ECRS)	51.41	16.51	51.93	16.48	51.73	16.47	0.26
Depression (DASS)	11.51	8.42	12.45	8.78	12.09	8.64	0.93
Anxiety (DASS)	11.66	6.67	11.91	7.45	11.82	7.15	0.30

* $p < .01$

TABLE 5. Frequencies of Demographic Variables by Sex (N = 305)

	Male (<i>n</i> = 117)	Female (<i>n</i> = 187)	Total
Type of Pet			305
Cat	38	68	106
Dog	58	41	99
Horse	22	78	100
Ethnicity			304
Caucasian	113	179	292
Af. Am.	4	4	9
Hispanic	1	2	2
Asian-Amer.	0	1	1
Site			305
Valley Park	45	84	129
ISU Vet Med	22	35	57
Bryan	23	30	53
AH West	18	24	42
Jordan Creek	8	8	16
Moffett	2	6	8
Marital Status			305
Single	59	77	136
Married	41	80	121
Div./Sep.	18	30	48
Role of Pet			305
Companion	113	162	276
Performance	3	18	21
Breed	1	7	8

TABLE 5 (cont.). Frequencies of Demographic Variables by Sex (N = 305)

	Male (<i>n</i> = 117)	Female (<i>n</i> = 187)	Total
Where Pet is Housed			305
House	78	92	170
Outdoors	24	56	80
Barn	11	38	49
Kennel	5	1	6
Same Medical Issue			305
Yes	10	7	17
No	108	180	288
Income (\$ in thousands)			305
<20	10	9	19
20-30	14	15	29
30-40	16	12	28
40-50	12	17	29
50-60	25	28	53
60-70	4	19	23
70-80	8	18	26
80-90	12	24	36
90-100	12	29	41
>100	5	16	21
Amount Paid For Pet (\$)			305
0-100	39	50	89
100-250	33	54	87
250-500	23	27	50
500-1000	7	7	14
1000-2000	9	22	31
2000-5000	3	10	13
5000-10000	0	3	3
10000-20000	2	8	10
>20000	2	5	7

TABLE 5 (cont.). Frequencies of Demographic Variables by Sex (N = 305)

	Male (<i>n</i> = 117)	Female (<i>n</i> = 187)	Total
# Pets Owned			305
1	97	153	260
2	10	22	32
3	4	1	5
4	3	3	6
5	3	4	7
6	0	2	2
7	0	1	1
8	1	0	1
9	0	1	1
10 or more	0	0	0
Amount Paid For Medical Issues (\$)			305
0-100	19	19	38
100-250	38	68	116
250-500	19	34	53
500-1000	15	19	34
1000-2000	16	33	49
2000-5000	5	11	16
5000-10000	1	2	3
10000-20000	4	0	4
>20000	1	1	2

TABLE 6. Means Differences by Pet Type for the Five Dependent Variables

Variable	<u>Dog</u> (<i>n</i> = 99)		<u>Cat</u> (<i>n</i> = 106)		<u>Horse</u> (<i>n</i> = 100)		<u>Total</u> (<i>n</i> = 305)		<u>F</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Pet Attachment (CABS)	13.69	3.96	17.46	5.40	24.59	4.54	18.57	6.47	138.67*
Attachment Anxiety (ECRS)	64.66	20.49	70.49	21.48	64.64	17.50	66.68	20.05	2.96
Attachment Avoidance (ECRS)	51.79	18.47	51.22	15.65	52.20	15.32	51.73	16.47	.09
Depression (DASS)	12.60	9.17	12.21	8.67	11.45	8.08	12.09	8.64	.45
Anxiety (DASS)	11.64	6.56	11.74	6.87	12.08	8.01	11.82	7.15	.10

* $p < .01$

TABLE 7. Frequencies of Demographic Variables by Pet Type (N = 305)

	Dog (n = 99)	Cat (n = 106)	Horse (n = 100)	Total
Sex				305
Male	58	38	22	118
Female	41	68	78	187
Ethnicity				304
Caucasian	97	102	93	292
Af. Am.	0	3	6	9
Hispanic	1	0	1	2
Asian-Amer.	1	0	0	1
Site				305
Valley Park	42	41	46	129
ISU Vet Med	14	24	19	57
Bryan	20	20	13	53
AH West	14	16	12	42
Jordan Creek	6	5	5	16
Moffett	3	0	5	8
Marital Status				305
Single	58	35	43	136
Married	30	47	44	121
Div./Sep.	11	24	13	48
Role of Pet				305
Companion	97	103	76	276
Performance	2	0	19	21
Breed	0	2	6	8

TABLE 7 (cont.). Frequencies of Demographic Variables by Pet Type (N = 305)

	Dog (n = 99)	Cat (n = 106)	Horse (n = 100)	Total
Where Pet is Housed				305
House	88	82	0	170
Outdoors	5	24	51	80
Barn	0	0	49	49
Kennel	6	0	0	6
Same Medical Issue				305
Yes	6	7	4	17
No	93	99	96	288
Income (\$ in thousands)				305
<20	10	9	0	19
20-30	16	9	4	29
30-40	7	12	9	28
40-50	17	5	7	29
50-60	20	24	9	53
60-70	5	10	8	23
70-80	8	10	8	26
80-90	5	15	16	36
90-100	9	8	24	41
>100	2	4	15	21
Amount Paid For Pet (\$)				305
0-100	24	58	7	89
100-250	34	35	18	87
250-500	25	12	13	50
500-1000	8	0	6	14
1000-2000	8	1	22	31
2000-5000	0	0	13	13
5000-10000	0	0	3	3
10000-20000	0	0	10	10
>20000	0	0	7	7

TABLE 7 (cont.). Frequencies of Demographic Variables by Pet Type (N = 305)

	Dog (<i>n</i> = 99)	Cat (<i>n</i> = 106)	Horse (<i>n</i> = 100)	Total
# Pets Owned				305
1	84	80	86	260
2	10	14	8	32
3	1	4	0	5
4	2	3	1	6
5	2	2	3	7
6	0	1	1	2
7	0	1	0	1
8	0	1	0	1
9	0	0	1	1
10 or more	0	0	0	0
Amount Paid For Medical Issues (\$)				305
0-100	12	16	10	38
100-250	34	42	30	116
250-500	14	28	11	53
500-1000	11	10	13	34
1000-2000	19	9	21	49
2000-5000	5	1	10	16
5000-10000	1	0	2	3
10000-20000	3	0	1	4
>20000	0	0	2	2

TABLE 8. Summary of Two-Way Analysis of Variance for Sex and Pet Type on Pet Attachment (CABS) Scores

Variable	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Pet Type	2	4709.10	2354.55	107.84*
Sex	1	24.81	24.81	1.13
Pet Type x Sex	2	89.36	44.68	2.04
Within cells	299	6527.82	21.83	
Total	304	12758.67		

