

HOUSEHOLD PETS AND DEPRESSION AMONG URBAN ADOLESCENTS

by

MARY MARGARET (MOLLY) NEVIN-HAAS

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Department of Graduate Studies, School of Nursing

The University of British Columbia
Vancouver, Canada

Date 13 October 1993

Abstract

This study was designed to describe the prevalence of depression among a group of adolescents and examine the relationships between depression and presence of pets in the home, primary ownership of pets and perceived degree of attachment to the pets by the subjects. The coping conceptual framework of Folkman and Lazarus (1988) provided the structure for the study. Subjects were 401 grade nine males and females attending three Vancouver and three Victoria secondary schools. The instruments utilized to gather the data were the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) and the Adolescent and Pet Characteristics Questionnaire, developed by the researcher. The subjects completed the instruments anonymously in classroom settings.

Among the grade nine students sampled, 48.4% demonstrated no depressive symptoms, 41.4% demonstrated what were classified as mild symptoms of depression, 8.7% demonstrated moderate symptoms of depression, and 1.5% of those sampled indicated severe depressive symptoms. Female adolescents were significantly more depressed than their male counterparts with mean depression scores being 18.7 and 15.1, respectively.

Those subjects with pets in the home were significantly less depressed than their counterparts without household pets. There was no relationship between gender and pet ownership combined with level of depression. An analysis of primary pet ownership indicated that subjects who owned their own pets were significantly more depressed on a whole than those in homes where the pet was owned by the entire family. Perceived degree of attachment to the household pet was not related to depression among the subjects. Conclusions are drawn from the findings and implications for nursing practice and research are discussed.

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Chapter One

Introduction

Background to the Problem

Fossil remains indicate that the domestic relationship between humans and animals dates back approximately 12,000 years to the preagricultural period of human history just following the end of the last global ice age (Davis & Valla, 1978). Although there is controversy as to the motivation behind the original formation of the relationship (whether it was one of companionship or one of utilitarian purpose), there is general consensus that this relationship has persisted throughout history and is strongly prevalent across a variety of age groups and human cultures today (Bustad & Hines, 1984; Messant & Serpell, 1980; Odendaal & Weyers, 1990; Ritvo, 1988; Serpell, 1988).

Levinson (1962, 1965, 1970, 1972) was one of the first individuals to study the nature of the relationship between humans and animals. He addressed the health value of human contact with the natural environment in an increasingly industrialized society. "When man is forced to live and work deprived of contact with nature, he loses much emotional strength" (Levinson, 1972, p.6). He further stated that encounters between people and animals are a form of contact with nature that may influence emotional strength of humans:

We need animals as allies to reinforce our inner selves. We must revive our intimate associations with nature and its animals if we are to survive as the dominant species on earth. It is of course possible that man can survive without animals, but we would surely be a depleted race, shorn of most of our emotional strength (1972, p.29).

Impairment in the emotional strength of individuals is a symptom which is frequently associated the clinical disorder of depression. Depression has been

demonstrated to be more prevalent in urban as opposed to rural settings (Klerman & Weissman, 1989). Frequently called the "common cold of mental disorders" (O'Hara, 1984, p.46), depression rates among adults in urban settings have been reported to be as high as 20% (Klerman & Weissman, 1989).

The etiology of depression in adults is believed to be twofold. Both physiological genetic make-up as well as psychological response to losses and stressors contribute to its development (Klerman & Weissman, 1989; Lapierre, 1988). In keeping with this bivariate foundation, the treatment of depression in adult populations has been shown to be equally effective with the use of antidepressant medications or cognitive therapy (Beck, Hollon, Young, Bedrosian, & Budenz, 1985; Murphy, Simons, Wetzel, & Lustman, 1984).

Depression among adolescents is not as well understood as that among adults. The reported prevalence of severe depression in the former group varies from 3% (Clarke, Lewinsohn & Hopps, 1990) to 16% (Pronovost, Cote & Ross, 1990). In some studies, the use of antidepressant medications has been found to be no more effective than placebos in treating adolescent depression (Kramer & Feiguine, 1981; MacLean, 1987; Puig-Antich, et al. 1987; Simeon, 1989). Such studies suggest that depression among adolescents may be more commonly a result of psychological factors than of biological determinants. Despite the vague understanding of adolescent depression, it is well-documented that adolescents with depression are at increased risk for dropping out of school, substance abuse, acts of delinquency, non-consensual sexual activity, and suicide than adolescents without depressive symptoms (Clarke, 1991; McDermott et al. 1990; Reinherz, Frost, & Pakiz, 1991; Simeon, 1989).

Both of the aforementioned concepts of a human-animal relationship and depression among adolescents have implications for nursing. Most models of nursing include individuals' responses to their environment as a factor influencing

health (Riehl & Roy, 1980). Domestic animals in the form of household pets are an integral part of the environment of many individuals. Therefore, the impact pets may have on the well-being of their owners becomes a concern for all phases of the nursing process (McMahon, 1991). It remains to be determined whether the sole presence of a pet in the home may constitute the beneficial bonding referred to by Levinson (1961, 1972) or if, in fact, there are other factors which determine whether humans receive health benefits from pets in their homes (Johnson, Garrity, & Stallones, 1992).

The second concept, depression among the adolescent population, also has implications for nursing. Nurses care for individuals across the lifespan. The care provided by nurses encompasses biological, psychological and social components of each individual's health (Johnson, 1980). The mental health of adolescents is a specialized health focus of a population of individuals within the realm of nursing practice (Canadian Nurses Association, 1991).

Problem Statement

It has been postulated that the alienation of humans in an urban setting from their natural environment may be related to the increased prevalence of depression (Klerman & Weissman, 1989) as well as an inability to recover quickly from stressful events (Ulrich, Simons, Losito, Fiorito, Miles, & Zelson, 1991). Additionally, it has been noted that human contact with animals may be emotionally strengthening (Levinson, 1972). The presence of pets can potentially act as a link between people living in an urban setting and their natural environment (Katcher & Beck, 1988; Phineas, 1974).

The literature notes the effects of pets on the emotional well-being of several different populations; however, there have been no studies which describe the relationship between the presence of household pets and

prevalence of depression among urban adolescents. If there is such a relationship, and hence the possibility of altering depression and associated factors such as suicide, delinquency, and substance abuse, it behooves nursing to explore this potential. The identification of the possible implications of the centuries old relationship between humans and animals for the mental health and future of our youth has significance for nursing knowledge, practice, and improved health care.

Purpose

The purpose of this study is to describe the prevalence of depression in a sample of grade nine adolescents from two large urban areas and to examine the relationships between prevalence of depression, presence of pets in the home, primary ownership of the pets, and perceived degree of attachment to the pets by the subjects involved.

Research Questions

This study proposes to answer the following research questions:

1. What is the prevalence of depression in a sample of urban adolescent males and females currently attending grade nine in selected Vancouver and Victoria secondary schools?
2. What is the relationship between the prevalence of depression and the presence of pets in the homes of urban adolescent males and females currently attending grade nine in selected Vancouver and Victoria secondary schools?
3. What is the relationship between prevalence of depression and primary ownership of household pets among urban adolescents currently attending grade nine in selected Vancouver and Victoria secondary schools?

4. What is the relationship between prevalence of depression and perceived degree of attachment to pets among urban adolescents currently attending grade nine in selected Vancouver and Victoria secondary schools?

Conceptual Framework

The theoretical framework of coping as proposed by Folkman & Lazarus (1988) is utilized in the conceptualization of this study (see Figure 1). This framework values an open and interactive system between people and their environment and views coping as a multidimensional process inherent within this system. It describes coping as a constantly changing response to person-environment encounters and emotional appraisals. The use of such a coping framework is consistent with that used in other studies of human-animal interactions (Carmack, 1988).

The bidirectional relationship between emotion and coping is an important aspect of the framework. The individual's appraisal of an event is related to an emotional response, which is related to a mediating method of coping. This coping behaviour, in turn, leads to an emotional reappraisal of the same event or an alternate occurrence. Folkman and Lazarus (1988) stress the importance of the "mediating" act of coping. A mediating variable is a factor which changes the relationship between the antecedent and the outcome variable. Mediating variables are created within the context of the encounter. The response of "coping" is such a mediator. Coping is formulated during the encounter and changes the original appraisal and its accompanying emotion in some way.

Such a framework correlates well with the conceptualization of this study. The adolescent assumes the position of the individual in the model, with the perceived or actual stressors and/or losses representing the environmental

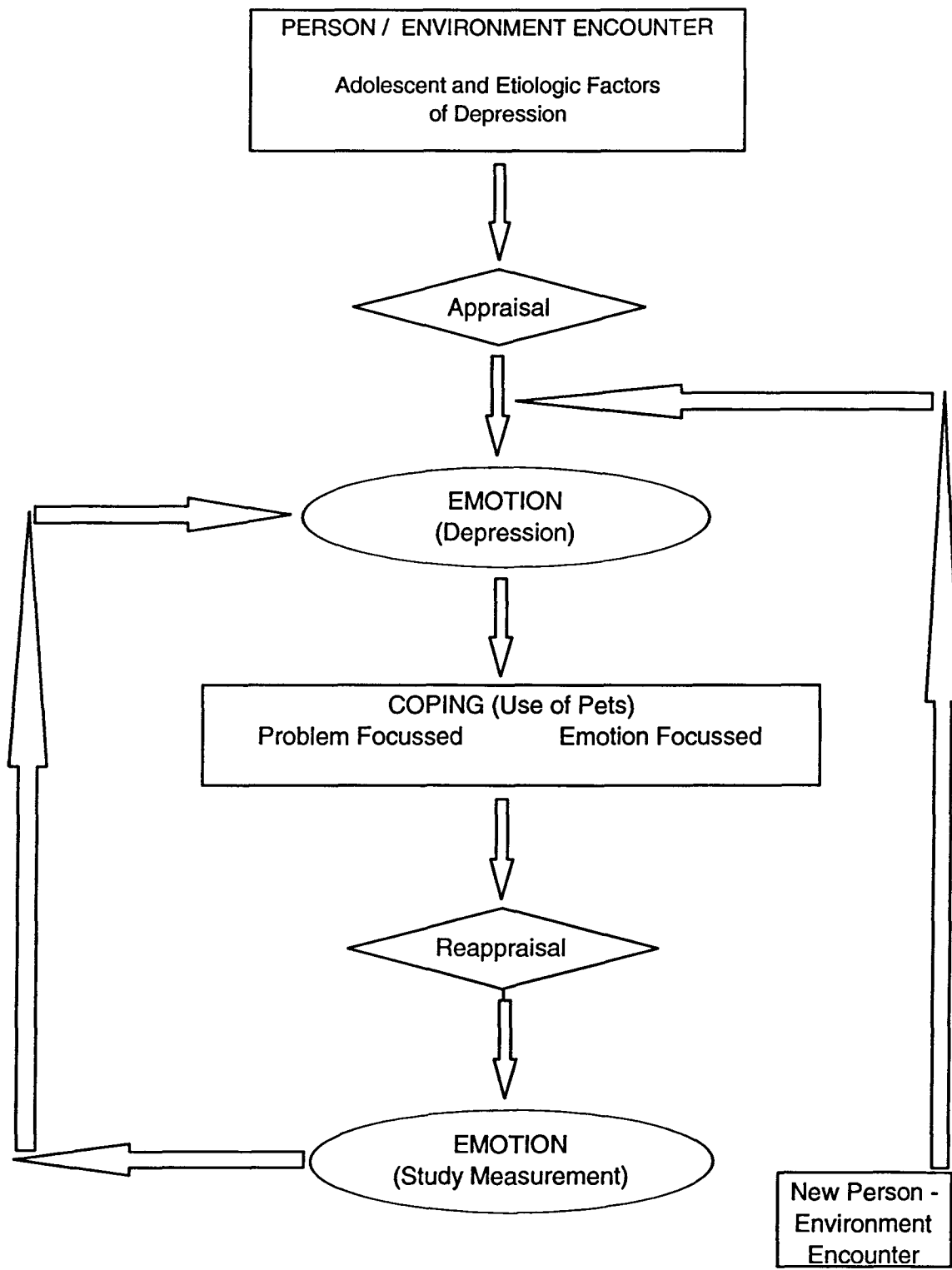


Figure 1. The Coping Conceptual Framework: Pets as Mediators of Emotion in Adolescent Depression (adapted from Folkman and Lazarus, 1988).

encounter(s). (The precise etiology of depression cannot be limited to one occurrence alone.) The preliminary emotional response to the appraisal of these stressors may then be represented by depression. The presence of household pets may act as a resource in the formation of mediating coping responses which may then interact with the depressive response to cause a reappraisal of the etiologic factor or the initial emotion and provide an alternate emotional response.

Folkman & Lazarus's (1988) model is used in discovering the nature of the relationship between depression experienced by urban adolescents, pets as a coping resource, and an altered form of the original depressed emotional response. As Figure 1 indicates, this model proposes a feedback loop. The use of mediating coping resources influences emotional responses by providing an alternate appraisal of events than that which was obtained prior to the use of the coping resources. The use of this mediating coping resource will then be utilized by the individual on an ongoing basis in the face of similar emotions, thereby replacing the original emotion with a more suitable emotional response.

Definition of Terms

For purposes of this study, the following terms will be defined as stated below:

Adolescent: Any youth between the ages of 13 and 16 currently attending grade nine in selected Vancouver and Victoria secondary schools;

Attachment: An individual's subjective report of emotional closeness or affection towards an animal in her / his home, as measured by the Adolescent and Pet Characteristics Questionnaire (Appendix A);

Depression: An emotional state characterized by low mood, apathy, anhedonia, and lack of energy, as measured by the Center for Epidemiologic Studies Depression Scale (CES-D) (Appendix B);

Pet: Any non-human, non-utilitarian animal which is currently living in the same household as the subject and is cared for by some member of that household;

Primary Ownership: An acknowledgement by the subject as to which household member has recognized possession of the pet. This generally implies responsibility for pet care-giving;

Urban: A city and surrounding geographic area characterized by its population density and non-resource based nature of employment.

Assumptions

The study is based on two primary assumptions. The first assumption is that those adolescents who are depressed at the time of the survey will have the concentration and motivation to complete the instruments in their entirety. The second assumption is that all the adolescents surveyed will respond truthfully to the questions on the instruments.

Limitations

The limitations inherent within this study involve both design and environmental factors. The findings of the study are generalizable only to subjects similar to those of the population sampled. The survey design accounts only for contact that the adolescents may have with the pets that currently live within their households. The subjects were sampled over a four-month period from October 1992 to January 1993. The study followed the implementation of a survey (McCreary, 1993a, 1993b) that raised some parental objections (Lamb, 1992a, 1992b; Odam, 1992; Truscott, 1992). It is possible that the negative press from the previous survey may have had an impact on subjects' participation in this study.

Significance of the Study

There is currently a lack of consistent information about the prevalence of depression in the general population of urban adolescents. Recently, much attention has been paid to adolescent mental health because of the rising incidence of suicide (a potential consequence of adolescent depression) in this age group (Children and Youth At Risk Steering Committee, 1991; Clarke, 1991; Conrad, 1991; McDermott et al., 1990; Pronovost et al., 1990;). This study will provide information about the prevalence of adolescent depression in selected Vancouver and Victoria secondary schools. Also, there is a paucity of research validating the benefits of pets on individuals' mental health as described in the lay literature (Robb & Stegman, 1983). This study will add to the body of knowledge related to the role which pets may play in adolescent mental health.

