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**EXPLORING ADOLESCENT LONELINESS AND
COMPANION
ANIMAL ATTACHMENT**

BY

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B.S.N., St. Mary of the Plains College, 1982
M.N., Wichita State University, 1988
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DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy

Nursing

University of New Mexico
Albuquerque, New Mexico

August, 2009

DEDICATION

To my father, Don Claassen (1927–2008), who showed me how to live in harmony and to respect all of God's creations, I dedicate this research.

ACKNOWLEDGMENT

Thank you, Dr. Marie Lobo, for your guidance and encouragement throughout my doctoral education and providing a solid foundation of nursing academia. Gratitude is also expressed to the members of my doctoral committee; each of you has contributed to my development as a nurse scholar.

I thank my family. My parents welcomed each pet I brought home and fostered virtues of love and guardianship. My daughter, Brigette, has inherited our family's love for companion animals and now cherishes and tenderly cares for her own pets.

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ABSTRACT OF DISSERTATION

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ABSTRACT

This study explored the relationship between companion animal attachment and adolescent loneliness. Self report measures of loneliness (Revised UCLA Loneliness Scale), companion animal attachment (Companion Animal Bonding Scale), and social support (Social Support Questionnaire Revised Short Form) were completed by 293 adolescents from two ethnically diverse southwest rural high schools. Pet information included the type of favored pet, length of pet relationship, the number of household pets, and how the participants described their pet relationship. Participants also provided basic demographic data about themselves and their pets. Descriptive statistics, standard multiple regressions, t-tests, and ANOVAs were employed to examine relationships

among the demographic data, pet variables, loneliness, and social support. Pet owners reported significantly lower loneliness scores than non-pet owners, $t(290) = 4.1$, $p < .001$. Furthermore, companion animal bonding scores were inversely related to loneliness scores. Social support was measured with two scores: the number of humans in the social network and the perceived satisfaction with the network. Companion animal attachment was positively related to the number of humans in the social support network. However, teens with multiple household pets reported less satisfaction with the social network.

Females reported higher pet attachment than males $t(241) = 2.61$, $p = .01$, but otherwise no significant demographic factors were found in loneliness or pet attachment scores. Adolescents predominately described their pet relationship with affectionate terms. It is questionable if a companion animal assessment tool aptly captures the feelings adolescents have for their pets. Hence both theory and instrument development for pet attachment among adolescents is recommended.

TABLE OF CONTENTS

LIST OF FIGURES	xiv
LIST OF TABLES	xv
CHAPTER 1: INTRODUCTION.....	1
Overview of Problem.....	1
Research Needs.....	3
Purpose of the Study and Research Question	4
Significance of the Study.....	5
Definitions.....	6
CHAPTER 2: REVIEW OF RELATED LITERATURE.....	7
The Experience of Loneliness.....	7
Loneliness Defined	8
Social and Emotional Loneliness.....	9
Adolescent Loneliness	11
Working Definition of Loneliness	11
Prevalence of Adolescent Loneliness	12
Time Alone During Adolescence.....	13
Gender.....	14
Cultural Considerations	15
Theoretical Frameworks of Loneliness.....	17
Social Support Framework	17
Limitations of Social Support Explaining Loneliness	19
Cognitive Bias Framework	20

Attachment and Loneliness.....	21
Attachment in Adolescence	23
Consequences of Adolescent Loneliness	24
Coping with Loneliness	26
Companion Animal Attachment as an Intervention.....	28
The Companion Animal Relationship	29
Human Health Correlates and Companion Animals.....	29
Research Need for Loneliness and Adolescents	32
Demographic Trends in Pet Keeping and Attachment	33
Attachment Theory and Companion Animals	34
Care Giving.....	37
Proximity Seeking and Separation Distress.....	38
Safe Haven and Secure Base.....	40
Social Catalyst	41
Implications for Pet Attachment.....	42
Summary.....	43
CHAPTER 3: METHODS	45
Appropriateness of Study.....	46
Limitations of a Survey Design	46
Statistical Validity.....	47
Sampling and Setting	47
Recruitment.....	48
Data Collection	49

Confidentiality	49
Research Approval.....	50
Ethical Considerations	50
Instruments.....	51
Revised UCLA Loneliness Scale.....	51
Social and Emotional Loneliness.....	52
Reliability and Validity of the RULS	52
Companion Animal Bonding Scale	53
Reliability and Validity of the CABS	54
Social Support Questionnaire, Short Form	55
Reliability and Validity of the SSQSR	56
Demographic Information.....	56
How the Study Addressed the Research Questions	56
Summary.....	57
CHAPTER 4: RESULTS	58
Data Preparation for Analysis.....	58
Demographic Information of the Sample	59
Pet Demographic Data	60
Instrument Reliabilities.....	62
Statistical Analysis per Research Question.....	63
Research Question 1: What Is the Relationship Between Loneliness and Companion Animal Attachment in Adolescents?.....	63
Research Question 2: Which Companion Animal Variables (Bond,	

Length of Relationship, and Number of Household Pets) Are Most Related to Levels of Loneliness in Adolescents?	64
Research Question 3: What Is the Influence of Human Social Support on Adolescent Loneliness?	65
Research Question 4: What Is the Influence of Human Social Support on Adolescent CAB?.....	66
Research Question 5: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnicity/Race, Family Structure, and Housing Type) and Loneliness?.....	67
Research Question 6: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnicity/Race, Family Structure, and Housing Type) and Companion Animal Bonding?	68
Relationships of Pet Variables and CABS scores.....	69
Research Question 7: How Do Adolescents Describe Their Relationship with Their Favorite Pet?.....	69
Summary	70
CHAPTER 5: DISCUSSION	73
Research Question 1: What Is the Relationship Between Loneliness and Companion Animal Attachment in Adolescents?	73
Research Question 2: Which Companion Animal Variables (Bond, Length of Relationship, and Number of Household Pets) Are Most Related to Levels of Loneliness in Adolescents?	74
Research Question 3: What Is the Influence of Human Social Support on	

Adolescent Loneliness?	77
Research Question 4: What Is the Influence of Human Social Support on Adolescent CAB?.....	78
Social Support Number and Pet Variables.....	79
Social Support Satisfaction and Pet Variables.....	80
Research Question 5: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnicity/Race, Family Structure, and Housing Type) and Loneliness?.....	81
Research Question 6: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnicity/Race, Family Structure, and Housing Type) and Companion Animal Bonding?	82
Research Question 7: How Do Adolescents Describe Their Relationship with Their Favorite Pet?.....	84
Survey Strengths	85
Survey Limitations.....	87
Recommendations for Future Research	88
Nursing Implications.....	90
Summary	91
LIST OF APPENDICES.....	93
APPENDICES	94
Appendix A: High School Teacher Letter	94
Appendix B: University of New Mexico Health Sciences Center, Parental Consent to Participate in Student Research	96

Appendix C: Student Letter from University of New Mexico Health
Sciences Center, Informed Consent Cover Letter for Anonymous
Surveys.....99

Appendix D: Student Packet.....101

REFERENCES.....115

LIST OF FIGURES

Figure 1. Social and emotional loneliness	9
Figure 2. Conceptual model of companion animal attachment	37
Figure 3. Error chart: Mean loneliness scores of adolescents with and without pets	64
Figure 4. Common categories of pet relationship	70

LIST OF TABLES

Table 1. Health compromising correlates of adolescent and young adult loneliness.....	25
Table 2. Demographic information of the sample	60
Table 3. Type and frequency of favored pet	61
Table 4. Instruments and quantitative data	62
Table 5. Coefficients of pet variables predicting loneliness	65
Table 6. Coefficients of social support variables predicting loneliness.....	66
Table 7. Coefficients of pet variables predicting social support number	66
Table 8. Coefficients of pet variables predicting social support satisfaction	67
Table 9. Loneliness and demographic variables	67
Table 10. CABS scores and demographic variables	68
Table 11. Pet relationship quotes	71

Chapter 1: Introduction

Loneliness is a distressing and very common experience throughout adolescence. During this tumultuous developmental time, loneliness often ensues when human relationships are perceived as inadequate or unsatisfactory. A companion animal attachment may be a comforting and steady relationship to ease a teen's lonely feelings. The purpose of this study is to explore the relationship between adolescent loneliness and companion animal bonding.

Overview of Problem

Loneliness is an inescapable part of life affecting everyone at some time. Weiss (1973) defined loneliness as an unpleasant, subjective response to the absence of some particular relational provision. All people will eventually experience the distress of loneliness, but its frequency and intensity appear to be more prevalent during adolescence, or the teen years, than at any other life stage (Brennan, 1982; Marcoen, Goossens, & Caes, 1987; Medora & Woodward, 1986).

While feeling lonely is a normal part of life, it becomes problematic when it is pervasive and hinders the achievement of normal developmental tasks (Larson, 1999; Mahon, 1983). Up to 66% of adolescents report living in this sphere of problematic loneliness (Culp, Clyman, & Culp, 1995). Arnett (1999) suggested the teen years as "storm and stress," (p. 317) when adolescents are pulled between dual imperatives of social connection versus individualism; this may contribute to feelings of isolation. Loneliness may also ensue when basic needs of attachment, social networks, and companionships are perceived as unsatisfactory (Bucholz & Catton, 1999; Nickerson & Nagle, 2005; Weiss, 1973).

If untended, adolescent loneliness can manifest into a host of emotional and physical problems ranging from poor school achievement to depression and suicide (Culp et al., 1995; Larson, 1999). Unfortunately, counseling services have not been found to be significantly helpful for adolescents struggling with chronic loneliness (Culp et al., 1995; DeBerard & Kleinknecht, 1995; Kodjo & Auinger, 2004). According to Weiss (1973), the most satisfying way to overcome loneliness is to either maximize one's existing social network or form new and rewarding relationships. It is, however, often difficult for chronically lonely teens to seek or maintain rewarding human social relationships. Weiss did not specifically limit relational provisions to humans when he observed that in combating loneliness, "the responsiveness to just the right sort of relationship with others is remarkable" (p. 13).

One such rewarding relationship may be with a companion animal. A companion animal is any domestic animal kept and provided for enjoyment and pleasure rather than solely for economic or safety purposes (Scott, 2004). Human relationships with companion animals often fulfill the intrinsic needs for emotional belonging and love (Levinson, 1972, 1997). Pet keeping is popular among American families with over 70% of households owning at least one pet (American Veterinary Medical Association [AVMA], 2002). The key factor in studying the human-nonhuman dyad is the quality of the relationship (Ory & Goldberg, 1983; Poresky, Hendrix, Mosier, & Samuelson, 1987). Despite inherent pet inconveniences such as expense, noise, and property damage, over 90% of pet guardians report a deep affection for their pet (American Pet Products Manufacturers Association [APPMA], 2005; Bryant, 1990).

The affection between a human and a companion animal is best described within attachment theory; each is seen as an irreplaceable figure and the relationship is mostly a nurturing one. Attachment theorist John Bowlby (1973a, 1982) described how humans and animals share instinctual attachment behaviors of care giving, proximity seeking, and distress upon separation. The exchange of attachment behaviors in human-pet interaction (HPI) often forms affectional bonds that can be as intense as the emotional bonds between people (Levinson, 1972; Rynearson, 1978).

Given the affection many humans and their pets share, it is not surprising that this bond has been shown to reduce feelings of loneliness among older adults (Banks & Banks, 2005; Calvert, 1989; Garrity, Stallones, Marx, & Johnson, 1989; Johnson & Meadows, 2002) and homeless adolescents (Rew, 2000). Research has offered explanations on how a pet buffers loneliness that includes its constant availability, non-judgmental and acceptance affection, and facilitation of contact with other people (Beck & Katcher, 1983; Endenburg, Hart, & Bouw, 1994; McNicholas & Collis, 2000; Melson, 2001; Messent, 1985).

Research Needs

What remains to be explored is if the companion animal bond (CAB) that appear to decrease loneliness in other populations also applies to the typical adolescent population. The majority of adolescents enjoy the company of animals and want a pet whether they have one or not (Kidd & Kidd, 1985; Triebenbacher, 1998). Adolescents have been found to display attachment behaviors toward their pets such as nurturance, solace, and intense trust—often revealing feelings they would not divulge in human relationships (Kidd & Kidd, 1990; Robin, Ten Bense, Quigley, & Anderson, 1983; Siegel, 1995). Adolescents

attached to their pet have reported higher self-esteem than their peers without a pet attachment (Covert, Whiren, Keith, & Nelson, 1985; Poresky, Mosier, & Samuelson, 1988; Triebenbacher, 1998). Furthermore, self-esteem negatively correlates with adolescent loneliness (Mahon, Yarcheski, Yarcheski, Cannella, & Hanks, 2006). If a pet relationship could serve as a steady and trustworthy anchor during the uncertain teen years, this attainable arrangement might help lessen the loneliness common during this developmental stage. Nursing assessment of the adolescent would include the presence and attachment of a companion animal in the household. Health intervention for the adolescent experiencing loneliness would assimilate recognition and facilitation of the pet relationship.

Another area of unexplored research is examining if two pet variables, length of relationship and number of pets in the household, are related to either loneliness or pet attachment. From pet bereavement research, it appears that the length of pet relationship, but not the number of household pets, influences the intensity of mourning for a companion animal (Brown, Richards, & Wilson, 1996; Planchon, Templer, Stokes, & Keller, 2002). Further research is indicated examining these pet variables.

Purpose of the Study and Research Questions

The purpose of this study is to explore the relationship between adolescent loneliness and companion animal attachment. A cross-sectional research design using t-tests, multiple regression analyses, and univariate ANOVAs from survey responses of regular education high school students was conducted. Demographic data included gender, age, family structure, number of siblings, housing type, pet ownership, type of favored pet, and whether the pet was kept predominately inside or outside. For non-pet owners, reasons for not having a pet were asked.

Since human social support negatively correlates with teen loneliness (Mahon et al., 2006) and research is indeterminate regarding its influence with CAB, social support was also measured and statistically examined. To better understand adolescents' relationships with their pets, narrative responses to the question, "How do you describe your relationship with your favorite pet?" were categorized and examined descriptively.

The research questions were:

1. What is the relationship between loneliness and companion animal attachment in adolescents?
2. Which companion animal variables (bond, length of relationship, and number of household pets) are most related to levels of loneliness in adolescents?
3. What is the influence of human social support on adolescent loneliness?
4. What is the influence of human social support on adolescent CAB?
5. What is the relationship between the demographic variables and loneliness?
6. What is the relationship between the demographic variables and CAB?
7. How do adolescents describe their relationship with their favorite pet?

Significance of the Study

The study of a companion animal bond in buffering adolescent loneliness is important for many reasons. Pervasive adolescent loneliness is not only an unpleasant experience, but has potentially devastating immediate and life-long effects. While not a substitute for human socialization, a CAB may help lessen the discomfort of feeling alone. Second, the study refocuses the importance of animals in the lives of humans. Biologist E.O. Wilson (1984) argued that humans share a genetic predisposition to be attuned to animals. Unfortunately, most American families have not recognized the innate connection

between animals and children (Melson, 2001; Wilson, 1984). Additionally, dissemination of research findings to nursing and the community at large may serve as an impetus to either strengthen existing bonds or form new companion animal bonds. A CAB may well offer “just the right relationship” Weiss (1973, p. 13) recommended for easing loneliness.

Definitions

- Adolescent—a person 13–19 years old; teen
- Companion animal—any domestic animal kept for enjoyment and pleasure rather than solely for economic or safety purposes; pet; nonhuman animal
- Companion animal bond (CAB)—a mutually rewarding relationship between a human and non-human animal influenced by attachment behaviors
- Loneliness—a sad or aching sense of isolation; a feeling of being alone or distanced from others associated with a longing for contact or closeness
- Pet owner—a person who is recognized to have responsibility for the care of a pet; pet guardian
- Social support—the existence or availability of reliable people who provide care, value, and assistance
- Social support number—the number of others in the social network available for support
- Social support satisfaction—the perceived degree of satisfaction with available support network

Chapter 2: Review of Related Literature

The Experience of Loneliness

Loneliness is an inescapable part of life and knows no boundaries. An inherent, universal need exists among all people for a sense of belonging and to feel cared for by others (Baumeister & Leary, 1995). When these needs are not consistently met, the inevitability of loneliness emerges. Peplau and Perlman (1982) wrote,

Few of us have escaped the painful experience of loneliness. In the natural course of growing up our social relationships begin, change, and end. . . . As children, we venture into a wider world of social relations where we try, not always successfully, to gain acceptance and friendships from peers. . . . For teenagers, the exhilarating prospect of first love may in reality include experiences of love spurned or gone sour. . . . Social transitions are a basic fact of life in modern society, and so is loneliness.
(p. 1)

Most individuals experience periods of loneliness from time to time, for example, when starting a new school, moving to a new town, or losing an important relationship. In such situations loneliness is often a transitory and normative emotional response. While discomfiting, episodic feelings of loneliness actually can be socially helpful. Unsettling experiences of feeling alone in the face of loss or change tend to both fortify the ability to tolerate temporary isolation and encourage self reflection (Koenig & Abrams, 1999). Measures people instigate to reduce feeling lonely often lead to either strengthening social relationships or seeking new, meaningful social relations (Goossens & Marcoen, 1999; Larson, 1999). Learning to face transient loneliness in childhood may establish a capacity that will be useful in other periods of life (Rubin, 1982). Accordingly, loneliness, when temporary and quickly amended, is common and typically not associated with maladjustment.

Loneliness does become problematic, however, when it is perceived as unmanageable, intense, or prolonged and impedes healthy psychological adjustment (DeBerard & Kleinknecht, 1995; Medora & Woodward, 1986; Moore & Schultz, 1983; Weiss, 1973, 1982). For millions of Americans, loneliness is endured so often and in so many social contexts, it becomes a pervasive and harmful negative personality state (Peplau & Perlman, 1982). Chronic loneliness, a state which one feels powerless to change, can manifest into deleterious emotional, social, and even physical sequelae (Lynch, 2000). Amongst the most troubled with loneliness are adolescents (Brennan, 1982; Culp et al., 1995; Medora & Woodward, 1986). Given the high degree of emotional difficulties and poor prognosis associated with feelings of loneliness in adolescence, it is an important research area.

Loneliness Defined

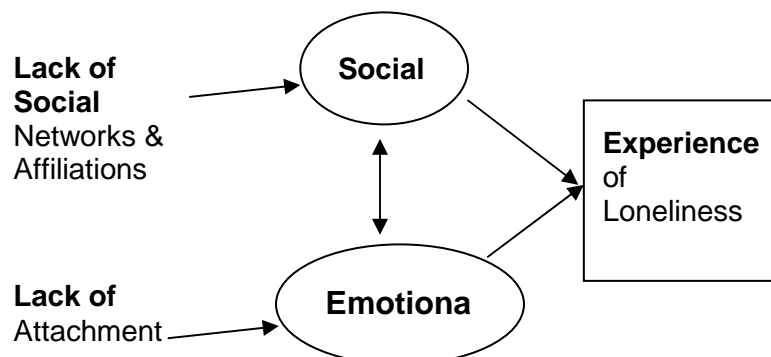
Loneliness is best described in emotional terms. Emotions are biologically evolved tools by which we appraise experiences and prepare to act on situations (Cole, Martin, & Dennis, 2004). Emotions have endured by their value of survival. Ainsworth (1989) described how loneliness is a basic behavioral motivator evolved in social species to seek and maintain proximity to co-species. Being sociable with others developed as a survival advantage, allowing those collaborating in a group to better gather food, build shelter, teach children, and protect themselves from predators. Given the survival advantage of sociable behavior, the lack of opportunity for social interaction manifested into sad feelings of loneliness, and consequently, a motivation to seek companionship. Lonely feelings may endure today as a survival signal to change interactive behavior toward others.