* $p < .01$

TABLE 9. Post-Hoc Comparisons for Pet Type on Pet Attachment (CABS) Mean Scores

<u>Analysis</u>	<u>Pet Type</u>	<u>Pet Type</u>	<u>Mean Difference</u>	<u>Std. Error</u>	<u>Sig.</u>	<u>95% Confidence Interval</u>	
						<u>Lower Boundary</u>	<u>Upper Boundary</u>
Temhane	Dog	Cat	-3.77	.65	.01	-5.35	-2.18
	Cat	Horse	-7.13	.65	.01	-8.80	-5.55
	Horse	Dog	10.89	.66	.01	9.44	12.35
Dunnett T3	Dog	Cat	-3.77	.65	.01	-5.35	-2.18
	Cat	Horse	-7.13	.65	.01	-8.80	-5.55
	Horse	Dog	10.89	.66	.01	9.44	12.35

**TABLE 10. Means Differences for Pet Type by Sex for Pet Attachment
(CABS) Mean Scores**

Sex	<u>Dog</u> (<i>n</i> = 99)			<u>Cat</u> (<i>n</i> = 106)			<u>Horse</u> (<i>n</i> = 100)			<u>Total</u> (<i>n</i> = 305)	
	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Male (<i>n</i> = 118)	58	13.61	4.50	38	18.89	6.78	22	24.45	4.41	17.33	6.71
Female (<i>n</i> = 187)	41	13.80	3.10	68	16.66	4.30	78	24.62	4.60	19.35	6.21

TABLE 11. Means Differences by Ethnicity for the Five Dependent Variables

Variable	<u>Caucasian</u> (<i>n</i> = 292)		<u>Non-Caucasian</u> (<i>n</i> = 12)		<u>Total</u> (<i>N</i> = 304)		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Pet Attachment (CABS)	18.40	6.36	22.91	8.06	18.57	6.47	2.37*
Attachment Anxiety (ECRS)	66.72	20.06	61.50	14.51	66.68	20.05	0.89
Attachment Avoidance (ECRS)	51.56	16.68	57.25	8.66	51.73	16.47	1.17
Depression (DASS)	12.20	8.70	7.91	3.60	12.09	8.64	3.71**
Anxiety (DASS)	11.80	7.17	11.58	6.80	11.82	7.15	0.10

* $p < .05$ ** $p < .01$

TABLE 12. Summary of Two-Way Analysis of Variance for Ethnicity and Pet Type on Pet Attachment (CABS) Scores

<u>Variable</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Ethnicity	1	21.25	21.25	.96
Pet Type	2	1056.41	528.20	23.87*
Ethnicity x Pet Type	2	9.73	4.86	.22
Error	298	6592.18	21.12	
Total	304	117749.01		
* $p < .01$				

TABLE 13. Correlations Between Pet Attachment, Human Attachment Styles, Depression, and Anxiety

	<i>r</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Depression (DASS)	Anxiety (DASS)
Pet Attachment (CABS)	<i>r</i>	1				
Attachment Anxiety (ECRS)	<i>r</i>	-.034	1			
Attachment Avoidance (ECRS)	<i>r</i>	-.037	.074	1		
Depression (DASS)	<i>r</i>	-.074	.448*	.231*	1	
Anxiety (DASS)	<i>r</i>	-.039	.373*	.049	.590*	1

* $p < .01$

TABLE 14. Correlations Between Pet Attachment, Human Attachment Styles, Depression, and Anxiety by Dog (n = 99)

	<i>r</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Depression (DASS)	Anxiety (DASS)
Pet Attachment (CABS)	<i>r</i>	1				
Attachment Anxiety (ECRS)	<i>r</i>	.043	1			
Attachment Avoidance (ECRS)	<i>r</i>	-.185	.146	1		
Depression (DASS)	<i>r</i>	-.111	.431*	.316*	1	
Anxiety (DASS)	<i>r</i>	.090	.490*	.070	.570*	1

* $p < .01$

TABLE 15. Correlations Between Pet Attachment, Human Attachment Styles, Depression, and Anxiety by Cat (n = 106)

	<i>r</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Depression (DASS)	Anxiety (DASS)
Pet Attachment (CABS)	<i>r</i>	1				
Attachment Anxiety (ECRS)	<i>r</i>	-.073	1			
Attachment Avoidance (ECRS)	<i>r</i>	-.011	-.034	1		
Depression (DASS)	<i>r</i>	-.047	.445*	.142	1	
Anxiety (DASS)	<i>r</i>	-.063	.394*	-.034	.638*	1

* $p < .01$

TABLE 16. Correlations Between Pet Attachment, Human Attachment Styles, Depression, and Anxiety by Horse (n = 100)

	<i>r</i>	Pet Attachment (CABS)	Attachment Anxiety (ECRS)	Attachment Avoidance (ECRS)	Depression (DASS)	Anxiety (DASS)
Pet Attachment (CABS)	<i>r</i>	1				
Attachment Anxiety (ECRS)	<i>r</i>	.001	1			
Attachment Avoidance (ECRS)	<i>r</i>	-.012	.165	1		
Depression (DASS)	<i>r</i>	-.051	.389*	.291*	1	
Anxiety (DASS)	<i>r</i>	-.182	.302*	.124	.464*	1

* $p < .01$

TABLE 17. One-Way Analysis of Variance for Effects of Demographic Variables on Pet Attachment (CABS) Scores

Demographic Variable	df	SS	F
Pet Type			
Between groups	2	22.02	138.67*
Within groups	302	3053.96	
Site			
Between groups	5	231.98	1.10
Within groups	299	12526.02	
Marital Status			
Between groups	2	98.50	1.17
Within groups	302	12660.17	
Income			
Between groups	9	1208.52	3.43*
Within groups	295	11550.15	
Role of Pet			
Between groups	2	804.50	10.13*
Within groups	301	11941.33	
Where Pet is Housed			
Between groups	3	4107.23	47.63*
Within groups	301	8651.44	
\$ Paid for Pet			
Between groups	8	2073.25	7.31*
Within groups	295	10446.73	
Medical \$ Spent on Pet			
Between groups	8	347.87	1.03
Within groups	296	12410.79	
Number of Pets Owned			
Between groups	8	150.88	0.44
Within groups	296	12607.79	

*p < .01

TABLE 18. Summary of Two-Way Analysis of Variance for Income and Pet Type on Pet Attachment (CABS) Scores

<u>Variable</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Pet Type	2	4361.91	2180.95	103.02*
Income	9	321.26	35.70	1.68
Pet Type x Income	17	518.76	30.51	1.44
Error	276	5842.92	21.17	
Total	305	118005.09		
* $p < .01$				

TABLE 19. Summary of Two-Way Analysis of Variance for Amount Paid for Pet and Pet Type on Pet Attachment (CABS) Scores

<u>Variable</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Pet Type	2	3216.94	1608.47	71.64*
Amount	8	73.21	9.15	.40
Pet Type x Amount	7	58.22	8.31	.37
Error	286	6420.58	22.45	
Total	304	116849.09		
* $p < .01$				