The above is important for nurses who find themselves in contact with adolescent clients or families with adolescents. By understanding the prevalence of depression in this population and its descriptive parameters, nurses can increase their knowledge and ability to provide early detection and prompt intervention for those individuals at risk for the more serious consequences of these pathological "blues" (McDermott et al., 1990; Offer & Schonert-Reichl, 1992; Reinherz, Frost, & Pakiz, 1991). Further, by analyzing the nature of the relationship between prevalence of depression and pets in the homes of urban adolescents, differences between the depressed and the mentally healthy adolescent may be identified. The results of this study may assist the practicing nurse in determining whether to include an assessment of pet ownership and interaction (Davis, 1985a, 1985b) when analyzing the coping mechanisms of youth. As Levinson (1972) so clearly stated two decades ago:

I am sure that the majority of my professional colleagues
would agree that our precious twentieth century youngsters

will probably mature in a chaotic, disturbed environment. If we have a therapeutic tool such as the use of pets as a mental hygiene adjunct, it behooves us to explore and develop fully the possibilities of this adjunct. If we do not, we as adults must take full responsibility for the consequences of our neglect (p.11).

Organization of Thesis

Chapter One has provided an introduction to the nature of the study, including the background to the problem, the purpose of the study, the research questions, conceptual framework, assumptions, limitations, and significance of the study. Chapter Two outlines the theoretical basis of the study with a review of selected literature pertaining to the two central themes of the study, namely depression and the mental health benefits of pets. The research methods used in the study are described in Chapter Three. In Chapter Four, the findings are presented and discussed. Finally, Chapter Five presents the summary, conclusions, and a discussion of the implications for nursing practice, education, and research.

Chapter Two

Review of the Literature

The literature review examines the current state of knowledge regarding adolescent depression as well as the nature of human and animal relationships and the potential mental health benefits of pets.

Adolescent Depression

Only within the past decade has increased attention been given to the distinction between normal adolescent frustration or moodiness and its pathological variant, adolescent depression (Greydanus, 1986; MacLean, 1987; McDermott et al., 1990; Offer & Schonert-Reichl, 1992; Reinherz et al., 1991; Simeon, 1989). This recent interest may be largely attributed to the rapidly increasing numbers of adolescent suicides and a desperate societal attempt to understand some of the phenomena contributing to suicide, the second leading cause of death among North American youth (Conrad, 1991). In the past twenty years, the suicide rate for adolescents between the ages of 15 and 19 has risen 44%, compared with a 2.6% increase for the general population (Conrad, 1991). In Canada, the suicide rate for 15 to 19 year old adolescents doubled in ten years. For this age group, the suicide rate is 17.6 deaths per 100,000 representing one out of five deaths (Pronovost et al., 1990).

Depression has been correlated with suicide as well as with other undesirable outcomes and behaviours among youth. Studies have indicated that 40 to 60% of suicidal adolescents have feelings of depression (Pronovost et al., 1990). However, not all suicidal individuals are depressed nor are depressed individuals necessarily suicidal (Greydanus, 1986; McDermott et al., 1990). Other undesirable outcome correlates of adolescent depression include an increased risk for dropping out of school, substance abuse, non-consensual

sexual activity, and acts of delinquency (Clarke, 1991; McDermott et al., 1990; Reinherz et al., 1991; Rogers, 1987). Longitudinal studies are currently underway to test these relationships (Weissman et al., 1987).

Reinherz et al. (1991) studied a group of 386 adolescents from their freshman to their senior year in high school. They found a significant correlation between drop-out rates and depressed states in adolescent males over all other groups. For adolescent females who were also depressed, substance abuse rates were significantly higher than for non-depressed females or males of either group. Thirty-three percent of these females reported "being high on marijuana all day and in school" (p. 61). Depressed females also began drinking alcohol one year earlier (age 14) than did all other adolescents surveyed. Although the stability of depressive symptoms from grade 8 to grade 12 was only moderate (60%), individuals who were depressed in grade 8 were 9.3 times more likely than their non-depressed peers to also be depressed in grade 12 (Reinherz et al., 1991). In addition to these behavioural concerns, poor academic performance has also been frequently correlated with a high incidence of depression among adolescents (Baron & Perron, 1986; Blechman, McEnroe, Carella, & Audette, 1986; Reinherz et al., 1991; Weissman et al., 1987).

McDermott et al. (1990) surveyed a random sample of 219 grade eleven and grade twelve students from a south central United States secondary school. The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depression symptoms. Scores on the CES-D were then correlated with a variety of reported health practices. The investigators determined that suicidal ideation was highly correlated with depression and was reported by 15.2% of the respondents. Health behaviours which were moderately correlated with depression included using recreational drugs or alcohol, overeating, and engaging in non-consensual sexual activity. Health behaviours demonstrating a

weak correlation to adolescent depression were abstaining from physical exercise and missing classes.

Presently, scientific knowledge in regard to adolescent depression remains at the descriptive level. The prevalence of depression reported for the general adolescent population currently ranges from 3% (Clarke, 1991) to 16% (Pronovost et al., 1990). There is no consensus as to the clinical frequency of adolescent depression (Siegel & Griffin, 1984). It is generally agreed that the primary etiology of adolescent depression may be either endogenous or reactive (Greydanus, 1986; MacLean, 1987; Simeon, 1989) with a greater proportion being of the reactive nature than in the comparable adult population (Kramer & Feiguine, 1981; Puig-Antich et al., 1987; Simeon, 1989).

Just as there have been conflicting findings about the prevalence of adolescent depression, so too have there been significant discrepancies regarding the demographic characteristics of depressed youth. Baron & Perron (1986), McDermott et al. (1990), Reinherz et al. (1991), Simeon (1989) and Weissman et al. (1987) have demonstrated significantly increased rates of depression among adolescent females over males. However, in a similarly designed study, using the same or a comparable diagnostic tool, Siegel & Griffin (1984) failed to demonstrate any gender differences.

Baron & Perron (1986) examined the family setting and demonstrated no significant difference in level of depression and marital status of biological parents, type of family structure, employment of parents, and presence of siblings. Utilizing the same instrument and level of significance, Siegel & Griffin (1984) found a significantly higher level of depression among children of divorced parents. As Baron and Perron's (1986) study involved a sample from western Quebec, Canada and Siegel and Griffin's (1984) study was composed of a sample from Missouri, U.S.A., this variation may be due to the differing value

each population places on the traditional nuclear family. Weissman et al. (1987) and Simeon (1989) demonstrated an increased prevalence of depression among children and adolescents whose parents were depressed as compared to those who had non-depressed parents.

Age and socioeconomic status have been found to be positively correlated with depression in some studies (Greydanus, 1986; Siegel & Griffin, 1984) and negatively correlated in others (Baron & Perron, 1986; Reinherz et al., 1991). Cultural and other demographic differences have been found to exist among urban and rural adolescents who were suicidal (Tonkin, 1984). No studies have isolated similar factors among adolescents experiencing depression.

Pets and Health in Humans

Similar to the research related to adolescent depression, the literature on pets and human health has increased greatly in the past several years. An annotated bibliography of the human-animal bond lists 819 citations prior to 1983 (Allen, 1985), and another lists 350 citations between 1987 and 1990 (Rowan, 1992a). In 1987, *Anthrozoos* commenced publication as a multidisciplinary refereed journal concerned with the interaction of people, animals, and environment. This publication was joined in 1993 by *Society and Animals*, a similar refereed journal committed to the scientific study of human and animal interactions. A number of international organizations are devoted to the study of human and animal interactions. Thirteen of these came together under the International Association of Human-Animal Interaction Organization (I.A.H.A.I.O.) for a conference in 1992 in Montreal, Canada.

There are several levels of rigor and complexity in publications regarding human and animal interactions in a shared environment. At the most basic level, articles in the media and lay literature extoll the benefits of pets for one's mental

health in decreasing feelings of loneliness and depression and increasing feelings of love and belongingness (Cohen, 1991; Humeston, 1983; Jaworski, 1990; Meer, 1984; Schultz, 1990; Toufexis, 1987; Wyatt, 1988). These articles have little scientific merit in most cases but may provide the impetus for empirical examination of popularly held beliefs.

The next level of literature includes anecdotal case reports which are generally found in non-research-based journals of nursing or other health professions. It is in this forum that "helpful hints" for improving patient care are passed from one professional to another. Such references, like the lay literature, frequently cite the profoundly positive effects pets have had on the subjective measurements of happiness and social behavior of various groups of individuals requiring nursing care (Bibby & Posterski, 1992; Bikales, 1975; Blythe, 1980; Bossard, 1944; Brickel, 1979, 1980; Carbary, 1975; Davis, 1985a, 1985b; Davis, 1986; Dolan, 1982; Fogel, 1983; Francis, 1981, 1991; Furstenberg, Rhodes, & Powell, 1988; Gammonley & Yates, 1991; Haggard, 1985; Lago & Knight, 1987; Manor, 1991; Manor, McCurdy, & Crain, 1988; Mayhew, 1988; Preshlock, 1985; Ruckert, 1987; Twiname, 1984; Wille, 1984).

One well-known piece of anecdotal pet literature in nursing came from Florence Nightingale who recognized the effect that the pet owl she carried in her pocket had on her patients. She wrote, "A small pet is often an excellent companion for the sick..." (Nightingale, 1860/1967, p. 103). Like the popular lay literature, attention is best paid to these sources for their inquiry into observed clinical effects. It is from such sources that the nurse researcher may begin to plan a course of study to actively test some of the "hunches" held by practicing colleagues.

The remaining research-based literature on the use of animals in the health promotion of humans has been split into three distinct groups. The first

category is that examining the use of "helping animals" for the physically disabled. However, this study examines the relationship of pets with mental health. Therefore, unless the emotional benefits of such a relationship are also studied, this body of literature is not addressed in the context of this review.

The second category of pet research literature does measure the emotional or mental effects of pets on humans in pet therapy, or pet-facilitated therapy. This involves the use of an "outside" animal (which is usually the therapist's but is almost always unfamiliar to the client) in therapeutic interactions between a client and a health professional (Corson, 1977; Draper, Gerber, & Layng, 1990; Hundley, 1991; Levinson, 1962, 1965; Wolfe, 1977). The use of animal visitation programs with hospitalized or institutionalized individuals is considered under the category of pet therapy as it involves the use of an "unknown" animal (Fila, 1991; Francis, Turner, & Johnson, 1985; Kale, 1992; Kalfon, 1991; Lebeck, 1992; Lee, 1987; Mead, 1992; Moneymaker & Strimple, 1991; Muschel, 1984; Ormerod, 1992; Robb, Boyd, & Pristash, 1980; Thompson, Kennedy, & Igou, 1983). This aspect of the literature is also not discussed in the review as it does not directly apply to the proposed study.

The third category of research-based literature discusses the nature of the relationship between individuals and their own pets. This literature occasionally refers to pets as "companion animals" to highlight the fact that it refers to an animal well known to the subject, and not an external animal such as those used in pet-facilitated therapy. In fact, there has been little clarification of the terminology differences between "pet" and "companion animal" in the literature (Veevers, 1992). In this study, the term "pets" refers to both "companion animals" and "pets" as used in the literature. A definition of pets is included in Chapter One.

The majority of the pet studies to date have been qualitative in design, examining the nature of pet ownership and/or interaction with a particular health parameter of a given population. Like the aforementioned state of knowledge regarding adolescent depression, the current state of knowledge in the study of human health factors and pets is still in the descriptive stage.

Pets and Physical Indices of Stress in Humans

Stress, one of the possible contributors to depression (Klerman & Weissman, 1989), is frequently demonstrated by an increase in blood pressure (Perko & Kreigh, 1988). In a within-subject experimental design study, Baun, Bergstrom, Langston, and Thoma (1984) examined the effect of pets on stress. This study demonstrated that stroking a pet dog (with whom the subject had an established bond) had a significant effect in lowering both the systolic and diastolic blood pressure when compared to stroking an unfamiliar dog. The decreased blood pressure response of those subjects stroking a pet dog paralleled the relaxation response demonstrated by those asked to read quietly alone. Unfortunately, there was no true control group in the latter study.

A thesis completed by Oetting (cited in Baun, Oetting and Bergstrom, 1991) examined the physiological indices of stress reduction (blood pressure, heart rate, and peripheral skin temperature) for groups solely stroking a pet dog or stroking a dog in combination with autogenic relaxation techniques. Although both groups demonstrated a decrease in stress levels as measured by the above parameters, there were no significant differences in the stress reduction indices of the two groups. The two aforementioned studies illustrate the differing findings in studies of the relationship between people and the effects of pets on certain parameters (such as the physical indicators of stress) of mental health.

Blood pressure was also a variable used by Riddick (1985) in a pre-test, post-test, control group design that provided fish aquariums to non-institutionalized elderly. Significant decreases in diastolic blood pressure, and increases in leisure satisfaction and in relaxation states were noted in the members of the experimental group. It is unclear, however, if these results were due to the actual nature of human-animal interactions or were an outcome of a new leisure hobby.

Allen, Blascovich, Tomaka and Kelsey (1991) measured the physical autonomic stress responses of 45 adult women asked to respond to mathematical skill testing questions (as a stimulus of stress) in a laboratory setting with only the researchers present. These women were then asked to repeat the exercise two weeks later at home in the company of either their best female friend (social support), their pet dog, or alone. The results were consistent across laboratory and field studies. The women with a friend present at the time of testing scored less well and demonstrated significantly increased autonomic stress responses. Those women with their dog present at the time of testing demonstrated significantly less physiological reactivity on all autonomic stress measurements. The marked difference between support provided by friends and that of pets was interpreted by the researchers as a result of the non-evaluative nature of pets as they relate to humans (Allen et al., 1991).

Another study of physiological indices of relaxation and stress reduction in regard to the presence of animals is that of Friedmann, Katcher, Lynch and Thomas (1980). These researchers followed 92 patients post-discharge from a coronary care unit. Findings demonstrated a significant positive relationship between the presence of household pets and a one-year survival rate. To control for the physical requirements (and hence possible adherence to recommended exercise regimes) necessary in caring for a dog, all dog owners

were then omitted. The findings of the second analysis also demonstrated a significant relationship between the presence of non-dog household pets and the one-year survival rate post-discharge from the coronary care unit. These findings were consistent across age, gender, severity of illness, marital status, and personality traits of the subjects. Such findings again suggest the notable effect household pets have on the health of their human companions.

In a study examining the risk factors related to stress and cardiovascular disease, Anderson, Reid, and Jennings (1992) studied 5,741 individuals attending a free clinic in Melbourne, Australia. Two matched groups were established according to age and sex. Potentially confounding variables of diet, exercise, weight, socioeconomic status, alcohol intake, and smoking habits appeared to be equally distributed throughout both the pet owning and non-pet owning groups of all ages and genders. All the male pet owners demonstrated significantly lower plasma triglyceride levels, lower plasma cholesterol levels, and lower systolic blood pressure than did their non-pet owning counterparts. The female pet owners in the 40 to 59 age group demonstrated significantly lower plasma triglyceride levels and lower systolic blood pressures than did non-pet owners in the same group. For all groups, the differences were independent of the type of pet owned. This is one of the first studies demonstrating a direct correlation between pet ownership and physiological indices of stress related to specific disease prevention.