Despite the many definitions of loneliness, it is fundamentally a disturbing and distressing experience. An often-cited definition is of Peplau and Perlman (1982), “Loneliness is the unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively” (p. 4). According to these researchers, there are three essential characteristics of loneliness. First, it results from deficiencies in social relationships. Second, it represents a subjective experience that is not necessarily synonymous with social isolation; one can be alone without feeling lonely, or conversely, feel lonely in the midst of a group of people. Finally, it is unpleasant and emotionally distressing. Childhood loneliness has been defined in a similar vein as with adults, “A sad, subjective state resulting from dissatisfaction with one’s social experiences” (Youngblade, Berlin, & Belsky, 1999, p. 136).

Social and Emotional Loneliness

Sociologist Weiss (1973) also portrayed loneliness as a distressing response, “Loneliness appears to be the response to the absence of some particular type of relationship, or more accurately, a response to the absence of some particular relational provision” (p. 17). Weiss (1982) further proposed that two distinct types of loneliness exist, social and emotional, each with different antecedents (Figure 1).

Figure 1. Social and Emotional Loneliness



Social loneliness results from the lack of social relationship networks that provides a sense of community. Social relationships may include a group of friends who engage in social activities together, or any relationship that provides feelings of belonging based on shared concerns, work, school, or other activities. A perceived lack of relationships has been found to be reflected in feelings of social loneliness (Clinton & Anderson, 1999; Green, Richardson, Lago, & Schatten-Jones, 2001; Stokes & Levin, 1986) and while uncomfortable, it is typically remedied by meeting new friends and involvement in group activities (McWhirter & Horan, 1996).

Emotional loneliness results from the lack of a close, intimate attachment to one other person. A pair-bond relationship provides emotional security, affection, and strong feelings of protectiveness for each other. A deficiency in pair-bond relationships, according to Weis (1973, 1998) leaves one feeling empty and susceptible for emotional loneliness. Often perceived as more painful than social loneliness, emotional loneliness is also more difficult to compensate for, with a propensity to submerge into a chronic loneliness state (Hsu, Hailey, & Range, 2001; McWhirter & Horan, 1996; Weiss, 1973).

It should be noted that the distinction between social and emotional loneliness does not imply there is no overlap between the two. There appears to be a high degree of variance shared between the two forms of loneliness (Clinton & Anderson, 1999; Green et al., 2001; Russell, Cutrona, Rose, & Yurko, 1984; Russell, Peplau, & Cutrona, 1980). Although conceptually distinct, these two forms of loneliness are likely to co-occur.

Adolescent Loneliness

Adolescence is an age within the life span particularly vulnerable to both social and emotional loneliness (Weiss, 1973). Teens become less satisfied with the parent as the principal attachment figure, however have not yet established strong or trustworthy attachment relationships with new figures. Additionally, some adolescents have difficulty forming attachment bonds and subsequently have a propensity for chronic loneliness. Personality traits of mistrust, isolation, low self-esteem, and self-consciousness can emerge from experiencing perpetual loneliness (DeBerard & Kleinknecht, 1995; Rubin, 1982; Weiss, 1973). One cannot compensate for the emotional need of security with a casual social network of friends. Emotional loneliness recognizes that there is only a small to moderate relationship between deficiencies in adolescents' social lives and their feelings of negative affect or loneliness (Dougherty, 2006; Green et al., 2001; Koback & Sceery, 1988; Mahon et al., 2006).

Working Definition of Loneliness

Loneliness is best described, then, as an emotion that encompasses both temporary and chronic distressful feelings that is not necessarily related to social deficits. The description of loneliness proposed by adolescent researchers Parkhurst and Hopmeyer (1999) serves as the working definition for this study, "Loneliness is a sad or aching sense of isolation; that is, of being alone, cutoff, or distanced from others. This is associated with a felt deprivation of, or longing for, association, contact, or closeness" (p. 58). Not only does this definition draw on the recurring elements of social deficiency and unpleasant feelings, it also recognizes that loneliness may stem from a multitude of

internal and external situations, including social and attachment deficits and personality traits.

Prevalence of Adolescent Loneliness

Although no age group is immune to loneliness, its direction and intensity are varied during different periods of life (Green et al., 2001; Rokach, 2007; Rokach & Neto, 2005). Adolescence is a particularly significant developmental period for examining loneliness because studies suggest that loneliness is more widespread and painful during this developmental period than for any other age group (Brennan, 1982; Medora & Woodward, 1986; Moore & Schultz, 1983; Weiss, 1973). Culp and colleagues (1995) found that 66% of teens report problems with loneliness in comparison to studies that indicated only 10–36% of the adult and elderly population report loneliness as a problem (Donaldson & Watson, 1996; Lauder, Sharkey, & Mummery, 2004). Teens tend to feel lonely around one quarter of their waking hours (Larson, 1999). A 30 month longitudinal study of 397 public high school students found that loneliness changed little over this duration of time (Koenig & Abrams, 1999), suggesting a propensity for a loneliness trait.

It is inconclusive if loneliness is equally distributed across the adolescent years. A meta-analysis of adolescent predictors for loneliness did not find age differences in self-reported loneliness (Mahon et al., 2006). Other studies indicated that middle to older adolescents report more loneliness than their younger counterparts (Brage, Meredith, & Woodward, 1993; Chipuer, Bramston, & Pretty, 2002; Mahon, 1983; Moore & Shultz, 1983).

Time Alone During Adolescence

Feeling lonely and the experience of being alone has been shown to be distinguished during adolescence (Buchholz & Catton, 1999), but excessive time spent alone does seem to add to loneliness. Adolescents spend about 26% of their waking hours alone compared with 17% of the time spent alone during late childhood (Larson & Richards, 1991). Time alone, when desired and in moderate amounts, is often pleasant and used to pursue important developmental tasks of individuality and identity formation (Buchholz & Catton, 1999; Koenig & Abrams, 1999; Larson, 1999). Solitude can be a creative and reflective time as one separates from family and public life and forms a unique persona.

Solitude, when not desired or if prolonged, is not always peaceful but rather a potentially painful and lonely experience. Parkhurst and Hopmeyer (1999) indicated that adolescents who spend the largest amounts of time alone are generally lonelier than their peers who spend a moderate time alone. For the alone teen who wants to be with others, the experience can be intensely lonely (Larson, 1999). Larson added that there exists a cultural expectation of sharing recreational time with peers, especially on weekends, and not fulfilling those imperatives is often viewed with a sense of failure, shame, and embarrassment.

While it is not unusual for an adolescent to transiently feel lonely while home alone, the reverse is true for the chronically lonely teen. Teens experiencing the most social maladjustment with loneliness have been found to be lonely while in the presence of peers (Pretty, Andrewes, & Collett, 1994). Parkhurst and Hopmeyer (1999) suggested that vulnerable teens are lonelier in school and social settings because they perceive

themselves as not only alienated from peers, but are humiliated and ashamed at having failed with social connection. It appears that at this point, loneliness becomes a personality trait rather than a temporary state.

Gender

Adolescents are peer oriented and there appears to be little gender difference in the prevalence of adolescent loneliness (Bagner, Storch, & Roberti, 2004; Davis, Morris, & Kraus, 1998; Haines, Scalise, & Ginter, 1993; Hsu et al., 2001; Jones, Carpenter, & Quintana, 1985; Kraus, Davis, Bazzini, Church, & Kirchman, 1993). When gender differences do emerge, males report themselves to be lonelier than females (Cheng & Furnham, 2002; Cramer & Neyedley, 1998; Koenig & Abrams, 1999; Koenig, Isaacs, & Schwartz, 1994; Seginer & Lilach, 2004; Stokes & Levin, 1986; Uruk & Demir, 2003). The propensity for boys to score higher on loneliness may be explained by the meaning and consequences of quality social interactions for the two genders. Socially, adolescent males have a tendency to spend more time alone (Larson & Richards, 1991) and a lower tendency for either close relationships or a cohesive set of friends (Borys & Perlman, 1985; Sharabany, Gershoni, & Hofman, 1981; Stokes & Levin, 1986). Rather, male friendships are generally group oriented and focus on shared interests and activities (Stokes & Levin, 1986). Males do seem to need close relationships as the absence of intimacy often translates into loneliness (Schmitt & Kurdeck, 1985). Sharabany and colleagues (1981) reported that males tend to develop intimacy more slowly than females; they "de-emphasize the affective components (e.g., emotional support and understanding, trust and loyalty) . . . and stress the instrumental aspects . . . in contrast to the girls' socialized need for intimacy, boys are socialized against intimacy" (p. 801).

Adolescent boys have also been found to fear social reproach should loneliness be admitted (Borys & Perlman, 1985; Cramer & Neyedley, 1998; Rokach, 2001; Schultz & Moore, 1986).

Adolescent females, conversely, have been found to more readily admit feelings of loneliness (Borys & Perlman, 1985) and have a propensity to associate with a favored friend in a dyadic, mutually interactive relationship where intimate exchanges are valued (Richard & Schneider, 2005; Stokes & Levin, 1986). Girls also tend to spend time with other people in general and particularly enjoy greater reliance on social support offered from their female adolescent peers (Cheng & Furnham, 2002; Koenig et al., 1994; Richard & Schneider, 2005). Females appear to have less difficulty than males in buffering loneliness through relationships that reciprocally provide social and emotional support (Schmitt & Kurdeck, 1985). Nevertheless, many teenage girls are lonely, and the role of gender in the experience of adolescent loneliness remains an important but relatively unexplored question.

Cultural Considerations

Cross-cultural research indicates that adolescent loneliness is a universal phenomenon (Anderson, 1999; Chen et al., 2004; Jones et al., 1985; Neto & Barros, 2000; Page et al., 2006; Roberts et al., 1999; Rokach & Neto, 2005). Worldwide, adolescence is viewed as a distinct developmental time marked by major physical and psychological transitions. A disjunction often ensues when an adolescent is physically mature for adult functions, such as work and childbearing, yet lacks the psychological maturity and social status to perform these functions independently and responsibly (Chen & Farruggia, 2002; Greenberger, Chen, Tally, & Dong, 2000).

An additional cultural commonality is that family and peers are major social contexts for socio-emotional development during adolescence (Arnett, 1999; Chen & Farruggia, 2002). Despite varying cultural degrees of affiliation between parents and peers, the social influences of each relationship context are often at odds, contributing to another disjuncture of a smooth transition into adulthood (Arnett, 1999; Greenberger et al., 2000). For instance, parents and peers may impose differing or conflicting expectations and boundaries on the teen. The storm and stress of puberty in addition to the shifting of affiliations are likely explanations for the universal experience of adolescence loneliness.

The global explosion of electronic media and communication, particularly used by teens, may further elucidate the prevalence of loneliness. Stivers (2004) suggests that our generation is lonely from internalizing impersonal technological stimuli at the cost of interpersonal human relationships. The growth of electronic communication hampers face-to-face socialization and has been found to render a sense of social isolation (Sanders, Field, Diego, & Kaplan, 2000).

Family composition and interactions also seems to reflect adolescent loneliness. By age 18, close to half of American children will see their parents divorce. Parents often remarry only to have the second marriage dissolve during a child's adolescent years (U.S. Census, 2004). Garnefski and Diekstra (1997) describe that Americans, "exhibit a revolving-door pattern in marriage and partner relationships that certainly is stressful for developing children and adolescents" (p. 201) with short-term and long-term consequences. One of these consequences is loneliness. The researchers found that adolescents from one parent and particularly stepparent families reported more loneliness

than those living with both biological parents. The commonalities of pubertal changes, impersonal communication, and changing family structures may explain why research, albeit limited, indicates that American adolescents' demographic variables such as ethnicity or socio-economic status shows little variance in self-reports of loneliness (Bagner et al., 2004; Lempers, Clark-Lempers, & Simons, 1989; Uruk & Demir, 2003).

Theoretical Frameworks of Loneliness

Various studies have investigated the potential causes of loneliness and there appears to be little genetic basis for loneliness (Henwood & Solano, 1994; McGuire & Clifford, 2000), but rather it forms from a poor quality of socialization and attachment experiences. In response, research has examined the causes of loneliness from two major perspectives, social support and cognitive personality characteristics. One model, the social network mediation, suggests that loneliness arises from social network (size and satisfaction) structure and function deficits. Another perspective is the cognitive bias model which posits that the predisposition of loneliness reflects one's personality that is pervaded with negative cognitive processes about interpersonal relationships.

Social Support Framework

Human social support has been well documented to have a beneficial role for physical and psychological health (Langford, Bowsher, Maloney, & Lillis, 1997). Social support is defined by Sarason, Levine, Bashman, and Sarason (1983) as the "existence or availability of people on whom we can rely, people who let us know that they care about, value, and love us" (p. 127). These authors assert that both the size and the satisfaction with the network are valuable in measuring social support. The social network for an

adolescent is typically recognized as peers, family, and community members (Gavazzi, 1994).

Adolescents often face difficulty and displeasure in forming and gaining satisfaction from their social network (Nickerson & Nagel, 2005). Furthermore, they are frequently pulled between dual cultural imperatives of social connection versus individualism (Arnett, 1999; Greenberger et al., 2000). The frustration from these conflicting myriads can manifest into feelings of defiance, social incompetence, and frequently, loneliness (Buchholz & Catton, 1999). Parental support seems to buffer loneliness into adolescence; however reliance on parents for social gratification diminishes with age (Johnson, LaVoie, & Mahoney, 2001; Marcoen et al., 1987; Nickerson & Nagel, 2005).

While peer relationships are the focus for self-acceptance among most teens, trusting peers for acceptance is fertile ground for the growth of loneliness when relationships come under strain. Adolescent peer relationships can be a complex web of idiosyncrasies. On the one hand, supportive, nurturing friends have been shown to greatly enhance the well-being of a young person (Asendorpf & Wilpers, 2000; Rotenberg et al., 2004; Uruk & Demir, 2003). On the other hand, betrayal and disloyalty run high among adolescent groups (Rubin et al., 2004). Intimidating or embarrassing peer interactions can manifest into significant loneliness for the teen who feels rejected (Brage & Meridith, 1994; Espelage, Bosworth, & Simon, 2000).

Social support has been found to be moderately correlated with loneliness. A recent meta-analysis of adolescent loneliness revealed a medium effect size ($r = -.40$) between social support and loneliness (Mahon et al., 2006). Sarason, Sarason, Shearin,

and Pierce (1987) reported a higher correlation ($r = -.59$) of social support with loneliness. One aspect of social support is the network size. The number of people one can turn to in times of stress is found to be associated with less loneliness, rationalizing that support available in a wide variety of settings enhances a sense of community and social integration (Green et al., 2001; Henwood & Solano, 1994; Pretty et al., 1994; Stokes, 1985).

Multiple social network interactions outside the school and family are also important during adolescence to facilitate the exploration of social identities (Pretty et al., 1994). Furthermore, many adolescents may be reluctant to ask for support from family because of the insinuation of dependence or guilt and therefore it is best if they are equipped with a large social network extending beyond the family and school (Pierce, Sarason, & Sarason, 1991). While social support network size does appear to safeguard against loneliness, its relationship is not as considerable in comparison to the perception of available support (Gavazzi, 1994; Pierce et al., 1991). A sizeable body of research indicates that the most direct effect of loneliness is exerted by an individual's subjective evaluation of the network (e.g. Green et al., 2001; Langford et al., 1997; Marcoen et al., 1987; Pretty et al., 1994; Uruk & Demir, 2003).

Limitations of social support explaining loneliness.

Social support and network size has the potential for either preventing or reducing loneliness, but not always. Loneliness has been observed in adolescents who described having a social network (Hoza, Bukowski, & Beery, 2000; Medora & Woodward, 1986; Pretty et al., 1994). Larose, Guay, and Boivin (2002) tested the two models, social support and attachment, among 125 adolescent students. They found that attachment

security, but not social support, was negatively related to loneliness. Other studies maintain that cognitive processes safeguards against loneliness to a higher degree than social support (Kraus et al., 1993; Rokach, 2001; Wei, Shaffer, Young, & Zakalik, 2005). It appears that personality characteristics are more predictive of loneliness than one's social network. In this vein, attempts to reduce loneliness by encouraging peer and community interactions offers little benefit for a teen who neither trusts nor desires human company and remains in a lonely state (McWhirter & Horan, 1996).

Cognitive Bias Framework

The cognitive bias theory advises that loneliness is viewed more relevantly from the way a person emotionally conceptualizes and responds to social relationships rather than the availability of social support. The model proposes that how people view and filter relationships are more directly relevant to feelings of loneliness than objective features of one's social lives. The chronically lonely person's personality is often imbued with negative affectivity about social relationships. Peplau and Perlman (1982) contend that lonely people have personality characteristics of low self-esteem, avoidance, and self-deprecating tendencies that contribute to the development and perpetuation of loneliness. Research supports that, indeed, chronically lonely adolescents often share these same common personality traits (Haines et al., 1993; Kraus et al., 1993; Wei et al., 2005).

In addition, chronically lonely individuals have been found to hold very high expectations for interpersonal relationships compared with individuals who do not report a problem with loneliness (Jones, Hobbs, & Hockenbury, 1982; Rotenberg, Gruman, & Ariganello, 2002). Acquisition of a relationship often fails to meet their unrealistic

expectations and proves disappointing; they do not see a way out of their lonely situation (Haines et al., 1993; McGuire & Clifford, 2000).

Further adding to a negative propensity for socialization is what has been described as a loneliness stereotype (Rotenberg et al., 2002). People tend to hold negative perceptions of others they perceive as lonely and are thus disinclined to engage in social interactions with them. There appears to be a general impression that the lonely are unfriendly and this dismissal by others only adds to feelings of rejection, thus increasing the lonely person's alienation. If other's impressions convey that a person is lonely, that may truly make a person believe it is so.

The cognitive bias model also proposes that an individual's explanations regarding the causes of their relationship problems often assume a self-blame approach. Studies of children, adolescent, and adult samples indicate that those who suffer chronic loneliness are more likely than the non-lonely to explain their social failures as due to their own unchangeable personality traits (Brennan, 1982; Horowitz, French, & Anderson, 1982; Peplau & Perlman, 1982). Attributions that one's loneliness is due to personality may explain the common finding that lonely people have low self-esteem and a propensity for depression. Blaming oneself for loneliness may only perpetuate their feelings of social inadequacy.

Attachment and Loneliness

If personality characteristics largely explain loneliness, it would be elucidating to explore how a propensity for adolescent loneliness is initially formed. A viable explanation is by the quality of attachments formed in infancy and throughout childhood and adolescence. Attachment theory explains how individual differences in a child's early

attachments with parents affect later abilities to form close, satisfying relationships (Bowlby, 1982, 1988). A key of attachment theory is internal working models that are formulated in infancy by the influences of a child's repeated interactions and experiences with an attachment figure. Of particular importance in the creation of either secure or insecure working models is the availability and responsiveness of the attachment figure. A secure working model is created when the child consistently perceives the parent as available and sensitively responsive. Over time, the child comes to believe his parent will behave in predictable ways and concurrently develops a complementary view of him or herself. Bowlby (1980) stated that if the child is loved and valued, he feels lovable and valuable. Conversely, if a child is neglected or rejected, he feels worthless and of little value.

