THE HUMAN-COMPANION ANIMAL BOND:
THE NATURE OF THE RELATIONSHIP BETWEEN PEOPLE AND THEIR PETS

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It is a completely selfless love: Tereza did not want anything of Karenin; she did not ever ask him to love her back. Nor had she ever asked herself the questions that plague human couples: Does he love me? Does he love anyone more than me? Does he love me more than I love him? Perhaps all the questions we ask of love, to measure, test, probe, and save it, have the additional effect of cutting it short. Perhaps the reason we are unable to love is that we yearn to be loved, that is, we demand something (love) from our partner instead of delivering ourselves up to him demand-free and asking for nothing but his company.

And something else: Tereza accepted Karenin for what he was; she did not try to make him over in her image; she agreed from the outset with his dog’s life, did not wish to deprive him of it, did not envy him his secret intrigues. The reason she trained him was not to transform him (as a husband tries to reform his wife and a wife her husband), but to provide him with the elementary language that enabled them to communicate and live together.

Milan Kundera, *The Unbearable Lightness of Being*. 
I like treating him like the dog he is. I don’t like to treat him like a human being. If he was a human being, I wouldn’t need him. I know enough of them.

ABSTRACT

The relationship pet owners have with their animals was examined in a series of studies. In Study 1 survey questionnaires were used to investigate the demographic variables related to pet ownership in 312 New Zealand families of 8-12 year olds. Almost 90% of families owned at least one pet, and over half of these families included a child who was the sole owner of a pet. Parental employment level, living locality, and sibling status (number and position) were related to pet ownership. Parents acquired pets for their children mainly to teach responsibility and care, or because their child had asked for the pet, and these reasons were related to sibling status. Parents who had owned pets before their children were born were more likely to own pets and attribute "family member" status to pets. In Study 2 the intergenerational continuity of attitudes to pets throughout three generations was examined by survey questionnaires. Results indicated that intergenerational continuity of attitudes regarding pet ownership, attachment to pets, and species of pets exist through family generations. The main study, Study 3, examined the language used to talk to dogs, and compared it to the language used in addressing infants. Results indicated few differences between speech to dogs and speech to children. Based on these findings, and Hummert and Ryan's model of patronising speech, a model of speech to dependents was developed, incorporating the dimensions of care, control, and communication. Implications for future research include the distinction between child-owned and family-owned pets, and comparison of parent and child beliefs about the role of the family pet. The model of simplified speech to dependents also requires further testing of speech to dogs and to other recipients of simplified speech.
I. INTRODUCTION

1.1 DOMESTICATION

Dogs are the nonhuman animal with which humans have the longest documented history of domestication or intimate association (Budiansky, 1992; Porter, 1989). According to Katcher and Beck (1986), dogs were included with humans in their burial sites as early as 5000 B.C. While domestication may have begun as early as 40,000 years ago, or as recently as 15,000 years ago, however, dogs are assumed to have been domesticated in pre-agricultural times, probably about 20,000 years ago in the late Palaeolithic era from the southern (Middle East or Indian) wolf rather than from jackal stock (Wayne and O'Brien, 1987). It is likely they were first domesticated for hunting and guarding, and later for use in the domestication of other species such as herding and guarding flocks and herds of domestic ungulates.

The rise of the agricultural era approximately 10,000 years ago resulted in a rise in anthropocentrism, and a profound change in the relationships between people and animals. The practice of farming may have been a necessary response to the pressures of accessing a regular food source for an increasing human population (Serpell, 1986; Thomas, 1983). Farming requires manipulation of animals and the environment, and domination results. Formerly, animals were accepted as the mental and spiritual equals of humans by hunting societies (Serpell and Paul, 1994), but with agriculture and the ideas of keeping and breeding animals in a controlled manner, animals
became perceived as inferior to and separate from the humans who kept them. Religious and secular ideologies supported this view, for example, The Book of Genesis makes reference to the human as having ‘dominion over every living thing’. Until relatively recently, the commonly held belief of Western culture was the Judaeo-Christian view that humans were separated from other animals by a moral distinction (Serpell, 1986). The creationist Bell proposed as recently as 1844 that facial displays were ‘God-given’ purely for the expression of character and emotion in the superior species: human (Fridlund, 1992, p.120), a view which reinforced the idea that humans were discontinuous with other animals. Such a distinction allowed the exploitation of animals without the constraints of human conscience (Thomas, 1983; Midgley, 1983; Serpell, 1986). Depersonalisation has been claimed to create a gulf between two parties, in the same way that humans depersonalise their enemies during wartime (Rothschild, 1986). This allows the infliction of pain or death on another for profit, and with relative indifference. If this view is correct, any experiences which serve to reduce this void by bringing humans and animals together in positive experience should also decrease the likelihood that humans would intentionally exploit or harm animals (Serpell and Paul, 1994).

Although a number of saints were reported as having special relationships with both wild and domestic animals, from the 13th century onwards, such tendencies were suppressed, particularly by the Christian church (Serpell, 1986). During mediaeval times the ownership of pet animals (or demons in the guise of dogs, cats, lambs, toads, hares, hedgehogs and some birds) was used as evidence in the prosecution of suspected witches. The mere possession of such a pet
animal was often sufficient to suspect witchcraft, especially in persons with a history of antisocial behaviour (Serpell and Paul, 1994, p. 133).