TABLE 20. Summary of Two-Way Analysis of Variance for Role of Pet and Pet Type on Pet Attachment (CABS) Scores

<u>Variable</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Pet Type	2	518.11	259.05	11.77*
Role	2	68.15	34.07	1.54
Pet Type x Role	2	77.86	38.93	1.77
Error	297	6532.34	21.99	
Total	304	117780.09		
* $p < .01$				

TABLE 21. Summary of Two-Way Analysis of Variance for Where Pet is Housed and Pet Type on Pet Attachment (CABS) Scores

<u>Variable</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Pet Type	2	1143.19	571.59	25.86*
Housed	3	39.78	13.26	.60
Pet Type x Housed	1	7.12	7.12	.32
Error	298	6586.30	22.10	
Total	305	118005.09		

* $p < .01$

TABLE 22. One-Way Analysis of Variance for Effects of Demographic Variables on Attachment Anxiety (ECRS) Scores

Demographic Variable	df	SS	F
Pet Type			
Between groups	2	2356.47	2.96
Within groups	302	119958.46	
Site			
Between groups	5	2108.32	1.04
Within groups	299	120206.60	
Marital Status			
Between groups	2	2782.35	3.51*
Within groups	302	119532.60	
Income			
Between groups	9	6268.39	1.77
Within groups	295	116046.60	
Role of Pet			
Between groups	2	200.58	0.25
Within groups	301	120769.30	
Where Pet is Housed			
Between groups	3	1766.01	1.47
Within groups	301	120548.90	
\$ Paid for Pet			
Between groups	8	4301.20	1.35
Within groups	295	117370.90	
Medical \$ Spent on Pet			
Between groups	8	4443.26	1.39
Within groups	296	117871.70	
Number of Pets Owned			
Between groups	8	3277.33	1.01
Within groups	296	119037.60	

*p < .05

TABLE 23. One-Way Analysis of Variance for Effects of Demographic Variables on Attachment Avoidance (ECRS) Scores

Demographic Variable	df	SS	F
Pet Type			
Between groups	2	50.27	0.09
Within groups	302	82429.96	
Site			
Between groups	5	3037.91	2.28*
Within groups	299	79442.33	
Marital Status			
Between groups	2	478.44	0.88
Within groups	302	82001.80	
Income			
Between groups	9	3520.69	1.46
Within groups	295	78959.54	
Role of Pet			
Between groups	2	76.40	0.14
Within groups	301	82088.31	
Where Pet is Housed			
Between groups	3	458.61	0.56
Within groups	301	82021.62	
\$ Paid for Pet			
Between groups	8	2021.15	0.92
Within groups	295	80413.59	
Medical \$ Spent on Pet			
Between groups	8	3162.95	1.47
Within groups	295	79317.29	
Number of Pets Owned			
Between groups	8	1498.92	0.68
Within groups	296	80981.31	

*p < .05

TABLE 24. One-Way Analysis of Variance for Effects of Demographic Variables on Depression (DASS) Scores

Demographic Variable	df	SS	F
Pet Type			
Between groups	2	67.71	0.45
Within groups	302	22642.01	
Site			
Between groups	5	497.32	1.33
Within groups	299	22212.40	
Marital Status			
Between groups	2	234.24	1.57
Within groups	302	22475.48	
Income			
Between groups	9	574.39	0.85
Within groups	295	22135.33	
Role of Pet			
Between groups	2	161.45	1.07
Within groups	301	22513.26	
Where Pet is Housed			
Between groups	3	101.23	0.45
Within groups	301	22608.49	
\$ Paid for Pet			
Between groups	8	539.40	0.89
Within groups	295	22146.16	
Medical \$ Spent on Pet			
Between groups	8	556.78	0.93
Within groups	295	22152.94	
Number of Pets Owned			
Between groups	8	258.15	0.44
Within groups	296	22441.57	

TABLE 25. One-Way Analysis of Variance for Effects of Demographic Variables on Anxiety (DASS) Scores

Demographic Variable	df	SS	F
Pet Type			
Between groups	2	10.33	0.10
Within groups	302	15552.10	
Site			
Between groups	5	295.32	1.15
Within groups	299	15267.11	
Marital Status			
Between groups	2	422.39	4.20*
Within groups	302	15140.04	
Income			
Between groups	9	793.75	1.76
Within groups	295	14768.68	
Role of Pet			
Between groups	2	24.68	0.24
Within groups	301	15453.26	
Where Pet is Housed			
Between groups	3	51.96	0.33
Within groups	301	15510.48	
\$ Paid for Pet			
Between groups	8	275.96	0.67
Within groups	295	15146.23	
Medical \$ Spent on Pet			
Between groups	8	246.71	0.59
Within groups	295	15315.72	
Number of Pets Owned			
Between groups	8	299.48	0.72
Within groups	296	15262.95	

* $p < .05$

CHAPTER 5: DISCUSSION

Based upon a review of the literature regarding pet attachment, attachment anxiety and attachment avoidance, and depression and anxiety, there were four areas that needed either initial or further empirical investigation. First, there had been no comprehensive investigation of pet attachment and demographic variables for an adult population. That is, there had been no study that investigated large and small animal attachment, most studies have used children as the participants, and the existing studies' findings have been inconclusive. Second, the relation of pet attachment to human attachment had not been explored empirically. Third, investigations into human attachment and distress had routinely measured either depression or anxiety, and had not simultaneously measured both constructs. Fourth, empirical studies had not been conclusive regarding pet attachment as it relates to human anxiety and depression.

Findings will be discussed in relation to the study's hypotheses, as will the limitations of this study, implications of this study for the field of psychology, and suggestions for future research.

Hypothesis Testing

The first three hypotheses all concern predictions for relations between the pet attachment construct and demographic variables (sex, marital status, and ethnicity). In this study there were a plethora of significant results within this context (i.e., pet attachment and demographic variables) with many of these results not being directly attached to any of the study's hypotheses. Initially, the results of each of the first three hypotheses will be described, and subsequently there will be a discussion about the other significant findings from the demographic variable/pet attachment milieu.

Hypothesis One: Females will be significantly more attached to pets as measured by the CABS with females' mean scores being significantly higher than the males' CABS mean scores.

In the present study females were found to be more attached to pets than males. This replicates results found in a previous study (Poresky & Daniels, 1998) that also found that females were more attached to pets using the CABS as the measure of pet attachment. In the present study females did not have significantly higher pet attachment scores after pet type was considered. To date, there have not been other studies that have measured pet attachment and reported sex differences based on the type of pet owned. Specifically, both sexes were more attached to horses, then cats, and finally dogs. Females compared to males in this study owned proportionally more of the cats (*females* = 63% vs. *males* = 37%) and more of the horses (*females* = 78% vs. *males* = 22%). Females compared to males did not own proportionally more dogs (*males* = 59% vs. *females* = 41%). The construct of pet ownership was not included in this study's review of the literature, thus, it is not known if these ownership patterns are common.