Working models formed during infancy and childhood is the foundation from which to base expectations for future attachments and social relationships (Bowlby, 1973b, 1982). They become deeply ingrained and automatic personality traits that guide the feelings and interpretations of social encounters and predict loneliness. An early link between insecure attachment and loneliness is evident among children as young as 5–7 years of age (Berlin, Cassidy, & Belsky, 1995).

An insecurely attached child harbors the “despair of ever having a secure or loving relationship with anyone” (Bowlby, 1988, p. 50). A child who has not learned or experienced attachment behaviors may be unable to form attachments into adulthood with the result of pervasive and life-long loneliness. However, working models of attachment are not necessarily a static concept and may change throughout life stages

(Ainsworth, 1989; Bowlby, 1988; Hazen & Shaver, 1994; Nickerson & Nagle, 2005; Weiss, 1973). Bowlby (1973a) wrote:

It is hardly news to announce that at each phase of our lives we tend to make strong bonds to a few other special and particular individuals, that so long as these bonds remain intact we feel secure in the world. (p. 39)

Ainsworth (1989) described attachment in adolescence and adulthood as affectional ties or bonds that one person forms to another unique, non-interchangeable specific individual. She differentiated attachment from social relationships in that affectional bonds are intimate and long lasting whereas social relationships are more casual and may or may not endure. Additionally, social relationships are dyadic interchanges whereas affectional bonds are behaviors characteristic of the individual.

Attachment in Adolescence

During adolescence, parents are not relinquished as attachment figures, but rather move down in the affiliative hierarchy as the teen includes close friends or a romantic partner as attachment figures (Ainsworth, 1989; Allen & Land, 1999; Hazen & Shaver, 1994; Laible, Carlo, & Raffaelli, 2000; Nickerson & Nagle, 2005). Once the friend has consistently proven to be responsive in times of distress, an internal working model is solidified that the peer will be available in times of need (Allen & Land; Nickerson & Nagle). Securely attached teens are found to obtain continual comfort from their family's secure base (place of safety from which a child ventures to explore the environment) while safe havens (returning to attachment figure for comfort when threatened) are increasingly sought from peers (Rubin et al., 2004). Supportive friendships in combination with parental attachment are positively correlated with psychosocial

adjustment and negatively correlated with loneliness and depression (Bailey & Nava, 1989; Berlin et al., 1995; Davis et al., 1998; DeMinzi, 2006; Hoza et al., 2000).

Unfortunately, adolescent attachments with parents or peers may be insecure resulting in a teen's perceived abandonment and loneliness. If a child enters adolescence without an internal working model of parental security and trust, difficulty ensues in forming healthy attachments to peers (Allen, McElhaney, Kuperminc, & Jodl, 2004; Nickerson & Nagle, 2005; Rubin et al., 2004). Even if an adolescent has felt parental attachment, unsupportive or inconsistent peer relationships can manifest into insecure friendship attachments. If a lack of important peer attachment exists, an adolescent often feels lonely and may be ill equipped to form future gratifying attachment relationships (Allen & Land, 1999; Kerns & Stevens, 1996). Multiple attachment figures developed in both the family and peer network appear instrumental for healthy psychosocial development (DeMinzi, 2006; Laible et al., 2000) and a safeguard against loneliness (Kerns & Stevens, 1996; Weiss, 1973, 1982). What remains unexplored is if, in addition to parents and peers, companion animals may also serve as attachment figures.

Consequences of Adolescent Loneliness

Adolescent loneliness is an important research area given its association with a high degree of emotional and physical difficulties. A common core of experiences is found whether the person experiences social loneliness, emotional loneliness, or both (Clinton & Anderson, 1999; Russell et al., 1984). The consequences of adolescent loneliness can be immediate as well as seed health-compromising behaviors into adulthood. Detrimental outcomes are not gender specific and can be immense and intense particularly if loneliness has been endured for greater than four months (DeBerard &

Kleinknecht, 1995). All domains of health, including emotional, social, and physical are potentially compromised due to loneliness (Table 1). Lonely adolescents are found to generate lower school achievement and productivity than peers with satisfying peer relationships. Various indices of maladjustment such as school dropout rates; delinquency; poor self-esteem; as well as feelings of powerlessness, anxiety, pessimism,

Table 1. *Health-Compromising Correlates of Adolescent and Young Adult Loneliness*

Correlates with Loneliness	Sources
Anger or aggression	Cassidy & Asher, 1992; Garnefski & Diekstra, 1997
Anxiety	DeBerard & Kleinknecht, 1995; Mahon et al., 2006; Wei et al., 2005
Cardiovascular activation potentially leading to heart disease	Cacioppo, Hawkley, Crawford et al., 2002; DeBerard & Kleinknecht, 1995; Krantz & Raisen, 1988; Lynch, 2000
Decreased life satisfaction and low self-esteem	Chipuer et al., 2002; Brage et al., 1993; DeBerard & Kleinknecht, 1995; Groholt, Ekeberg, Wichstrom, & Haldorsen, 2005; Mahon et al., 2006; Ouellet & Joshi, 1986
Depression propensity	Brage & Meredith, 1994; Brage et al., 1993; DeBerard & Kleinknecht, 1995; Groholt et al., 2005; Hafen & Frandsen, 1986; Koenig et al., 1994; Mahon et al., 2006; Ouellet & Joshi, 1986; Rotenberg & Flood, 1999; Wei et al., 2005
Eating disorders	Rotenberg & Flood, 1999; Stewart, 2004
Future orientation and motivation reduction	Seginer & Lilach, 2004
Immune system less effective in fighting illness	Glaser, Kiecolt-Glaser, Speicher, & Holliday, 1985
Learning difficulties	Demir & Tarhan, 2001; Galanaki & Kalantzi-Azizi, 1999; Koenig & Abrams, 1999
Sedentary habits, as television viewing and internet use	Moore & Schultz, 1983; Page & Page, 1994; Page & Tucker, 1994; Sanders et al., 2000; Seepersad, 2004
Sleep dysfunction	Cacioppo, Hawkley, Bernston, et al., 2002; Cacioppo, Hawkley, Crawford et al., 2002
Somatic complaints, or a number of symptoms in the absence of verifiable physical pathology	Brink & Niemeyer, 1993; DeBerard & Kleinknecht, 1995; Ellaway, 2004; Rauste-von Wright & von Wright, 1992
Substance abuse	Fleschler, Tortolero, Baumler, Vernon, & Weller, 2002; Korn & Maggs, 2004; Page & Cole, 1991; Rokach & Orzeck, 2002; Shapiro, Siegel, Scovill, & Hays, 1998
Suicide or suicide ideation	Culp et al., 1995; Garnefski & Diekstra, 1997; Groholt et al., 2005; Hafen & Frandsen, 1986; Hazler & Denham, 2002; Medora & Woodward, 1986; Page et al., 2006

hostility, and aggression have been correlated with the loneliness experience. Teen loneliness is also associated with substance abuse and instigation for suicide.

Health-compromising ways of life seem to prevail among the lonely teen such as eating disorders and low physical exercise. Extensive television viewing and internet use for entertainment rather than socialization is also prevalent among the lonely (Seepersad, 2004). Such unhealthy lifestyles can set a health risk trajectory into adulthood.

Chronically lonely adults have been shown to have higher incidences of heart disease, hypertension, strokes, and cancer (Lynch, 2000). While the detrimental health sequelae of loneliness may not become evident until later in life, the behaviors of lonely youth add to the proclivity of chronic disease, a fact that only emphasizes the need to study adolescent loneliness.

Coping with Loneliness

Research addressing helpful interventions for adolescent loneliness is limited in comparison to what has been studied on its antecedents and consequences. It is evident that coping mechanisms may be either adaptive or maladaptive. The most frequent adaptive strategy used by adults to manage loneliness is reflective solitude, where quiet time is spent searching the inner self for insight how to resolve the alienation experience (Rokach, 1999, 2001). Few lonely adults (less than 10%) seek professional help and even fewer (5%) actively seek a social support network or turn to religion or faith (Rokach, 1999). Adolescents are similar in that they do not tend to turn to professional guidance or religion as loneliness coping mechanisms (Culp et al., 1995; Rokach, 2001). Developmentally, the adolescent is often deemed too harried, impulsive, and immature to practice the positive solitude strategy adults employ (Arnett, 1999; Rokach, 2001).

Moore and Schultz (1983) reported that some adolescents experiencing transient loneliness seek to maximize social contacts to improve their state, but chronically lonely teens are less likely to take the social risk of initiation. Based on the cognitive bias model, it is understandable that chronically lonely teens fear social encounters due to high social anxiety, low perceived likeability, and public self-consciousness (Peplau & Perlman, 1982; Rotenberg et al., 2002). Instead, passive coping with potentially health-compromising sequelae are usual responses to the aching feelings of isolation.

A major task of intervention recommended for adolescent loneliness is the facilitation of attachments, commitments, and new modes of social participation (Brennan, 1982; Weiss, 1982). The value of counseling services facilitating these encounters is doubtful. McWhirter and Horan (1996) offered two types of cognitive therapy for lonely college students. One focused on reducing emotional loneliness through techniques centered on establishing and maintaining intimate relationships. The other focused on reducing social loneliness with cognitive restructuring on how to establish and maintain affiliative relationships. Small, yet statistically significant, decreases in loneliness were reported with the social loneliness treatment, but intimate interventions were non-significant, suggesting that cognitive therapy for those with emotional loneliness is not particularly helpful. This finding concurs with other studies reporting the relative ineffectiveness of counseling for loneliness relief (Cutrona & Russell, 1982; Hogan, Linden, & Najarian, 2002; Padula, Conoley, & Garbin, 1998).

Identifying successful interventions for adolescent loneliness is important not only because it is a distressful feeling, but the lonely young person may slip into coping mechanisms of habitual aloneness, devalue the importance of social relations (Peplau &

Perlman, 1982), and set a trajectory for detrimental life-long health sequelae (Lynch, 2000). Wei and colleagues (2005) recommend interventions for loneliness that target both the adolescent's current social strengths and unmet psychological needs. This perspective is proposed to be less time intensive and arduous than attempting to alter one's primary attachment orientation. Effective counseling for loneliness appears to require attention to build upon underlying positive characteristics, reducing the use of maladaptive strategies, and helping one find more positive, adaptive methods of satisfying unmet needs.

Companion Animal Attachment as an Intervention

In light of the failure to find a valuable modality to assist adolescents in effectively dealing with lonely feelings, a strategy employed by many adults is worthy of examination, a companion animal bond (CAB). Pets are not substitutes for human interaction, but do offer a reciprocal relationship of connection, affection, and love. Studies have shown that people often prefer the company of pets instead of humans in stressful or lonely situations (Allen, Blascovich, & Mendes, 2002; American Animal Hospital Association [AAHA], 2005; Friedmann, Thomas, Cook, Tsai, & Picot, 2007; Johnson, Meadows, Haubner, & Sevedge, 2003). A CAB may not only relieve emotional loneliness, but could also be instrumental in addressing social loneliness by proxy of expanding both social skills and social networks. Simply the presence of a companion animal has been found to facilitate social interaction with other people and portray a friendly persona (McNicholas & Collis, 2000; Messent, 1985), possibly negating the lonely person negative stereotype. Feelings of value, importance, and appreciation are bestowed by a CAB (Rynearson, 1978), attributes sorely lacking in the lonely adolescents.

The Companion Animal Relationship

Americans love their companion animals. Deep emotions ranging from adoration to horror are publicly displayed in response to frequent media portrayals of heroic, spirited, endangered, homeless, or abused animals. Communities and nations put aside their differences when united to aid animals in plight. Pet care advice is increasingly featured in magazines and newspapers. Companion animal keeping is popular among most cultures worldwide but is especially widespread in America (Beck & Meyers, 1996). According to the American Veterinary Medical Association (AVMA, 2002), over 70% of American households have at least one pet, double the percentage of households with children (U.S. Census Bureau, 2004). Despite inherent pet inconveniences of expense, noise, and property damage, over 90% of pet owners report a deep affection for their pet and most tell their pet daily that they love them (APPMA, 2005; Bryant, 1990).

It is common for American pet owners to spend extravagantly on pet luxuries such as toys, grooming, celebrations, day care, acupuncture, and specialized accessories (APPMA, 2005; Hirschman, 1994; Serpell, 1986). A survey of pet owners conducted by the AAHA (2005) indicated that three quarters of married respondents greeted their pets before their spouses and felt their pet listened to them better than did their spouse. The pet phenomenon is hardly a recent trend as animals have been tamed to live with us and be our companions since prehistoric times (Serpell, 1986). It is undeniable that a special relationship often exists between humans and companion animals.

Human Health Correlates and Companion Animals

Companion animal affiliations are most often perceived as a type of close human relationship. When pet owners were questioned by Endenburg, Hart, and Bouw (1994)

about why they keep their pets, most indicated companionship, yet were typically unable to explain this reason further. For adults, the pet is most often viewed as a family member. Studies that reported high percentages of adults who describe their pets as family include those of Risley-Curtiss, Holley, and Wolf (2006) at 97%; Albert and Bulcroft (1988) at 87%; Cain (1983) at 87%; Hirschman (1994) at 80%; and Beck and Katcher (1983) at 70%.

An affectionate relationship with pets does seem to be good for us. Adults attached to their pet are shown to enjoy enhanced physical health such as lowered systolic blood pressure and lower lipid levels in comparison to adults without a close pet relationship (for summaries, see McNicholas et al., 2005 and Headey, 2003).

Psychological health indices favoring pet attachment among adults include decreased anxiety in stressful situations (Allen et al., 2002), less depression (Garrity et al., 1989; Jessen, Cardiello, & Baun, 1996; Siegel, Angulo, Detels, Wesch, & Mullen, 1999; Wood, Giles-Corti, Bulsara, & Bosch, 2007), and increased owner morale and self-esteem (Goldmeier, 1986; Poresky, 1996, 1997; Siegel, 1995; Triebenbacher, 1998). Cat and dog owners have been found to spontaneously laugh more than people who own neither, indicating a friendship factor with companion animals (Valeri, 2006).

Adult studies have investigated the role of companion animals and human social support systems with mixed results. Owners with a pet attachment have been found to report lower amounts of human social support (Garrity et al., 1989; Keil, 1998; Stambach & Turner, 1999), indicating that pets may compensate for weak or lacking human relationships. Conversely, other studies imply that social support obtained from the pet does not compensate for human relationships, but rather mirrors an appreciation

for human support (Bonas, McNicholas, & Collis, 2000; Messent, 1985; Ory & Goldberg, 1983; Wood et al., 2007). It is therefore inconclusive how pet attachment influences the perception of human social support.

In addition, pet guardians are found to report fewer somatic complaints (Serpell, 1991; Wood et al., 2007) and visit their health care provider less often than non-pet owners (Headey, Grabka, Kelley, Reddy, & Yi-Ping, 2002; Siegel, 1990). It is important to note that not all studies have found a positive effect of companion animals on human health. Parslow and Jorm (2003) reported that pet ownership was not associated with a reduction in heart disease risk factors. Other studies have failed to find significant physical or psychological benefits for pet-owning, community dwelling older people (Parslow, Jorm, Christensen, Rodgers, & Jacomb, 2005; Raina, Waltner-Toews, Bonnett, Woodward, & Abernathy, 1999). A limitation of these and many other studies is that only pet presence in the household was tabulated, rather than assessing the quality of the companion animal attachment. Not all pet owners are attached to their pets, and mere ownership may not be the key factor. For instance, in a survey of 1,232 older persons, pet ownership per se did not relate to depression, but a strong pet attachment did correlate with less depression (Garrity et al., 1989). It appears that the quality of the CAB confers health benefits.

The health benefits companion animals bestow to adolescents has been less studied than among adults or the elderly. Nevertheless, it is evident that adolescents derive pleasure in their pets, as over 95% of teen pet owners have reported sharing a close pet relationship (Kidd & Kidd, 1990; Robin et al., 1983). Adolescents tend to view their pets as friends or confidants, often revealing to their pet secrets and troubles they do

not share with friends or family members (Kidd & Kidd, 1985, 1990; Rew, 2000; Robin et al., 1983; Siegel, 1995). Pets do tend to make us feel happy, complete, and needed (Beck & Katcher, 1983), but whether they help adolescents feel less lonely remains unexplored.

Research Need for Loneliness and Adolescents

Given the love many people feel for their companion animals, it would seem logical that a pet bond buffers human loneliness. However, the association between loneliness and pet affection is another unclear area of human-pet interaction (HPI) research. Some studies have shown that older adults who report pet attachment are less lonely than either those not attached to their pets or non-pet owners (Calvert, 1989; Garrity et al., 1989; Jessen et al., 1996; Johnson & Meadows, 2002; Keil, 1998; Ory & Goldberg, 1983; Wood et al., 2007). Conversely, other studies have not shown an association between pet attachment and adult loneliness (Gilbey, McNicholas, & Collis, 2006; Zasloff & Kidd, 1984). Beck and Meyers (1996) claim that “one way people can be protected against the ravages of loneliness is through animal companionship” (p. 250) may or may not be empirically justified.

A key area of untapped HPI research is among adolescents, who have been found to experience more frequent and intense loneliness than any other age group. A companion animal relationship could be an attainable arrangement for many teens and might help lessen the isolating feelings of loneliness common during this developmental stage. Furthermore, research on companion animal and human relationships in the United States has been tepid despite requests by the research community. The working group at the National Institutes of Health (NIH, 1988) 1987 Technology Assessment Workshop,

Health Benefits of Pets, proposed, “Future studies of human health should consider the presence or absence of a pet in the home and the nature of this relationship with the pet as a significant variable” (n.p.). Unfortunately, many of the extant HPI studies have been criticized for small samples sizes, anecdotal findings, and failing to examine the perceived relationship between the pet and owner (Beck & Katcher, 2003; Wilson, 1998). In addition, studies often report inconclusive results about the health responses of people interacting with their pets. Rigorous study designs with large samples supplying demographic information is needed to clarify the health effects of companion animal relationships (Beck & Myers, 1996; NIH, 1988; Wilson & Barker, 2003).

Demographic Trends in Pet Keeping and Attachment

Pet keeping is a universal practice with the United States leading other countries in owning more pets per household. Dogs and cats are the most popular types of pets and half of pet owners have more than one pet (APPMA, 2005). Pet ownership is highest in married and remarried households, particularly if children over six years old are in the home (AAHA, 2005; Poresky & Daniels, 1998). Family size appears to favor pet ownership, but does not favor pet attachment. Poresky and Daniels’ (1998) telephone survey of 1,800 adults found that single adults or those living alone scored higher on pet attachment than adults in families. The larger the family size, the lower the pet attachment scores. A caveat of the survey was that reports were obtained from the head of household, not necessarily the person in the home claiming the most pet attachment.