Serpell (1990, 1991) carried out a ten-month prospective study which examined changes in health status and behaviour in 71 adult subjects following the acquisition of a new pet (dog or cat). The pet owning groups reported a significant reduction in minor health problems in the first month following pet acquisition as compared to a control group of non-pet owners. For dog owners, the health status improvement was sustained for the entire ten-month study

period. Similarly, new pet owners also demonstrated a significant improvement in psychological well-being over the first six months. For dog owners, this included an increased sense of self-esteem which was sustained for the entire ten month study period. Serpell's (1990, 1991) findings suggest that acquisition of a pet may have a causal influence on overall human physical and psychological health and in some cases these effects may be relatively long lasting.

Pets and Emotional Health in Humans

The research literature regarding the relationship between pet ownership and the emotional well-being of the owners has been studied in a variety of ways on a vast number of populations. Carmack (1991) studied the lived experience of 18 individuals with acquired immunodeficiency syndrome (AIDS) and the role of a pet in their lives. Identified themes that persons with AIDS attributed to the presence of their pets included an increased feeling of affection, feeling valued and needed, an ability to have a confidant, a catalyst for facilitating discussion of difficult topics, an increased ability to focus on the present, a feeling of consistent support, and an increased ability to handle anger, as well as a decreased perception of loneliness and stress.

It becomes apparent that the value which persons with AIDS placed on the presence of pets may, in fact, also be present among pet owners without AIDS. According to Folkman and Lazarus's (1988) model, several of these attributes could be included with the presence of pets as part of the coping response of an individual experiencing depression. The use of pets (with the identified attributes cited by Carmack, 1991) may enable individuals experiencing depression to reappraise that emotion into one of an alternate and perhaps more manageable nature.

Blenner (1991) interviewed 25 infertile couples in a qualitative study to determine the effects of pets on this population. She concluded that using pets as therapeutic adjuncts greatly helped to break the cycle of depression, withdrawal, and stress or isolation in infertile patients' lives.

The effects of pets on depressed individuals has been examined by McCulloch (1981) who surveyed 31 individuals (ages 22 to 69) with a variety of chronic physical health concerns and concurrent depression in order to determine the role of their pets during the course of their physical illness. The majority (71%) of the subjects indicated that their pets were an important source of companionship, as well as a valuable force in helping them cope with feelings of loneliness (83%). A larger majority (94%) of McCulloch's (1981) sample stressed the importance of the pet in encouraging a sense of humour. Even among those in the sample who demonstrated social stability and satisfactory support systems, pets were perceived to provide invaluable additional coping resources to help the individuals deal with their physical illness as well as the concurrent depression (McCulloch, 1981).

Mugford and M'Comisky (1975) utilized a pre-test, post-test, control group experimental study design in which a sample of well elderly who were living alone were given either begonias, caged birds, or nothing. The results demonstrated significant improvement in self-concept and attitude toward others for the group who received the birds for the five-month test period over those who received the plants or no item.

In contrast, a more recent study by Robb and Stegman (1983) found no significant difference in measures of morale, locus of control, social interaction, and mental status among predetermined groups of pet owning and non-pet owning veteran clients receiving home care services. Utilizing instruments with established reliability and validity, this study was one of the few to have

quantitatively measured the findings frequently cited in anecdotal reports. Robb and Stegman (1983) recommended that further quantitative studies of factors in human-animal interactions be carried out utilizing established instruments. In addition, the researchers recommended that critical attention be paid to situational and personal characteristics of the subjects.

Baun, Cardiello, and Jassen (1992) utilized a pre-test, post-test control group design in the measurement of depression, loneliness, and morale of older adults transferred to a rehabilitation unit. Their study demonstrated a significant decrease in depression among those individuals transferred to the rehabilitation unit with a pet bird over those in the control group who were not given a bird. The presence of a bird, however, made no significant difference in the morale or loneliness of the subjects.

In a study of single seniors in their homes, Lane and De Gale (1992) measured self-perceptions of health, finances and living situations as well as indices of depression, loneliness, and life satisfaction among pet owners and non-pet owners. Overall, pet owners viewed their health, finances, and living accommodations as significantly better than did the non-pet owners sampled. Objectively, there was a statistically significant difference between the two groups only on the life satisfaction scale (pet owners scored higher). Unlike the previously cited study of Baun et al. (1992), Lane and De Gale (1992) found that the depression and loneliness indices of their two study groups were indistinguishable.

In another study of perceived health status among the elderly, Siegel (1990) reported on a one-year prospective study of 938 individuals. When all demographic characteristics were controlled for (including social support network and chronic health problems), those with pets reported fewer physician contacts during the year than did those without pets. The accumulation of stressful events

during the year was no different between the two groups; however, the events resulted in more physician contacts by the non-pet owners than by the pet owners. Dog owners, in particular, did not utilize their physician in times of stress. They reported that their pets provided them with companionship (75%), security (25%), and love (21%). It is hypothesized by the author that those without dogs or other pets may be using their family physician to fill this companionship role in times of stressful life occurrences (Siegel, 1990). A descriptive study (Cookman, 1991) using grounded theory methodology to study attachment of a similar population of pet owners demonstrated that elderly pet owners used their animals to fill a perceived void in companionship, thereby confirming Siegel's (1990) results.

Stallones, Marx, Garrity and Johnson (1990) also studied use of health care services among pet and non-pet owners. They surveyed 1,300 adults (ages 21 to 64) from the general population in the United States to determine the relationship between pet ownership and pet attachment with self-reported illness behaviour and depression. Their telephone survey used numbers of visits to the doctor, use of prescription medication, and numbers of hospitalizations to measure illness-related behaviours. The respondents were also questioned as to their self-perception of health, recent negative life events, support network and perceived attachment to their pets. The data analysis revealed no significant difference between pet owners and non-pet owners on comparisons of illness behaviour, depression, life changes and support network. The results also demonstrated a significant inverse relationship between attachment to pets and presence of a human support network. The absence of a human support network was associated with emotional well-being. On the basis of this study, Stallones et al. (1990) caution against advocating pet ownership for depressed individuals as it may lead to a decrease of human supports and provide yet

"another stressor ... to increase rather than decrease emotional distress" (p. 108). A review of the etiology of depression in adults and the use of a conceptual framework for the placement of pets in relation to the health parameters may have further assisted Stallones et al. (1990) in drawing conclusions from the latter finding.

The interrelationship between human-pet attachments and subsequent human-human interactions has been another subset of research into the emotional well-being of pet owners. In one of the original studies in this area, Brown, Shaw, & Kirkland (1972) reported a positive correlation between human affection for dogs and affection for humans. In opposition to this view, another of the original pet researchers determined that pet owners and men in general like people less than do non-pet owners and women in general (Cameron, 1966). They conclude that pets seem to function as a deterrent to effective social relationships and, consequently, to mental health (Cameron & Mattson, 1972). Given the nature of their sampling procedures and correlational analysis, Cameron and Mattson (1972) may be presumptuous in their statement of causation.

More recently, the effect of human-pet relations on human-human relations has been tested using a variety of study designs. Robins, Sanders, and Cahill (1991) used a participant observation research design to demonstrate that dogs facilitate interactions with strangers in a park setting and help to establish trust among the newly acquainted. Messant (1983) had 40 volunteer dog walkers, and 40 control group walkers (no dog) observed with behavioural measurements of the frequency and nature of interactions with other humans. He concluded that the presence of the animal acted as a "social lubricant" (similar to the findings of Mugford and M'Comisky, 1975). The presence of a dog increased the likelihood of interactions with other people. These others usually

spoke to or touched the dog while also addressing its owner. Such an observation reinforces the significance of the pet in the interaction in comparison to those walkers who did not have a dog present.

Rosbach and Wilson (1992) built on the previous research in their study in which 34 subjects were asked to rate a series of 32 photographs on dimensions of approachability, happiness, relaxation, and "best" photo. The photographs consisted of the same four individuals in combinations of seated and standing positions, alone, with flowers, with their own dog, and with a strange dog. In all cases, pictures which had dogs in them were rated higher than all other photographs. In the second stage of the study, 45 subjects were asked to rate slides of scenery, an individual alone in the scene, and the same individual with a dog in the scene. The findings demonstrated a preference for scenery alone on ratings of aesthetics, happiness, relaxation, safety, and "best" picture. Second to the images of scenery alone, were the scenes with an individual and a dog. It was only when the subjects were asked to place themselves in the photo, that the preference on all scales became the slide with the dog. Rosbach and Wilson (1992) interpreted these results to indicate that their subjects would rather be with a dog than alone (companionship) and that an individual with a dog is more appealing than one without (perhaps as a social lubricant).

Paul and Serpell (1992a) surveyed 385 university students regarding their childhood relations with pets and current attitudes towards animals and humans. Their results demonstrated a significant positive relationship between involvement with pets as children and both positive attitudes to animals in general, and higher scores on a scale of empathy for other humans. This confirms an earlier study of childhood pet ownership by Poresky (1990) who demonstrated that empathy towards children by other children was correlated

with empathy towards pets. Children with a strong attachment bond to a pet had higher scores on empathy towards other children than did the children in the study who did not have pets (Poresky, 1990). This finding conflicts with those of Stallones et al. (1990) who concluded that pet attachment among adults was negatively correlated to attachment with humans.

Gage (1992) studied 454 couples with a baby of one year or less. After controlling for factors of the parental childhood experience, and level of socialization for marital and parental roles, the findings demonstrated a significant correlation between the extent of pet experience and competence in marital and parental roles using established scales for self-esteem, life satisfaction, marital satisfaction, and parenting competence. Similar to the aforementioned studies, Gage (1992) demonstrates the effects relations with pets may effect other relations with humans.

In regard to pets and the adolescent population, Covert, Whiren, Keith, and Nelson (1985) interviewed 285 urban and rural adolescents from 10 to 14 years old about the nature of their relationship with their pets. Results indicated that 89% of those surveyed had cared for an animal. The benefits of pet ownership among those surveyed was found to be significant on the parameters of reported friendship (dog, fish, bird, and horse owners only), expanded knowledge (fish, and bird owners only), and acknowledged responsibility (small mammal and horse owners only).

In a study similar to that of Covert et al. (1985), Stevens (1989) surveyed 490 urban and rural grade eight adolescents. The investigator determined on the basis of the survey that urban adolescents were significantly more attached to their pets than were their rural counterparts. There were no significant differences in the level of pet attachment among male or female adolescents or between dog or cat owning individuals. The study confirmed the more utilitarian

role animals play in rural families as well as the lack of gender bias or species preference in the pet attachment of urban adolescents.

Much of the remaining literature concerning adolescents and pets, groups adolescents together with children in an analysis of developmental task achievement. Davis and Juhasz (1985) discuss the formation of a concept of "self" to be an important developmental task of the preadolescent. Pets may contribute to adolescent confidence and sense of self by a facilitation of healthy expression of feelings through play, a non-authoritarian nature, consistent availability, maintenance of "confidences," and unconditional acceptance. They indicate that the pet's involvement as a developmental asset will fluctuate over time and according to the individual needs of the adolescent and caution that "a rigid relationship indicates limitations in growth potential relative to developmental progress" (p.91).

Schaufli and Bergler (1992) found that among the 460 nine to fourteen year olds they surveyed, dogs took on several roles and functions for their subjects. Namely, the pets represented fantasy, friendship, entertainment, facilitators of communication, topics of conversation, comforters, "nurses", and catalysts for family togetherness.

In addition, there are literature reviews and philosophical constructs discussing the roles played by pets in families with children. Albert and Bulcroft (1988) interviewed 320 pet owners and 116 non-pet owners to determine the degree of attachment of pets have to the family system. Their findings suggest that pets are viewed as family members who play significant emotional and psychological roles in urban households. The nature of the role the pet holds in the family system varies over the life cycle and type of family. Cain (1983) identified both positive and negative aspects of pet ownership dependent on the life stage and the dynamics in individual families. The pets in the households

with adolescents frequently served as a confidant for the adolescent as well as teaching attributes of independence and responsibility and providing a source of companionship (Albert & Bulcroft, 1988; Schaufli & Bergler, 1992).

Robin and ten Benseel (1990) studied the role played by pets in the developmental tasks of the adolescent:

Pets function, particularly for adolescents, as transitional objects, much like the blanket or the teddy bear does for infants. As transitional objects, pets help children feel safe without the presence of parents. Pets are more socially acceptable as transitional objects for older children than are inanimate objects. Adolescence brings with it a changing relationship to pets....At this period pets can be a confidant, an object of love, a protector, a social facilitator, or a status symbol (p.17).

The literature further indicates that, due to the intense relationship that adolescents, (more so than elementary school children) have with their pets (Kidd & Kidd, 1990a, 1990b), it is members of this age group that generally have the most profound and prolonged periods of grief in the event of loss of a pet (Robin & ten Benseel, 1990).

In summary, a vast array of lay and anecdotal literature describes the mental health benefits of pets for their owners. The research-based literature is as yet unclear as to the exact nature of the benefits of pets to humans. Consistent with the findings of Baun et al. (1984), Friedmann et al. (1980), and Robb and Stegman (1983), there appears to be a paucity of controlled quantitative investigations of particular health parameters in humans in relation to the presence of household pets. The relationship between measurement of depression and pet ownership also appears to vary according to the age and

circumstances of the subjects. In general, the research literature confirms that animals are able to facilitate human-human contact. Pets in childhood are instrumental in fostering feelings of empathy towards other humans in adulthood. However, as previously noted, despite the descriptions of the role pets may play in the developmental tasks of adolescents, there is little in the research literature regarding the relationship of pets to the current mental health of adolescents.

Summary

In this chapter an overview of the relevant literature pertaining to the concepts of adolescent depression and the health benefits of pets has been presented. The research literature regarding adolescent depression addresses the demographic correlates of depressed youth as well as the potential etiologic basis and behavioural representations. There is evidence in the literature that adolescent depression is related to suicide, delinquency, dropping out of school, poor academic performance and substance abuse (Rogers, 1987). It is also clear from the literature that there are recognized differences in adolescent depression between urban and rural populations and among different cultural groups. The points on which the literature is not clear relate to important aspects such as overall prevalence in the population, as well as any demographic correlations of depression with gender, family structure, age, and socioeconomic status.

The presence of household pets has not previously been identified as a factor in dealing with this health concern among adolescents. Literature regarding the health benefits of pets ranges from lay anecdotal articles to reports based on rigorous experimental design. The areas pertinent to the concept of mental health include the relationship of pets to stress responses, as well as measures of emotional well-being. The literature describes recognized

differences in the role played by pets for people living in urban and rural settings. The research literature also confirms that pets provide increased feelings of love, belongingness, and companionship for their owners. Despite the wealth of anecdotal articles promoting other emotional health benefits of pets, the findings of the research-based literature are conflicting as to whether pets are, in fact, correlated with a change in blood pressure, heart rate, loneliness, depression, affection for other people, morale, locus of control, and social interactiveness when examining groups of pet and non-pet owners.

Although findings have indicated that adolescents are one of the age groups most affected by the death of a pet, and rate as much more attached to their pets than do younger children, there have been few studies regarding the relationship between mental health of adolescents and the presence of pets. For these reasons, this study helps to fill the void noted in the review of the literature. The study addresses the need for further clarification of the prevalence and demographics of depression a selected group of adolescents. The study also builds on the foundation knowledge in examining the correlation between this specific mental health concern and the presence of pets among members of the population. The study adds to knowledge about both the emotional health of urban grade nine adolescents and the potential correlation of emotional health with the environmental influence of household pets.