In conclusion, this study did initially find support that females were significantly more attached to pets than males (this effect was negated when pet type was added to the ANOVA). Further investigation, though, is needed regarding sex differences by different pet types as the present study found that pet attachment (CABS) mean scores are more impacted by type of pet owned than by sex of the owner.

Hypothesis Two: Single adults and separated/divorced adults will be significantly more attached to pets as measured by CABS with the single adults' and separated/divorced adults' CABS mean scores being significantly higher than the married adults' CABS mean score.

There were no significant differences found between single, separated/divorced, and married participants regarding their attachment to pets. This study's results do not align with Poresky and Daniels' (1998) findings that divorced adults had higher pet attachment scores on the CABS to cats and dogs than married adults. There were, though, significant differences found for attachment anxiety scores (EACS) as both single and separated/divorced participants scored higher in attachment anxiety in human relationships than married participants. Demographic variables were only explored in this study's literature review in relation to the pet attachment construct, therefore, it is uncertain how common these findings are in the human attachment styles milieu.

Hypothesis Three: Caucasian-Americans will be significantly more attached to pets as measured by the CABS with Caucasian-American's mean scores being significantly higher than African-American's CABS mean scores.

The results from this study indicate that there were not any significant pet attachment differences between Caucasian-American and African-American participants. One potential problem with this finding is that 95.8% ($n = 292$) of the participants were Caucasian while only 2.9% ($n = 9$) were African-American. In Brown's (2002) study she found that Caucasians were significantly more attached to pets (using the Pet Attachment Questionnaire – PAQ) than African-Americans. This study collected data from 57 Caucasian veterinary medical students and 76 African-American Students. In Brown's (2002) study African-

Americans were better represented in the sample than in the present study. The present study also differed from Brown's as the participants were not veterinary medical students, and pet attachment was measured using the CABS instead of the PAQ.

Because of the limited number of African-Americans in the present study, ethnicity was collapsed into two categories "Caucasian-American" and "Racial and Ethnic Minority American." Again, there were still a limited number of participants in this study who were Racial and Ethnic Minority Americans ($n = 12$), but the Racial and Ethnic Minority Americans in this study had significantly higher pet attachment (CABS) mean scores than Caucasian-Americans. A 2 (Ethnicity: Caucasian-American/Racial and Ethnic Minority American) X 3 (Pet Type: Dog/Cat/Horse) ANOVA was used to examine the unique effect that ethnicity had on pet attachment (CABS) mean scores. There was no effect found for ethnicity when pet type was also added to the analysis.

In summary, there were no significant pet attachment differences found between African-Americans and Caucasian-Americans. There were, though, significant pet attachment differences found between Caucasian-Americans and Racial and Ethnic Minority Americans, which was formed by grouping together African-Americans, Asian-Americans, and Hispanic-Americans.

Hypothesis Four: Attachment anxiety and avoidance as measured by the ECRS will be significantly positively correlated with depression and anxiety as measured by the DASS.

There is a moderate amount of empirical evidence supporting a positive correlation between insecure attachment styles (i.e., attachment anxiety and attachment avoidance) and distress (i.e., anxiety and depression) (DeFronzo, Panzarella, & Butler, 2001; Evans & Wortheim, 1998; Gittleman, Klein, Smider, & Essex, 1998; Lopez & Gormley, 2002; Lopez,

Mauricio, Gormley, Simko, & Berger, 2001; Mikulincer, Florian, & Weller, 1993; Strodl & Noller, 2003; Priel & Shamia, 1995; Van Buren & Cooley, 2002; Wei, Heppner, & Mallinckrodt, 2003). To date, though, there have been eleven studies (DeFronzo, Panzarella, & Butler, 2001; Evans & Wortheim, 1998; Gittleman, Klein, Smider, & Essex, 1998; Lopez & Gormley, 2002; Lopez, Mauricio, Gormley, Simko, & Berger, 2001; Mikulincer, Florian, & Weller, 1993; Strodl & Noller, 2003; Priel & Shamia, 1995; Van Buren & Cooley, 2002; Wei, Heppner, & Mallinckrodt, 2003) that have measured attachment styles and both anxiety and depression. In these eleven studies attachment styles, depression, and anxiety have been measured with variety of instruments. Only two studies measured attachment anxiety and avoidance by the ECRS (Lopez et al., 2001; Lopez & Gormley, 2002). Lopez et al. (2001). They found that there were significant positive correlations between attachment anxiety and avoidance with anxiety (measured by the State-Trait Anxiety Inventory –STAI) but only attachment anxiety was significantly positively correlated with depression (measured by the Depression Adjective Checklist - DACL). Lopez and Gormley (2002) found that attachment anxiety and avoidance were significantly positively correlated with depression (measured by the Center for Epidemiologic Studies Depression Scale - CES-D). Lopez and Gormley (2002) did not measure anxiety. Depression and anxiety were not measured by the DASS in any of the eleven studies that measured attachment styles, anxiety, and depression.

The present study found that in most relations, significant positive correlations did exist between attachment styles, anxiety, and depression as seen in Table 13. Specifically, there were significant positive correlations found between attachment anxiety (ECRS) scores and depression (DASS) scores, attachment anxiety (ECRS) scores and anxiety (DASS) scores, and attachment avoidance (ECRS) scores and depression (DASS) scores. There was

not a significant positive correlation between attachment avoidance (ECRS) scores and anxiety (DASS) scores. This study's significant positive correlations between attachment styles, anxiety, and depression match the results present in most of studies that measured all of the constructs (DeFronzo, Panzarella, & Butler, 2001; Evans & Wortheim, 1998; Gittleman, Klein, Smider, & Essex, 1998; Lopez & Gormley, 2002; Lopez et al., 2001; Mikulincer, Florian, & Weller, 1993; Strodl & Noller, 2003; Priel & Shamia, 1995; Van Buren & Cooley, 2002; Wei, Heppner, & Mallinckrodt, 2003). One finding in this study that deviates from past research is that in Lopez et al.'s (2002) study they found that attachment avoidance (ECRS) scores did significantly positively correlate with anxiety (STAI) scores but not depression (DAACL) scores. This study found that attachment avoidance (ECRS) scores significantly positively correlated with depression (DASS) scores but not anxiety (DASS) scores.

The bulk of the results from this study confirm existing evidence that there are significant positive correlations between insecure attachment styles (i.e., attachment anxiety and attachment avoidance) and distress (anxiety and depression). There are, though, a number of issues that were illuminated while reviewing the literature in this area and conducting this study. First, few studies have measured human attachment styles while also measuring both depression and anxiety. Second, the questionnaires, inventories, etc. used to measure the constructs of attachment styles, anxiety, and depression are often different and little is known about their construct validity and reliability with other tests that measure the same (or similar) constructs. Third, the present study used a state measure of depression and anxiety, as did most of the previous studies, but it is important that we understand these correlations (attachment styles, anxiety, and depression) at both the state and trait level.