The societal view was to treat with disapproval, suspicion or contempt, individuals who expressed affection for pet animals, and this is demonstrated by the very few authors who included pet animals in their writing up until the eighteenth century (Ritvo, 1988).

During the 16th and 17th centuries, the attitude towards pets was even more in contrast to today. Shakespeare, for example, seldom referred to dogs other than to express his distaste for them, and those who associated with them (Berwick, 1975). Indeed, during this period the dog was more likely to represent bestiality or vulgarity in writings than loyalty or affection (Ritvo, 1988).

1.2 WEALTH

Ritvo (1988) suggests that while many authors praise the animal-human bond as a long standing entity, other evidence suggests that such relationships with pets existed for only a small part of Western society. Serpell (1988) notes that since classical times there has been a distinct class difference between those who kept pets and those who didn’t. The aristocracy of ancient Greece and Rome kept animals as pets, and the early Greek inhabitants of Sybaris in Italy took lapdogs with them wherever they went, including to bed (Serpell, 1988 p.35). In the middle ages this trend continued with the aristocracy and “the ecclesiastical elite” frequently attending to pets. During mediaeval Europe lapdogs and cats were kept in most baronial households, and during sixteenth century English society’s wealthy and ranked commonly owned lap dogs.
Pet keeping was a popular action of the wealthy and powerful who could afford to own animals that did not earn their keep, and who were of sufficient standing in society to avoid the pressure of the general beliefs concerning these animals. Although by this time domesticated animals had been established in many households for some time, since Saxon and Celtic times, the majority were kept for some useful function other than affection or ornament (Ritvo, 1988). Most commonly, hunting dogs such as setters and spaniels, and coursing dogs such as greyhounds were kept.

Serpell refutes the notion that only the wealthy and powerful, and not the poor or underprivileged kept pets. During the sixteenth and seventeenth centuries, he argues, poor people probably commonly did keep pets, but when this practice was observed it aroused suspicion. For example, the English witch trials (1570-1700) regarded the possession of a pet animal as suspicious, and these suspected witches were often elderly and poor (Serpell, 1988).

In the late 17th century pet keeping increased in popularity and respectability when the anthropocentric views gradually faded, and both enthusiasm for science and concern for animal welfare grew (Thomas, 1983).

Pet ownership among members of the middle classes in Europe rapidly increased and pet keeping became widespread by the late eighteenth and early nineteenth centuries (Ritvo, 1988). During this period significant changes in industry occurred, and natural forces came more and more under human control with the development of science and engineering. The change in cultural attitudes toward pets is attributed partly to the growth of foreign trade, and the movement from rural areas to cities where the population could ignore the
distaste of certain farming practices including the breeding of animals for slaughter (Serpell, 1986). The members of the middle class in particular became more sentimental about pets as it became clear that animals and nature were controllable and hence, no longer as threatening as once thought. Evidence of the upsurge in pet acceptance is indicated by the rapid increase in the numbers of animal, particularly dog, books published, dog tax increases, and dog and cat shows (Ritvo, 1987 and 1988).

1.3 CRUELTY AND KINDNESS

Disapproval of cruelty to animals gradually increased in Great Britain, with many promoters of animal welfare also being pet owners, such as Michel Eyquem de Montaigne (1533-1592), who wrote,

"when I play with my cat, who knows whether I am not more of a toy for her than she is for me? We equally amuse each other with our monkey-tricks. If I have my hour for sulking or playing, so has she. When all is said and done, there is a certain respect and human duty which binds us not only to animals, which have life and sentiment, but even to trees and plants. We owe justice to men and kindliness to other creatures: there is an intercourse and mutual obligation between them and us" (Serpell 1986).

Bentham (1748-1832) in his argument for improvements in the treatment of animals stated, "...a full grown horse or dog is beyond comparison a more rational, as well as a more conversable animal,
than an infant of a day, or a week or even a month old” (Ryder 1989:75 cited in Serpell and Paul, 1994).

One of the strongest arguments for promoting kindness to animals involved the perceived link between cruelty to animals and cruelty to fellow humans. The practice of kindness to animals was viewed as encouragement of the development of broadly compassionate feelings (Serpell and Paul, 1994). Thomas Aquinas noted that in the Holy Scripture there were ‘injunctions forbidding the infliction of some cruelty towards brute animals......either for removing a man’s mind from exercising cruelty toward other men, lest anyone, from exercising cruelty upon brutes, should go on hence to human beings’ and ‘God’s purpose in recommending kind treatment of brute creation is to dispose men to pity and tenderness towards one another’ (Hume 1957:8 cited in Serpell and Paul, 1994, p.137).

Michel de Montaigne recognised the importance of links between childhood attitudes towards animals and adult traits and wrote: “...think it great sport to see a child wring off a chicken’s neck, and strive to beat a dog or cat...yet are they the true deeds or roots of cruelty, of tyranny, and of treason. In youth they bud, and afterwards grow to strength, and come to perfection by means of custom”(quoted in Wynne-Tyson 1990:316 in Serpell and Paul, 1994).

John Locke, one of the founders of modern educational theory also expressed the view that “they who delight in the suffering and destruction of inferior creatures will not be apt to be very compassionate or benign to those of their own kind” (Locke 1699:153 in Serpell and Paul, 1994).

Serpell and Paul (1994) claim that Locke was the first to suggest
that caring for animals played a role in teaching the carer sympathetic
tendencies toward both animals and people. Such views became
accepted in the 18th century environment, and children’s literature
adopted accounts of cruelty versus kindness to animals as one of its
most important themes. Such anthropomorphic publications as Black
Beauty flourished in 19th century society.