Childhood pet ownership is a strong predictor of adult pet ownership. Adults who had a pet as a child or adolescent are reportedly 80–90% more likely to have a pet in adulthood, and frequently the same type of pet (Poresky, Hendrix, Mosier, & Samuelson,

1988; Raupp, 1999). It is therefore likely that adolescent pet guardians are raised by parents who also had childhood pets. The primary motive for acquiring any breed of pet, according to the AAHA (2005) is for companionship and pleasure (80%), as a child's playmate (10%), for security and protection (5%), for breeding (1%), and other (13%).

A recent meta-analysis by Herzog (2007) indicated that males and females similarly keep and are equally attached to their pets. The relationship of ethnicity and pet ownership or attachment is lacking in HPI research (Johnson & Meadows, 2002; Risley-Curtiss et al., 2006). Opportunities for assessing ethnicity as a pet owner demographic were neglected in recent large surveys (AAHA, 2005; AVMA, 2002; Poresky & Daniels, 1998).

Another area of unexplored HPI demographic information is if the pet variables, length of relationship and number of pets in the household, influence either loneliness or pet attachment. Drawing from pet bereavement research, it appears that the longer one owns a pet, the more intense the grief response (Planchon et al., 2002). The number of pets in the household, however, is not shown to influence the intensity of mourning of a deceased pet (Brown et al., 1996; Planchon et al., 2002). These studies suggest that the length of pet ownership, but not the number of household pets, translates into higher attachment.

Attachment Theory and Companion Animals

Much of the human-pet research over the past few decades supports attachment theory as a credible framework (Johnson, Garrity, & Stallones, 1992; Lago, Kafer, Delaney, & Connell, 1988; Poresky et al., 1987; Wilson, 1998). The AVMA (1998) recognized attachment in defining the human-animal bond as, "a mutually beneficial and

dynamic relationship between people and other animals that is influenced by behaviors that are essential to the health and well being of both” (p. 1675). The attachments children form with companion animals can become unique and beneficial internal working models for humans and nonhumans (Kogan & Viney, 1998; Levinson, 1972, 1997; Poresky et al., 1988). The study of adolescent-pet relations is well adapted to attachment theory as a research framework given the high association teens have with insecure attachment and loneliness and evidence of attachment behaviors with their pets.

Bowlby (1982) and Ainsworth (1989) described attachment as a lifelong, distinct behavioral system with the goal of maintaining proximity to a unique, non-replaceable individual. Attachment behaviors are biologic survival instincts similar among human and nonhuman species (Bowlby, 1973a, 1982). The ethological study of attachment was explored by ethologist Konrad Lorenz (1978) and his studies of imprinting behaviors of newly hatched goslings as well as the affectional behavioral systems of young rhesus monkeys observed by primatologist Harry Harlow (1958). Bowlby (1982, 1988) described the similar instinctual behaviors of humans and nonhumans as care giving, proximity seeking to a secure base and safe haven, and separation distress. Despite attachment theory’s ethological roots that human and nonhuman animals share an instinctual communality of attachment needs, nowhere do the early attachment theorists mention the possibility of affectional bonds between humans and nonhumans. This omission is surprising given the ample evidence of strong attachment to them (Albert & Bulcroft, 1988; Brown et al., 1996; Johnson & Meadows, 2002; Sable, 1995; Wilson, 1998). Furthermore, despite the ubiquitous presence of animals in children’s lives, developmental psychology and child psychology typically restrict their inquiry to

children's ties with other humans (Melson, 2003; Wilson, 1984). Broadening the concept of an attachment figure to include a companion animal implies the pet guardian and pet are each seen as attachment figures and the relationship is mostly a nurturing one.

Attachment theory in regards to a pet relationship was recognized by child psychiatrist Boris Levinson (1972) who argued within a psycho-analytic framework that pets satisfy the emotional needs of potentially all people by providing an object to love. Levinson (1972, 1997) further postulated that a secure child-pet attachment can partially compensate for insecure parental attachment and even offer the child a reason for living. Agreeing with the human-pet attachment framework, Rynearson (1978) observed in his often referenced paper, "Humans and Pets and Attachment," that "the bond between a human and pet pivots on their commonality as animals; therefore, this interaction must be viewed as biological as well as psychiatric" (p. 550).

Key attachment behaviors found in HPI literature are care giving, proximity seeking, safe haven, and separation distress (Figure 9). These concepts are defined as

- care giving: Protective behaviors regulated by strong emotion.
- proximity maintenance: The desire to be near the people we are attached to.
- separation distress: Anxiety that occurs in the absence of the attachment figure.
- safe haven: Returning to the attachment figure for comfort and safety in the face of a fear or threat.
- secure base: The attachment figure acts as a base of security from which the child can explore the surrounding environment.

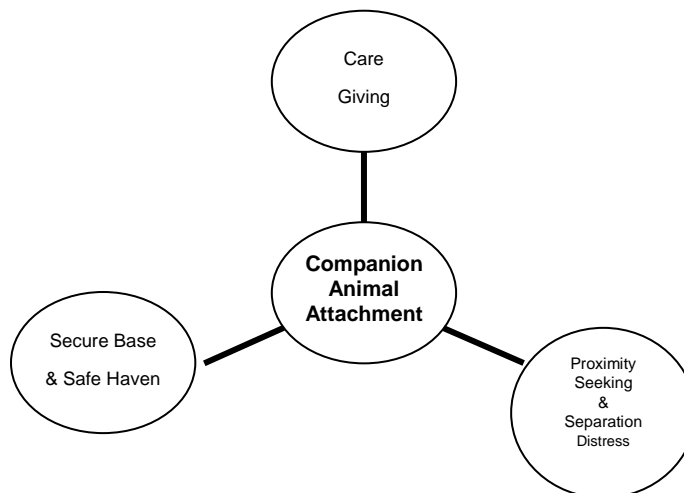


Figure 2. Conceptual Model of Companion Animal Attachment

Care Giving

Care giving behaviors are central in attachment theory and pet affiliation. Irrespective of age or gender, pet guardians find comfort caring for their pets. Veterinarian Bruce Fogle (1984) speculated that nurturing is at the heart of pet relationships. He described that touching, stroking, and the infantile like submissive gestures of pets “are all releasers for our inherent nurturing behavior. These things bring out the parent in us” (p. 20). The act of petting has been shown to reduce physiological stress for both human and nonhuman animals (Allen et al., 2002; Baun, Bergstrom, Langston, & Thoma, 1984; Tuber, Hennessy, Sanders, & Miller, 1996).

While males seem less likely than females to engage in nurturing and affectional behaviors directed to humans, numerous studies have indicated that males of all ages display as many overt behaviors of affection and nurturing to pets as females (Beck & Katcher, 1983; Herzog, 2007; Kidd & Kidd, 1990; Marks, Koepke, & Bradley, 1994; Prato-Previde, Fallani, & Valsecchi, 2006; Siegel, 1995). It may be that caring for pets, unlike caring for humans, is free of cultural gender-role stereotypes that typecast nurture as an essentially feminine function.

Providing pet care appears to deepen the bond with the pet. Siegel (1995) reported that adolescents with sole responsibility for pet care felt that their pet was more important to them than adolescents who either shared or had no responsibility for pet care. Boys and girls who nurtured a pet have been shown to grow up with a heightened sense of empathy and concern for future generations (Marks et al., 1994; Poresky, 1997). Among older people, the care of a pet has been described as a felt responsibility adding purpose and sometimes a reason for living (Johnson & Meadows, 2002; Levinson, 1972). It is noted that nurturing behaviors have been found to protect against loneliness among college students (Bailey & Nava, 1989). Caring for a pet appears, then, to offer immediate and long-term enhancements toward the owner's well-being and disposition, and by feeling responsible and important, may well buffer teen loneliness.

Proximity Seeking and Separation Distress

A basic premise of attachment theory is that the presence of the attachment figure promotes a feeling of security. A lack of security triggers the goal of reestablishing proximity (Ainsworth, 1989; Ainsworth & Bell, 1970; Bowlby, 1973b). One unique and comforting aspect of pets is their constant proximity. We may go to our pets for comfort without the social mores of time or place.

An approach to assess human infant attachment to a caregiver is the Strange Situation Test developed by Ainsworth and Bell (1970). Separation from, and union with, the attachment figure activates attachment behaviors of distress and proximity seeking. These separation behaviors appear to be remarkably similar for adult dogs separated from their caregivers, particularly distress upon separation and joyful greeting upon reunion (Gasci, Topal, Miklosi, Doka, & Csanyi, 2001; Prato-Previde et al., 2006; Topal,

Miklosi, Csanyi, & Doka, 1998; Tuber et al., 1996). Separation anxiety can be so intense for companion animals missing their beloved owners during even abbreviated separations that many dogs and cats require behavioral therapy or medication (Schwartz, 2003). The proximity seeking of companion animals to its guardian may be a factor in establishing attachment; the owner feels needed with a conscientious stewardship for their well-being.

When attachment behaviors are activated but the attachment figure is no longer available, grief and mourning processes occur (Bowlby, 1980). Grieving behaviors are not limited to humans. Lorenz (1978) observed, “The objective physiological symptoms of deep emotion, especially grief, are virtually the same in humans as in animals” (p. 38). Dogs, in particular, were described by Lorenz to experience a grieving process when their owner departs, initially through separation anxiety, then sometimes evolving into a chronic depressive like state.

Humans whose pet bond is broken from a pet’s death or disappearance often display grieving behaviors similar to those when a human attachment figure is lost (Planchon et al., 2002; Sharkin & Bahrlick, 1990). Pet guardians facing life without their companion animals have been shown to experience a significant disruption in their daily functions and sometimes subsequent depression (Stallones, 1994; Toray, 2004). Brown and colleagues (1996) described how the loss of a pet is especially painful for adolescents who held a fond attachment to their pet. The grief was intensified when others either trivialized or failed to recognize the intensity of the pet bond. These authors added that the loss of a pet is an eventual reality for many families, but if handled properly, bereavement of a pet in childhood and adolescence can serve as a healthy working model for grieving in future life.

Safe Haven and Secure Base

Pets and their guardians often seek solace from each other. Guerney (1991) reported that latchkey children who returned home from school alone were comforted and entertained by their eagerly awaiting pet. The afforded comfort in the company of each other suggests a safe haven for both child and pet. Children and teens often rank pet relationships higher than human relationships and have been found to be as likely as or more likely to talk to their pets about interpersonal concerns than with their family or friends (Bryant, 1990; Covert et al., 1985; McNicholas & Collis, 2001). Beck and Katcher (1983) reflected why it is so natural to talk to companion animals:

We feel we can say anything we like, in any way we like, and we will be understood. We are in communion by touch and gesture: the animal utters no words that contradict our impression that he understands. He asks none of the questions that destroy intimacy. (pp. 126–127)

The role of a pet as a confidant appears to strengthen into adolescence when the pet is played with less and confided in more (Kidd & Kidd, 1990; Rew, 2000). Over 70 % of adolescent pet guardians routinely confide in their pet (Beck & Meyers, 1996). At-risk adolescents in particular value a nonhuman confidant whom they believe is more capable of understanding them than their human counterparts (Rew, 2000; Robin et al., 1983). Despite favoring nonhuman confidants, children and teens that turn to their pets for support have been reported to be more empathetic with humans, show higher self esteem, and have less anxiety than their peers without pet support (Melson, 2001; Poresky, 1997; Triebenbacher, 1998).

Levinson (1972) explained the special niche that a companion animal serves to comfort and fortify when human relationships go wrong:

A child who is foiled or rebuffed in his attempt to make friends with his peers can find acceptance from his pet. The pet will not disappoint him or make excessive demands on him. The child is in no way vulnerable when he exposes himself to a pet. . . . By receiving this emotional support the child is better able to disregard temporary hurts and make new attempts to relate to his peers. (pp. 47–48)

Social catalyst.

The presence of a pet may be viewed as a secure base from which to explore social arenas outside the home and potentially facilitate social interactions between people; a social catalyst. Levinson's (1972) seminal work with pet therapy described how withdrawn or autistic children who would not converse with humans began talking to his dog. As children developed trust between the dog and Levinson, children addressed him and the dog together. Eventually the children initiated conversations with Levinson and other humans without the dog present. In other words, the dog was the bridge to communication with humans.

The presence of a pet, even a rabbit or turtle, has been found to increase the incidence of brief and casual interactions with people passing by (Hunt, Hart, & Gomulkiewicz, 1992). The company of a pet offers a non-threatening and readily available topic of conversation, particularly when remarks are made directly to the companion animal (McNicholas & Collis, 2000; Rogers, Hart, & Boltz, 1993). Social interactions between pet guardians often develop independent of pet outings (Messent, 1985; Wood et al., 2007). It makes sense that meeting people by proxy of a pet may expand social interactions and reduce social loneliness.

The social catalyst contribution of pets may additionally be explained by the perception that a person in the company of a pet has a caring persona (McNicholas & Collis, 2000; Messent, 1985). The 'animal halo' (Melson, 2001) effect to accent positive

personality traits is often capitalized by politicians and celebrities when portrayed in the presence of an animal. Lockwood (1983) observed human reactions to the same people, in identical settings, both with and without a pet. People associated with animals were commonly judged to be friendlier, happier, bolder, and less tense than the same people without an animal. The caring persona of a pet guardian may negate the 'loneliness stereotype' (Rotenberg et al., 2002) and facilitate social interactions. There seems to be a powerful friendly social perception for those who are perceived to cherish pets or other animals. The social network framework is easily adjusted to include companion animals as an impetus to venture into other social realms.

Implications for Pet Attachment

Companion animals can provide components of attachment that contribute to an adolescent's emotional and social well-being, and in turn, very possibly reduce loneliness. Pets offer an opportunity and responsibility to nurture without the barriers of gender stereotypes, a secure base to turn to when stressed, and love without fear of human reproof. The presence of a pet also facilitates social interactions. As well, a companion animal bond holds reciprocal implications for pet welfare.

Animals need attachment bonds for protection and survival and are also affected by bond dissolution (Bowlby, 1973a; Harlow, 1958; Lorenz, 1978; Rynearson, 1978; Topal et al., 1998). The strength of the bond between a human and pet may predict the pet's future. Pet owners cherishing their companion animal are likely to ensure the affectional bond is not broken, for instance securing its safety during disasters or evacuations. Thus, attachment theory appears to best explain why and how humans love pets and pets unconditionally prefer to be by our side.

Summary

Loneliness is an aching sense of longing for closeness with another. Feeling lonely at times is common, but for around two-thirds of the adolescent population it is a pervasive problem that can interfere with normal developmental tasks. A number of maladjustment indices have been reported with teen loneliness including depression, low self-esteem, poor socialization skills, lowered school achievement, poor physical health habits, substance abuse, and suicide. Left untreated, loneliness can set a detrimental health trajectory into adulthood. Much has been written about the antecedents and outcomes of untended adolescent loneliness, but how to successfully intervene to reduce its painful feeling has, to date, been minimally explored.

A CAB is proposed as a relationship that may ease an adolescent's lonely feelings. A pet attachment is non-threatening, accessible, constant, and not dependent on the social mores of time, place, or popularity status. Affectionate pet relations have been found to lessen loneliness among the adult and elderly population, but research has not been expanded to the adolescent population.

Attachment theory explains why a CAB may be "just the right relationship" that Weiss (1973, p. 11) recommended for easing the longing for association or contact. Attachment theory was founded on the commonalities of humans and nonhuman animals of care giving, proximity seeking, separation distress, a safe haven, and a secure base. The reciprocal behaviors of attachment explain the proclivity to bond with animals. In addition, multiple attachments, be they human or nonhuman bonds, serve as a safeguard against loneliness.

Secure attachment behaviors are protective against loneliness when others are perceived as available, trustworthy, tolerant of our foibles, and consistently accepting. Insecure attachment, however, leaves one susceptible to mistrust and introversion, leading one to be unreceptive to others for fear of further rejection. It is not surprising that insecurely attached adolescents often suffer from loneliness. A companion animal bond can be an outlet for attachment behaviors of nurturance and responsibility, and serve as a respite replete with acceptance and security. Adolescents attached to their pet often describe the relationship as a one of a confidant; a friend. The social catalyst effect of pets encourages socialization with other humans by proxy of the pet. Additionally, teens may gain confidence feeling appreciated by caring for their pet's physical and emotional needs.

Given that most American families have a pet and consider it as a family member, it is surprising that the health community has not yet fully embraced recommendations by the NIH (1988) to further investigate health benefits that may be offered by companion animals. Some steps have been taken by nursing, but progress is slow and needs revitalizing. Nursing is aptly suited to join the ranks of other disciplines in building the HPI knowledge base. Patient care and nursing research should include, at a minimum, the presence and meaning of a companion animal in every health history.

This study examined the presence and meaning of a companion animal in adolescents' lives, ascertaining if a CAB, the length of the pet relationship, and number of pets, is related to loneliness or social support.

Chapter 3: Methods

This chapter includes a description of the survey methodology, participants, setting, instrumentation, data collection and recording, approval, and ethics considerations.

The research seeks to answer the following questions:

1. What is the relationship between loneliness and CAB in adolescents?
2. Which companion animal variables (bond, length of relationship, and number of household pets) are most related to levels of loneliness in adolescents?
3. What is the influence of human social support on adolescent loneliness?
4. What is the influence of human social support on adolescent CAB?
5. What is the relationship between the demographic variables and loneliness?
6. What is the relationship between the demographic variables and CAB?
7. How do adolescents describe their relationship with their favorite pet?

A quantitative, cross-sectional survey research design was conducted to examine relationships between loneliness and companion animal variables. A survey is appropriate to answer the research questions for several reasons. Survey designs are cost effective, maintain anonymity, allow for larger sample sizes, are easy to administer, are not overly personally intrusive, and are a familiar format to most students.

Additionally, a higher likelihood exists of obtaining adolescents' true measures of both loneliness and CAB per self-report. Loneliness, particularly in the adolescent population, is a feeling not readily acknowledged in face-to-face settings (Cramer & Neyedley, 1998). Weiss (1982) argued that the multifaceted nature of loneliness renders it best measured by self-report, multiple-item tests, which also reduces potential

interviewer bias. Similar justifications may be argued for companion animal bonding measurements. Typical companion animal attachment behaviors may not be readily displayed or captured in an interview setting. For instance, in the presence of an interviewer, a skittish or shy pet may either refuse to interact with the owner or display atypical behaviors.

Appropriateness of Study

A logical starting point in the vast realm of unexplored knowledge about HPI and interventions for adolescent loneliness was to determine if adolescents who report strong pet attachment are less lonely than adolescents with little or no pet attachment. A quantitative analysis of adolescent self-reports among high school students examined demographic variables, adolescent loneliness, social support, and companion animal bonding. How adolescents depict their pet relationship was coded into common categories for descriptive purposes only. Data about loneliness, companion animals, social support, and demographics were secured in a quantitative design, albeit limited by the chosen variables. The survey was conducted in a timely and cost-effective manner by one researcher.

Limitations of a Survey Design

There are methodological limitations with survey responses. Self-reports may skew toward socially acceptable ways. Teen responses, despite anonymity, may not be an accurate reflection of their feelings and experiences but rather answered in a defensive manner that reflect more positively on the self. In comparison to interpersonal qualitative designs, quantitative methods are limited in opportunities to probe further into topics and fail to appreciate face-to-face communication such as visual cues, gestures, and informal

remarks. Additionally, certain aspects of the loneliness experience remain untapped by cross-sectional measures, as causal inferences and the differentiation between state and trait. For example, environmental and situational antecedents of loneliness such as the recent death of pet, break up or loss of friend, or a move to a new community may skew results.