Overall, the findings from this study closely parallel the findings from previous studies. Thus, it appears as though we have a solid empirical foundation supporting the existence of significant positive correlations between insecure attachment styles and anxiety and depression. There is, though, evidence that does not coincide with previous findings. For example, this study's finding that attachment avoidance (ECRS) scores do not significantly positively correlate with anxiety (DASS) scores. It appears that more consistency regarding measurement in the areas of attachment styles, anxiety, and depression is needed to further solidify our understanding of the specific relations between human attachment styles, anxiety, and depression.

Exploratory Hypothesis Testing

Hypothesis Five and Hypothesis Six: Pet attachment scores as measured by the CABS will be significantly negatively correlated with depression scores as measured by the DASS; and Pet attachment scores as measured by the CABS will be significantly negatively correlated with anxiety scores as measured by the DASS.

These hypotheses were exploratory as there has been no consensus established regarding the relations between these variables. The prior evidence was either mixed or sparse.

Pet attachment and depression. The current study found that pet attachment was not significantly correlated with depression. This null finding matches the findings of three of the five studies (Budge et al., 1998; Stallones, 1994; Watson & Weinstein, 1993). These three studies all measured pet attachment to small animals (i.e., cats, dogs, birds), two used the CABS as the pet attachment measure (Budge et al., 1998; Stallones, 1994), and all three measured depression with different inventories. Therefore, the present study is the first to

measure pet attachment to a large animal (horse), the third to use the CABS as the pet attachment measure, and the first to use the DASS as a depression measure.

Thus far, there had been one finding that indicates that pet attachment is significantly negatively correlated with depression (Garrity, Stallones, Marx, & Johnson, 1989), three studies that reported null correlations between pet attachment and depression (Budge, Spicer, Jones, & St. George, 1998, Stallones, 1994, Watson & Weinstein, 1993), and one that found a significant positive correlation between pet attachment and depression (Stallones, Johnson, Garrity, & Marx, 1991). These present study matches three studies in supporting the null (Budge et al., 1998; Stallones, 1994; Watson & Weinstein, 1993). These three studies possibly differ from two that found significant correlations (Garrity et al.; Stallones et al.) because Garrity et al.'s study was done via phone interview and Stallones et al.'s study was done with adults who had recently experienced the loss of a pet. It is reasonable to expect that during a phone interview depression would be underreported (Garrity et al.), and that depression would be more present after the recent loss of a pet (Stallones et al.).

Overall, it appears that there is preliminary evidence that pet attachment does not significantly correlate with depression, as four of six studies found no significant correlations between the two constructs. Additionally, four of the existing six studies used the CABS as the measure of pet attachment.

Pet attachment and anxiety. The current study found that pet attachment was not significantly correlated with anxiety, which matches the finding from the only other study that measured anxiety and pet attachment (Watson and Weinstein, 1993).

Anxiety was measured by the State-Trait Anxiety Inventory (STAI) in Watson & Weinstein's (1993) study and pet attachment was measured by the Companion Animal Attachment Scale (CAAS).

The finding that pet attachment was not significantly correlated with anxiety parallels Watson and Weinstein's (1993) findings. Therefore, the present findings lend support for nominal relations between pet attachment and anxiety. There is still the need to investigate this relation further as just two (including this study) have reported correlations between pet attachment and anxiety.

Hypothesis Seven and Hypothesis Eight: The variance in the DASS depression score will be significantly predicted by the interaction of the ECRS attachment anxiety score and the CABS pet attachment score; and The variance in the DASS anxiety score will be significantly predicted by the interaction of the ECRS attachment anxiety score and the CABS pet attachment score.

These two hypotheses were exploratory and were potentially interesting if pet attachment was significantly correlated with either attachment style (attachment anxiety and/or attachment avoidance) or anxiety and/or depression. To date there have been no studies showing that pet attachment changes any relations between attachment styles, anxiety, and depression.

In this study pet attachment was not significantly correlated with either attachment anxiety or attachment avoidance, anxiety, or depression. Therefore, increased pet attachment was not found to decrease anxiety or depression in relation to attachment anxiety.

The belief that pets enhance mood is based upon some empirical evidence that people depend on their pets as human substitutes (Archer, 1997), pets act as people's children

(Savishinsky, 1985), 48% of people emotionally depend on their pet (AAHA, 1998), and that pet attachment has been negatively correlated with depression (Garrity et al., 1989). This study found no evidence that pets enhance depression and anxiety, and the findings from this study do parallel most empirical explorations into the relations between depression, anxiety, and pet attachment (Budge et al., 1998; Stallones, 1994; Watson & Weinstein, 1993). To date, five (Budge et al., 1998; Quinn, 2005; Stallones, 1994; Stallones et al., 1994; Watson & Weinstein, 1993) of six studies that have measured pet attachment and anxiety or depression have found non-significant correlations or positive correlations (Stallones et al.) between the constructs. Therefore, the results of empirical investigations suggest that there are not significant correlations between anxiety, depression, and pet attachment.

Additional Pet Attachment Findings

The pet attachment construct has been examined in relation to various demographic variables (e.g., ethnicity, age, sex, pet type, income, etc.). In this study the first three hypotheses were based upon previous empirical findings involving pet attachment and the demographic variables sex, marital status, and ethnicity. Information regarding type of pet most attached to, income, role of pet, where pet is housed, amount paid for pet, amount of money spent on pet's medical issues, and number of pets owned was also gathered.

Pet Type. Participants were more attached to horses than cats and dogs, and more attached to cats than dogs. In the present study, type of pet was the demographic variable that had the strongest effect on pet attachment (CABS) mean scores. Pet type was included in all two-way ANOVAs with demographic variables that were found to have significant differences for pet attachment (CABS) mean scores (i.e., sex, role of pet, income, amount paid for pet, where pet is housed, and marital status). In all of the ANOVAs there was a

significant effect for pet type, and there were not significant effects for the other demographic variables and for the interactions.

There has been one study that has measured and reported pet type differences while measuring pet attachment with the CABS. Poresky and Daniels (1998), conversely, found that pet attachment was significantly higher for dogs than cats. Since the Poresky and Daniels study is the only study that has reported pet attachment differences based upon type of pet, the present study is the first to look at large animals (horses) in comparison to small animals (cats and dogs). As seen in Table 2, pet attachment (CABS) mean scores to horses was significantly and meaningfully higher than pet attachment (CABS) mean scores to cats and dogs. It also appears that the significant differences between sex, roles of pet, income levels, where pets are housed, amount paid for pet, are directly attributed to pet type differences. For instance, 78 females reported that they were most attached to horses in comparison to 22 males as seen in Table 7. Also, pets housed in barns, pets used for performance, and pets that people paid more money for had the highest pet attachment (CABS) mean scores. Intuitively, horses are most likely to live in barns, be used in performances, and cost more money as seen in Table 2.