Chapter Three

Methods

A multi-method quantitative design was used to address all four research questions. The first question relating to the prevalence of depression among the subjects was addressed using a descriptive survey design. The second, third, and fourth questions concerning the relationships between pets, gender, and depression, as well as primary ownership of pets and depression, and perceived pet attachment and depression, were addressed by correlational study designs.

Instruments

The instruments utilized in the study were the Adolescent and Pet Characteristics Questionnaire (see Appendix A) and the Center for Epidemiologic Studies Depression Scale (CES-D) (see Appendix B).

Adolescent and Pet Characteristics Questionnaire

The Adolescent and Pet Characteristics Questionnaire is an instrument designed by the researcher to collect nominal level, descriptive demographic data about the subjects (see Appendix A). The following criteria were utilized for item inclusion on the Questionnaire:

1. Each independent variable was identified in the literature as significant or potentially significant (content validity);
2. The inclusion of each variable appeared logically relevant in relation to the research questions and purpose of the study (face validity).

The Questionnaire was submitted to a convenience group of 5 male and 6 female adolescents (aged 13 to 20) to assess for comprehensiveness, clarity, and face validity prior to its use. No changes to the instrument were made on the basis of this preliminary assessment.

The Questionnaire includes fourteen items related to gender, age, school performance, current family members at home, immigration (of the subjects as well as their parents), language, and presence of pets in the home. For those subjects who have pets, a further seven items (for which short responses are necessary) gather additional information as to type and number of pets, identified favorite pet, primary ownership, duration of ownership, and perceived degree of attachment to the pet. Subjects complete the instrument by circling the nominal category or briefly describing that which best portrays their current situation.

Center for Epidemiologic Studies Depression Scale

The Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) was used to measure the prevalence of depression among the subjects (see Appendix B). Unlike measures used in other studies (Beck, Ward, Mendelson, Mock & Erbaugh, 1961 ; Siegel & Griffin, 1984), the CES-D was designed to measure depressive symptoms in the general population as opposed to the clinical case and is, therefore, particularly pertinent to the subjects in the study. The CES-D consists of 20 summated Likert-type statements on a unidimensional measurement of depression. The depression factors include measurement of depressed affect, positive affect, somatic concerns, slowed activity, and interpersonal relations. The subjects circle the response which best describes how frequently each statement pertained to them during the past week. There are four potential responses to each statement ranging from 0 to 3, with 0 indicating "rarely or none of the time" and 3 indicating "most or all of the time" (Radloff, 1977). The subjects' circled responses are totalled to obtain an overall score for the scale, which may range from 0 to 60. The CES-D scoring for adult populations uses a cut-off value of >15 to indicate the presence of depression symptoms (Radloff, 1977). Several authors have indicated, however, that this is

not an adequate indicator for an adolescent population and scores of >20 (Pronovost et al., 1990), >24 (Ackerson, Dick, Manson, & Baron, 1990) or >28 (Clarke, 1991; Manson, Ackerson, Dick, Baron & Fleming, in press) are better indicators of specific depression-related symptoms in adolescents. Indeed, those adolescent studies which have utilized the adult cut-off point of >15 for depression have demonstrated prevalence rates of depression such as 49% and 58% of the population (McDermott et al., 1990). These rates are in excess of the adolescent depression prevalence rates reported in studies using alternate measurement instruments (Greydanus, 1986; Simeon, 1989). For the purposes of this study, no distinct cut-off point was utilized. Rather, a series of four scoring categories, based on the cut-off points utilized by the above researchers and the principle of interval data, was used to indicate various degrees of depressive symptoms. An overall score on the CES-D from 0 to 15 indicated no depression, a score from 16 to 30 indicated mild depression, a score from 31 to 45 indicated moderate depression, and a score from 46 to 60 indicated severe depression.

The CES-D was designed for use with English-speaking, Caucasian or African-American populations of both genders, a wide range of socioeconomic statuses, and education levels and is freely available for public use. Although originally designed to measure depression in an adult population, it has demonstrated high concurrent validity ($r = 0.73$) and excellent internal consistency (0.91 for suicidal youth, and 0.81 for non-suicidal youth) among adolescent populations in both Canada and the United States (Clarke, 1991; Pronovost, 1990; Roberts, Andrews, Lewinsohn & Hopps, 1991). The exact reading comprehension level is not known; however the instrument was designed for use with "less than high school" (Radloff, 1977, p.398) levels of education. Adolescent subjects complete the instrument in an average of five minutes.

Factor analysis of the internal sub-scales of the instrument revealed a high interrelatedness that cautions against separating out any internal measures of depressed affect, positive affect, somatic retardation, and interpersonal factors. Rather, Radloff (1977) recommends using the tool only as a whole. The CES-D also has strong discriminant validity when compared to a series of 12 other similar scales (Radloff, 1977).

Protection of Human Rights

Approval of procedures for the protection of human rights was obtained from the University of British Columbia Behavioural Sciences Screening Committee for Research and Other Studies Involving Human Subjects prior to commencing the study. Throughout the study, every effort was made to maintain anonymity of the subjects. Despite the fact that the students and teachers were aware of who participated in the survey and who did not, no names were accepted on the completed instruments. The instruments were collected in an envelope without any observation of results by the researcher or the teacher. Parents of the children were informed of the study and were offered the opportunity to view the instruments if they desired prior to providing their consent. None of the parents contacted elected to do so.

Prior to conducting the study, the researcher, in conjunction with the school counsellor or principal, identified an individual within the school to whom the students could go for counselling if they found that the questions asked in the survey had caused them to think about problems they were experiencing. This information was verbally given to the students as a group after all the instruments were collected. Although some of the responses revealed severely depressed individuals, no effort was made to seek out the identity of those individuals as this would have constituted a breach of anonymity. Rather, contact was made with

the principal or guidance counsellor of the three schools from which the completed instruments had been collected. Each was informed that there had been responses indicating depressed students in the school. They were then provided with information about community resources in the area of the school to provide class presentations or counselling to self-identified individuals.

Sample

All secondary schools in urban Vancouver (eighteen) and Victoria (eleven) were approached for participation in the study. Only those in which approval was received from both the principal and the classroom teacher involved were included. These schools (three in Vancouver and three in Victoria) represented a variety of socioeconomic levels in the urban population (Capital Regional District Health, 1990; Rumel & Costanzo, 1992; Siegel & Griffin, 1984). Participation was sought from all grade nine students in the six schools. Only those students who returned a signed parental consent form were included in the sample, which consisted of both males and females.

The choice of grade nine students was made based on the literature which documents an increase in the incidence of depression in the 13 to 16 year old age group (Greydanus, 1986) as well as an increase in suicide rate in the 15 to 18 year old age group (Conrad, 1991; Pronovost et al. 1990). Individuals 13 to 16 years of age are at an optimal age for experiencing depression, but may not yet have dropped out of school (Reinherz et al. 1991) or been led to suicidal acts.

Data Collection

Approval for completing the study was obtained from the Vancouver School Board and the Victoria Regional District School Board. The Vancouver School Board then approached the individual school principals to request their consent for school participation. The schools within the Victoria School District

were individually approached by the researcher through a letter introducing the study and requesting consent (see Appendix C). The principals were then contacted by telephone to arrange a time to obtain the signed consent, answer any questions they might have, and complete the final arrangements for the study. For those principals who did not respond to the initial letter or telephone call, a FAXed memo was sent requesting their participation.

Once the schools were identified, letters were distributed explaining to the students and their parents the nature and purpose of the study, as well as the time and effort required (see Appendix D). Active signed consent was requested from the parents and required prior to student participation in the study. In four of the schools, parental consent forms were sent home with the subjects and returned to class in the same manner. One school had a blanket consent on record which the parents had signed at the beginning of the school year giving their consent for voluntary participation by their child in any study approved by the school board. In the sixth school, the principal requested that the study information and consents be mailed home to the parents to avoid placing extra duties on the teaching staff. In the first four schools, the principals or classroom teachers volunteered to collect the parental consent forms from the students prior to the survey date. In the last school mentioned, the students either turned their signed consent form into the school office or brought it with them at the time that the instruments were completed.

Once consent was obtained from the parents and subjects, the data were collected. Each school varied slightly as to the procedure which the principal preferred to have followed. One school with relatively few students gathered all of those with parental consent from their classrooms into a room at a pre-arranged time. Another preferred that the students respond to the instruments during lunch time, and the four remaining schools had the instruments distributed

to participating subjects during a guidance class or, in the case of one school, an English class.

The researcher was able to personally distribute the questionnaires in five of the six schools. In each of these instances, the researcher introduced herself as a nurse interested in learning how teenagers currently felt about themselves and in the degree of involvement they had as individuals with pets in their homes. It was stressed that there were no right or wrong answers to the questions. The subjects were encouraged to express how they truly felt and not what they thought others might want to hear. Finally, it was pointed out again to the students that there were two pages to be completed and that their names were not to be put on either form. The students were encouraged to respect each other's privacy and look only at their own paper, fold it in half when they finished, and place it in the envelope held by the researcher. In the sixth school, the guidance classes were held at a time at which it was impossible for the researcher to be present. The above directions were given to the guidance counsellor who read the introductory statement and instructions to the participating subjects in each of his nine classes. In all cases, the subjects were presented with the CES-D Scale first, followed by the Adolescent and Pet Characteristics Questionnaire.

Data Analysis

Data from the Adolescent and Pet Characteristics Questionnaire were tabulated as follows. The questions for which the potential responses were of a limited number were analyzed at face value as the nominal category which they represented (gender, age, school performance, number of parents, number of siblings, birth country, years in current neighbourhood, primary language, presence of pets, type of pet, primary pet ownership, duration of pet ownership,

and attachment to pet). Four of the short-answer questions had numerous potential responses (place in sibship order, overall numbers and types of all household pets, name of pets, and occasion for pet acquisition). The responses to these questions were categorically grouped according to common characteristics. Sibship order was analyzed as eldest, youngest, and anywhere in the middle of a group of siblings. Overall numbers and types of household pets were analyzed in groupings of single pet, multiple pets of same species, and multiple pets of different species. Names of pets were grouped into categories of human names, names based on physical characteristics, names based on social or behavioural characteristics, humorous names, and miscellaneous. The reason for pet acquisition responses were grouped into categories of no reason, unplanned finding, gift, planned desire, replacement of a past pet, and replacement of a past significant other.

The first research question was answered with a prevalence ratio using the values from the CES-D scale (Glass & Hopkins, 1984; Munro, Visintainer, & Page, 1986; Radloff, 1977; Zar, 1984) to delineate those respondents who were not depressed, mildly depressed, moderately depressed, and severely depressed.

The second research question was analyzed using a two-way fixed effects analysis of variance (ANOVA) design (Glass & Hopkins, 1984; Munro et al., 1986; Zar, 1984). In this case, the dependent variable was the interval level measurement of depression as recorded by the CES-D score. The independent variables of gender (female/male), and pets in the home (no/yes) were obtained from the Adolescent and Pet Characteristics Questionnaire.

In order to use the ANOVA statistical analysis procedure, three primary assumptions about the data must be met (Glass & Hopkins, 1984; Munro et al., 1986; Zar, 1984). The first ANOVA assumption is that the dependent variable be

composed of normally distributed continuous data. Secondly, the sampled groups must have equal (homogeneous) variances. Finally, the factor effects must be linear or additive in nature. To determine the distribution (normality) of the CES-D scores, the results were plotted graphically using a density distribution histogram and a normal curve. The results showed a positively skewed distribution with a long right-sided tail (see Appendix F) (Glass & Hopkins, 1984). To utilize parametric analysis procedures with these data as they existed in their raw numerical form would be in violation of the assumption of normal distribution (Glass & Hopkins, 1984; Zar, 1984).

A logarithmic (base 10) data transformation was used to correct for the positively skewed distribution of CES-D scores. The conversion equation of $X' = \log_{10}(x+1)$ was utilized due to the presence of several "0" scores in the data set and an inability to provide a log 10 value for 0 (Zar, 1984). This resulted in a normal distribution (see Appendix F). In addition to obtaining a normal distribution of data, logarithmic transformations ensure data linearity or additivity (Zar, 1984). Therefore, the analysis of research questions three, and four (utilizing parametric analysis of variance procedures) also used logarithmic 10 $(x+1)$ transformed data.

The third research question was addressed using a one-way fixed effects ANOVA design (Glass & Hopkins, 1984; Munro et al., 1986; Zar, 1984). This utilized a subset of the dependent variable of depression (CES-D score) which included only those individuals who had pets in examination of combinations of independent pet ownership (individual / family / parent / sibling) as reported on the Adolescent and Pet Characteristics Questionnaire. Post hoc analysis of the data was completed using the Tukey test for honest significant difference as provided by SYSTAT with Tukey-Kramer adjustment for unequal group numbers (Wilkinson, 1990). This adjustment is reported to provide more consistent

protection against type I and type II errors than the Newman-Keuls or Duncan post hoc analyses (Wilkinson, 1990).

The fourth research question was also addressed using a one-way fixed effects ANOVA design (Glass & Hopkins, 1984; Munro et al., 1986; Zar, 1984). Once again the dependent variable was the subset of depression (CES-D) scores for those individuals with pets in examination of the relationship with perceived attachment as reported on a scale from 1 to 5 (not attached / somewhat attached / very attached / extremely attached) on the Adolescent and Pet Characteristics Questionnaire. Post hoc analysis of the data was also completed using the Tukey test for honest significant difference as provided by SYSTAT with Tukey-Kramer adjustment for unequal group numbers (Wilkinson, 1990).

Chapter Four

Presentation and Discussion of Findings

Response Rate

Grade nine students of three Vancouver and three Victoria secondary schools were the subjects for this study. Of a possible 710, 411 consent forms were returned for an overall response rate of 58%. A response rate between 50% and 60% is expected when employing active parental consent procedures (Ellickson & Hawes, 1989). Such a consent procedure has been criticized for its potential underrepresentation of ethnic minority groups, low achieving students, and "those at risk for engaging in problem behavior" (Ellickson & Hawes, 1989, p.46). Although it is probable that some parents did return the signed consent forms because they were unable to read English, a demographic review of the subjects' ethnic origins later in this chapter will demonstrate that such an underrepresentation was not likely the case in this study. This is likewise the same for scholastic ability. Only eight of the 411 returned consents (1.9%) indicated parental refusal to grant permission for their child to participate in the study. As shown in Figure 2, the majority of the participants came from two schools in which the teachers strongly encouraged and reminded the students to return their signed parental consent forms.

Of the 403 completed instruments, 401 were usable. Two instruments were discarded; one was incomplete and the other had obviously fictitious answers. The remaining instruments were filled out in their entirety by the subjects. Many were returned with elaborate explanations included in the margins to further describe the subject's circumstances to the researcher.

Due to the profound differences in size among sample groups, before any analysis was completed, the differences between sample sites and depression scores were analyzed to ensure homogeneity of variance (Zar, 1984). The

results of this preliminary one-way fixed effects ANOVA (with $\log_{10}(x+1)$ CES-D scores as the dependent variable and school as the independent variable) indicated a probability statistic of $p = 0.393$. With statistical significance set at a < 0.05 alpha level, this result clearly indicates that there is no significant difference between the depression values among the sampled school groups. Therefore, despite the selection bias of most subjects being from two schools, the analysis indicates homogeneity of variance across all sites. For the remainder of the analyses, all school values were pooled and treated as one sample (Zar, 1984).