Finally, a CAB may have stronger influences on constructs other than loneliness or social support, such as family and peer dynamics, self-esteem, nurturing, responsibility, or autonomy that this study does not directly measure. These concepts were examined by responses to the open-ended question, “*How do you describe your relationship with your favorite pet.*”

Statistical Validity

To strengthen the study’s ability to detect significant correlations among loneliness, social support, and the companion animal variables, a power of .80, $\alpha^2 = .05$, and an effect size = .30 were pre-selected that required a sample size of 218 (Cohen, 1987). To account for an estimated 20% unobtainable and unusable data rate, a sample of at least 275 participants was requested, however 320 students participated.

Sampling and Setting

Students enrolled in 9th to 12th grade regular education classes in two public, rural Southwestern high schools served as this nonrandomized sample. The two schools are the only public high school in each town. High School A is in a town with a population of approximately 6,900 with an average family size of 3.12, according to the 2004 U.S. Census Bureau. There are 1,364 students enrolled in High School A with ethnicities of

65% Hispanic, 30% White, and 5% Other. Half of the students in High School A are eligible for free or reduced lunch.

High School B is located in a town with a population of 20,000 and an average family size of 3.39 (U.S. Census Bureau, 2004). Among the 1,600 students at High School B, 74% are Native American, 15% are Hispanic, 10% are White, and 1% Other. Sixty-two percent of High School B students qualify for free or reduced lunches.

Students ranged in age from 13–19 years old. Inclusion criteria were enrollment in a regular education high school class. Exclusion criteria included an inability to complete the questionnaires, as non-English speaking or illiteracy; no participants were excluded.

Recruitment

Ten statewide high school principals were mailed study proposal packets in November 2007. The packet information included the survey's purpose, potential benefits and risks, and parental consent and participant assent requirements. Two principals wrote back with signed agreements to survey regular education students in their high schools.

The school administrations then determined which classes would be surveyed and when. Teachers of participating classes were given a letter at least three weeks before the survey (Appendix A). Two weeks before the scheduled survey, classroom teachers distributed to each student a parental/guardian letter to take home. The parental/guardian letter was a summary of the survey including potential benefits and risks with the option for parental notification with waiver of informed consent (Appendix B).

If a student did not return the attached form requesting non-participation within two weeks, the parent/guardian was assumed to have given parental notification with

waiver of informed consent for their child to participate. Each student verified that the parent/guardian had received the letter and did not refuse child participation before the surveys were distributed. Survey completion indicated participant assent.

Data Collection

Data were collected directly in the high school's regular education classrooms at the student's desk. The approximate time allocated to complete the three instruments and demographic information was 15–30 minutes. Those that did not have a companion animal were given the option of either omitting the pet questions or completing the pet questions based on a hypothetical or former pet relationship. Pet data from non-pet owners was not included in statistical analysis. High School A was surveyed in two days in April 2008, and High School B was surveyed during one day in May 2008.

The researcher and classroom teacher were present during each survey event. All student questions were immediately answered. The researcher read aloud the participant cover letter to students (Appendix C) immediately before each survey. This information included the purpose of the study, its voluntary nature, and the potential benefits and risks. No student refused receiving the survey.

Confidentiality

No questionnaire was returned with identifying information such as name or classroom; all questionnaires were anonymous. Questionnaires were coded with a random number rather than student name at the time of data entry to protect confidentiality.

Data were entered into SPSS 13.0 within several days after data collection to the researcher's password-protected home computer. All questionnaires, consent forms, and

notes are kept in a locked file cabinet in the researcher's office with plans for destruction five years after the study. The one parental refusal form remains in the high school administrative office. Protection of subjects is in accordance with the National Institutes of Health's *Regulations and Ethical Guidelines* (2005) and the University of New Mexico Human Research Review Committee (HRRC). Disclosure of the participants' responses outside of this research will not be available.

Research Approval

The University of New Mexico HRRC approved the survey (3/25/08) and supported parental notification with waiver of informed consent (passive consent). This survey followed federal guidelines for minimal risk and respected the rights and welfare of the participants in that it ensured the confidentiality and privacy of participants, obtained implied assent for each adolescent participant, and allowed parental involvement by sending home survey information and parental refusal forms. The study design involved only data collection from questionnaires; there were no interventions or treatments. The subjects were given an option for pertinent research findings via the school principal.

Ethical Considerations

Although minimal risks were entailed, potential threats included an emotive response if the participant perceived the constructs of loneliness, companion animals, or social support to be sensitive. Students were given the option of declining the survey if these topics proved emotionally taxing. Safeguards in the event of participant distress during the survey included stopping the questionnaire and referral to the school counselor. No student exhibited or reported survey-related distress.

Instruments

The three self-report questionnaires measured loneliness, companion animal bonding with the favorite pet, and social support. Demographic questions (Appendix D, question 1) included age, gender, ethnicity/race, family structure, and housing type. The pet variables were pet ownership, type of pet, number of pets, pet housing (if the pet was kept mostly inside or outside), and length in years of the pet relationship. If applicable, reasons for non-pet ownership were asked. Responses to the question, “*How do you describe your relationship with your favorite pet,*” were coded for content and frequency.

Revised UCLA Loneliness Scale

Self reported loneliness was measured with the Revised UCLA Loneliness Scale (RULS) developed by Russell, Peplau, and Cutrona in 1980 (Appendix D, question 2).

The original scale was derived from reports of people concerning their experience of loneliness and showed high reliability and validity; however the questions were all worded in a negative or “lonely” bias (Russell, Peplau, & Ferguson, 1978). Due to concerns about how the negative wording of the items may have affected responses, the tool developers revised the scale two years later. Of the 20 statements, half are descriptive of feelings of loneliness and the other half are descriptive of feelings of non-loneliness. For instance, “I feel completely alone” was reworded “I do not feel alone.”

Individuals indicate how often they feel the way described on a four-point Likert scale ranging from “*never*” to “*often*.” Sample questions from the RULS include:

- How often do you feel that you lack companionship?
- How often do you feel isolated from others?
- There are people who really understand me.

Mean scores for the RULS can range from 20–80. After adjustment for ten negatively worded items, the higher the score, the higher the loneliness.

Social and emotional loneliness.

The RULS has been tested for its ability to capture emotional and social loneliness as separate constructs. Items # 1, 5, and 6 respond to social loneliness while items # 3, 7, and 13 respond to emotional loneliness (Clinton & Anderson, 1999; Russell et al., 1980). The results of Clinton and Anderson's (1999) study of 100 college undergraduates indicated that there were significant correlational differences between social and emotional loneliness items ($r = .53, p < .001$). There were no differences, however, in the correlations between social and emotional loneliness and the total score on the RULS, suggesting that the two forms of loneliness share a sizable common core of experience.

Reliability and validity of the RULS.

Cronbach alphas for the RULS have been consistently high in adolescent samples. Among early, middle, and late adolescents, Mahon (1983) reported coefficient alphas of .83, .87, and .89 respectively. Chipuer and colleagues (2002) reported alphas ranging from .86 to .90 across a sample of 11–17 year old adolescents.

Criterion-related validity among two samples in initial scale testing were reported at $r = .72$ and $r = .79$ ($p < .001$) with a self-reported statement of loneliness (Russell et al., 1980). Evidence of construct validity was supported by testing relationships among loneliness and the theoretically relevant variables, negative affect, and introversion (Mahon et al., 2006; McWhirter, 1990). Concurrent validity of the RULS has been reported as the scale's ability to significantly distinguish loneliness from attachment and

social support (Larose et al., 2002) and from depression (Besser, Flett, & Davis, 2003). Initial testing of the RULS showed significant correlations among the scale and measures of social activities and relationships (Russell et al., 1980).

Discriminant validity of the RULS was demonstrated among adolescents by Mahon (1983) with scale scores positively correlating with a self report of loneliness (.71) and inversely correlating with measures as self esteem (-.49), affiliative tendency (-.45), and extroversion (-.46). All items on the RULS have inter-item correlations ranging from .40 to .60 (Russell et al., 1980). The RULS is the most widely used scale measuring loneliness (McWhirter, 1990). It has excellent validity and reliability properties and has been used extensively with adolescent populations (Cheng & Furnham, 2002; Jones et al., 1985; Koenig et al., 1994; Mahon et al., 2006).

Companion Animal Bonding Scale

The Companion Animal Bonding Scale (CABS) is an eight item, five-point Likert self-report scale measuring attachment with a companion animal (Poresky et al., 1987; Appendix D, question 3). Its theoretical underpinnings stem from Bowlby's (1982) and Ainsworth's (1989) attachment theories. The questions comprise attachment behaviors as care giving, secure base and safe haven, and proximity seeking. Item responses are answered from 5 = *always* to 1 = *never*. The higher the score obtained, the higher the perceived pet attachment.

The participants were asked to complete the scale based on feelings for his or her favorite household pet. Acknowledging that adolescents have been found to confide in their companion animals, an added question was "*How often do you talk to your companion animal.*" The scores on the original tool can range from 8–40 and 9–45 with

the included question. Non-pet owning participants were provided the option to choose to complete the scale either hypothetically, as if they had a pet, or based on recollections of a previous pet. Only CABS scores from current pet owners were used in data analysis.

Sample questions included:

- How often do you feel your companion animal is responsive to you?
- How often do you feel that you have a close relationship with your companion animal?

Reliability and validity of the CABS.

Cronbach alphas with adolescent and young adult samples have been reported from .79 to .82 (Poresky et al., 1987; Triebenbacher 1998). Factor analysis in initial testing (Poresky et al., 1987) yielded one factor that explained 65% of the total variance, supporting construct validity. Inter-item correlations ranged from .12 to .85.

Construct validity has been supported by significant inter-instrument correlations with the Pet Attitude Scale (Templer, Salter, Dickey, & Baldwin, 1981); $r = .38, p < .001$ and the Companion Animal Semantic Scale (Poresky et al., 1988); $r = .54, p < .001$. In comparison to other companion animal scales (Johnson et al., 1992; Lago et al., 1988; Templer et al., 1981) the CABS appears reliable, is inclusive of attachment behaviors, is more succinct than other HPI scales, and has been used in adolescent samples (Brown et al., 1996; Kogan & Viney, 1998; Poresky et al., 1987; Triebenbacher, 1998).

Social Support Questionnaire, Short Form

Social support was measured with the Social Support Questionnaire Short Form (SSQSR) by Sarason, Sarason, Shearin, and Pierce (1987); it assesses social-support size and satisfaction (Appendix D, question 4). Sarason and colleagues (1983) based their measure of social support on the premise that attachment styles largely determine how social support is recognized and utilized. Individuals that have established working models of others as accepting and nonjudgmental accordingly develop an appreciation for social support. The SSQSR is a modified version of its parent scale, the Social Support Questionnaire (SSQ) that is comprised of 27 items (Sarason et al., 1983). The SSQSR was found to be highly correlated with the SSQ, in fact the researchers point out that the internal reliability of the SSQSR is greater than that of the SSQ, implying that it might be a better measurement than its parent scale (Sarason et al., 1987).

The SSQSR measures two aspects of social support, network size (SSQN) and satisfaction with support (SSQS). For each six hypothetical situations, respondents list up to nine people they can turn to or rely on for support, and indicate the degree of satisfaction with this support on a scale from 1 = *very dissatisfied* to 6 = *very satisfied*. The SSQN is calculated by adding the total number of supports and dividing by the number of items. The SSQS is calculated by adding the satisfaction ratings and dividing them by the number of items. Sample questions are:

- Whom can you really count on to be dependable when you need help?
- Whom can you really count on to help you feel better when you are feeling generally down-in-the dumps?

Reliability and validity of the SSQSR.

Both dimensions of social support, SSQN and SSQS, have shown good internal reliability among adolescent and young adult samples with alphas for each the SSQN and SSQS .90 to .93 (Pretty et al., 1994; Sarason et al., 1987).

Factor analyses performed for the two scores indicate construct validity, 82% of the variance in the network size score and 72% of the satisfaction score (Sarason et al., 1987). The tool developers concluded that the two scores represent different tapped dimensions of social support. Criterion validity correlations between the SSQSR and depression were found to be significantly negative and the scale correlates positively with optimism (Sarason et al., 1987).

Demographic Information

Demographic data coded for statistical analysis included gender, age, ethnicity, family structure, housing type, length of pet relationship, number of household pets, and pet housing (if the pet was kept mostly inside or outside). Additional demographic information that was used for descriptive purposes included type of pet(s) and reasons for not having a pet. Two other pet variables, length of favored pet relationship and number of pets in the household, were also chosen as they have not been extensively researched in the pet attachment experience. Common categories of responses to the question, “Describe your relationship with your pet” were labeled and examined descriptively and for frequency.

How the Study Addressed the Research Questions

Initially, a two-tailed t-test was run to ascertain if group differences exist between pet owners and non-pet owners on reported loneliness. Standard (or simultaneous which

SPSS calls the Enter method) multiple regressions were conducted to determine if the independent variables accounted for variances in loneliness, CAB, and human social support. Narrative responses to the question, “How do you describe your relationship with your favorite pet,” were coded for frequency for categorical analysis (Patton, 2002).

Summary

The strengths of this exploratory study include a contribution of nursing research about adolescent loneliness and influences of companion animal attachment. Interventions including companion animal involvement may be developed and facilitated. To best answer the research questions regarding adolescent high school students’ relationships across the variables of loneliness, CAB, social support, and demographics; a quantitative, cross-sectional research study was conducted. Ethics considerations included passive parental consent, participant assent, and adherence to Research Protocol of the HRRC. This survey method involved minimal risk, and no detrimental effects were observed or reported. The instruments used (RULS, CABS, and SSQSR) have all been used with adolescent samples and demonstrate good validity and reliability. Author permission was granted for use of each of these instruments for this survey. A question was added to the CABS tool: *How often do you talk to your pet*. An open-ended question was added to garner further descriptive insight into the adolescent-pet relationship: *How do you describe your relationship with your favorite pet*. Standard (simultaneous) regression was used to explore the direction and amount of variance in loneliness, CAB, and social support with the chosen variables. Findings will be prepared for publication in a journal with an adolescent or family health focus.

Chapter 4: Results

The data preparation, demographic information, instrumentation, and results of statistical analyses used to address each research question are presented in this chapter.

Data Preparation for Analysis

Prior to analysis, data were screened for outliers and missing data, and to evaluate the fulfillment of test assumptions. A total of 320 public high school students enrolled in 9th through 12th grade regular education classes served as this sample. One parent returned a refusal form and that child was not present during the survey. Thirteen students did not fill out their questionnaires; six surveys were unusable due to nonsensical or incomplete data. Incomplete data were determined as greater than two items omitted in a questionnaire. In an additional 13 cases, either one question on a scale was not answered or more than one answer was checked, and the item score on these scales was replaced with the mean.

Outliers were identified among the remaining cases by calculating the Mahalanobis variable (Cohen, 1987) generated from scores of the four instruments (RULS, CABS, SSQN, and SSQS). The critical value of chi square (χ^2) at $p < .001$ with $df = 4$ was 18.47. Seven cases exceeded this critical value so were deleted from analysis. Missing data occurred in a random pattern throughout the data set, reducing concern for a systematic pattern. Data screening resulted in 293 participants in the total sample.

Linearity was then analyzed by creating a scatterplot matrix, identifying minor nonlinearity for the four instruments. Univariate normality was also assessed by histograms, the Kolmogorov-Smirnov test, and skewness and kurtosis confidence intervals. Age was normally distributed, but the four instruments displayed mildly non-

normal distributions. Transformations of the data did not improve normality tests, so data were run in the original, unaltered form. The small non-normalities among the instrument scores did not alter results when parametric testing was compared with its nonparametric counterpart tests. Therefore, normality was not considered a concern in regards to the accuracy of statistical analyses.

Demographic Information of the Sample

Participants consisted of 293 high school students from two high schools. High School A ($n = 174$) and High School B ($n = 119$). Table 2 summarizes gender, age, and ethnicity for each school as well as combined as a total sample. Gender was equally distributed. Ages of the participants ranged from 13 through 19 with the mean age 15.8 years old ($SD = 1.32$). Specific to each school, the mean age for students from High School A was 15.02 ($SD = .87$) and for High School B the mean age was 16.82 ($SD = 1.13$). The three most common ethnic groups were Hispanic/Latino (39.0%), White (22.7%), and American Indian (18.2%). The remaining 20% of the sample reported “Other Ethnicities”, “Two or More Ethnicities”, or “Chose Not to Answer.”

Among the participants, 153 (52 %) lived with both their mother and father. Sixty three (22%) lived with their mother, 10 (3%) lived with their father, 41 (14%) lived with a stepparent, 15 (5%) lived with grandparents, and 11 (4%) lived with others. The mean number of siblings and stepsiblings was two. The most common housing was a single-dwelling home for 232 participants (80%) and most of these homes had a fenced back yard. Living at a farm or ranch was the second most common dwelling for 29 participants (10%). Of the remaining 8% of the sample, half ($n = 12$) lived in mobile homes and the other half ($n = 12$) in apartments.

Table 2. Demographic Information of the Sample

	High School A (<i>n</i> = 174)		High School B (<i>n</i> = 119)		Total Sample (<i>N</i> = 293)	
	Frequency	Percent Subsample (Total)	Frequency	Percent Subsample (Total)	Frequency	Percent
<i>Gender</i>						
Male	84	48 (28.8)	51	41.5 (17.1)	135	45.9
Female	90	52 (30.8)	68	58.5 (23.3)	158	54.1
<i>Total Sample Age (SD = 1.32)</i>						
13	3	1.7 (1.0)	0	0.0	3	1.0
14	44	25.3 (15.1)	2	1.7 (0.7)	46	15.8
15	80	46.0 (27.4)	17	13.6 (5.5)	97	32.9
16	43	24.7 (14.7)	24	20.3 (8.2)	67	22.9
17	1	0.6 (0.3)	38	32.2 (13.1)	39	13.4
18	3	1.7 (1.0)	35	29.7 (12.0)	38	13.0
19	0	0.0	3	2.5 (1.0)	3	1.0
<i>Ethnic/Race</i>						
American Indian or Alaskan	1	0.6 (0.3)	53	44.1 (17.9)	54	18.2
Asian	1	0.6 (0.3)	4	3.4 (1.4)	5	1.7
Black	8	4.6 (2.7)	2	1.7 (0.7)	10	3.4
Hispanic/Latino	90	51.7 (30.8)	24	20.3 (8.2)	114	39.0
White	45	25.8 (15.4)	21	17.8 (7.3)	66	22.7
Hispanic & White	12	6.9 (4.1)	5	4.2 (1.7)	17	5.8
Other	5	2.9 (1.7)	3	2.5 (1.0)	8	2.7
Two or More	7	4.0 (2.4)	1	0.8 (0.3)	8	2.7
Not Answered	5	2.9 (1.7)	6	5.1 (2.1)	11	3.8

Pet Demographic Data

At least one pet was present among 245 (84%) participants' households. Among the 47 non-pet owning participants, 28 (60%) wanted a pet. The most common obstacles to pet ownership were pet allergies (34%), parental (28%) or landlord (28%) refusal, and insufficient room (9%). Those who did not want a pet did not explain why a pet was not desired.