Based upon the present findings and the Poresky and Daniels study it is clear that more research is needed into the relation between pet type and pet attachment. Future studies should also look into pet attachment with both large and small animals as this study found that its participants were more attached to horses than cats and dogs.

Again, females were found to be more attached to pets than males, pet attachment did not significantly differ across marital status (single, married, divorced/separated), and there were no significant differences found between Caucasian and African-American participants.

Additionally, this study found significant differences between pet attachment and income of the owner's household, type of pet, role of pet, where pet is housed, and amount paid for pet.

Income. In this study participants recorded their household income based upon ten categories that ranged from "less than \$20,000" through "more than \$100,000." Additionally, each category spanned \$10,000 (i.e., "\$20,000-\$30,000"). In the present study there were three categories that were significantly different from one another. Participants who recorded their household income as "more than \$100,000" and "\$90,000-\$100,000" had significantly higher pet attachment (CABS) mean scores than participants who recorded their household income as "\$20,000-\$30,000." Also, participants who recorded their household income as "more than \$100,000" had significantly higher pet attachment (CABS) mean scores than participants who recorded their household income as "less than \$20,000." However, since there were significant pet type differences with participants reporting that they are most highly attached to horses, income differences appear to be due primarily to higher attachment to horses (which cost more to acquire and maintain). The present findings deviated from Poresky and Daniels' (1998) study that found that pet attachment did not differ significantly for different income groups. But, their study did not include horses.

Overall, as seen by Table 2, there is a general trend of pet attachment (CABS) mean scores increasing as reported household income increases. Contrary to this general trend, the third and fourth highest pet attachment (CABS) mean scores were in the "\$30,000-\$40,000" and "\$40,000-\$50,000" categories.

A 10 (Income) X 3 (Pet Type: Dog, Cat, Horse) ANOVA was used to examine the effect of income and pet type on pet attachment (CABS) means scores. As has been found in all cases thus far, there was no significant effect found for income while there was for pet

type. Therefore, pet attachment (CABS) scores differences appear to be attributed primarily to type of pet owned, with higher attachment to horses explaining income differences.

Role of Pet and Where Pet is Housed. Related to the pet attachment differences across pet types, pet attachment was significantly different for the variables “role of pet” and “where pet is housed.” Pet attachment was higher for pets whose role was labeled “performance” in comparison to pets whose role was labeled “companion” as seen in Table 2.

Pet attachment was higher for pets housed in barns in comparison to those housed in houses or outdoors as seen in Table 2. These findings relate to pet attachment being higher for horses than for cats and dogs, as horses are more often housed in barns and have roles as performers. The review of the literature did not find any studies that investigated variables similar to “role of pet” and “where pet is housed” in relation to pet attachment. Therefore, few conclusions can be made and more research is necessary, especially looking at pet attachment differences to pets other than horses that are housed in places other than houses, and other pets whose primary roles are performance-based.

Amount Paid for Pet. The final demographic variable where significant pet attachment differences were found is “amount paid for pet.” Participants’ pet attachment (CABS) mean scores increased in a linear fashion as the amounts paid for pets increased steadily from the lowest score at “\$0-\$100” and the highest score at “more than \$20,000” as seen in Table 2. The “amount paid for pet” variable was not found in any other study, and it seems reasonable that there would be greater attachment to pets when people paid more for the pet.

Limitations of the Study

One limitation of the study is that the data was gathered at sites where pet attachment would most likely be high (i.e., veterinary medical facilities). This would potentially restrict the variance of pet attachment scores and impact this study's ability to fully investigate the pet attachment construct. Ideally, there would be more variation in pet attachment scores (*SD* was 6.45 in this study), which would enable comparisons of higher and lower pet attachment scores to constructs such as attachment styles, anxiety, and depression. This study did not find any significant correlations between pet attachment and either attachment styles or mood variables (depression and anxiety), and gathering pet attachment data solely from participants who are more likely to be highly attached to pets may be a limitation of this study.

A second limitation is that there was homogeneity regarding the ethnicity of the sample. Caucasian-American participants made up 95% of the sample and limited this study's ability to understand ethnic differences across pet attachment, attachment styles, and anxiety/depression. Hypothesis three specifically predicted that Caucasian-Americans would be more highly attached to pets than African-Americans, and although there were enough African-American participants to analyze potential differences, more representation by African-Americans, Hispanic-Americans, Asian-Americans, etc. would have strengthened these results.

A third limitation pertains to the measurement of pet attachment. As seen in Appendix A questions 46-53, the Companion Animal Bonding Scale (CABS) has three questions (questions 49, 52, and 53) that appear more oriented toward cat and dog owners than horse owners. Interestingly, in the present study participants were most attached to horses despite these three questions. Further analysis of the CABS showed that dog and cat

owners had higher mean scores on questions 49, 52, and 53 than horse owners, and that horse owners had higher mean scores on the other five CABS items. Thus, it appears that using the CABS as a measure of pet attachment for horses (or any large animal) may not be appropriate. In the future, studies should look to create a pet attachment measure that is suitable for measuring attachment to both large and small animals.

Implications for Counseling Psychology

This study was motivated by the possibility that pet attachment could assist people in dealing with depression and anxiety. In this study pet attachment was not found to significantly correlate with attachment styles, anxiety, and depression, but more research is warranted in this area. There is pervasive anecdotal evidence that pets do help enhance people's moods and ability to relate with other people. Yet, no empirical investigation has been able to pinpoint and verify the anecdotal evidence.

As psychologists we have an ethical responsibility to practice beneficence and to assist our client's growth in a positive manner. We have evidence that owning pets serves many purposes and fulfills many needs as 70% of pet owners view their pets as children, 48% emotionally depend on their pet, and 83% would risk their lives for their pets (AAHA, 1998), yet we have yet to integrate pets into our treatment of mental health issues.

This study looked to form a bridge between two fields, psychology and veterinary medicine, as both areas are rich in their history of helping people. Veterinary medicine helps people, animals, and the relationships between humans and pets. Psychology need to establish a stronger presence in the veterinary medicine, and particularly in the component of veterinary medicine that deals with the relationships between humans and pets.

Suggestions for Future Research

Based upon the review of the literature and the findings from this study there are a number of areas where future research is warranted. First, this study was the only study to report pet attachment differences by sex and then pet. Females were found to be significantly more attached to pets than men, but females were only more attached than men to cats. More research needs to be done regarding the specific nature of attachments to pets, and in most cases this simply involves reporting specific results. For example, Poresky and Daniels (1998) reported that women were more attached to pets than men, but did not report whether significant pet attachment differences existed for sex by pet type.

Second, there is a dearth of studies that have looked into ethnic differences in pet attachment. To date only one study has examined this relation (Brown, 2002). More studies are needed to gain an understanding of the potential differences that people from different ethnic backgrounds possess in their attachment to pets.