Towards the end of the 19th century, the keeping of pets by
children became regarded as causally linked to humane attitudes
(Paul and Serpell, 1993, p.322). Despite the increasingly humane
attitudes being fostered in children, the Society for the Prevention of
Cruelty to Animals was founded in 1824 in Great Britain, prompted
by repeated observation of violent physical abuse, and sports such as
dog fighting and badger baiting which were still enjoyed by the
population (Ritvo, 1987).

1.4 WHY PEOPLE KEEP PETS

The Collins English Dictionary defines a pet as: ‘a tame animal
kept for companionship or pleasure’. Pets are valued for the social or
emotional roles they play, rather than for economic or working
purposes. Pet keeping is not a practice exclusive to western culture.
Serpell (1986; 1987, 1989) has revealed that pet keeping occurs in other
cultures, including hunter-gatherer societies, in which companion
animals may be cared for like children. They are suckled along with
children, protected, and mourned when they die, and they are not
expected to fulfil any useful function. The pets are regarded as
honorary members of the human family and as such, the slaughter
and consumption of these animals is typically regarded as taboo, even
when that society will hunt other members of that species as prey (Serpell, 1989). Serpell (1988) refers to non western examples of early pet ownership as evidence of the long standing relationship between species. Early European explorers found North American Indians to fondle and love their pet dogs, and also to keep many other species as pets (eg raccoons, moose, bison, wolves, and bears (Hernandez, 1651; Galton, 1883 in Serpell, 1988). South American Indians tamed and kept “virtually all of the birds and mammals available to them” (Serpell, 1988, p.42). Serpell notes that the westernisation of South America has caused a decline in pet keeping, although the more remote tribes still practice it. The Barasana Indians of Eastern Columbia, for example, commonly keep dogs, cats, rodents and parrots and other birds as pets as one of their principal leisure activities (Serpell, 1988). In addition they keep small numbers of less domesticated species such as tapir, ocelot and occasionally jaguars. Serpell suggests that pet-keeping in this community is motivated by the enjoyment and entertainment an extra member of the community brings, rather than by any economic or practical needs.

Affection for pets is largely independent of economic use. and while any species which are hunted are also kept as pets, those individuals which are pets are exempt from hunting. Previous authors have attempted to explain the apparent love shown by tribes for their pets by its use as a hunting tool, for example, Lumholtz (1884) observed of the Australian Aborigines...“he caresses it like a child, eats the fleas off it, and then kisses it on the snout” and accounts for this observation by stating that the dingo...“is very useful to the natives, for it has a keen scent and traces every kind of game” (Serpell, 1988). Harrison (1965) justifies the Dyaks of North Borneo
love for their dogs by the hunting assistance they provide, and Cipriani (1966) likewise accounts for the Andaman Islander’s “inordinate love of dogs” by the fact that dogs meant “invariable and abundant success in the hunt” (Serpell, 1988, p. 45).

Whereas pet-keeping was once justified by the physical uses of the animal for hunting, current literature suggests that pet keeping has become widespread due to its benefits to normal human social behaviour and needs. Levinson, Katcher and Beck, Bustad, McCulloch, Messent, and others have proposed that the “majority of pet owners are normal, rational people who make use of animals in order to augment their existing social relationships, and so enhance their own psychological and physical welfare” (Serpell, 1988, p. 49).

1.5 SAFETY AND HEALTH

Although pets tend not to be kept primarily for guarding reasons, calm animals appear to make humans feel safe. Katcher and Beck (1983) have made the observation that animals have the ability to reduce human anxiety and arousal, to give cues to relaxation, and that the presence of an animal appears to be interpreted as “a signal that a situation is intrinsically less stressful and safer” (p.109). This may be because over the many years humans have shared their lives with animals they have learnt to recognise their signals of contentment, relaxation, fear and distress. Katcher and Beck suggest that, in pre-agricultural times, by watching the behaviour of other animals humans were able to discern the presence of danger and predators, and the proximity of food and water. Resting animals, or animals behaving normally, without agitation, signal a lack of
danger. Following the domestication of the dog, Katcher and Beck claim, the observed calmness of animals remained associated with a safe and unchanging environment. Katcher and Beck suggest that the presence of undisturbed organisms is calming to humans because it signals safety and has done through much of humans evolutionary history. Nonhuman primates have used the flight behaviour of other animals as danger signals, relying on the more acute senses of these animals. Thus Katcher and Beck claim, any animal which flees from dangers that also apply to primates, can be used as a safety signal when they are undisturbed. They suggest that there is an "innate neurological template for discrimination between different patterns of movement in the environment. The tendency to orient toward and track distant moving objects could have been shaped by selection pressures when predation or conspecific aggression were significant sources of mortality" (p.123). Humans continue to use representations of agitated animals as indications of danger. Fearful and escaping animals are a visual means of "indicating the presence of danger in film and television" (Katcher and Beck, 1983, p.123), and the keeping of watchdogs utilises this safety signal mechanism.