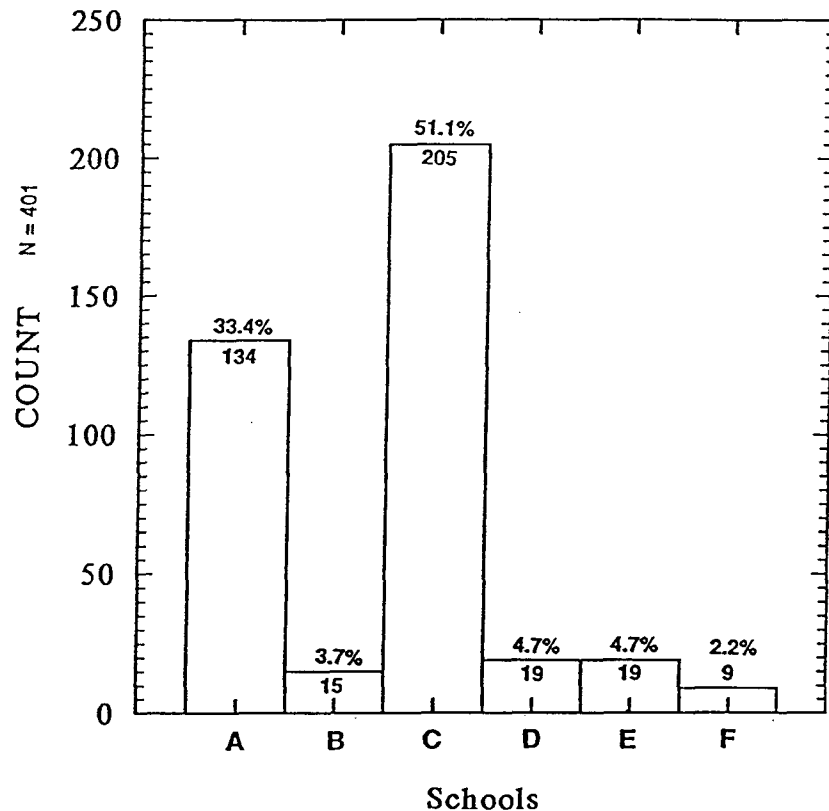


Figure 2. Numbers and Percentages of Subjects by School

Demographic Characteristics

Gender

The sample was composed of 53.6% female and 46.4% male subjects.

Age

All subjects were in grade nine at the time of the study. Their ages ranged from 13 to 16, with almost 80% of the sample being 14 years of age (see Table 1).

Table 1**Ages of Subjects**

Age (Years)	Subjects (N=401)	
	Number	Percentage (%)
13	12	3.0
14	316	78.8
15	70	17.5
16	3	0.7

School Performance

Almost 85% of the subjects reported receiving either B or C grades (see Table 2). These grades have been interpreted by the investigator as "high-average" or "average," respectively. The reported grades for the subjects

Table 2**School Performance of Subjects**

Grades	Subjects (N=401)	
	Number	Percentage (%)
A	45	11.2
B	193	48.1
C	149	37.2
D	14	3.5

in this study are similar to those reported in the larger adolescent health survey in Vancouver and Victoria which were generally above average (McCreary, 1993a, 1993b).

Family Composition

Subjects reported the number of parents and siblings currently living at home with them and their position in the overall sibship order of the family. The majority of subjects (78.8%) reported living with two parents, while 20.4% reported that they lived with only one parent and three subjects (0.7%) lived with older siblings in lieu of their parents (see Table 3). During the completion of the instruments, a total of six students asked if they were to count their parent's spouse as a second parent on the instrument. The students were encouraged to do so only if they thought of that person as a parent. The percentage of two parent families is slightly larger than reported in other studies: 75% for Canada (Bibby & Posterski, 1992); and 71% and 59% for Vancouver and Victoria respectively (McCreary, 1993a, 1993b).

Table 3

Parents Living at Home

Parents at Home	Subjects (N=401)	
	Number	Percentage (%)
0	3	0.7
1	82	20.4
2	316	78.8

With regard to siblings living with the subject, the numbers ranged from zero to seven (see Table 4). The largest representative group was 42.4% of the subjects who reported one sibling living at home with them. Almost 13% reported being the only child in the house, while nearly 28% reported having two siblings

at home. Seventeen percent of the respondents reported 3 or more siblings at home.

Table 4

Siblings Living at Home

Siblings at Home	Subjects (N=401)	
	Number	Percentage (%)
0	51	12.7
1	170	42.4
2	112	27.9
3	42	10.5
4	18	4.5
5	5	1.2
6	2	0.5
7	1	0.2

The number of siblings at home does not always correlate with the overall number of siblings in the family. This is illustrated by the figures which indicate 12.7% of the subjects as the only child living at home, while only 10.5% of the subjects were actually the only child in the family (see Table 5). Approximately two-thirds of the subjects reported being either the eldest or youngest child, while the remaining 21% reported being somewhere in the middle of the sibship order. The presence of certain family members in the home may be beneficial in that they provide additional coping resources for the adolescent in emotional reappraisals. The absence of certain family may also be beneficial by decreasing the chance of environmental encounters which result in negative emotions for the

adolescent. Obviously, the reverse of each situation is also plausible within the conceptual framework.

Table 5

Sibship Position of Subjects

Position	Subjects (N=401)	
	Number	Percentage (%)
Eldest	139	34.7
Middle	85	21.2
Youngest	135	33.7
Only Child	42	10.5

Country of Origin

Cultural practices may be passed on to the children of immigrant parents, therefore, information regarding country of origin was gathered on both subjects and their parents. The majority of the families originated in Canada with the next two largest groups being from China and Hong Kong. However, as shown in Table 6, there were 49 different countries of familial origin, placed within eight regional categories. The subjects were highly multicultural as a sample group; however, the coping conceptual framework allows for differences associated with a variety of beliefs, values and resources. Cultural beliefs may influence how adolescents respond to environmental stressors and hence their establishment of coping responses (Bibby & Posterski, 1992).

As Table 7 indicates, 296 (73.8%) of the subjects were born in Canada or the United States. Seventy-seven (19.2%) were born in the Orient, and 28 (6.9% in total) in a variety of places across Asia, Australia/New Zealand, Europe, Latin America, or the Middle East.

Unlike the subjects, the parents were not primarily from North America (see Table 7). The highest percentage of the parents were born in the Orient (average 37.4%). Those born in North America were second with an average representation of 31.9%. Twenty-one percent of the subjects' parents came from a variety of the countries listed in the European region. Parents of the remainder

Table 6

Regions and Countries of Origin for Subjects and Parents

<u>Region</u>	<u>Countries of Subjects and All Reported Parents</u>				
North America	Canada	(505)	U.S.A.	(42)	
Latin America	Argentina	(4)	Jamaica	(2)	
	Costa Rica	(1)	Peru	(2)	
	El Salvador	(10)	Venezuela	(4)	
	Honduras	(1)			
Europe	Austria	(1)	Ireland	(4)	
	Bulgaria	(3)	Italy	(16)	
	Croatia	(4)	Norway	(3)	
	Czech Rep.	(9)	Poland	(6)	
	England	(39)	Portugal	(27)	
	Finland	(7)	Romania	(1)	
	France	(9)	Scotland	(7)	
	Germany	(7)	Spain	(1)	
	Greece	(16)	Wales	(2)	
	Holland	(2)	Yugoslavia	(6)	
	Hungary	(9)	Denmark	(2)	
	Asia - Orient	Cambodia	(3)	Malaysia	(15)
		China	(120)	Philippines	(23)
Hong Kong		(103)	Taiwan	(42)	
Japan		(6)	Viet Nam	(55)	
Korea		(4)			
Asia - Non-orient	Brunei	(2)	India	(19)	
	Fiji	(19)			
Middle East	Israel	(1)	Lebanon	(8)	
Africa	Mauritius	(1)	South Africa	(4)	
Australia / New Zealand	Australia	(8)	New Zealand	(2)	

were born in Africa, Asia, Australia New Zealand, Latin America and the Middle East regions (average total of 9.3%). Thus, almost half of the subjects were first generation Canadian. This is important to note as it may indicate potential areas of conflict when the values and beliefs of the family are different from those encountered by the subject when among her / his peer group (Bibby & Posterski, 1992).

Table 7

Subjects and Parental Birth Regions

Region	Numbers and Percentages		
	Subjects (N=401)	Mothers (N=396)	Fathers (N=390)
North America	296 (73.8%)	131 (33.1%)	120 (30.8%)
Latin America	6 (1.5%)	9 (2.3%)	9 (2.3%)
Europe	14 (3.5%)	80 (20.2%)	87 (22.3%)
Asia - Orient	77 (19.2%)	149 (37.6%)	145 (37.2%)
Asia - Non-orient	4 (1.0%)	18 (4.5%)	18 (4.6%)
Middle East	1 (0.2%)	4 (1.0%)	4 (1.0%)
Africa	0	2 (0.5%)	3 (0.8%)
Australia / New Zealand	3 (0.7%)	3 (0.7%)	4 (1.0%)

Primary Language

In addition to reporting countries of origin, the subjects indicated which language was primarily spoken at home. Forty-six of the subjects (11%) indicated that more than one language was spoken at home. If they did not make clear which was the language most frequently used, the first of the languages listed was recorded as the primary language used in the home. In total, 26 specific languages were reported by the subjects as shown in Table 8.

As were the countries of origin, the languages were categorized to facilitate presentation.

Only 58.4% of the subjects reported English as the primary language spoken at home. The second most frequently spoken languages were in the Oriental category with 28.2% of the subjects reporting the use of at least one of these nine languages. The remainder of the subjects (13.4%) reported speaking a variety of the remaining 16 Asian or European languages. This is a larger percentage (41.6%) of non-English speaking households than indicated by a census completed in 1986 in which 21.8% of households in Vancouver were non-English speaking (Child and Youth At Risk Steering Committee, 1991).

Table 8

Primary Languages Used At Home

Subjects (N=401)			
Category	Number	Percentage	Languages
English	234	58.4%	English
Asian - Oriental	113	28.2%	Cantonese (55) Korean (2) Chinese (16) Mandarin (20) Hakka (2) Taiwanese (5) Japanese (1) Vietnamese (11) Tagalog (1)
Asian - Non-oriental	8	2.0%	Hindi (4) Lebanese (1) Punjabi (3)
European - Latin-based	27	6.7%	French (13) Portuguese (8) Italian (1) Spanish (5)
European - Non-latin-based	19	4.7%	Bulgarian (1) Greek (5) Croatian (4) Hungarian (2) Czech (2) Norwegian (1) Finnish (1) Polish (1) German (2)

A reason for the difference in these numbers could be that the 1986 figure includes all families regardless of composition, whereas this sample includes only those with a grade nine student in the home. It is also possible that multilingual families make a concerted effort to speak their native language at home so that their children who are being educated in English will retain their non-English language abilities, hence raising the statistical representation of non-English speaking households for those families with children. It may also be that many more immigrant families have settled in Vancouver and Victoria since the 1986 census.

Residence

Approximately 70% of the subjects had lived their entire life in Canada (see Table 9). The remaining 30% of the subjects reported living in Canada anywhere from two months to twelve years. Within this population, only about 26% had spent their entire life in the same neighbourhood. Similar to the familiar beliefs and practices found within cultural patterns, living in the same region for a long period of time may permit the adolescent to cultivate a set of coping practices which are effective in reappraising emotional circumstances.

Twelve percent of the subjects had been in their current neighbourhood for less than a year. The remaining 61% of the subjects had lived in their neighbourhoods anywhere from one to thirteen years (see Table 9). It should be noted that some of the subjects commented in the margins of the instrument that they had made several moves throughout their lives; however, always within the same neighbourhood. It could be assumed, therefore, that support systems and resources would remain the same for these individuals.

Table 9**Years of Residence in Canada and Current Neighbourhood**

Years	Numbers and Percentages of Subjects (N=401)			
	Canada		Current Neighbourhood	
< 1	9	(2.2%)	49	(12.2%)
1 - 3	32	(7.9%)	89	(22.2%)
4 - 6	17	(4.2%)	73	(18.2%)
7 - 9	21	(5.2%)	40	(10.0%)
10 - 12	40	(10.0%)	47	(11.7%)
13 - 15	282	(70.3%)	103	(25.7%)

In summary, the subjects in the study were generally similar to the cross-section of adolescent subjects from the same Vancouver and Victoria settings participating in other studies. There were slightly more female than male subjects and most were 14 years old at the time of the study. They attended three Vancouver and three Victoria secondary schools and their school performance was generally in the average or high-average range. Three-quarters of the subjects lived with two parents and one to three siblings. The sample was equally represented by subjects who were the oldest, youngest and middle in the sibship. Half of the subjects had lived their entire lives in Canada with approximately half of the group remaining in the same neighbourhood. The most remarkable characteristic of this sample was its multicultural nature, representing 49 countries and 26 languages.

Pet Demographic Information

Presence of Household Pets

Within the group of 401 subjects, 226 (56.4%) reported having one or more pets currently in the home. The remaining 43.6% of the sample had no pets. This is somewhat higher than the overall statistics which report the incidence of pet ownership to be approximately 50% of urban households in the United States and Britain (Beck, 1983; Rowan, 1992b) and approximately 50% of all households in Canada (Bibby & Posterski, 1992). However, it is well recognized that households with children, especially between the ages of 6 and 15, are more likely to have pets than those without children (Endenburg, Hart, & de Vries, 1990). A description of the pet demographics follows.

Types of Pets

Of the 226 subjects with pets in the home, 22.2% reported having several pets of the same species. Examples of this are the subjects who reported having two cats or sixteen fish. One subject reported having two adult and ten baby rats. Approximately 39% of the remaining sample reported having several pets of different species. Another 39% of the population reported having only one pet.

Identified Favorite Pet

Subjects who reported having more than one animal at home were asked to answer the remainder of the questions on the Adolescent and Pet Characteristics Questionnaire with regard to their identified favorite pet. It was assumed that subjects who had only one pet answered all questions in regard to that single pet. Four subjects did not answer this question; however, they did respond to other questions within the pet characteristics section so it is assumed that they had a pet in the home and merely overlooked the question. Of the types of single pets identified, 32% were dogs, 31.1% were cats, 11.7% were fish, 11.3% were small mammals, 7.2% were reptiles or amphibians, and 6.7%

were birds (see Table 10). The categories of small mammal and reptile / amphibian were composed of the animals listed in Table 10.

Table 10

Favorite Pet Categories and Types

Category	Pet Owning Subjects (N=222)		
	Number	Percentage	Types
Bird	15	6.7%	-
Cat	69	31.1%	-
Dog	71	32.0%	-
Fish	26	11.7%	-
Small Mammal	25	11.3%	guinea pig (1) hamster (11) mice (3) rabbit (6) rat (4)
Reptiles and Amphibians	16	7.2%	iguana (1) newt (2) snake (1) turtles (12)

These findings are consistent with those of other studies involving youth and pets (Endenburg et al., 1990) but somewhat lower in dogs reported as pets than in other studies (Kidd & Kidd, 1990b). This may be partially explained by the fact that the subjects in the study were urban dwellers and there is a trend towards cat ownership (58% increase in the past ten years) rather than dog ownership (10% increase in the past ten years) in urban environments (Rowan, 1992b).

Pet Names

Some pet theorists suggest that the type of name given to the pet may reflect the type of role the pet owner expects the pet to assume within the household (Fogel, 1983). The pet names provided by 91% of the subjects are categorized with examples in Table 11.