Third, there need to be more studies measuring pet attachment, attachment styles, and anxiety. We are just beginning to investigate pet attachment in relation to anxiety (we know much more about depression), as well as pet attachment in relation to attachment styles with humans. To date, most studies have explored pet attachment in relation to demographic variables. There is a need, though, to broaden pet attachment research into areas that can help psychologists and veterinarians use pet attachment to better understand how to facilitate client growth and treat clients more effectively.

Fourth, this was the first study that measured pet attachment to large and small pets. Since pets tend to be dogs and cats it appears that research has focused primarily on these two pet types in relation to pet attachment. Ironically, this study found that its participants

were more attached to horses than both cats and dogs. Additional research is needed that measured attachment to both large and small animal pets so we can continue to learn more about the pet attachment construct.

Finally, it is important that future research gather pet attachment data from participants who are likely to vary in their pet attachment scores. This will allow for a better understanding of how pet attachment relates to constructs such as human attachment styles and mood (e.g., depression and anxiety).

Conclusion

The present study had multiple intentions primarily in relation to the construct of pet attachment. First, it sought to extend the empirical understanding that is available regarding pet attachment in relation to various demographic variables (e.g., sex, age, ethnicity, pet type, income, etc.). This study found that for its participants pet attachment was higher for females than males; Caucasian-Americans and African-Americans did not differ in pet attachment, although Caucasian-Americans and Racial and Ethnic Minority-Americans (a collapsed category formed due to small numbers of ethnic minorities in the study ($n = 12$)) did significantly differ in their pet attachment. Also, participants were more attached to horses than cats and dogs, and pet type proved to be the variable that had the most significant and meaningful effect on pet attachment. Finally, participants' household income significantly effected pet attachment as the general trend was that pet attachment increased as income increased.

The second purpose of this study was to look into the relation between pet attachment and attachment styles to humans. Pet attachment developed as a construct based upon Bowlby's (1969) original attachment theory work and no study had measured both pet

attachment and human attachment styles. This study was the first to gather pet and human attachment scores, and the scores from these participants did not significantly correlate with one another. The hope is that research will continue to look into relations between these two constructs and that this study serves as a starting point for future endeavors.

The third purpose of this study was to add some empirical evidence to the inconsistent findings in the pet attachment/depression and anxiety relation. The findings have been mixed with most studies finding that pet attachment, depression and anxiety are not significantly correlated (Budge, Spicer, Jones, & St. George, 1998, Stallones, 1994, Watson & Weinstein, 1993). This study also found that pet attachment was not significantly correlated with depression and anxiety.

The fourth purpose of this study was to add to the research that has investigated human attachment styles in relation to anxiety and depression. This study found that attachment anxiety was significantly positively correlated with depression and anxiety, while attachment avoidance was significantly positively correlated with depression but not with anxiety. These significant positive correlations match results from previous studies (DeFronzo, Panzarella, & Butler, 2001; Evans & Wortheim, 1998; Gittleman, Klein, Smider, & Essex, 1998; Lopez & Gormley, 2002; Lopez, Mauricio, Gormley, Simko, & Berger, 2001; Mikulincer, Florian, & Weller, 1993; Strodl & Noller, 2003; Priel & Shamia, 1995; Van Buren & Cooley, 2002; Wei, Heppner, & Mallinckrodt, 2003), while the finding that attachment avoidance does not significantly correlate with anxiety is not matched in any previous study.

APPENDIX: QUESTIONNAIRE GIVEN TO PARTICIPANTS

Title of Study: An examination of the relations between human attachment, pet attachment, depression, and anxiety

**Investigators: Aaron Quinn M.S. - Iowa State University, Department of Psychology,
294-2714**

INTRODUCTION

The purpose of this study is to **learn more about the relation that pets have to human moods**. You are being invited to participate in this study because you are a pet owner and a client of the ISU Veterinary Teaching Hospital.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will last for **about 20-30 minutes (or the time that it takes you to complete the items on the questionnaire)**. During the study you may expect the following study procedures to be followed. **You will be asked to participate in the study. You will be given a questionnaire with an answer sheet, and you will be asked to turn in your completed answer sheet with the questionnaire to the investigator.**

RISKS

While participating in this study you may experience the following risks: **there are no foreseeable risks at this time from participating in this study.**

BENEFITS

If you decide to participate in this study there **may be no direct benefit to you (a benefit is defined as a “desired outcome or advantage.”)**. It is hoped that the information gained in this study will benefit society by providing information regarding the impact of pets on human moods.

PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information. To ensure confidentiality to the extent permitted by law, the following measures will be taken: the information provided on the answer sheet will only be viewed by the investigator and by persons affiliated with the scoring of the answer sheet (scoring is done by machine). The persons affiliated with the scoring will have no access to the questionnaire, thus, they will only see bubbles on a score sheet. Once scored, the data will be entered into a database

that will be viewed/used only by the investigator. The paper answer sheets will be destroyed. If the results are published, your identity will remain confidential.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study contact **Aaron Quinn at 294-2714** . If you have any questions about the rights of research subjects or research-related injury, please contact the Human Subjects Research Office, 2810 Beardshear Hall, (515) 294-4566; austingr@iastate.edu or the Research Compliance Officer, Office of Research Compliance, 2810 Beardshear Hall, (515) 294-3115; dament@iastate.edu

SUBJECT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the signed and dated written informed consent prior to your participation in the study.

Subject's Name (printed) _____

(Subject's Signature)

(Date)

Directions (PLEASE READ THIS SECTION)

Your completion of this questionnaire is voluntary. You can choose to skip any questions that you do not feel comfortable answering. However, you are encouraged to respond to as many of these items as you are able, as you are in the unique position to help us better understand the relation between pet ownership, your relationships with other humans, and human moods. ***Please note:** There are **four** sets of questions: **1.** Basic information about you; **2.** Attachment to romantic partner(s); **3.** Pet attachment; **4.** Mood.

Step 1 (optional): Fill in your name and corresponding bubbles in the space labeled "Name" on the GREEN sheet

Step 2: Fill in bubble for your sex ("M" or "F") in the space labeled "SEX."

Step 3: Fill in your name and corresponding bubbles in the space labeled "BIRTH DATE."

Step 4: In the space labeled "IDENTIFICATION NUMBER" in COLUMN A fill in the number and corresponding bubble with the type of animal that you are **MOST ATTACHED (connected) TO: 1=DOG; 2=CAT; 3=HORSE**

Step 5: PLEASE USE A #2 PENCIL

Now you're ready to begin!

Answer the following questions beginning with question #1 on the GREEN answer sheet. Please CHOOSE ONE answer for each question.