Safety and relaxation have typically been measured by physiological measurements of decreases in systolic, diastolic, and mean blood pressure, and heart rate (Katcher and Beck, 1983). Katcher (1981), Katcher, Beck and Levine (1983), and Baun, Bergstrom, Langston and Thoma (1984) demonstrated that while talking to people raised blood pressure, talking to and touching pets resulted in no increase, or a decrease in systolic blood pressure. This effect has been found in dog and cat owners, and in children. Katcher, Friedmann, Beck, and Lynch (1983) asked subjects to enter the
experimenter's house and sit quietly while their blood pressure was recorded, in a room in which a dog was present as "part of the visual environment" (Katcher et al, 1983, p.352). The subject was then asked to read aloud while physiological measurements were taken. The dog then left and the process was repeated. A second group of subjects completed the first set of recordings facing the experimenter alone, and the dog entered before the second set. The blood pressure of subjects was significantly lower when the dog was present, with the effect greater in the group who had the dog present when they entered the house. Similarly, children who enter a neighbour's home experience reduced blood pressure if the neighbour's dog is present, and subjects who complete the Manifest Anxiety Scale with a dog present have lower anxiety scores than those completing the scale alone (Andryscos, 1983). Friedmann et al (1983) found that blood pressure and heart rate were significantly lower when subjects were asked to read aloud with a friendly dog present than when the animal was not present. The physiological benefits of the stress reducing capabilities of pets have also been supported by studies which claim pet owners to have increased recovery rates after illness which cannot be attributed to the amount of exercise gained from owning a dog. In a study which followed heart-attack patients after their return home from hospital, only 6% of pet owners died, compared to 44% of those who did not own a pet (Friedman, Katcher, & Meislich, 1980). Katcher (1982) also found an association between pet ownership and increased survival rate in those suffering from coronary artery illness.

To investigate the influence of animals as visual rather than tactile objects, Katcher, Friedman, Beck, and Lynch (1983) considered the blood pressure reductions gained from watching tropical fish.
Participants entered an office where blood pressure was measured. They were asked to read aloud for two minutes to allow a stressed blood pressure measurement to be obtained. Participants were then assigned to conditions of watching a blank wall or watching tropical fish in a tank for 20 minutes. Watching the fish reduced systolic and diastolic blood pressure levels to below that of resting levels, even in hypertensive participants. This difference was maintained while watching the fish. When later asked to read aloud, there was a significant decrease in blood pressure in comparison to previous reading aloud measures. This was attributed to relaxation allowing higher tolerance to stress, though it may also be explained by the acclimatisation effect.

In a semi-controlled replication study, Katcher, Segal and Beck (1984) monitored subjects about to undergo dental extraction in conditions of watching fish, under hypnosis, and sitting quietly, for 20 minutes. There was a trend towards greater relaxation and lower blood pressure in those assigned to the fish watching task, and those under hypnosis, than the sitting quietly group. This effect is probably due to a decrease in autonomic arousal and is observed when the subject’s attention is turned outward, and thought patterns are interrupted (Katcher and Beck, 1983). Lacey, Kagen, Lacey and Moss (1963) have found that “interruption of internal data processing by focusing attention on external stimuli results in a decrease in sympathetic activation ie decreased arousal” (p.123). This explanation has also been presented to explain the effects of hypnosis on arousal in this experiment, and to explain the effects of meditation on arousal (Benson, 1975). Friedman, Katcher and Meislich (1983) have cited Lacey’s (1953) evidence to demonstrate the calming influence of
exterior gaze. Lacey found that when subjects were required to think, process data, or do mental work, the indications of nervous activation (heart rate, blood pressure, and activity of the sweat glands in the palms) increased. However, when subjects were required to attend to the external environment, these measures decreased. Friedman et al (1983) concluded that stimuli that calm subjects are those that draw the attention outward and “interrupt the private dialogue with the self, the constant thought stream of remembrance and recreation of events, the streams of worry and concern” (p.354).

The ability of animals to reduce blood pressure has also been linked to the sense of touch. Levinson (1984) claims the human neonate has an innate need, strengthened by experience, for touch stimulation as a means of pleasure and comfort from anxiety. Touch demonstrates caring and affectionate closeness, and, he claims, becomes an important component of love. Both Levinson (1984) and Katcher (1979) have suggested that physical contact stimulates the brain’s production of endorphins into the nervous system, which alleviates anxiety and forms the foundation for social attachment. During the early months of life the infant is completely dependent on others for food, comfort and contact sensations. Montagu (1978 in Corson and Corson, 1981) suggests that touch may be the earliest sensory system to become functional, and the psychobiological significance of touch may be subsumed from the general embryological law that states that the earlier a function develops, the more fundamental it is likely to be.

As the child grows older, other individuals satisfy this need for physical contact. This means of communication remains with the individual throughout life, allowing the expression of intimate
thoughts and feelings most effectively and satisfactorily through physical contact rather than through words (Levinson, 1984).

Soft contact continues to evoke experiences of security and being loved. Touch and stroking sensations reduce tension and facilitate relaxation by their effect on the opiate receptors in the limbic system, corpus striatum and hypothalamus through the production of endorphins (Pert and Gulley, 1977 in Levinson, 1984). Panksepp, Herman, Conner, Bishop and Scott (1978) have indicated opiates to alleviate separation anxiety in puppies.

Through conditioning, the experiences evoked by touch are transferred to any soft object, such as a familiar blanket or toy, which becomes a transitional object between the caretaker and the child as a source of security and comfort (Winnicott, 1953 in Levinson, 1984). A security object promotes adaptive behaviour by enabling the child to separate from the usual human attachment figures. By extension from the transitional object secure, pleasurable feelings can be transferred to a real animal. Levinson (1984) claims that this need for contact comfort never disappears.