Table 11**Pet Name Categories and Examples**

Category	Pets (N=205)		Examples
	Number	Percentage	
Human	92	44.9	Includes familiar first names and surnames
Humourous	11	5.4	Biccardi, Cat (for a dog), Moose (for a hamster), Scat, Soup (for a turtle), Stew (for a rabbit), T-bone, Yertle
None	27	13.0	The majority of fish owners reported not naming their pet
Physical Characteristics	45	22.0	Bear, Blackie, Bubbleface, Chiquita, Diamond, Ginger, Jolie, Kiwi (for a newt), Pee Wee, Rabbit, Snowball, Spud, Yeller
Social or Behavioural Characteristics	19	9.3	Airwalk, Buddy, Cuddles, Eternity, Goofball, Hugs, Kisses, Spunky, Wacky, Undertaker (for a snake)
Miscellaneous	11	5.4	Brax, Chichu, Cita, Csopi, Eleven, Mandu, Marmaul, Neko

In this study, the use of pets as coping mediators in the emotional reappraisal of certain situations might lead one to expect that the pets would be given either human names or names reflecting emotional or behavioural traits. The name may reflect the expectation that the pet will act in an emotionally supportive manner or even as a surrogate human.

In fact, almost 45% of the subjects reported using a human name for their pet, 22% described their pet by naming it with a physical characteristic, 9.3% used a social or behavioural trait as the name of their pet, 5.4% used obvious humour when naming their pet, 5.4% named their pet by a word that could not be categorized usually because it reflected another language or an unusual concept,

and 13% reported not having a name for their pet. This last group was largely composed of fish or bird owners. It is possible that the 9% of the pet owners who did not answer this question may not have had a name for their pet as many of them were also fish or bird owners. These names suggest that just over half the subjects may have named their pet with regard to possible emotional coping strategies.

Duration of Pet Ownership

More than half of the subjects (66.8%) reported having their pets for three years or less, with the largest proportion of the group (19%) having had their pets for less than one year. The remaining 33.2% of the subjects with pets reported having their pets anywhere from four to fifteen years.

The framework for the study implies that the coping mediator must be present in order to be involved in the emotional reappraisal. This is the case for the subjects in this study who currently owned pets. The study only accounts for pets presently owned by the subjects. However, there may be instances in which subjects had had a pet in the past and learned that walking the dog, for example, allowed them to cope effectively with emotional stress. The subjects may no longer have their pets; however, they may be still using the coping mechanism which originated with pet ownership. In this example, however, the original coping mediator of pet ownership has been replaced within the framework by walking.

As the majority of subjects were relatively recent pet owners, these demographic data are best viewed while concurrently examining the reasons for acquiring the pets (most of which were acquired as the subjects entered adolescence).

Reason for Acquiring Pet

The majority of the subjects (51.5%) reported acquiring their pet for no specific reason. Other subjects cited reasons behind acquiring their pet such as replacing a previous pet (16.2%), as a gift (14.8%), having found it (7.9%), because they wanted it (6.9%), and to replace a family member who died (0.9%). Two subjects reported getting a pet for fun and entertainment (0.9%). An additional two subjects related other reasons such as "a fight between Mom and Dad" and "we moved." These findings indicate no specific pattern as to the reasons for acquiring the pet. It could be that this may have been part of a parental decision and that the subjects were not generally privy to the information. The fact that most of these pets were acquired as the subjects entered adolescence (and many of them may have had siblings who were already adolescents), and that many of the pets were generally given human names, may imply they were acquired to act as a non-judgemental support for the subjects going through a period characterized by change such as the loss of their childhood, or of a family member, or previous pet. The coping conceptual framework demonstrates how this support may occur through the process of emotional reappraisal with the use of a mediating variable such as the pet.

Primary Ownership of Pet

As Figure 3 indicates, the majority (43.4%) of subjects who responded to this question, reported that the pet was owned by the whole family. The second largest group of subjects (35.6%) were the primary owners of the pets. Finally, 14.2% of the subjects reported their parents as being the primary pet owners in the family, and 6.8% reported siblings as being the primary pet owners. Of the 226 subjects with household pets, 7 (3%) did not respond to this question. These results were similar to those of Paul and Serpell (1992b) who noted primary pet ownership among adolescents to be somewhat lower than family pet ownership.

If the subject is to use the pet as an emotional coping mediator, this would best be accomplished if the subject has frequent contact with the pet. This is

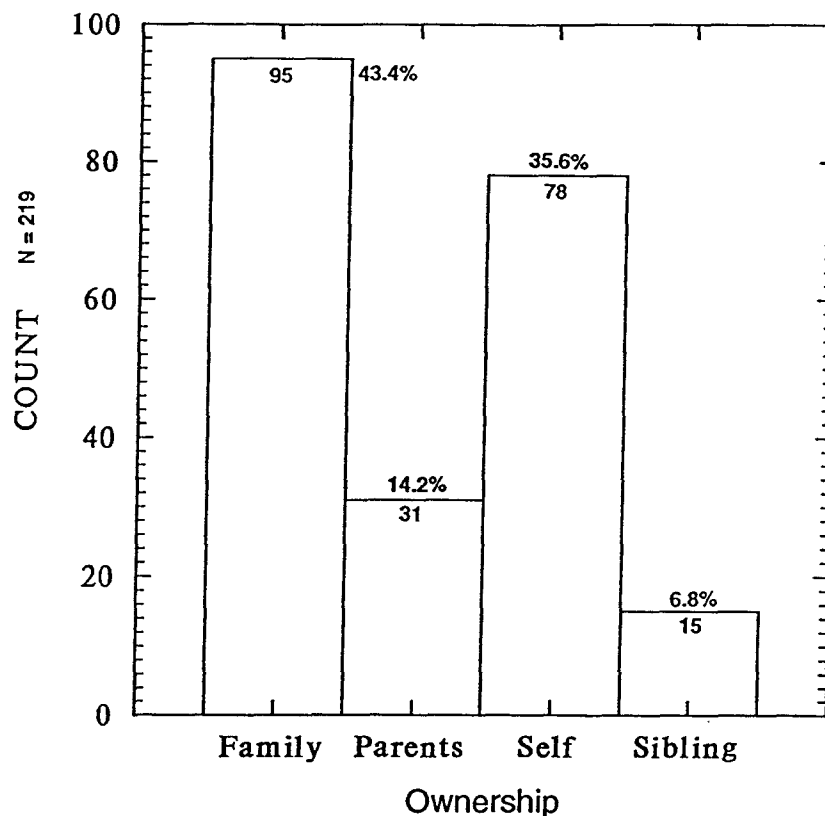


Figure 3. Pet Ownership

most likely to occur if the pet is solely owned by the subject or if the subject is a part of family ownership of the pet. The presence of, for example, gerbils in a sibling's bedroom, would not be expected to provide the coping mediation necessary to effect emotional change unless the subject was frequently involved in interactions with these pets. As well as interaction, pet ownership involves responsibility for providing care for the animal. In addition, there is often a sense of prestige which may accompany ownership of a pet.

Pet Attachment

The subjects reported perceived degree of attachment to their pets on a five point Likert-type scale from 1 to 5. On this scale, a rating of 1 was indicative of no attachment and 5 was indicative of extreme attachment (see Appendix A).

Only 8 of the total 226 subjects with household pets did not respond to this question. As indicated in Figure 4, of the subjects who did respond, 25 subjects (11.5%) reported that they were not at all attached to their pets. From a brief

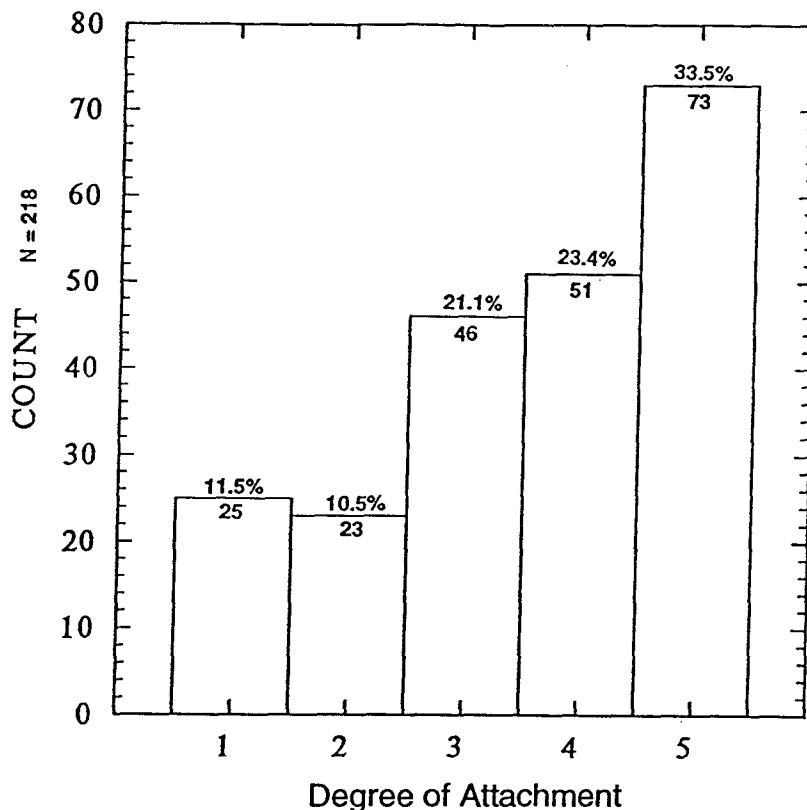


Figure 4. Perceived Attachment to Pet

review of the completed instruments, the majority of these subjects were fish owners. Twenty-three subjects (10.5%) stated that they were only somewhat attached to their pets. Forty-six subjects (21.1%) rated their attachment as being at the midline point on the scale. The remaining half of the subjects reported that they were either very (23.4%) or extremely (33.5%) attached to their pets. In order for the pets to be used as coping mediators it may not be entirely necessary for the subjects to be attached to them. If they are attached, pets may be utilized as confidants with whom adolescents may voice concerns and explore possible solutions. If the subjects are not attached to the pets, they may still be used as emotional coping mediators. However, in this case, the pets may

become focal objects for the projection or displacement of the subjects' emotions (both positive and negative) through methods such as confrontation, distancing, self-control, planful problem solving, avoidance, and positive reappraisal (Pekar, 1992; Puskar & Lamb, 1991).

In summary, the subjects with pets in their homes displayed a broad range of characteristics. Those with pets were most likely to have either one pet or many different species of animals in their household. The types of pets were generally one-third dogs, one-third cats, and one-third birds, fish, reptiles, amphibians and small mammals. Just under half of the subjects had human names for their pets. The remainder named their pets a variety of humorous names, names depicting physical or social/behavioural characteristics, or unknown names in their primary language. Well over half of the subjects had had their pets for three years or less and most had acquired them for no particular reason. Three-quarters of the subjects reported either themselves or their whole family as the primary pet owner. Finally, approximately half of the subjects felt they were very or extremely attached to their pets.

Findings Related to Research Questions

Question One : Prevalence of Depression

The overall scores on the Center for Epidemiologic Studies Depression Scale (CES-D) were used to measure the prevalence of depression in the study group. The scoring with the CES-D is directly related to the level of depressive symptoms. The scores ranged from 0 to 53 out of a potential 60 points. The mean score was 17.0, the median was 16.0, and the standard deviation was 10.2. There was a difference in depression scores between adolescent females (mean score 18.7) and males (mean score 15.1).

Of the 401 subjects in the study, 194 (48.4%) obtained scores of 15 or below on the CES-D. These scores were interpreted as indicating no depressive symptoms. Another 166 subjects (41.4%) scored between 16 and 30 and were classified as being mildly depressed. A third grouping of 35 subjects (8.7%) scored between 31 and 45 on the CES-D. These subjects were classified as being moderately depressed. Finally, 6 subjects (1.5%) scored 46 or above on the CES-D. These individuals were classified as severely depressed, (see Table 12). Thus, approximately half of the adolescents had some feelings of depression; however, only about 10% of the overall population scored above 30 on the CES-D and could be rated as moderately or severely depressed.

Table 12

Categories of CES-D Scores

Score	Category of Symptoms	Number (N=401)	Percent (%)
0 - 15	No	194	48.4
16 - 30	Mild	166	41.4
31 - 45	Moderate	35	8.7
46 - 60	Severe	6	1.5

These findings are similar to those of previous studies which reported mean values on the CES-D for adolescents of 16 (Manson et al.), 17.1 to 20.4 (McDermott et al., 1990), 18 (Pronovost et al., 1991), or 19 (Clarke et al., 1990). Each of the studies utilized a different "cut-off" point to indicate the presence or absence of depressive symptoms. The study in which the same cut-off point of >15 was used found prevalence rates similar to those in this study (McDermott et al., 1990). Studies using other cut-off points demonstrated prevalence rates for depression among adolescents similar to those found in the moderately (8.7%)

and severely (1.5%) depressed categories of this study (Clarke et al., 1990; Pronovost et al., 1991). The results of this study indicate that 10.2% of the subjects could be considered to be depressed, whereas 41.4% of the subjects clearly have some mild symptoms of depression and 48.4% of the subjects have no depressive symptoms. In relation to the study framework, clearly 10% of the subjects are not coping effectively to reappraise the depressive emotions which in adolescence may be a result of numerous environmental and some biochemical sources. Despite the multicultural nature of the sample, these findings are similar to those in studies of more homogeneous ethnic populations. Therefore, although ethnicity was not a variable considered in this study, based on comparisons with other studies, it does not appear to be a confounding variable which may have affected the results. Both genders were represented in all of the CES-D groupings. Males represented a higher proportion of those scoring in the not depressed or mildly depressed categories, whereas females represented a higher proportion of those scoring in the moderately or severely depressed categories.

Question Two: Relationship Between Gender, Pet Presence and Depression

The results of the two-way fixed effects ANOVA examine the relationship between gender and depression, pets and depression and the combined relationships of gender with pets and depression (see Table 13). With regard to the first correlational analysis, the results demonstrated a significant relationship between gender and level of depression among the subjects ($p = 0.000$). Further Tukey-Kramer post hoc analysis reveals that the female subjects were significantly more depressed than their male counterparts ($p = 0.001$). As the CES-D instrument has established reliability and validity across both genders (Radloff, 1977), it can be assumed that this difference in scores is truly

representative of the population sampled. This gender difference has been noted by other researchers (Baron & Perron, 1986; McDermott et al., 1990; Reinherz, 1991, Schonert-Reichl & Offer, 1992; Simeon, 1989; Weissman et al., 1987).

Table 13

ANOVA Summary Table for Gender, Pets, and CES-D Scores (N=401)

<u>Source</u>	<u>Sum-of-Squares</u>	<u>Degrees Freedom</u>	<u>Mean-Square</u>	<u>F-Ratio</u>	<u>P</u>
Gender	1.055	1	1.055	13.240	0.000
Pets	0.489	1	0.489	6.142	0.014
Pets*Gender	0.149	1	0.149	1.874	0.172
Error	31.636	367	0.080		

Schonert-Reichl & Offer (1992) discuss several possible reasons why female adolescents have higher prevalence rates of depressive symptoms than do males. One reason suggested is that male adolescents tend to exhibit depression in the form of externalized behaviours such as delinquency and aggression whereas female adolescents express their disturbance in an inward fashion. Hence, the CES-D tool may be inaccurate for use with male adolescents as it emphasizes low mood and low energy symptoms as indicators of depression rather than high energy and destructive behaviour. In addition, some studies indicate that females report more symptoms than do males, and also that expressing concerns is more acceptable for females than for males (Schonert-Reichl & Offer, 1992).