Table 3. *Type and Frequency of Favored Pet*

Type of Closest Pet	High School A (<i>n</i> = 149)		High School B (<i>n</i> = 96)		Total Sample of Pet Owners (<i>N</i> = 245)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Dog	110	44.9	55	22.5	165	67.4
Cat	19	7.8	25	10.2	44	18.0
Horse	9	3.7	2	0.8	11	4.5
Bird	0	0.0	1	0.4	1	0.4
Ferret	0	0.0	2	0.8	2	0.8
Rabbit	0	0.0	1	0.4	1	0.4
Reptile	3	1.2	1	0.4	4	1.6
Other	2	0.8	2	0.8	4	1.6
Missing Data	6	2.4	7	2.9	13	5.3

Regarding the closest pet relationship, dogs (67.4%) were favored over cats (18.0%) and other pets (9.3%), Table 3. The mean length of the closest pet relationship was 3.64 years, a mode of 3 years, and a range from less than six months to over nine years. Most pet owners (75.5%) listed more than one pet in the household with a mean and median each of three pets. An equal proportion of pets were kept mostly inside or mostly outside.

Instrument Reliabilities

The questionnaires used in this survey were the Revised UCLA Loneliness Scale (RULS); the Social Support Questionnaire, Short Form (SSQSR); and the Companion Animal Bonding Scale (CABS). The SSQS generates two scores, Social Support Number (SSQN) and Social Support Satisfaction (SSQS). Scores from both the original eight-item CABS and the CABS with the added question are compared. The mean scores, standard deviations, score range, reliability, and item-to-item correlations are presented in Table 4.

Table 4. *Instruments and Quantitative Data*

Instrument	N	Mean	SD	Range	Cronbach's alpha	Item-to-Item Correlation
RULS	293	34.68	.07	20 – 60	.86	.10 - .66
Social Support Number	293	4.17	.29	0-9	.94	.56 - .84
Social Support Satisfaction	293	5.46	.54	3.7-6.0	.78	.18 - .50
Companion Animal Bonding Scale ^a	243	32.32	.20	13-45	.82	.16 - .64
Companion Animal Bonding Scale ^b	243	28.39	.62	12-40	.82	.16 - .88
Age of participant	292	15.75	1.32	13-19	N/A	N/A
Length of pet relationship (years)	245	3.64	.53	≤ 6 mo. - ≥ 9 years	N/A	N/A
Number of pets	245	3.30	.93	1 - ≥ 6	N/A	N/A

^a = Scale with added question #9

^b = Original scale of 8 questions

In comparison with other studies using the same scales with adolescents, this sample tended to score lower on the RULS, an indication of less loneliness. Participants scored higher on the CABS, SSQN, and SSQS, indicating higher pet attachment and human social support. Regarding RULS comparisons among high school students, Cheng and Furnham (2002) reported a RULS $M = 37.0$ ($N = 100$) and Mahon and colleagues (1994) $M = 36.1$ ($N = 107$), both higher than this samples' $M = 34.7$. Comparing the CABS, this sample's $M = 28.4$ that was similar to Trienbacher's (1998)

$M = 28.3$ among 128 public high school students, yet higher than Poresky et al. (1987) reported $M = 26.4$ among 121 students. Social support scores were compared with Pretty et al. (1994) study of 167 high school students reported mean scores on the SSQN = 3.9 and SSQS = 5.0, both lower than this samples' means of SSQN = 4.2 and SSQS = 5.5.

Statistical Analyses per Research Question

Research Question 1: What Is the Relationship Between Loneliness and Companion

Animal Attachment in Adolescents?

A two-tailed independent t-test with equal variances was run comparing loneliness scores with high school students that have pets and those that do not. The mean loneliness score for the 47 students with no pet was 39.5 ($SD = 9.2$), that was significantly higher than the mean loneliness score for the pet owners ($n = 246$) of 33.7 ($SD = 8.8$), $t(290) = 4.1$, $p < .001$, Effect size (ES) = 0.32. Figure 3 depicts the mean loneliness scores within a 95% confidence interval (CI) with no variance overlap. When t-tests were run specifically for gender, the results were equally significant as when gender was combined. In other words, there were no gender differences in pet ownership or loneliness scores. Pet owning high school students, regardless of their gender, were found to be significantly less lonely than non-pet owning high school students.

The sample size was heavily weighted for pet owners, but methodological analyses supported the t-test results. Sample size was sufficient to meet the power analysis (Cohen, 1987) and equal variance was assumed. Furthermore, the t-test results were close to identical when sample sizes of each group were equal. That is, a t-test was run in which 198 cases of pet owners were randomly eliminated producing equal sample

sizes of 47 non-pet owners and 47 pet owners. The results of this t-test produced near identical results as the original t-test inclusive of all pet owners.

There were no significant differences in self-reported loneliness for dog or cat owners, $t(207) = .08, p = .94$. Pets other than dogs and cats were varied and accounted for only 10% of pet ownership, considered too small a proportion for meaningful statistical analysis of their relationship to loneliness. Whether a pet was kept inside or outside was unrelated to loneliness scores, $t(235) = 1.19, p = .23$.

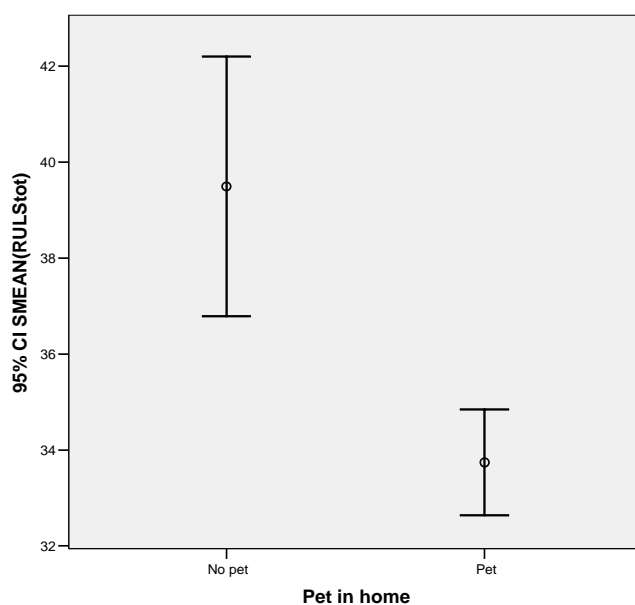


Figure 3. Error chart: Mean Loneliness Scores of Adolescents with and without Pets

Research Question 2: Which Companion Animal Variables (Bond, Length of Relationship, and Number of Household Pets) Are Most Related to Levels of Loneliness in Adolescents?

To explore lower loneliness among pet owners, the three pet variables of CABS scores, length of favored pet relationship, and number of household pets were regressed with loneliness scores. Only pet owning students were analyzed ($n = 245$). The overall regression model summary (Table 5) did not significantly predict loneliness $R^2 = .02$,

$R^2_{adj} = .009$, $F(3, 238) = 1.72$, $p = .17$. However, CABS scores did reach significance with an inverse relationship with loneliness ($\beta = -.13$, $p = .05$).

Table 5. *Coefficients of Pet Variables Predicting Loneliness*

Variables	<i>B</i>	β	<i>t</i>	<i>p</i>
CABS	-.16	-.13	-1.97	.05
Length of pet relationship	-.08	-.01	-.22	.83
Number of pets	.41	.09	1.37	.17

Research Question 3: What Is the Influence of Human Social Support on Adolescent Loneliness?

Social support was measured with the Social Support Questionnaire, Short Form (SSQSR) that generates two scores, the number of humans available for support (SSQN) and the perceived degree of satisfaction with available support (SSQS). Standard regression was conducted with the two independent variables, SSQN and SSQS, predicting loneliness scores for the total sample ($N = 293$). Regression results indicated that more social support (combined SSQN and SSQS) is significantly related to less loneliness, $R^2 = .19$, $R^2_{adj} = .19$, $F(2, 261) = 31.09$, $p < .001$, $ES = .24$.

Each of the social support variables had similar beta weights suggesting that support number and satisfaction are equally important in predicting loneliness. Combined, the two social support variables accounted for 19.2% of variance in loneliness. A summary of regression coefficients is presented in Table 6.

Table 6. *Coefficients of Social Support Variables Predicting Loneliness*

Variables	<i>B</i>	β	<i>t</i>	<i>p</i>
Social Support Number	-1.10	-.29	-5.04	<.001
Social Support Satisfaction	-4.14	-.26	-4.46	<.001

Research Question 4: What Is the Influence of Human Social Support on Adolescent CAB?

To examine relationships between social support and the pet variables, two regressions were run since the SSQRS produces two scores. The first regression was run with SSQN as the dependent variable with the three independent pet variables of CABS scores, length of the pet relationship, and the number of pets. The other regression was run with SSQS as the dependent variable with the same three independent pet variables. Only pet-owners ($n = 245$) were included in this analysis. Regarding SSQN, the full model with pet variables did not reach significance, $R^2 = .02$, $R^2_{adj} = .009$, $F(3, 238) = 1.73$, $p = .16$, $ES = .02$. The only pet variable reaching significance in predicting social support number scores was the CABS scores ($\beta = .04$, $p = .05$), Table 7.

Table 7. *Coefficients of Pet Variables Predicting Social Support Number*

Variables	B	β	t	p
CABS	.04	.13	1.96	.05
Length of Pet Relationship	.10	.06	.99	.33
Number of Pets	-.03	-.03	-.43	.67

When social support satisfaction was regressed with the pet variables, the overall model was significant, $R^2 = .05$, $R^2_{adj} = .04$, $F(3, 238) = 3.94$, $p = .01$, $ES = .05$. The number of pets was the only significant independent variable ($\beta = -.05$, $p = .004$), see Table 8. This was a negative correlation, meaning that participants with more pets reported less social support satisfaction.

Table 8. *Coefficients of Pet Variables Predicting Social Support Satisfaction*

Variables	B	β	t	p
CABS	.007	.10	1.48	.14
Length of Pet Relationship	.04	.11	1.64	.10
Number of Pets	-.05	-.19	-2.94	.004

Research Question 5: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnicity/Race, Family Structure, and Housing Type) and Loneliness?

A Univariate Analysis of Variances (ANOVA) was conducted to determine group differences among loneliness and the demographic factors of gender, age, ethnicity/race, family structure, siblings, and housing type (Table 9). Both pet owners and non-pet owners were analyzed. No significant demographic variables in relationship to loneliness were found.

Table 9. *Loneliness and Demographic Variables*

Tests of Between-Subjects Effects

Dependent Variable: SMEAN(RULStot)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3094.429 ^a	33	93.771	1.151	.270
Intercept	36529.059	1	36529.059	448.433	.000
Sex	25.041	1	25.041	.307	.580
Age	237.873	6	39.646	.487	.818
Ethnic	1282.487	9	142.499	1.749	.078
Family	852.334	6	142.056	1.744	.111
Stepparent	171.523	1	171.523	2.106	.148
Siblings	290.756	5	58.151	.714	.614
Housing	185.213	5	37.043	.455	.810
Error	20935.048	257	81.459		
Total	373853.677	291			
Corrected Total	24029.477	290			

a. R Squared = .129 (Adjusted R Squared = .017)

Research Question 6: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnicity/Race, Family Structure, and Housing Type) and Companion Animal Bonding?

Among the pet owner sample, a univariate ANOVA was conducted to determine group differences among CABS scores and the demographic factors of gender, age, ethnicity/race, family structure, and housing type (Table 10). Two significant relationships with CABS scores were found, for gender, $F(1, 208) = 7.55, p = .007$, and for number of siblings, $F(5, 208) = 2.27, p = .05$.

Table 10. *CABS Scores and Demographic Variables*

Tests of Between-Subjects Effects

Dependent Variable: CA Bonding Scale

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2323.598 ^a	33	70.412	1.444	.066
Intercept	22561.431	1	22561.431	462.543	.000
Sex	368.382	1	368.382	7.552	.007
Age	374.289	6	62.381	1.279	.268
Ethnic	467.199	9	51.911	1.064	.391
Family	327.836	6	54.639	1.120	.352
Stepparent	108.149	1	108.149	2.217	.138
Siblings	554.307	5	110.861	2.273	.049
Housing	216.550	5	43.310	.888	.490
Error	10145.597	208	48.777		
Total	265902.360	242			
Corrected Total	12469.195	241			

a. R Squared = .186 (Adjusted R Squared = .057)

Significance for gender was again found with an independent t-test in which females ($n = 133$) scored significantly higher on the CABS, 33.40 ($SD = 6.59$) compared with males ($n = 100$), with a mean score of 31.01 ($SD = 7.71$), $t(241) = 2.61, p = .01$, $ES = .17$.

Although the number of siblings and step-siblings was found significant in the ANOVA ($p = .05$), a variety of post hoc tests did not reach significance. In particular, the Scheffe post hoc test suggested that those without siblings scored higher on the CABS, but it was a non-significant finding ($p = .63$). It is therefore considered that there are no significant differences in the number of siblings or step-siblings and CABS scores.

Relationships of pet variables and CABS scores.

A t-test was conducted to ascertain whether CABS scores differed if the pet was kept predominately inside ($n = 115$) or outside ($n = 121$). The mean CABS score for those with inside pets was 35.36 ($SD = 6.37$) and with outside pets, the mean was 29.22 ($SD = 6.56$), $t(234) = 7.29$, $p < .001$, $ES = .47$.

While dogs were selected most often as the favored pet ($n = 165$), cat owners ($n = 43$) scored significantly higher on the CABS. The mean CABS score for cat owners was 35.86 ($SD = 5.49$); for dog owners the mean score was 32.37 ($SD = 7.03$), $t(206) = -3.03$, $p = .003$, $ES = .20$. The mean CABS score for other pets ($n = 34$) was 27.70 ($SD = 7.6$). The length of pet relationship was not related to CABS scores, $F(6, 241) = 1.51$, $p = .18$. The number of pets, however, positively correlated with CABS scores, $F(5, 241) = 2.45$, $p = .03$.

Research Question 7: How Do Adolescents Describe Their Relationship with Their Favorite Pet?

Of the 245 pet owners, 87% ($n = 214$) responded to the narrative question, *how do you describe your relationship with your favorite pet*. Approximately half of the responses were brief, often a single sentence or one word. The response conciseness

precluded content analysis, so data were labeled to categorize relationships (Patton, 2002).

Amongst the more narrative responses, most participants (62%) described their pet relationship in an affectionate way, specifically in the status of a confidant, exclusive friend, and family member. Subcategories of affection involved reciprocal nurturing and protection of each other. Seventeen percent depicted the relationship as primarily fun and recreational, an additional 18% of responses were described simply as “good” or “OK,” and the remaining 3% responded indifferent (Figure 4). There were no overtly negative or degrading comments. Examples of participant remarks are found in Table 11.

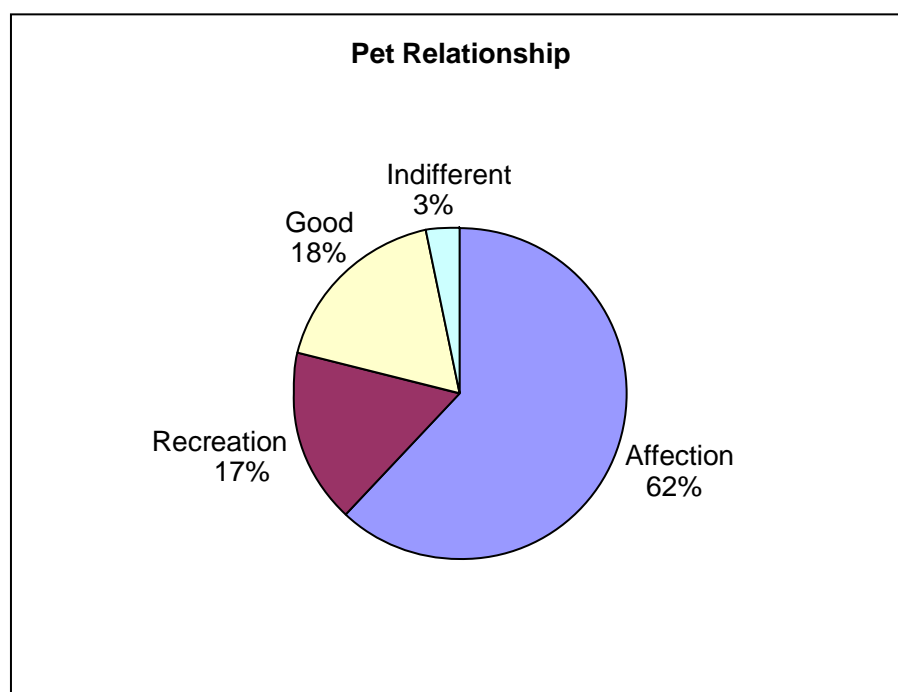


Figure 4. *Common Categories of Pet Relationship*

Summary

The rural high schools students who completed this survey were from diverse family structures and ethnicities. Most participants (90%) lived in a house or farm/ranch and had three pets. Of the 16% of participants who did not have a pet ($n = 47$), 60%

Table 11. *Pet Relationship Quotes*

AFFECTION
<p>Exclusive</p> <p><i>“Very close, because its mine and I take care of her and she feels more comfortable with me than anyone else.” (dog)</i></p> <p><i>“We are really close. She listens to me better than anyone else. Whenever she’s inside she is always with me. I don’t know what I’m going to do when she dies.” (cat)</i></p> <p><i>“We’re really close. When I’m lying on the couch he’ll come lay by me and I’ll play with him. We’re so close when someone tries to mess with me he’s overprotected [sic].” (dog)</i></p> <p><i>“I love my dog because it’s so so cute and she’s so mean to other people. She just loves me.”</i></p> <p><i>“She is my own cat. She sleeps with me and follows me around everywhere. She is very smart and comes when I call her name and I taught her how to play fetch”.</i></p> <p>Confidant</p> <p><i>“Well, my dogs are like my babies I talk to them and tell them everything that happens to me at school and when I feel sad I hug them and cry.”</i></p> <p><i>“It’s all good, she knows my feelings and listens to my every word, doesn’t judge.” (cat)</i></p> <p><i>“My dog and I get along very well and he understands how I am feeling and responds accordingly. I love him.”</i></p> <p><i>“That I can talk to my horse about anything and she understands me.”</i></p> <p>Family and Friend Status</p> <p><i>“I feel that my dog is like my sister. I love her.”</i></p> <p><i>“I have raised my dog from a puppy. I am very attached to her. She makes me feel better when I am sick & sad. Watching the dog grow up has been an interesting experience.”</i></p> <p><i>“My dog is like my best friend. I would die without her.”</i></p> <p><i>“My cats are like my sibling, I feel protective of them but I can also play and talk to them.”</i></p>
FUN AND RECREATIONAL
<p><i>“When I get home he runs to me. We are always together. He sleeps with me. Sometimes we play together.” (dog)</i></p> <p><i>“Fun to play with, always happy to see me.”(dog)</i></p> <p><i>“It is very good, we play together and he goes hunting and fishing with me.”(dog)</i></p> <p><i>“Fun, we go to the store together.” (reptile)</i></p> <p><i>“She is a cool cat. I play with her and take care of her.”</i></p> <p><i>“My dog and I always eat dinner together. We sing karaoke until the wee hours of night.”</i></p>
INDIFFERENT
<p><i>“He’s a dog. I’m a human. I do not like having 'relationships' with anything but human[s].”</i></p> <p><i>“Don’t have any relationship.”(dog)</i></p>

wanted one. The favorite pets were dogs and cats with an average ownership of 3.6 years.