The often cited study offered in support of this theory is that of Harlow’s (1961) demonstration of the importance of tactile comfort for the biological and psychosocial development of young monkeys. Infant monkeys were provided with surrogate wire “mothers” and cloth covered “mothers”, one of which was “lactating”. The infant monkeys preferred to cuddle with the cloth mothers regardless of the opportunity of receiving milk. Harlow concludes that it is the contact comfort to which the infant bonds affectionately. Follow up studies indicated that those monkeys which had never been touched by other monkeys developed severe emotional and social pathology, and an
aversion to touching and being touched later in life (Lichtenstein and Sackett, 1971 in Levinson, 1984).

Touch sensation therefore appears to represent a significant afferent psychosomatic input essential for optimal physical, emotional and mental health (Montagu, 1978).

Katcher et al (1979 in Katcher, 1980) studied tactile communication in people and dogs by observing clients in the waiting room of a veterinary clinic. The study was based on the premise that both humans and dogs were accustomed to feeling anxious while waiting in medical clinics. Although men are frequently described as using touch as a medium of expression less often than women, Katcher and colleagues found no difference between men and women in the frequency, amount, or type of touching of their dogs. Katcher et al claimed dogs to be an apparent means through which men especially can legitimately both express and receive affection in public situations.

Katcher et al identified a further tactile behaviour which they labelled 'idle play'. This behaviour included distracted touching and patting which was out of focal awareness, and frequently occurred when the person was attending to something else, such as a conversation with a third party. This type of comforting touch puts both the animal and the owner into a state of inattentive comfort, with a lowered state of arousal (Katcher et al, 1979 in Katcher, 1980). In addition, blood pressure was greatly reduced when subjects were touching or talking to their dogs compared to when they were conversing with the experimenter alone.

In some Middle Eastern countries, where dogs are undesirable, the idle stroking and fondling of worry beads and dolls seems to serve
the same purpose (Katcher, 1980), and young children often inattentively stroke a parent, ‘security’ blanket, toy or other soft object.

Katcher (1981) found the decreases in blood pressure when people spoke to and petted their own dogs were greater than when they were reading quietly. This effect appears to be reciprocated: Gantt (1964, cited in Rosenthal, 1966) found that a dog’s heart rate could drop from 160 to 140 beats per minute when a particular person entered the room, and when in familiar surroundings with a bonded person, the dog’s heart rate has been shown to drop some 20 beats per minute (Ginsberg & Hiestand, 1992). Lynch, Fregin, Mackie and Monroe (1974) found that the heart and respiratory rates of dogs and horses decreased when humans petted them.

Grossberg and Alf (1985) also found that blood pressure was lower when petting a dog than during social interactions with humans, and the effect was greater when the dog was owned by the subject.

Undisturbed animals lower anxiety and arousal, not only through direct physical contact, but also just by their presence. This effect also extends to the company or situation surrounding them. Pet presence can facilitate interaction amongst strangers (Messen, 1983), perhaps because social interactions which include animals are less threatening, and society has a more positive view of people with pets than people who dislike animals (Lockwood, 1983; Veevers, 1985). Rossbach and Wilson (1992) found that subjects rated a photograph of people with a dog as happier and more relaxed than photographs of people with a bunch of flowers, or people alone. When slides of rural and urban scenes were presented, people seen with a dog were rated as being happier and safer than people seen alone. Research by
Friedmann and Lockwood (1991), and Budge, Spicer, Jones and St. George (1996) has indicated that variables such as the scene depicted, the gender of the models, and the species of pet influence the perceptions of the photographs.

Katcher and Beck (1983) suggest that evidence of dogs exerting a calming influence may be useful to the theory that calm animals constitute a safety signal. The dog, they claim, has very clear, unambiguous and contrasting signals for submissive approach and threatened aggression. Katcher and Beck (1983) suggest the signals people recognise as calming also have an obvious, contrasting behaviour which signals danger, and that the more extreme these two behaviours are, the more valuable the signal is to humans. Darwin’s (1965) drawings of canine affectionate submission and defensive behaviours serves as an illustration of antithesis in terms of the general stance, and the placement of tail, head and ears of these behaviours. Other domesticated animals offer similar examples of contrasting safety and danger signals: consider stampeding and grazing cattle, defensive and affectionate cats, and calm and frightened horses. Katcher and Beck’s theory offers an explanation of why communication with pets is so important to humans, and why we are able to understand the signals of some species of animal but not others. Those species which have not only become domesticated but have also become companion animals are those species whose behaviours are easiest for humans to recognise. While humans probably chose those species whose behaviour they could recognise and predict to domesticate, part of the process of domestication has been to select and breed further for particular communicative and other useful functions such as herding and guarding instincts. Dogs
originally bred for guarding purposes may have, for example, a wrinkled brow indicating concentration on an unfamiliar object or animal (basenji, shar-pei, mastiff), high set tail (basenji, shar-pei), or permanently raised hackles along the back (Rhodesian ridgeback).