1. Please indicate your ethnicity on the answer sheet:
 1. Caucasian/White
 2. African-American
 3. Hispanic-American
 4. Asian-American
 5. Native-American
 6. International Student
 7. Other (example: bi-racial)

2. Your Marital Status:
 1. Single
 2. Married
 3. Divorced/Separated

3. What is your household's total income?
 1. less than \$20,000
 2. \$20,000 - \$30,000
 3. \$30,000 - \$40,000
 4. \$40,000 - \$50,000
 5. \$50,000 - \$60,000
 6. \$60,000 - \$70,000
 7. \$70,000 - \$80,000
 8. \$80,000 - \$90,000
 9. \$90,000 - \$100,000

10. Over \$100, 000

4. What is the primary role of your animal?

1. Companion
2. Work
3. Perform
4. Breed
5. Other

5. Where is your animal primarily housed?

1. House
2. Barn
3. Outdoors
4. Kennel
5. Other

6. How much did you pay for your animal?

1. \$0 - \$100
2. \$100 - \$250
3. \$250 - \$500
4. \$500 - \$1,000
5. \$1,000 - \$2,000
6. \$2,000 - \$5,000
7. \$5,000 - \$10,000
8. \$10,000 - \$20,000
9. Over \$20,000

7. How much have you spent on your animals' medical needs/issues?

1. \$0 - \$100
2. \$100 - \$250
3. \$250 - \$500
4. \$500 - \$1,000
5. \$1,000 - \$2,000
6. \$2,000 - \$5,000
7. \$5,000 - \$10,000
8. \$10,000 - \$20,000
9. Over \$20,000

8. Have you and your animal (or one of your animals) ever experienced the same medical issue at the same time

1. Yes
2. No

9. How many animals do you own?
1. 1
 2. 2
 3. 3
 4. 4
 5. 5
 6. 6
 7. 7
 8. 8
 9. 9
 10. 10+

ECRS

Instructions: The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement indicating how much you agree or disagree with it. **FILL IN THE CIRCLE ON THE ANSWER SHEET BASED ON THE FOLLOWING RATING SCALE.**

Disagree strongly			Neutral/mixed			Agree Strongly
1	2	3	4	5	6	7

10. I prefer not to show a partner how I feel deep down.
11. I worry about being abandoned.
12. I am very comfortable being close to romantic partners.
13. I worry a lot about my relationships.
14. Just when my partner starts to get close to me I feel myself pulling away.
15. I worry that romantic partners won't care about me as much as I care about them.
16. I get uncomfortable when a romantic partner wants to be very close.
17. I worry a fair amount of the time about losing my partner.
18. I don't feel comfortable opening up to romantic partners.
19. I often feel that my partner's feelings for me were as strong as my feelings were for him/her.
20. I want to get close to my partner, but I keep pulling back.
21. I often want to merge completely with romantic partners, and this sometimes scares them away.
22. I am nervous when partners get too close to me.
23. I worry about being alone.
24. I feel comfortable sharing my private thoughts and feelings with my partner.
25. My desire to be very close sometimes scares people away.
26. I try to avoid getting too close to a partner.
27. I need a lot of reassurance that I am loved by my partner.
28. I find it relatively easy to get close to my partner.

29. Sometimes I feel that I force my partners to show more feeling, more commitment.
30. I find it difficult to allow myself to depend on romantic partners.
31. I do not often worry about being abandoned.
32. I prefer not to be too close to romantic partners.
33. If I can't get my partner to show romantic interest in me, I get upset or angry.
34. I tell my partner just about everything.
35. I find that my partner(s) don't want to get as close as I would like.
36. I usually discuss my problems and concerns with my partner.
37. When I am not involved in a relationship, I feel somewhat anxious and insecure.
38. I feel comfortable depending on romantic partners.
39. I get frustrated when my partner is not around as much as I would like.
40. I don't mind asking romantic partners for comfort, advice, or help.
41. I get frustrated if romantic partners are not available when I need them.
42. It helps to turn to my romantic partner in times of need.
43. When romantic partners disapprove of me, I feel really bad about myself.
44. I turn to my partner for many things, including comfort and reassurance.
45. I resent it when my partner spends time away from me.

CABS

Instructions: FILL IN THE CIRCLE ON THE ANSWER SHEET BASED ON THE FOLLOWING RATING SCALE. REMEMBER: BASE YOUR ANSWERS ON THE PET THAT YOU ARE MOST ATTACHED TO.

Always	Generally	Often	Rarely	Never
1	2	3	4	5

46. How often are you responsible for your animal?
47. How often do you clean up after your animal?
48. How often do you hold, stroke, or pet your animal?
49. How often does your animal sleep with you?
50. How often do you feel that your animal is responsive to you?
51. How often do you feel that that you have a close relationship with your animal?
52. How often do you travel with your animal?
53. How often do you sleep near your companion animal?

DASS

Instructions: Please read the each statement and circle a number 0, 1, 2, or 3 which indicated how much the statement applies to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

- 1 = Did not apply to me at all
 2= Applied to me to some degree, or some of the time
 3= Applied to me a considerable degree, or a good part of the time
 4= Applied to me very much, or most of the time

54. I found myself getting upset at quite trivial things.
 55. I was aware of dryness of my mouth.
 56. I could not seem to experience any positive feelings at all.
 57. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion).
 58. I just could not seem to get going.
 59. I tended to overreact to situations.
 60. I had a feeling of shakiness.
 61. I found it difficult to relax.
 62. I found myself in situations that made me so anxious I was most relieved when they ended.
 63. I felt that I had nothing to look forward to.
 64. I found myself getting upset rather easily.
 65. I felt that I was using a lot of nervous energy.
 66. I felt sad and depressed.
 67. I found myself getting impatient when I was delayed in any way.
 68. I had a feeling of faintness.
 69. I felt that I had lost interest in just about everything.
 70. I felt that I wasn't worth much as a person.
 71. I felt that I was rather touchy.
 72. I perspired noticeably (e.g., sweaty palms) in the absence of high temperatures or physical exertion.
 73. I felt scared without any good reason.
 74. I felt that life wasn't worthwhile.
 75. I found it hard to wind down.
 76. I had difficulty in swallowing.
 77. I could not seem to get any enjoyment out of the things I did.
 78. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat).
 79. I felt downhearted and blue.
 80. I found that I was very irritable.
 81. I felt I was close to panic.
 82. I found it hard to calm down after something upset me.
 83. I feared that I would be "thrown" by some trivial but unfamiliar task.

84. I was unable to become enthusiastic about anything.
85. I found it difficult to tolerate interruptions to what I was doing.
86. I was in a state of nervous tension.
87. I felt I was pretty worthless.
88. I was intolerant of anything that kept me from getting on with what I was doing.
89. I felt terrified.
90. I could see nothing in the future to be hopeful about
91. I felt that life was meaningless
92. I found myself getting agitated
93. I was worried about situations in which I might panic and make a fool of myself
94. I experienced trembling (eg, in the hands)
95. I found it difficult to work up the initiative to do things

Thank You!

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