Pet owners were significantly less lonely than non-pet owners, and while the correlation between CABS scores and loneliness scores was significant, it was weak ($\beta = -.13, p = .05$). Social support number and satisfaction were inversely related to loneliness. The social support number was positively related to CABS scores, but social support satisfaction was inversely related to the number of pets. Demographic variables did not contribute to an explanation of loneliness or CABS with the exception that females scored higher on the CABS. Pets were kept for companionship rather than for utilitarian purposes and the relationship was described primarily as affectionate and recreational.

Chapter 5: Discussion

The purpose of this study among high school students was to explore relationships between companion animal attachment, loneliness, and social support. Demographic information was also analyzed regarding its influence on CABS scores and loneliness. In addition to questionnaire data, descriptions of the pet relationship were coded for common categories. Findings for each research question are discussed followed by an overall analysis of survey strengths, limitations, recommendations for further research, and implications for nursing.

Research Question 1: What Is the Relationship Between Loneliness and Companion Animal Attachment in Adolescents?

Pet owners were found to be less lonely than non-pet owners in this sample. Gender was not significant in either pet ownership or loneliness scores. Pet ownership was popular with an 84% rate that is higher than the 70% national average (AVMA, 2002). The high rate of pet ownership may be partly explained by the rural settings and predominance of single dwelling homes that may be more conducive to pet ownership than urban settings.

The majority of the favorite pets were dogs and cats, and the type did not influence loneliness scores. Only 6% of the sample did not have a pet nor wanted one. This leaves 94% of the sample who either had a pet or wanted one, concurring with studies that most adolescents want a pet (Kidd & Kidd, 1990; Robin et al., 1983). The sample size was heavily weighted for pet-owners and subsequent methodological concerns were addressed supporting the t-test results. It is recognized that generalizability of the results may be comprised, and it can be difficult to argue that the small sample of non-pet owners is representative of a large and varied population.

Pet presence among adolescents appears to buffer loneliness and adds an important finding in the studies of HPI and adolescent loneliness. Beck and Meyers (1996) claim that pet guardianship protects against the “ravages of loneliness” (p. 250) emerges as justifiable from this study. Aspects of the pet relationship in relation to loneliness are addressed in the next discussion, Question Two.

Research Question 2: Which Companion Animal Variables (Bond, Length of Relationship, and Number of Household Pets) Are Most Related to Levels of Loneliness in Adolescents?

To date, this is the first study to investigate if the pet variables of length of relationship and number of household pets relates to loneliness. Data did not support a relationship with either of these pet variables and loneliness. CABS scores, however, did reach significance in negatively predicting loneliness ($r = -.13$, $p = .05$). It appears that the quality of the pet relationship, how an adolescent feels about the pet, buffers loneliness and concurs with studies among elders that pet attachment may be a safeguard against loneliness (Garrity et al., 1989; Keil, 1998).

The strength of CABS scores was not robust enough to carry the regression model of the combined three pet variables to significantly predict loneliness. Before accepting a small effect between loneliness and pet attachment, methodological attention to this survey is warranted. Several suggestions are proposed that may lead to a more accurate appraisal of the association between pet attachment and adolescent loneliness.

The first consideration is the appropriateness of the CABS with adolescents; it may not adequately measure unique pet attachment concepts. The tool was chosen for this survey because of its previous use with adolescents and its development from

Bowlby's (1982) grand theory of attachment. Attachment behaviors of care giving, proximity maintenance, safe haven, and secure base are somewhat integrated within the CABS, but not equally.

Among the eight questions on the original CABS, three items (#4, #7, & #8) question about the proximity of a pet in travel or sleeping arrangements. These three proximity questions were scored lowest among the survey participants. Concerns arise if pet proximity truly reflects pet attachment. A teen's parents may restrict pet presence in travel or sleeping arrangements, for instance, worries about hygiene or family member allergies. The teen may want to travel or sleep with the pet, but is restricted from doing so. Also, 50% of the favored pets in these rural settings were kept primarily outside, so it is likely they also slept outside.

Key attributes of safe haven and secure base were not specifically asked, for instance behaviors regarding confiding, comfort, loyalty, and an exclusive, dyadic bond. It is not just the CABS that lacks omission of safe haven and secure base behaviors as other available pet attachment tools have been criticized for assessing a generalized close relationship instead of specific attachment behaviors (Wilson, 1998).

It is plausible that the concepts of safe haven and secure base explain more of a teen's attachment to a companion animal than were measured in this study. Common categories that emerged when adolescents described their pet relationship (discussed further in Question 7) involved finding comfort in each other and as a special confidant, both of which are attachment attributes of safe haven and secure base. Therefore, for use with children and teens, the CABS may overemphasize proximity and insufficiently focus

on behaviors of safe haven (e.g. confiding, comfort) and secure base (e.g. loyal, constant presence).

In light of a scarcity of comprehensive pet attachment tools, and absence of one specifically for adolescents, development of a new pet attachment tool is advised. Toward the search to capture the unique dynamics of the teen-pet relationship, theory development is initially recommended. Theory foundation of adolescent HPI would best be achieved through a grounded theory approach; developed inductively from interviews and observations (directly or audio-visual means) of teen-pet interactions. Concept development would progress into a suitable theory from which to base an appropriate measurement tool.

Additionally, the participants were asked about their ‘favorite’ pet that implies affection but does not necessarily imply a dyadic bond. In line with attachment theory, it would be prudent for future studies to assess if the pet is an attachment figure, that is, if the pet and teen share an exclusive relationship based on security. Tapping into this aspect would assess if the teen felt the pet was primarily responsive and sought security with more reliance through him or her than from other family members. An affiliative relationship with a pet, the teen feeling that the pet favors him over others, is inherent with attachment and separates it from simply a close relationship.

Finally, explanations that may explain why pet owning adolescents are less lonely than non-pet owners involve the home dynamics that keep companion animals. Parents who incorporate pets into the family have been found to encourage child socialization, nurturing, and responsibility through pet care (Cain, 1983; Covert et al., 1985). Family pets may also prepare children for a number of life experiences, for example social

interactions, life and death, empathy, and an appreciation for nonverbal communication (Beck & Meyers, 1996; McNicholas & Collis, 2001). It may be, then, that parents who keep household pets are actually fostering qualities such as empathy and socialization proxy the pet that, in turn, buffers loneliness. Future studies of the health benefits of pets among children and adolescents should integrate assessment of parenting styles that may differ for families with and without pets.

Research Question 3: What Is the Influence of Human Social Support on Adolescent Loneliness?

Survey findings agree with previous studies that social support negatively correlates with loneliness (Green et al., 2001; Marcoen et al., 1987; Sarason et al., 1987; Uruk & Demir, 2003). Each of the two measured social support variables, the number of humans in the network and the perceived satisfaction with the network, are important in relationship to loneliness as evidenced by similar beta weights and significance. In other words, the number of individuals in the teen's social support network is equally as significant as the perceived satisfaction with the network in predicting loneliness.

It is noted that 81% of variables other than social support are unexplained from the regression model predicting loneliness. The theories of social and emotional loneliness may clarify concepts other than social support that relate to loneliness.

Weiss (1973) described social loneliness as external; related to a lack of social interaction. Social loneliness is typically relieved when a satisfying social network is acquired. Emotional loneliness is more of an internal, disturbing, and chronic process imbued with negative feelings about the quality of relationships (Peplau & Perlman, 1982). People who feel emotional loneliness do not necessarily lack opportunities for

social interaction or support. Rather, personality traits negatively conceptualize relationships rendering one unwilling or distrustful to invest in relationships. The outcome of sustained poor relationship quality is emotional loneliness.

A common personality trait among emotionally lonely people is low self-esteem (Haines et al., 1993; Kraus et al., 1993; Mahon et al., 2006; Wei et al., 2005). An emotionally lonely person with low self-esteem views himself as unlovable and with little worth and expects that others view him in this self-deprecating view. Adolescents suffering from emotional loneliness often demonstrate low self-esteem by focusing on their personal faults and invest little time or energies toward forming relationships (Brennan, 1982). The results of a meta-analysis of adolescent loneliness predictors concur that low self-esteem is a stronger predictor of loneliness than low social support (Mahon et al., 2006).

Social support was chosen as a variable in this survey due to its inconclusive relationship with CAB. It is an important finding that both aspects of social support, number and satisfaction, are equally important variables in buffering loneliness. However, future studies of loneliness are recommended to include measurement of self-esteem as it appears to be a pertinent variable in loneliness.

Research Question 4: What Is the Influence of Human Social Support on Adolescent CAB?

Two regression models were generated to examine relationships among the three companion animal variables of CABS scores, length of pet relationship, and the number of pets with social support. The first model examined the number of individuals in the

social support network and the second model examined the perceived satisfaction of the social support network.

Social Support Number and Pet Variables

While the overall regression model of SSQN and the pet variables was non-significant, there was one positive correlation with CABS scores. The association may be explained by the social facilitation theory of pets (Messent, 1985). According to social facilitation, pets interact directly with people and serve as a catalyst for human to human contact. Pet contributions for human social interactions include play, a non-threatening conversation starter, and an opportunity to meet others during pet walks and outings. Pet presence and the perceived positive persona of pet guardians bring a commonality among others that can develop into human to human relationships (Bonas et al., 2000; Lockwood, 1983; Messent, 1985; Ory & Goldberg, 1983; Wood et al., 2007). Companion animals are not seen as a substitute for human social support, but rather are assimilated into the social network (McNicholas & Collis, 2000; Rogers et al., 1993). Those who enjoy pets also appear to enjoy the company of people.

The survey participants lived in rural areas that are apt to offer readily accessible outside play areas and social activities that include pets. Also, rural teens have likely spent their childhood in the presence of domestic and farm animals. Perhaps it is this early childhood integration of animals and people that also explains why those that are attached to their pets also enjoy many humans in the social network.

Farming and animal care organizations such as 4-H are active within the counties of the two surveyed high schools. These rural organizations teach caring behaviors for animals and the community at large, likely fostering a respect and affection for both

humans and non-human animals. Even simple pet excursions such as walks or hunting with a dog or horse, can enlarge the social network with humans of like interests (Messent, 1985).

Social Support Satisfaction and Pet Variables

The overall regression model of SSQS and the three pet variables was significant. The one significant correlation was that social support satisfaction was inversely related with the number of companion animals. In other words, the more pets an adolescent owned the more dissatisfaction was reported with human social support. Causality is not determined, but explanations may include that the time involved in caring for a number of pets restricts time for human social companionships. Rural area living teens would likely be expected to contribute with animal care.

Another possible explanation why social support satisfaction was negatively correlated with the number of pets is that pets may be sought to compensate for lacking human support. In contrast with the social facilitation theory of pets, some studies have found that pet guardians report diminished human social support in comparison with non-pet owners (Garrity et al., 1989; Keil, 1998; Stammbach & Turner, 1999). Those that lack or distrust human social support may plausibly acquire pets to fill a social need unmet by humans. Perhaps teens in this survey also obtain animals as an alternative or response to a disappointing human social support network

Research Question 5: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnicity/Race, Family Structure, Siblings, and Housing Type) and Loneliness?

Loneliness appears immune to the demographic variables of gender, age, ethnicity, family structure, number of siblings, and housing type. Few adolescent loneliness studies have examined these ethnic representations an important finding from this ethnically diverse sample is the similarity in self-reported loneliness.

As well, loneliness appears to transcend gender and the findings support other studies that show that there is little gender difference in the experience of teen loneliness (Bagner et al., 2004; Davis et al., 1998; Hsu et al., 2001; Jones et al., 1985; Kraus et al., 1993). Self reports of loneliness were similar among those 13 –19 years of age, supporting that the age of a teenager is not a significant predictor of loneliness (Koenig & Abrams, 1999). In other words, freshman through senior loneliness scores were not significantly different.

Neither family structure nor number of siblings or step-siblings correlated with loneliness. Family diversity was represented in this survey as 48% of the sample lived in families other than with both biological parents. Family composition was not significantly correlated with loneliness which is a noteworthy finding and contradicts Garnefski and Diekstra's (1997) findings that adolescents from one parent and stepparent families are lonelier than those living with both biological parents. Perhaps the family quality superseded family structure in adolescent loneliness. Incorporating an assessment of family attachment into further studies of loneliness would assist in clarifying the home

dynamics of teen loneliness. It is also plausible that pet presence in the home buffered loneliness regardless of family structure.

To date, this is the first study to investigate a relationship between type of housing and loneliness, and no significant findings were found. However, this finding is certainly not generalizable as over 90% of the sample lived in single dwelling homes.

The many commonalities of puberty may explain why loneliness surpasses demographic variables. For one, teens experience hormonal swings that influence physical and emotional changes. Secondly, teens are frequently at odds with the cultural expectation of social accord versus their inner drive for individualism; a struggle that often manifests into loneliness (Arnett, 1999; Buchholz & Catton, 1999; Greenberger et al., 2000).

Research Question 6: What Is the Relationship Between the Demographic Variables (Gender, Age, Ethnic/Race, Family Structure, Siblings, and Type of Housing) and Companion Animal Bonding?

Gender was the only significant demographic that correlated with companion animal bonding with females reporting higher CABS scores than males. This finding supports some research that females are more attached to their pets than males (Raupp, 1999; Risley-Curtiss et al., 2006; Trienbacher, 1998). Gender disparity contradicts other studies that have shown males and females equally bond with their pets (Beck & Katcher, 1983; Herzog, 2007; Kidd & Kidd, 1990; Marks et al., 1994; Prato-Previde et al., 2006; Siegel, 1995). Gender differences may be explained that adolescent females tend to be more nurturing (Sharabany et al., 1981) and extend that to their companion animal, while males may interact with their pets more as a friend. In other words, perhaps female teens

envision their pet relationship in a maternal role while male teens perceive their pets more as a comrade.

Explaining gender differences of pet attachment on nurturing behaviors is certainly tenuous as many studies report males are as nurturing to companion animals as are females (Beck & Katcher, 1983; Herzog, 2007; Kidd & Kidd, 1990; Marks et al., 1994; Prato-Previde et al., 2006; Siegel, 1995). A better explanation of the gender dissimilarity is that we do not yet understand the theory behind pet attachment and teens. There may not be true gender differences with a pet bond, but rather the CABS did not truly capture how males feel about their pets. It is reiterated that a theory of CAB in adolescents be developed and then the gender difference be re-examined.

The remaining demographic variables of age, ethnic/race, family structure, siblings, and type of housing were not significant with CABS scores. Pet keeping and attachment does appear to surpass ethnic differences and is an important HPI research contribution as few studies have examined ethnic differences among pet attachment (Johnson & Meadows, 2002; Risley-Curtiss et al., 2006). Housing type did not correlate with CAB, but there was a preponderance of single dwelling homes in this sample precluding inferences. Teens living in inner-city, multi-dwelling housing may have different pet relations that requires further investigation.

Participants who kept their pets predominately inside scored higher on the CABS than participants who kept their pets primarily outside. Explanations may include the pet's constant proximity and interaction with family routines. The number of pets positively influenced the CABS score of the favorite pet and may reflect enjoyment of pet

company. The length of the pet relationship was not related to CAB suggesting that quality of interaction supersedes duration of the pet relationship.

Research Question 7: How Do Adolescents Describe Their Relationship with Their Favorite Pet?

The high response rate of comments (87% of pet-owners) in the survey suggested that the teens wanted to describe their pet relationship. The majority of adolescent pet owners described their pet in a positive manner. Only 3% acknowledged an indifferent relationship and there were no overt negative comments.

The preponderance of brief, succinct answers limits in-depth concept exploration. It is understandable that written responses are brief in contrast to what would be elicited through direct interviews. Another explanation for the short answers may be that teens, as do adults, have difficulty describing their pet relationship (Endenburg et al., 1994). Qualitative studies are recommended for a richer and more comprehensive understanding of how teens view their pets.

The responses that were descriptive overwhelmingly conveyed pet affection. Categories of nurturing, protection, and comfort commonly were found and were often dyadic. For instance, the pet and teen comforted, protected, and loved each other. This suggests that teens do not view their favorite pets as subordinate, but rather as respected and reciprocal equals.

A common response involved the pet as a confidant, e.g., *"I can tell my dog anything."* Other studies support that adolescents confide in their companion animals (Kidd & Kidd, 1985, 1990; Rew, 2000; Robin et al., 1983; Siegel, 1995). It is plausible that adolescents tend to reveal private feelings and concerns to their pets because of the

non-judgmental acceptance. In contrast, potential gossip and derision among peers exists should a secret be revealed (Rubin et al., 2004). Confiding to a pet holds the inherent security of acceptance, a stable relationship, and protected privacy.

The pet was frequently depicted as a close friend or family member, in line with how adults view their pets (Albert & Bulcroft, 1988; Risley-Curtiss et al., 2006). An exclusive relationship with the companion animal also was identified and relevant comments typically were replete with fond and affectionate attributes. *“Very close, because its mine & I take care of her & she feels more comfortable with me than anyone else.”* *“She just loves me.”* These intimate relationships are consistent with attachment figures. The owner and the pet are seen as mutually exclusive and responsive to each other in an affiliative bond.

Fun and recreation was a less common elicited category than affection, but is not necessarily separate. A playful pet relationship draws out a feeling of friendship and laughter that augments affection (Valeri, 2006). Taking the pet to public places suggests pet pride and value, *“I go everywhere with my dog and he is cool.”* Venturing out with a boasted pet also offers human socialization opportunities (Messent, 1985) and accentuates the teen’s caring persona (Lockwood, 1983).

Survey Strengths

A central finding from this survey is that owning a pet and being attached to it safeguards adolescent loneliness. This study offers quantitative data investigating high school student loneliness and the mitigating effects of companion animals. Pet guardianship appears to be an important contribution of adolescent well-being.

Additionally, this finding reinforces the developmental importance of youth connecting with animals (Levinson, 1972; Melson, 2001; Rynearson, 1978; Wilson, 1984).

The diverse ethnic representation was another unique research offering as American Indians and Hispanics comprised 57% of the sample. These particular ethnicities have not been adequately represented in recent studies of either adolescent loneliness or pet relations. Since this study did not examine cultural differences in pet ownership or attachment it is premature to imply cultural neutrality. Additionally, participants were from rural areas that offer a unique approach to adolescent studies as the predominance of recent adolescent studies has been conducted in metropolitan and urban settings.

Loneliness reports and pet ownership were each similar among ethnicities, gender, age, and family composition. The similarity of loneliness and pet ownership draws attention to the commonalities, rather than differences, among adolescents. It is useful from an intervention stance to appreciate the likeness of loneliness and pet guardianship.

Another key contribution of this study is the novel examination of two pet variables, length of pet relationship and number of pets. While loneliness scores were not affected by these pet variables, social support satisfaction was inversely related to the number of pets. Social support number was positively correlated with CABS scores.

So while the interaction of companion animals and human social support still remains somewhat uncertain, this study offers new insights regarding teens. It is also a noteworthy finding that CABS scores were positively related to the number of household pets but not the length of the pet relationship.