1.6 NURTUREING

Katcher and Beck (1987) suggest that humans raised the young of other animals for both the practical value of the animal and the "pleasure and physiological rewards" (p. 179) gained from nurturing. Human evolution involves to a large degree the increased time spent in nurturing young. Because of the enlargement of the primate brain, an evolutionary adaptation was called for- either enlargement of the female pelvic region to massive proportions, or the continued development and growth of the infant brain postnatally. Therefore "human development was associated with progressive neotony" (p. 178), an enlarged and rounded head and eyes, more juvenile qualities which tend to suggest vulnerability and to stimulate nurturing and care. Ancestral human young were nurtured for progressively longer periods, as the brain developed, and the infant was dependent long past the years of necessary breast feeding. This, coupled with the probable engagement of extended family in helping to care for children, suggests that nurturing behaviour may have developed as an efficient evolutionary strategy. Katcher and Beck (1987) suggest that with the increase in human lifespan to now well beyond the independence of their offspring, pets may fulfil a need to nurture through the duration of the adult life.

This type of neotonic development "decreases the distinction
between adult and child-like characteristics, blurring the distinctive 
traits that release affectionate care and thus extending the period of 
time and the kinds of people engaged in affectionate nurturing” 
(Katcher and Beck, 1987, p.179). This type of development is not 
restricted to the human species. Katcher and Beck (1983) propose that 
humans have selectively bred dogs to conform to their social role “as 
a kind of child by ... breeding for juvenile characteristics in both facial 
form and behaviour” (p.125). Moreover, they suggest, humans 
resemble a juvenile form of ape, with one of their juvenile 
characteristics being a loss of innate control over maternal or 
nurturant behaviour. They cite examples of humans nurturing a 
wide variety of living things, which can, they suggest be considered as 
a kind of play, in the same way children play with dolls.

Evolutionary changes are apparent in the development of 
domesticated animal species from their wild ancestors. Since the dog 
was domesticated from the wolf, characteristics which people find 
useful or appealing have been bred for, resulting in great diversity of 
breeds, temperaments and abilities.

Herzog and Burghardt (1988) propose that human attitudes 
toward animals have some connection to natural selection, which 
may come directly, from the increased fitness of individuals who treat 
animals in a particular way, such as avoiding snakes, or indirectly, via 
the anthropomorphic generalisations of responses that have evolved 
toward conspecifics.

Indirect selective pressures which they suggest could have 
shaped human responses or attitudes include “baby releasers”, 
characteristics which Lorenz (1943) recognised as specific features of 
infants which form the basis of human attraction to most infant
mammalian species. This may reflect a generalisation of the nurturing responses essential to survival of young in species such as humans, with prolonged juvenile dependency (Herzog and Burghardt, 1988). Lorenz (1943) has suggested that a range of appearance variables commonly found in both human and animal infants combine to elicit responses from adults that increase the infant’s chance of survival. These responses include “... increased attention to and protection of the helpless infant, positive affect toward the infant, and a decreased likelihood of aggression toward an infant who naively violates social mores (Alley, 1981; Eibe-Eibesfeldt, 1970; Hess, 1970; Lorenz, 1943)” (Berry and McArthur, 1985 p. 313). Struhsaker’s (1971) observations of primates indicate that the loss of neotenic appearance is accompanied by a decline in protective responses, and an increase in aggressive responses by other members of the group.

Components proposed as specific to babyfacedness include a large head in proportion to body size, large eyes, large pupils, eyes positioned in the centre of the vertical plane of the face, a large, protruding cranium, short, narrow facial features, full cheeks, and short, thick limbs (Lorenz, 1943; Sternglanz, Gray, and Murakami, 1977; Hildebrandt & Fitzgerald, 1979; Brooks & Hochberg, 1960; Alley, 1981). These physical characteristics tend to identify not only maturational status, but also the power and independence of an individual. McArthur and Apatow (1983-1984) found support for this contention - the less mature a profile was the more likely it was to be perceived as warmer, kinder, more honest and more naive.

Herzog and Burghardt (1988) further propose that as with baby releasers, the human attraction to the juvenile behaviour of animals
may be based on a genetic predisposition to attend and respond to the behaviour of juveniles. Goodwin (1997) has found support for the hypothesis that domesticated dogs are wolves which have been selected to remain juvenile in behaviour (and often phenotype) throughout their lives.

Burghardt and Herzog (1980) suggest that the communication method is important because we are “biased toward those species which we feel we can at least have the illusion we are communicating with them or recognise their signals for what they are. We are, for example, more responsive to a puppy’s cries which are similar to those of a human baby, than we are to eg the high frequency cries of baby bats” (p.765). Serpell and Paul (1994) also note that the physical and behavioural attributes of animal species are determinants of human attitudes toward them: “large, intelligent, anthropomorphous mammals, for example, almost invariably inspire more favourable attitudes than, say, reptiles, fish or invertebrates” (p.128). Driscoll (1995) asked her subjects to rate 33 species of animals on six dimensions: useful-useless; smart-stupid; responsive-unresponsive; lovable-unlovable; safe-dangerous; and important-unimportant. Similar patterns of ratings made by subjects placed chimpanzee, monkey, dog, horse, human, dolphin, cat, panda, sea otter, deer, rabbit, pig, elephant and sheep into the same cluster. The sub-group of chimpanzee, monkey, dog, horse, human, and dolphin received higher ratings for usefulness, importance, smartness, lovableness, and responsiveness. Another cluster included animals which are eaten by humans (trout, lobster, turkey, chicken). These animals were rated lowest on intelligence and responsiveness, even though mammals used for food (pigs, sheep) shared ratings
more similar to humans and dogs on these dimensions.