Other influences which might explain the differences between prevalence and severity of female and male depression symptoms are those of gender identification and self-esteem. Schonert-Reichl and Offer (1992) report that during puberty, females and males begin to strongly identify with the extremes of masculine and feminine stereotypes. Research has demonstrated that

androgyny and masculinity are linked with higher levels of self-esteem and more effective coping mechanisms (Schonert-Reichl & Offer, 1992). Therefore, adolescent females suddenly confronted with extreme feminine stereotypes are more likely to have lower levels of self-esteem than their male peers. In fact, among the adolescents in a recent study, Vancouver and Victoria females were two and four times, respectively, more likely to have low self-esteem than males, and males were almost twice as likely to have higher self-esteem than females (McCreary, 1993a, 1993b).

Physical changes during puberty have also been reported to be more distressing to females than to males (Schonert-Reichl & Offer, 1992). Of the Vancouver and Victoria adolescents surveyed, 76% and 83%, respectively, measured within an average / healthy body mass ratio (McCreary, 1993a, 1993b). However, females were two to three times more likely to be dissatisfied with their weight than males (McCreary, 1993a, 1993b). Given the supporting data from other adolescent surveys in the Vancouver and Victoria population (McCreary 1993a, 1993b), it is likely that the differences in depression prevalence among the females and males in this study are a result of actual differences in the population rather than instrument selection.

With regard to the second relationship of this ANOVA correlational comparison, the analysis also revealed a significant relationship between the presence of pets in the home and lower levels of depression among the subjects ($p = 0.014$). Such a result is consistent with the reports in the anecdotal reviews indicating improved emotional well-being among those children and adolescents with household pets (Albert & Bulcroft, 1988; Bibby & Posterski, 1992; Covert et al., 1985; Davis & Juhasz, 1985; Paul & Serpell, 1992a; Poresky, 1990; Robin & ten Bensele, 1990). The relationship between the presence of household pets and lower levels of depression in adolescents found in this study is precisely the

opposite of that found by Stallones et al. (1990) in a population of adults responding to the same instrument. It is likely that the reason for this discrepancy is the reactive nature of depression in adolescents as compared to the endogenous nature of adult depression (Simeon, 1989). As a result, pets in adolescent households may be viewed in the context of an emotional coping mediator as described in the conceptual framework.

The third and final portion of this ANOVA analysis indicates that there is no significant difference in the interrelatedness among gender, pets and level of depression for the sampled subjects ($p = 0.172$). Males with pets scored the lowest on the CES-D instrument (indicating an absence of depressive symptoms) followed by males without pets, females with pets, and then finally females without pets. Despite the non-significance of these findings, it quite plausible that males and females utilize the presence of pets as emotional mediators in different ways.

Question Three: Relationship Between Pet Ownership and Depression

The third research question was answered using a sub-set of the overall CES-D scores for those 219 individuals who had pets. The ownership variable has four distinct categories of family, parents, sibling, and self. There is a significant relationship ($p = 0.023$) between pet ownership and lower levels of depression among the subjects. Post hoc Tukey-Kramer analyses of the findings reveal the basis for this conclusion to be in the comparison between those subjects who owned their own pet and those subjects who were part of a family ownership of the household pet. Individuals who had sole ownership of the household pet were significantly more depressed than those who were part of a shared family ownership ($p = 0.028$). There was no significant difference in the

depression scores for those whose household pets belonged to parents or siblings as compared to either sole ownership or family ownership.

The interpretation of these results involves addressing the value systems of the adolescent population. Bibby and Posterski (1992) have established that "values that incite the spirit of individualism dominate what is important to young people" (p. 289). The valued goals of "friendship" and "being loved" have dropped behind "freedom" in comparable Canadian teen polls of 1984 and 1992. In addition, the percentage of young people who value "working hard" has decreased from 69% in 1984 to 49% in 1992 (Bibby & Posterski, 1992). Given this value system, the findings become clearer. Of all those subjects with pets, those who had primary ownership of the pet were the most depressed and those with familial ownership were the least depressed. Values of adolescents have changed since Levinson (1970) wrote "caring for a pet provides an opportunity for the child to toughen his ego...acceptance of responsibility for the care of a pet will eventually lead to acceptance of responsibility for establishing meaningful, satisfying human relationships" (p. 1763). It is possible that the freedom from total responsibility for the care of the pet, yet the recognition of shared ownership of the pet within the family was the most desirable situation for the mental health of the subjects.

Indeed, Stallones et al. (1990) caution that pet ownership may create another stressor for a depressed person rather than a facilitator to decrease emotional distress. Such was the case with the subject who responded to the questions of type of pet, pet name, primary ownership, reason for acquisition, and attachment with the following, "mouses...male: Hugs Eternity and female: Kisses Obsession....me....I begged for it and it was a big mistake!.....not attached" (subject #217). The names given to these mice imply that there may have been some behavioural expectations of affection from the mice; however, at

the time of the study, these expectations were clearly not being met. This could have been a result of the responsibility involved with caring for such pets.

Considering the fact that the majority of subjects' pets were given recognizable human names, part of their role could be interpreted to be a "family member" which is common for pets in urban settings (Albert & Bulcroft, 1988; Fogel, 1983). As a "family member" with joint ownership by all members of the family, the pet in this circumstance is in a pivotal position to act as a vector for intrafamilial communication (Albert & Bulcroft, 1988; Schaufl & Bergler, 1992), and as a buffer or recipient of emotions (Cain, 1991). Pets that are jointly owned can represent a shared family interest (Paul & Serpell, 1992b; Schaufl & Bergler, 1992), thereby allowing adolescents to have the security of the family unit without being tied to the family as they strive for independence. As indicated by Robin and ten Bensel (1990), the pet is the ideal transitional object for the adolescent.

These findings indicate the inappropriateness of implying that obtaining pets for depressed adolescents may help to "cheer them up," as the adolescents in this study who owned their own pet were the most depressed among those with household pets. Rather, the usefulness of obtaining a pet for the family when one of its adolescents is depressed may be worthy of consideration. It should be noted, however, that several authors caution against suggesting pets to severely disturbed families, as the pet may be harmed or threatened as an abusive strategy directed at the child (Levinson, 1969; Robin, 1984; Robin, ten Bensel, Quigley, & Anderson, 1981). Although having pets in the home is more highly correlated with an absence of depression than not having pets, the least favoured situation regarding adolescent depression appears to be for the adolescent to own the pet.

Question Four: Relationship Between Pet Attachment and Depression

The final research question was also answered using a sub-set of the overall CES-D scores for the 218 individuals who had pets. This variable has five distinct categories of not attached, somewhat attached, attached, very attached, and extremely attached.

The analysis indicates that depression levels are lower with increased perceived attachment to the household pet; however, the relationship is not statistically significant. This finding is difficult to interpret. First, one must assume that the report of the subjects' perceived level of attachment (on a Likert-type scale from 1 to 5) adequately represents their actual perception of attachment. It is important to note that this report does not attempt to represent actual attachment as it is recognized in the literature as being a highly complex concept (Johnson, Garrity & Stallones, 1992; Stallones et al., 1990; Zasloff, 1992).

The absence of any significant difference between those who reported being extremely attached to their pets and those who reported not being attached to their pets has provided an alternate view of the concept of attachment to that reported by other researchers (Friedmann, 1990; Melson & Taylor, 1990; Michaels, 1989). The results receive support from the work of Albert and Bulcroft (1988) who report, "Pet ownership is particularly high among families with grammar-school-age and teenage children. Yet, attachment to pets is relatively low during this period." (p. 550). Kidd and Kidd (1990b) report that high school students indicate greater love for their pets than do elementary school students. However, the constructs of love and attachment can be only loosely compared. Similar to the results of this study, Zasloff (1992) determined no difference in degree of loneliness in owners according to attachment to pets.

These findings could be indicative of the mediating role which pets may provide in families with adolescents. It may be possible that adolescents receive emotional support from sources outside the family system (Bibby & Posterski, 1992) and, therefore, the household pet is used to meet intrafamilial communication needs rather than individual emotional needs. In the context of the conceptual framework, it is possible that the pet may serve as a coping mediator for emotional reappraisal through processes such as emotional projection, and displacement. The adolescent could utilize the pet (which, for example, s/he may hate to walk or groom) as an outlet for frustration and anger s/he may have for authority figures and/or peers. By expressing negative emotions through the pet, the adolescent avoids internalizing these feelings as well as any potential social consequences should s/he express these feelings to the source of the conflict. These mechanisms of pet utilization would coincide with the adolescent coping methods of confrontation, avoidance, distancing, and self-control discussed by Puskar and Lamb (1991). Subject #217 who was cited earlier as not being attached to the mice she begged to acquire, obtained a CES-D score of 4 (no depression). It is important to note that correlation does not imply causation and these results could simply be due to the fact that non-depressed individuals tend to acquire pets and whether they are attached to those pets is irrelevant.

Summary

The sample in this study was equally divided between males and females, multicultural in nature, generally born in Canada, and was living at home with two parents and some siblings. The subjects were either average or high-average in their scholastic abilities. Pet owners and non-pet owners were equally represented in the sample. Female subjects were more depressed than males, and non-pet owners were more depressed than pet owners. Subjects who

owned their own pet were more depressed than those in homes where the pet was owned by the entire family. In addition, there was no relationship between perceived attachment to the pet and level of depression among the subjects. This suggests that the manner in which the subjects used their pets as emotional coping mediators occurred in the context of complex family dynamics and may not necessarily have reflected a supportive bond or attachment between adolescent and pet.

Chapter Five

Summary, Conclusions, and Implications for Nursing

Summary

The purpose of this study was to describe the prevalence of depression among a group of adolescents and to examine the relationships between depression and presence of pets in the home, primary ownership of pets and perceived degree of attachment to the pets by the subjects. Subjects were 401 grade nine males and females attending three Vancouver and three Victoria secondary schools over the period from October 1992 through January 1993. The instruments utilized to gather the data were the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) and the Adolescent and Pet Characteristics Questionnaire, developed by the researcher. The subjects completed the instruments anonymously in classroom settings. The data were transformed using logarithmic $10(x+1)$ data transformation techniques to ensure normality and linearity. The transformed data were analyzed using the SYSTAT 5.01 computer programming for two-way and one-way fixed effects analysis of variance (ANOVA) and subsequent Tukey-Kramer post hoc analysis of pairwise comparisons as necessary.

The majority of the subjects surveyed were fourteen years old, had average or high-average school performance, and generally lived at home with two parents and one to three siblings. The sample was definitely multicultural in its representation. Most of the subjects were born in Canada; however, approximately two-thirds of the subjects reported having parents who were not born in Canada. Indeed, the sampled group included families which originated in forty-six different countries. Only half of the subjects reported English as the primary language used at home. Twenty-seven different languages were

reported to be used by the survey subjects. Just over half of the subjects had household pets at the time of the survey.

Approximately two-thirds of those having household pets reported owning dogs or cats, with the remaining third of the subjects owning a variety of birds, fish, reptiles, amphibians and small mammals. Approximately half of the subjects had human names for their pets and had had their pets for only three years or less. Most of the subjects acquired their pets for no particular reason. Three-quarters of the subjects reported either themselves or their whole family as the primary pet owners. Finally, approximately half of the subjects felt they were very or extremely attached to their pets.

Of the Vancouver and Victoria grade nine students sampled, 48.4% demonstrated no depressive symptoms, 41.4% demonstrated what were classified as mild symptoms of depression, 8.7% demonstrated moderate symptoms of depression, and 1.5% of those sampled indicated severe depressive symptoms. Findings indicated that female adolescents were significantly more depressed than their male counterparts ($p = 0.001$) with mean scores of 18.7 and 15.1, respectively.

The findings also revealed that those subjects with pets in the home were significantly less depressed than their counterparts without household pets ($p = 0.014$). There was no significant relationship between gender and pet ownership combined with level of depression ($p = 0.172$). An analysis of primary pet ownership indicated that subjects who owned their own pets were significantly more depressed on a whole than those in homes where the pet was owned by the entire family ($p = 0.028$). Perceived degree of attachment to the household pet showed no relationship with depression ($p = 0.725$).

Conclusions

The results of this study indicate the following five conclusions. The grade nine adolescents in this study demonstrated depression prevalence rates comparable to those of other Canadian adolescents. Symptoms of depression were much higher among female subjects than among males. The presence of pets in the household was directly related to decreased prevalence of depression. The strongest relationship between household pets and absence of adolescent depression appears to occur when the pet is owned and cared for by the entire family. The conceptual coping framework as proposed by Folkman and Lazarus (1988) was useful in demonstrating the process by which the presence of pets may influence the outcome measurement of depression in this sample of adolescents.

Implications for Nursing

The Canadian Nurses Association (1991) has officially recognized that there is a lack of information and resources for mental health promotion and illness prevention particularly regarding conditions encountered in adolescence. The Association's (1991) recommendations for reform include amongst others to:

- a) encourage research on the value of natural support networks and self-help programs in caring for persons with emotional or mental health problems;
- b) develop proposals for the implementation of prevention programs;
- c) encourage research to identify risk factors and groups at risk by virtue of either psychosocial or biological events;
- d) support policies and programs that enable infants, children, and adolescents to accomplish normal developmental tasks;

- e) support programs that strengthen the ability of individuals, families, and communities to cope or successfully negotiate situational stress throughout the human life cycle (p.28-29).

These recommendations are consistent with the direction provided by Health and Welfare Canada (1988) which emphasizes a commitment to generating new interdisciplinary knowledge in the search for mental illness prevention and mental health promotion practices in enhancing people's capacity to cope with stress.

As demonstrated in this study, the concept of human and pet interaction has a positive relationship to the emotional health of urban adolescents. The incorporation of pets as an environmental influence in the coping practices and health behaviours of individuals and families has implications for both nursing practice and research.

Nursing Practice

Florence Nightingale (1860 / 1967) noted the positive effects of a pet owl on the health of those for whom she was providing nursing care. As indicated in the literature review for this study, nurses have utilized a variety of different practice routes to include pets in the provision of health care. Most nursing models contain the components of person, health, environment, and nurse in their configuration (Reihl & Roy, 1980). In most totality systems models for nursing, the pet assumes the position of an external system, stimulus, therapy, resource, or force within the model (McMahon, 1991). For those utilizing a person-environment simultaneity paradigm such as that of Rogers (Reihl & Roy, 1980), the pet would be viewed as "a part of the sphere of health generating energies, forces, and stressors...as a vital, often symbiotic or energizing component of the individual's state of being" (McMahon, 1991). Regardless of where the pet is viewed in the system, there exist no models for nursing that do

not have a place for the inclusion of pets and their potential influence in promoting the health of individuals.

In a country where more than 50% of the homes with children also have household pets, the inclusion of pet relationships in the assessment of the emotional health of adolescents should occur at all phases of the nursing process. In order to complete a comprehensive view of the biological, psychological, social and spiritual aspects of any individual or family system, an acknowledgement of the potential influence of household pets should be included when assessing coping behaviours, supports, and forces. This study has demonstrated that almost 10% of the adolescents surveyed had symptoms of moderate or severe depression, and that the presence of pets in the household is related to decreased prevalence of depression. This finding alone should encourage nurses to incorporate an assessment of pet presence, ownership and characteristics when caring for the adolescent client. By asking about pets in the home, the nurse may open lines of communication into traditionally unspoken areas of support which the patient may view as important. This will facilitate the establishment of rapport as well as identify potential coping mediators for the individual in regard to emotional reappraisal.