Additionally, this study was methodologically strong. Strengths of the study included a sufficient sample size supporting statistical validity (Cohen, 1987), the high response rate, and overall enthusiasm students expressed in completing the surveys. Teens appeared to be quite willing to discuss the pets in their lives and many expressed interest in similar future studies. The internal consistency reliability of the instruments were all well above .70 that is considered acceptable. The additional question inserted within the CABS (#9: *How often do you talk to your pet*) demonstrated similar internal consistency compared with the original scale. Talking to a pet encompasses the pet as a confidant, tapping into attachment behaviors of safe haven and secure base. It would appear statistically sound to maintain this question for future scale use.

Survey Limitations

Cross-sectional surveys do not explain cause and effect, therefore inferences are speculative. For instance, the causality between adolescent loneliness and companion animal attachment remains unanswered. Does pet presence directly buffer loneliness? Does a teen attached to a pet share some personal characteristics proxy pet guardianship that buffers loneliness? Do parenting styles of pet-owning families differ in ways that may indirectly mitigate teen loneliness? Concepts beyond social support that may have explained loneliness, CAB, and co-interactions were not included in the research design. Some potentially pertinent variables that remain unexplored include self-esteem, the pet as an attachment figure, and secondary benefits of pet care such as responsibility, empathy, and autonomy.

A limitation of self reflective measures is their susceptibility to socially desirable responses. Although the questionnaires were anonymous, there may have been a tendency to answer personal and subjective questions in ways that positively reflect the

self and limits assurance of accurate responses. Nonetheless, self-report scales are often used as a safeguard against potential interviewer bias (Weiss, 1982). Furthermore, the sample size in this survey was sufficient to ensure statistical validity.

Additionally, the CABS used in this survey, as well as available pet attachment questionnaires, may overlook the complexity of the teen-pet relationship. An inclusive companion animal attachment tool has not yet been designed specifically for teens.

Another study limitation was the prevalence of brief and unstructured written responses to the narrative question, “*Describe your relationship with your favorite pet.*” Succinct answers limited conceptual analysis. Finally, there was a disproportionate sample size of non-pet owners in comparison to pet owners. While the sample size for each group was adequate (Cohen, 1987), one might argue concerns about generalization for non-pet owners due to the small sample size.

Recommendations for Future Research

As a result of this study, the following recommendations are offered.

1. It is undeniable that most teens feel affection for their pets, but a theory of adolescent pet attachment has not yet been fully explored. This deficit limits our understanding of health benefits for adolescent pet owners. Existing pet attachment tools may not capture specific attributes that form pet-teen attachments. A qualitative approach for theory development is initially recommended. Proposed techniques include in-depth interviews, probing questions and, when possible, and direct observations of the teen-pet interactions.

2. Longitudinal studies (repeated observation of the same individual over time) are recommended for additional clarity about adolescent loneliness and their pets. One proposed longitudinal study would be baseline loneliness evaluations when a pet is obtained and then measuring for time related changes in their loneliness and pet attachment. Another valuable longitudinal study would be to measure changes in both loneliness and pet attachment from childhood into adolescence.
3. Future studies comparing the benefits of pet ownership are also encouraged to employ larger sample sizes of non-pet owners as this sample was predominately pet owners (84%). Increasing the sample of non-pet owners would heighten generalizability.
4. Socio-economic status was not assessed among the high school students, but it is noted that the rural towns in this survey had a per capita income below the national average (U.S. Census Bureau, 2004). It appears that family income did not relate to pet ownership, but further studies are encouraged to investigate associations between income and HPI.
5. The study setting was rural which limits inferences to urban pet ownership. Duplication of this study in urban areas would allow for result comparison with rural counterparts.
6. Since most of the participants (90%) lived in single dwelling homes; it would be elucidating to replicate this study with inclusion of multi-family dwellings.
7. Future studies of the health benefits of pets in children and adolescents should integrate assessment of parenting styles that may differ for families with pets

and those without pets. Recommended pet-owning family attributes include family attachment, empathy, responsibility, and autonomy.

Nursing Implications

Nursing has increasingly recognized the positive health benefits of pet ownership, but unfortunately this has not translated into common practice. Since the results of this study acknowledge that pets improve the emotional well-being of adolescents, nursing assessment should inquire about pet ownership and pet attitudes. Companion animals can be cost effectively incorporated into loneliness treatment plans, for example by promoting pet care, socialization experiences through pet outings, and encouraging the teen to confide with the pet. Dissemination of the importance of companion animals to the community could evolve into a rewarding interface with nursing, youth community organizations, and pet shelters.

Although this research supports HPI as beneficial for teens in reducing loneliness and facilitating the human social support network, there is much more to understand about this connection. Nursing is ideally suited to instigate HPI theory development and subsequent assessment and interventions embracing the companion animal bond.

Survey results support that gender, age, ethnicity, family structure, or number of siblings and stepsiblings are not related to either teenage loneliness or pet ownership. These commonalities are important from an intervention perspective. Since loneliness and pet ownerships were so similarly reported among surveyed teens, interventions incorporating a pet relationship may be equally receptive among most adolescents. Promotion of a CAB may cultivate feeling safe, special, empathic, and responsible; attributes that could well shield against loneliness so common during adolescence. Loneliness holds a potential trajectory for numerous emotional and physical health

problems. Since pets promote reduced teen loneliness, nursing is called to acknowledge and promote the companion animal bond.

Summary

Adolescent pet owners in rural settings were significantly less lonely than their non-pet owner counterparts. Although females reported higher companion animal attachment, neither loneliness nor pet ownership related with gender, ethnicity, or family structure. Among pet owners, the pet relationship was primarily described as affectionate and recreational.

CABS scores were inversely correlated with loneliness scores ($\beta = -.13, p = .05$). A stronger relationship was expected, but this may be explained by the limitations of measuring companion animal attachment. Extant pet attachment tools, including the CABS used in this survey, tend to focus on proximity and a generalized close relationship yet underemphasize behaviors of safe haven and secure base. Theory development through qualitative research designs would better clarify teen-pet relations and serve as a basis for appropriate pet attachment tools.

Both social support variables, the number of humans in the network and the perceived satisfaction with the network, predicted less loneliness. Social support findings were mixed regarding pet attachment and number of pets. Companion animal attachment positively correlated with the number of humans in a teen's social network. The social facilitation theory of pets may explain the relationship of pet attachment and social network size; pet presence tends to bring people together. The rural settings of the survey are likely to offer social interactions that include animals, for instance farming organizations. On the other hand, the participants with the most pets reported the least

social network satisfaction. Perhaps caring for a number of animals reduces time for gratifying human socialization or pets are sought to compensate human social support.

It is clear that pet-owners in this study reported less loneliness than non-pet owners. It is also clear that most teens hold very positive feelings for their pet. Future studies are recommended to first, clarify the teen-pet relationship and secondly, design an appropriate companion animal attachment tool. Once these are in place, further exploration of how a pet relationship buffers teen loneliness could ensue leading to helpful treatment plans with companion animals. A companion animal bond may be “just the right sort of relationship” (Weiss, 1973, p. 13) in mitigating adolescent loneliness.

LIST OF APPENDICES

Appendix A: High School Teacher Letter	94
Appendix B: University of New Mexico Health Sciences Center, Parental Consent to Participate In Student Research	96
Appendix C: Student Letter from University of New Mexico Health Sciences Center, Informed Consent Cover Letter for Anonymous Surveys	99
Appendix D: Student Packet.....	101

Appendices

Appendix A: High School Teacher Letter

Dear [] High School Teacher,

Your high school students are invited to participate in a research project entitled, *Exploring Adolescent Loneliness and Companion Animal Attachment*. From my work with teenagers as a nurse practitioner, I realize there is much we need to learn about adolescent loneliness and how they feel about their pet(s). I will be using this information for a nursing dissertation through the University of New Mexico.

The survey consists of four parts that solicit information about the adolescent and their pets, families, loneliness, social support, and companion animal attachment. It requires approximately 15 - 30 minutes to complete. The responses will be completely anonymous. The study has been approved the UNM Human Research Review Committee. While minimal, potential risks include unhappiness or psychological distress during the survey. In that event, the participant may opt not to answer questions or stop the survey. Guidance may be sought from the teacher, school counselor, family, a support hotline, or myself. I will be present in the classroom throughout the survey.

Your principal has given permission to conduct this survey with regular education high school students, but you are under no obligation to have your class surveyed. If you agree to the survey, students and their parents/guardians will be given study information two weeks prior to survey with the option to refuse participation. Signed refusal and

consent forms will be kept in the school principal's office. Completion of the survey implies participant assent.

Please feel free to contact me for any questions at (505) 237-8816 or Kblack@salud.unm.edu. You may also contact my dissertation supervisor, Dr. Marie Lobo, at 505-272-2637 for questions. If you have questions regarding the legal rights of research participants, you may call the UNMHSC Human Research Review Committee at (505) 272-1129.

Thank you for your assistance with this survey.

Sincerely,

Keri Black, MN, CFNP

Marie Lobo, RN, PhD

Nursing Professor and Dissertation Chair

Title: Exploring Adolescent Loneliness and Companion Animal Bonding HRRC#: 08-078 Version: 3/25/08

*Appendix B: University of New Mexico Health Sciences Center, Parental Consent to
Participate in Student Research*

Exploring Adolescent Loneliness and Companion Animal Attachment

Dear Parent/Guardian of a [] High School Student,

Keri Black, MN, CFNP from the Department of Nursing at the University of New Mexico is conducting a research study. The purpose of the study is to help us understand adolescent loneliness and how teens feel about their pets. Around 300 high school students are being asked to participate. Your child is being asked to participate in this study because s/he can provide valuable information to help us plan care for our teens.

Both you and your child's permission are needed in order to participate in the study. If you agree and your child volunteers to participate in this study, the following things will happen. Your child will be given questionnaires in the classroom about loneliness, affection for their companion animal (if they have one), social support, and basic family information. A copy of the survey will be kept in the principal's office if you would like to review it. The survey should take about 30-45 minutes to complete. No names or identifying information is on the survey. The survey includes questions such as the people they turn to for support and how they feel about their pets. Your child can refuse to participate, withdraw from the study, or refuse answer any of the questions at any time without any penalty. There are no known risks in this study, but some individuals may experience discomfort when answering questions. All data will be kept for five years in a locked file in Keri Black's office and then destroyed.

Participation in the study is voluntary. This study provides a chance for us to better understand

teen loneliness and their feelings for their pets. You have the right to choose not to participate or to withdraw participation at any time.

If you would like to find out more, please call me at 505-237-8816 or Dr. Marie Lobo, my supervisor, at 505-272-2637 during the weekday hours of 8am to 5pm. If you are not interested, please sign and check the appropriate line below then return it to your child's principal's office so we will know that you have been contacted and are not interested in participating. If we do not receive this form back from you, we will assume you are giving permission for your child to participate.

If you have questions regarding your legal rights as a research subject, you may call the UNMHSC Human Research Review Committee at (505) 272-1129.

Thank you in advance for your help with this project.

Sincerely,

Keri Black, MN, CFNP

Marie Lobo, RN, PhD, FAAN

Nursing Professor

I am not interested in allowing my child to participate at this time.

Parent name _____ Parent Signature _____ Date ____

Minor Child's name _____ Minor's Signature _____ Date ____

Exploring Adolescent Loneliness and Companion Animal Attachment

HRRC#: 08-078

Version: 3/25/08

*Appendix C: Student Letter from University of New Mexico Health Sciences Center, Informed
Consent Cover Letter for Anonymous Surveys*

Exploring Adolescent Loneliness and Companion Animal Attachment

Dear [] High School Student,

Keri Black, CFNP, MN and Marie Lobo, RN, PhD from the University of New Mexico Department of Nursing are conducting a research study with around 300 high school students. The purpose of the study is to better understand teen loneliness and how you feel about your pets. You are being asked to participate in this study because we need more information about your feelings and, if you have pets, how they affect you.

Your participation will involve filling out questionnaires about you and your family, pets, loneliness, your affection for your companion animal, and social support. The survey should take about 30 – 45 minutes to complete. Your involvement in the study is voluntary and you may choose not to participate. There are no names or identifying information associated with this survey. The survey includes questions such as who you can turn to for support and how you feel about your pet(s). You can refuse to answer any of the questions at any time. There are no known risks in this study, but some individuals may experience discomfort when answering questions. Should you feel upset while answering the questions, please tell us, your teacher, or school counselor so we can help you. All data will be kept for 5 years in a locked file in Keri Black's office and then destroyed.

The findings from this project will provide information on how we can best help teens. A summary of the study findings will be sent to your high school administration. If published, only

a review of the results will be written.

If you have any questions about this research project, please feel free to call Keri Black at (505) 237-8816 or Dr. Marie Lobo at (505) 272-2637. If you have questions regarding your legal rights as a research subject, you may call the UNMHSC Office of Human Research Protections at (505) 272-1129.

By returning this survey, you will be agreeing to participate in the above described research study.

Thank you for your consideration.

Sincerely,

Keri Black, CFNP, MN

Marie Lobo, RN, PhD, FAAN

HRRC#: 08-078 Version: 3/25/08

*Appendix D: Student Packet***Question 1**

First, we would like to ask you some questions about you, your family, and pets. Please answer each question by checking the box next to the response.

Are you:

Male

Female

What was your age at your last birthday? (check one)

13

14

15

16

17

18

19

other _____

Ethnicity and Race

- I do not wish to provide this information

- Hispanic or Latino
- White
- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- Other

Do you live most of the time with your (check one)

Mother and father

Mother

Father

Grandparents

Other

Do you live most of the time also with a step parent? (check one)

yes

no

How many siblings and step siblings live with you most of the time? (check one)

0 1 2 3 4 ≥ 5

Do you have a pet in the home you live in most of the time? (check one)

yes

no

If you do not have a pet in your home, do you want one? (check one)

yes

no

If you want a pet and do not have one, why can't you? (check as many as apply)

I or someone in the family has a pet allergy

We don't have the room or outside access

Our landlords won't let us

My parents won't let me

Other, and please explain

If you **do have a pet**, please answer these next questions, then go to Question 2.

If you **do not have a pet** living in your home, you may go to the next part, Question 2.

Or, you may answer these remaining questions in this section by what you think a pet would be like, or how it was when you had a pet.

What type of pet(s) do you have at home? Check as many as are applicable.

Dog

Cat

Horse

Bird

Fish

Ferret

Rabbit

Reptile

Other

Which type of pet listed above do you feel closest to? _____

How long have you had the pet you feel closest to? (check one)

< 6 months 6-12 months 1 – 2 years 3 – 5 years 6 – 8 years \geq 9 years

How many pets do you have in your primary home?

Any number of fish counts as “one”. (check one)

1 2 3 4 5 ≥ 6

Do you live most of the time in a/an: (check one)

House with a fenced yard

House without a fenced yard

Apartment

Other

How do you describe your relationship with your favorite pet?

Question 2. Now we would like to ask you some questions about loneliness. Indicate how often you feel the way described in each of the following statements. Circle one number for each.

The Revised UCLA Loneliness Scale

Statement	Never	Rarely	Sometimes	Often
1. I feel in tune with the people around me	1	2	3	4
2. I lack companionship	1	2	3	4
3. There is no one I can turn to	1	2	3	4
4. I do not feel alone	1	2	3	4
5. I feel part of a group of friends	1	2	3	4
6. I have a lot in common with people around me	1	2	3	4
7. I am no longer close to anyone	1	2	3	4
8. My interests and ideas are not shared by those around me	1	2	3	4
9. I am an outgoing person	1	2	3	4
10. There are people I feel close to	1	2	3	4
11. I feel left out	1	2	3	4

12. My social relationships are superficial	1	2	3	4
13. No one knows me well	1	2	3	4
14. I feel isolated from others	1	2	3	4
15. I can find companionship when I want it	1	2	3	4
16. There are people who really understand me	1	2	3	4
17. I am unhappy being so withdrawn	1	2	3	4
18. People are around me but not with me	1	2	3	4
19. There are people I can talk to	1	2	3	4
20. There are people I can turn to	1	2	3	4

Question 3: Please complete this if you have a pet. Pick your favorite pet when choosing your responses.

If you do not have a pet, you can either skip this and go on to question 4 or fill it out how you think a pet would be like or how you remember a former pet.

Companion Animal Bonding Scale

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

Always Generally Often Rarely Never

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

Always Generally Often Rarely Never

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

Always Generally Often Rarely Never

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

Always Generally Often Rarely Never

5. How often do you feel that your companion animal is responsive to you?

Always Generally Often Rarely Never

6. How often do you feel that you have a close relationship with your companion animal?

Always Generally Often Rarely Never

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

Always Generally Often Rarely Never

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

Always Generally Often Rarely Never

9. How often do you talk to your companion animal?

Always Generally Often Rarely Never

Question 4

The last set of questions asks you to list and describe people you can count on for social support.

Social Support Questionnaire (Short Form)**SSQSR**

The following questions ask about people in your environment who provide you with help or support. Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described.

Give the persons' initials, their relationship to you (see example). Do not list more than one person next to each of the numbers beneath the question.

For the second part, circle how satisfied you are with the overall support you have.

If you have had no support for a question, check the words "no one," but still rate your level of satisfaction. Please answer all the questions as best you can. All your responses will be kept confidential.

EXAMPLE:

Who do you know whom you can trust with information that could get you in trouble?

No one 1) T.N. (brother) 4) L.C. (father)
 2) L.M. (friend) 5) J.G. (employer)
 3) R.S. (friend)

How satisfied?

6 – very	5 – fairly satisfied	4 – a little	3 – a little	2 – fairly	1 - very
satisfied		satisfied	dissatisfied	dissatisfied	dissatisfied

1. Whom can you really count on to be dependable when you need help?

No one 1) 4) 7)
 2) 5) 8)
 3) 6) 9)

2. How satisfied?

6 – very satisfied	5 – fairly satisfied	4 – a little satisfied	3 – a little dissatisfied	2 – fairly dissatisfied	1 - very dissatisfied
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3. Whom can you really count on to help you feel more relaxed when you are under pressure or tense?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

4. How satisfied?

6 – very satisfied	5 – fairly satisfied	4 – a little satisfied	3 – a little dissatisfied	2 – fairly dissatisfied	1 - very dissatisfied
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5. Who accepts you totally, including both your worst and your best points?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

6. How satisfied?

6 – very satisfied	5 – fairly satisfied	4 – a little satisfied	3 – a little dissatisfied	2 – fairly dissatisfied	1 - very dissatisfied
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7. Whom can you really count on to care about you, regardless of what is happening to you?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

8. How satisfied?

6 – very satisfied	5 – fairly satisfied	4 – a little satisfied	3 – a little dissatisfied	2 – fairly dissatisfied	1 - very dissatisfied
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9. Whom can you really count on to help you feel better when you are feeling generally down-in-the dumps?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

10. How satisfied?

6 – very satisfied	5 – fairly satisfied	4 – a little satisfied	3 – a little dissatisfied	2 – fairly dissatisfied	1 - very dissatisfied
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11. Whom can you count on to console you when you are very upset?

No one	1)	4)	7)
	2)	5)	8)
	3)	6)	9)

12. How satisfied?

6 – very satisfied	5 – fairly satisfied	4 – a little satisfied	3 – a little dissatisfied	2 – fairly dissatisfied	1 - very dissatisfied
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_____ You are done with all the questions! Your confidential answers will help us understand how teens feel about pets, loneliness and social support.

Thank you and feel free to write any comments here.

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