Humans tend to be most often concerned with the pain and suffering of animals which have physiognomic or psychological similarities to humans, that is, they respond as we might expect to respond ourselves in similar circumstances (Burghardt and Herzog, 1980). The boiling of live crayfish, sport fishing, and spraying of insects with pesticides, for example, do not incite the same level of human emotions as cruelty to cats or dogs does, because as Driscoll (1995) has found, these species are viewed as less similar to humans on dimensions of intelligence and responsiveness.

Goodwin (1997) found that while wolves exhibit 9 aggressive and 6 submissive signals to regulate social interactions, the number of these behaviours exhibited by domesticated dog breeds was positively correlated with the degree to which the breeds physically resembled the wolf. Siberian Huskies, for example, exhibited all 15 of the wolf-like social interactions, while the highly modified Cavalier King Charles Spaniel displayed only two. In addition, dog breeds which exhibit fewest wolf-like behaviour patterns appear to exhibit only behaviours which are displayed by juvenile wolves, but not signals which are exhibited by adult wolves (Goodwin, 1997). The heavily modified breeds such as the French Bulldog and Cavalier King Charles Spaniel exhibit not only the juvenile physical appearance but also the juvenile behaviour patterns of the immature wolf.

1.7 THE CURRENT STATUS OF PETS

Dogs are the species which humans have genetically modified more extensively than any other, to suit their social and emotional
needs (Buck and Ginsburg, 1997). Buck and Ginsburg suggest that the emotional bond between humans and dogs is so great that there is "...a perceived empathetic connection between dog and human that is possibly greater than that between dog and dog." (p.22). Nevertheless, the perception of this apparently reciprocal relationship relies a great deal upon inference and anthropomorphism.

Darwin (1965) ascribed the same internal states to dogs and other animals as he did to humans, based on two assumptions. Firstly, he assumed that humans and dogs responded naturally to each other's moods, as if they shared an intuitive skill for reading behavioural cues. Secondly, he assumed that when the same emotions were involved, the same neuroanatomical and neurophysiological pathways would be excited in all higher animals possessing similar brain structures (Buck and Ginsburg, 1997). The neural pathways would determine the expression of the emotion, which in turn, could be used to infer the emotional state.

The research on interspecies interaction and relationships is relatively scarce. Sanders (1993) suggests this is largely due to the conventional sociological/social science belief that real interaction, at anything above a simple level, is impossible between two interactants without shared linguistic skills. Traditional sociological views dismiss all but simple social exchanges between animals of different species, notably between humans and other animals, due, they claim, to a lack of ability to understand and apply shared linguistic symbols. Sanders suggests that language allows interactants to "...construct and share a mutually defined reality and provides the vehicle for the internal conversation that constitutes the mind" (p.206). The
conventional sociological view, as represented by Mead ((1934) 1964), Sanders says, proposed that human to other animal exchanges could only involve "...direct references to physically present objects and intentions" (p.206). Any other type of interaction, he claimed, was due purely to instinct or previous conditioning. Sanders considers Mead’s perspective to effectively reduce the interactions and communication between people and their pets to one way relationships between people and objects. From this perspective, Sanders states, both talking to and interpreting the behaviour of their pet animals as social exchange is an example of humans projecting anthropomorphist values onto objects in the same manner that they interact with such inanimate objects as computers and cars.

However, many others, particularly those who live with or deal with companion animals frequently or intimately, often describe their interactions with animals as reciprocal social exchanges (Crist and Lynch, 1990; Griffin, 1984; Hearne, 1987; Shapiro, 1990; Ristau, 1990 all in Sanders 1993), which appears to denote an acceptance of the "mindedness" and individuality of the animal. Some support for this comes from the general public sample in Kemp and Strongman’s (1994) research into the folk view of consciousness of defined groups. Animals, the mentally handicapped and children were all attributed some level of consciousness by the sample. Although not significant, respondents more often considered animals to be conscious than they did children or retarded people. The most frequent justification for the assignation of consciousness in animals was based on personal observations the respondents had made. In particular the observations that animals could "sense emotion", "communicate", and had some level of "cognitive ability" were used to support the
assignation of consciousness to animals. It is interesting that the
category “senses emotion” was more often a justification for
consciousness than was “shows emotion”. Also of note was that
typically, observations of animals were used as justification that
animals were conscious, while respondents who considered animals
to be not conscious or of limited consciousness supported their
argument with theoretical reasons or no reason at all. Interestingly,
only two of the 179 respondents reported linguistic reasons for their
attributions of consciousness in animals (one supporting and one
rejecting the assignation of consciousness).

Owners’ and caretakers’ definitions of their relationships with
an animal suggest they regard the animal as “unique individuals who
are minded, empathetic, reciprocating, and well aware of basic rules
and roles that govern the relationship” (Sanders, 1993, p.207) and as
being capable of consciously acting so as to achieve goals in social
exchanges with others. The dogs are regarded, in short, as possessing
at least a rudimentary ability to “take the role of the other.” (Sanders,
1993, p.207). Sanders notes that owners typically view their canines as
capable of emotional experience and of an awareness and ability to
respond appropriately to the experiences of others.

Sanders (1993) proposes that dogs may be assigned a human-like
identity, based on Bogdan and Taylor’s (1989) explanation of
humanness. Sanders recognises that the exclusion of some groups
from human or people status has been a common phenomenon of
society, and for some groups, ongoing denial of such status has been
apparent through some realms of society. African Americans, black
South Africans, native tribes which do not adopt Western
civilisation, and the institutionalised mentally ill and criminal
populations have all, at some time, been denied the benefits and acceptance of affiliation with the “human” label.