The planning of any nursing care must be based on individualized assessment and directed towards client-specific interventions. Nurses can devise strategies to include clients' pets in the establishment of coping mediators for selected adolescents at risk for mental health concerns. This practice would be in keeping with theory-directed nursing practice, as well as representing movement towards the new vision for innovative, consumer-focussed mental health promotion and illness prevention care. The practice of including pets in the mental health care of adolescents would likely also be welcomed by clients and their families, the exceptions being those families with adolescents who were

already severely depressed (Stallones et al., 1990) or those families where there may be situations of abuse (Robin, 1984; Robin et al., 1981). The findings of this study also direct the nurse to incorporate the entire family when working with the adolescent and pet, as the least depressed adolescents were from those households where pet ownership was an acknowledged family venture. It is also important to remember, however, that even those who were not particularly attached to their pets, derived benefit from the animals in the home. Therefore, planned care may include the involvement of animals to which the client does not even seem to be particularly attached.

Once the plans are made for integration of pets into the mental health care of the adolescent, implementation should proceed with the objectivity and continual evaluation and reassessment required for any nursing intervention. The descriptive parameters of nursing care applications of human - pet - health interactions must be documented to add to the existing knowledge base about this relationship. It is important that all interventions be client-focused and family-focused and not the result of a program designed to meet nursing's goals.

Evaluation of the interventions should focus on the health or illness parameters of the adolescent as well as identifying the role which the pet played in any change in health status. The use of familiar conceptual frameworks such as coping, social support, family systems, attachment, loss, pain, stress management, pain management, and adaptation may assist by providing guidance as to the process by which the pet may influence the adolescent's health system. The use of a model for nursing and conceptual framework for the role of the pet within the adolescent's system will provide both direction for nursing care and facilitation of growth in pet-related coping behaviours for the client. The systematic inclusion of pet assessment in the parameters of

individualized health care will add to the knowledge of pet and human health interactions upon which nursing care can be based.

Nursing Research

With respect to nursing research, this study is in keeping with the recommendations of the Canadian Nurses Association (1991) regarding further study into the value of natural support systems to promote mental health, the identification of risk factors for mental illness, and the exploration into the establishment of coping resources for individuals and families. The study provides empirical validation of much of the previous anecdotal nursing literature. The findings provide a base for further exploration into the relationship between pets and the emotional health of urban adolescents. The first of further studies could be a replication study using an alternate instrument to measure depression in the adolescent population. Such an exercise would validate the findings of this study and the use of this tool with such a culturally diverse adolescent population.

Qualitative studies could be undertaken to determine the meaning of pets for adolescents, the specific role of pets as coping mediators, the role of pets in families with adolescents, and the role of pets in first generation Canadian families with adolescent members.

Other studies could involve pre-test, post-test control group designs of families with adolescent members who had acquired a family pet for the first time. This would help to determine causal relationships between pets and the emotional health of adolescents and/or families.

Through the process of studying the prevalence of depression in urban adolescents and pets as a potential coping mediator, this study has demonstrated that the emotional relationship between humans and animals which dates back 12,000 years is still active in regard to the mental health of

urban adolescents. The credence that Florence Nightingale gave to the benefit of pets in the care of the sick over 100 years ago has relevance for the future direction of mental health nursing. The relationship between people, pets, and health can have a more central role in health care in the future.

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Appendix A
Adolescent and Pet Characteristics Questionnaire

Appendix B
Center for Epidemiologic Studies Depression Scale

Household Pets and Depression Among Urban Adolescents
Center for Epidemiological Studies Depression Scale

For the following statements, circle the number for each statement which best describes how often you felt this way **DURING THE PAST WEEK**.

	Rarely or none of the time	Some or a little of the time	Occasionally or a moderate amt. of time	Most or all the time
<i>DURING THE PAST WEEK:</i>				
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I did not feel like eating; my appetite was poor.	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4. I felt that I was just as good as other people.	3	2	1	0
5. I had trouble keeping my mind on what I was doing.	0	1	2	3
6. I felt depressed.	0	1	2	3
7. I felt that everything I did was an effort.	0	1	2	3
8. I felt hopeful about the future.	3	2	1	0
9. I thought life had been a failure.	0	1	2	3
10. I felt fearful.	0	1	2	3
11. My sleep was restless.	0	1	2	3
12. I was happy.	3	2	1	0
13. I talked less than usual.	0	1	2	3
14. I felt lonely.	0	1	2	3
15. People were unfriendly.	0	1	2	3
16. I enjoyed life.	3	2	1	0
17. I had crying spells.	0	1	2	3
18. I felt sad.	0	1	2	3
19. I felt that people disliked me.	0	1	2	3
20. I could not get "going".	0	1	2	3

Appendix C

Letter of School Consent and Consent Form



School of Nursing
T. 206-2211 Wesbrook Mall
Vancouver, B.C. Canada V6T 2B5
Fax: (604) 822-7466

Household Pets and Depression Among Urban Adolescents

Dear

Your consent is requested to enable a sample of grade nine students from your school to participate in a brief questionnaire survey to take place within school hours. This survey has been approved by the Vancouver and Victoria School Boards. It addresses the important issue of depression among our adolescent population. Depression is known to be associated with increased risks of dropping out of school, substance abuse, delinquency, and suicide.

This survey will anonymously survey grade nine students in regard to certain demographic characteristics (the presence of household pets being a major focus) in addition to measuring their current level of depression (if any). The survey takes approximately 10 minutes and would be ideally administered by myself in a pre-arranged portion of class time. (Homeroom, physical education, or health classes are preferable to increase the likelihood of student attendance.)

As the questionnaire is anonymous and will be collected by myself, student confidentiality will be ensured. The analysis of this data may potentially reveal situations of a severely depressed student(s). Should this be the case in your school, I will contact you with this information as well as resource referrals for mental health education and consultation for your students as a group.

The completion of this project will contribute greatly to the understanding of the incidence and characteristics of adolescent depression among grade nine students in selected Vancouver and Victoria high schools. I thank you in advance for your consideration and support in this regard. Should you wish to give your consent, please sign the attached form and retain this page for your records. I will contact you by telephone within the next couple of weeks to arrange a time to meet with you and answer any questions you may have and pick up your consent form. Please do not hesitate to call me at the University of British Columbia, School of Nursing (822-7486). Thank you once again, I look forward to meeting you.

Respectfully,

Molly Nevin-Haas, R.N., B.S.N.
Graduate Student

Dr. Marilyn Willman, R.N., Ph.D. & Gloria Joachim, R.N., M.S.N.
Faculty Advisors, School of Nursing
University of British Columbia (822-7417).



School of Nursing
T. 206-2211 Wesbrook Mall
Vancouver, B.C. Canada V6T 2B5
Fax: (604) 822-7466

Household Pets and Depression Among Urban Adolescents
A questionnaire survey by Molly Nevin-Haas

Signed School Consent

I have read the attached information sheet and hereby give / do not give (please circle)
my consent to have the above study take place at

_____ School. I understand that
individual student and parental consent will be obtained by the researcher prior to surveying the
students selected. I also understand that I may withdraw permission for this school to participate
in the study at any time before or during the course of the sampling without experiencing any
negative ramifications from the researcher.

Signed,

(print name)

(position)

(date)

Appendix D

Letter of Parental Informed Consent and Consent Form



School of Nursing
T. 206-2211 Wesbrook Mall
Vancouver, B.C. Canada V6T 2B5
Fax: (604) 822-7466

**Household Pets and Depression Among Urban Adolescents
Letter of Informed Consent**

Dear Parent:

Your consent is requested in enabling your daughter or son to participate in a brief questionnaire survey to take place at their high school.

This survey has been approved by the Vancouver and Victoria School Boards and addresses the important topic of teenage depression. It will determine the level of this occurrence among our young people as well as identify its relationship with a selection of individual characteristics. The presence of pets in the home will be the main focus of this survey. However, even if you have no pets in your household your child's opinion is important to this study.

Please be aware that the questionnaire is completely anonymous. **Your child's name will not appear on the questionnaire.** The entire survey will take no longer than 10 minutes and will be completed during an allotted portion of school time. Should you choose not to allow your child to participate in the questionnaire survey, there will be no impact on your child's education or treatment in class. Should you give your permission for your son or daughter to participate in the survey, your child will also be given an opportunity on the day of the survey to consent to participate. Either decision you or your child makes will not affect his or her education or treatment in class.

Please sign the attached consent and have your son / daughter return it to school. Alternately send a note indicating your consent with your child to school. Retain this sheet for your information. If you have any questions regarding this study, please do not hesitate to call me at The School of Nursing, University of British Columbia, (822-7486).

Thank you for returning this signed form so promptly!

Sincerely,

Molly Nevin-Haas, R.N., B.S.N.
Graduate Student

Dr. M. Willman, R.N., Ph.D. & G. Joachim, R.N., M.S.N.
Faculty Advisors
U.B.C., School of Nursing (822-7417)



School of Nursing
T. 206-2211 Wesbrook Mall
Vancouver, B.C. Canada V6T 2B5
Fax: (604) 822-7466

Household Pets and Depression Among Urban Adolescents
A questionnaire survey by Molly Nevin-Haas

Signed Parental Consent

I have read the attached information sheet describing this study. I give / do not give (please circle your choice) permission for my child, _____ to participate in the study, Household Pets and Depression Among Urban Adolescents. I understand that all results of the study are entirely anonymous. I also understand that I may withdraw consent for my child to participate in this study at any time before or during the course of the survey without any negative consequences towards myself or my child.

Signed,

(Parent or Legal Guardian).

(date)

Appendix E
Information and Instructions for Questionnaire



School of Nursing
T. 206-2211 Wesbrook Mall
Vancouver, B.C. Canada V6T 2B5
Fax: (604) 822-7466

Household Pets and Depression Among Urban Adolescents

Information and Instructions for Questionnaire

This questionnaire is part of a survey to study the relationship between personal characteristics (and for those with a pet, also pet characteristics) and teenage depression. By filling out this questionnaire it is assumed that you are agreeing to have your answers used in our study. If you do not wish to participate, do not fill out the questionnaire. Either choice you make will not effect your school standing in any way.

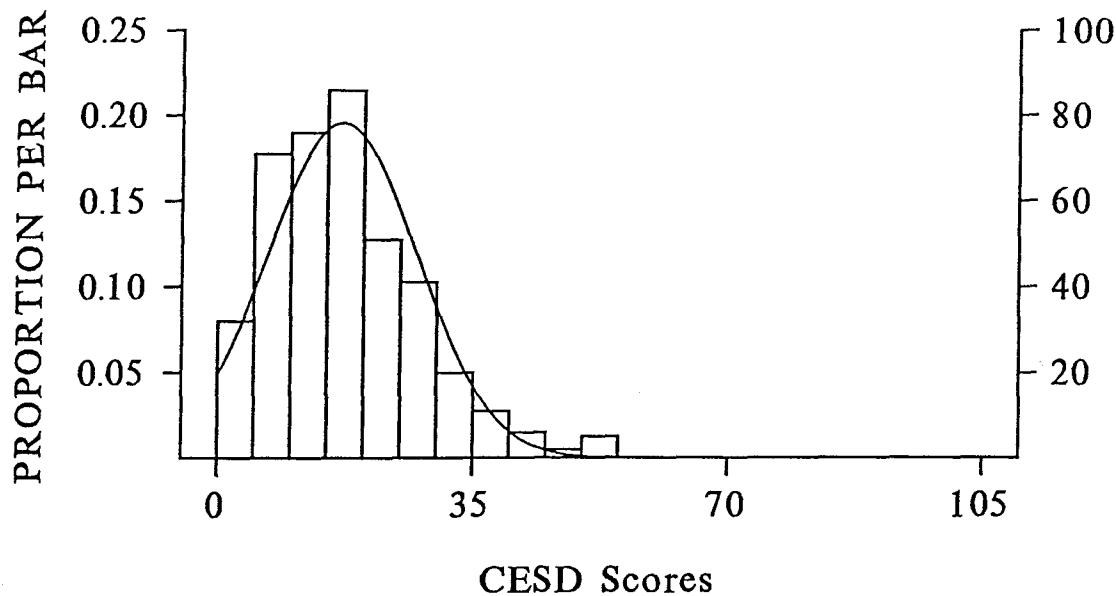
DO NOT PUT YOUR NAME ON ANY OF THESE PAPERS. Please answer all the questions as honestly as possible. There are no right or wrong answers. The questionnaire consists of two pages. Please be sure to complete both of them. The questionnaire will take approximately 10 minutes. When you are finished please fold your papers in half to conceal your responses, and bring it to the envelope held by the researcher.

Thank you very much for agreeing to participate! Your information will greatly help add to what is known about teenage depression.

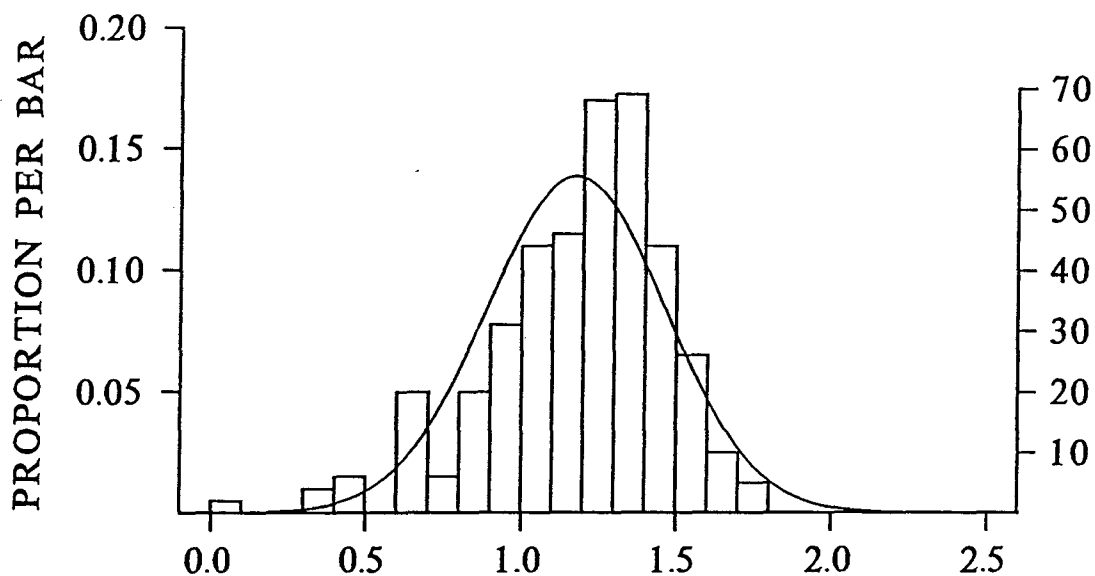
Molly Nevin-Haas, R.N., B.S.N.
Graduate Student (822-7486)

Dr. Marilyn Willman, R.N., Ph.D. & Gloria Joachim, R.N., M.S.N.
Faculty Advisors
U.B.C. School of Nursing, (822-7417)

Appendix F
Density Distribution of CES-D Scores



Density Distribution of Overall Raw CES-D Scores



CESD Scores Using Log 10 Transformation

Density Distribution of Overall CES-D Scores Using Logarithmic 10(x+1) Data Transformation