Bogdan and Taylor (1989) describe several ways in which family members explain the “humanness” of the severely disabled person among their group. Firstly, they attribute thinking ability to the disabled person, perceiving them as able to reason, understand and remember, in short, as minded. They are seen as individuals who are capable of social interaction, with gestures and expressions which may be interpreted by themselves and possibly others interpretation, which indicate intelligence.

Sanders (1993) found canine owners he interviewed firmly believed in the cognitive abilities of their pet and could define examples of minded behaviour. They described the thought processes of dogs as fairly basic, although to some extent this varied as a function of breed and individual. The majority suggested that what was thought about was also basic - that a dog’s thoughts focused predominantly on immediate events which were fundamental to their own emotional or physical experience. Some owners, however, offered evidence for deeper thought processes in their canines, including the animals’ modifications of behaviour to suit a specific purpose, or to manipulate the behaviour of the owner to desirable ends for the canine. That is, they understand their dogs as being able to reason. Thought processes were considered to be “wordless”, composed of mental images and their thought and decisions strongly based on emotion. Other studies have indicated that owners ascribe their pets a “person-like” status (Cain, 1985; Veevers, 1985). Cain noted that 72% of respondents said their dog was usually given people status. Beck and Katcher (1983) found that 80% of their
veterinary clinic sample felt their pets were family members and talked to them as a person rather than as an animal.

Secondly, Bogdan and Taylor (1989) found families of the disabled recognise them as individuals, with distinct personalities, "identifiable likes and dislikes, authentic feelings, and unique personal histories" (Sanders, 1993, p. 210). In Sanders' sample, many dog owners saw particular personality traits as breed idiosyncrasies, but the majority regarded their own dog as a unique individual, and as having their own personal tastes in food, activities, objects and people.

Thirdly, Bogdan and Taylor (1989) found that disabled persons are seen as capable of reciprocating in relationships, of giving as well as receiving, providing genuine companionship, "acting as objects of caring, and opening up situations in which they can encounter new people" (Sanders, 1993, p.210). Sanders' (1993) sample described their canines as experiencing a range of emotions, including joy, sadness, loneliness, embarrassment and anger. All Sanders' sample agreed their dogs had a sense of the rules of the household although there was some disagreement as to whether their animal had a conscience regarding the effective constraint of unwanted behaviour. They could all recount episodes of wrongful or questionable deeds followed by behaviour which indicated the animal was experiencing guilt.

Owners also credited their dogs with the ability to reciprocate the recognition of emotions in others and to offer comfort when it was needed. Fox (1975) suggests animals are perceived by their owners as empathetic whether or not they actually are. Up to 80% of pet owners described their pets as sensitive to their feelings in a study by Beck and Katcher (1983). They noted that over 98% of dog owners surveyed in
veterinary clinics talked to their pets every day.

Finally, Bogdan and Taylor (1989) found that disabled persons are humanised by being incorporated into a social place. They are incorporated into the family unit, routines and lives, and intimacy as a family member.

Dog owners typically consider their pets to be family members because, Sanders suggests, dogs are regarded by their owners as displaying humanlike characteristics and are therefore included in the routine social exchanges and household activities as any other family member. Many owners celebrate the pet’s birthdays and include them in Christmas preparations. Sanders (1993) noted however that

"at the same time that owners presented their dogs as thinking, emotional, creative, role-taking individuals they realized that conventional social definitions tended to situate dogs outside the bounds of humanness. Companion canines are customarily regarded as objects, toys, or creatures whose ostensibly human characteristics are “actually” the result of anthropomorphic projection on the part of overinvolved owners. However, intimate experience and the practical recognition that treating their animals as minded and competent coactors worked as an effective context in which to understand and accomplish ongoing collective action convinced owners that rigidly placing dogs outside the social category of “person” was unwarranted. The recognition that their views of their dogs violated conventional boundaries between humans and “others” and could potentially be seen as stigmatising was apparent in the discomfort often expressed by my interviewees when I asked
them if they regarded their dogs as "people"" (p. 220).

Evidence has also been offered that indicates that people consider their pet to be a 'member of the family', by spontaneous report when asked why they tolerate undesirable behaviour from their pets (Voith, 1981), or when directly questioned (Katcher, Friedmann et al 1983; Katcher, 1981; Ganster and Voith, 1983). People who describe their pet as a family member are more likely to have the pet near them when they sleep, confide in the pet, display photographs of it, celebrate its birthday, and to have furniture, toys or clothing for the pet which resemble human articles (Katcher and Beck, 1983). "Thus people behave toward pet animals with some of the social acts that are usually reserved for conspecifics with whom they have a close and friendly relationship" (Katcher and Beck, 1983, p. 124).

One of the major difficulties in the field of human-canine relationships lies in the reliance on subjective experience. Sanders (1993) suggests that even if this approach does consist of pet owners' anthropomorphic projections (and he does not necessarily agree that it does), these constructions would be central to the understanding of the relationship between humans and their canine companions. In addition, there is no direct evidence to suggest such anthropomorphism does not exist in any relationship in which an alingual is an interactant. The level of intimacy of a human-canine relationship is inherently linked to the perception of each of the interactants for the other, and if the human reaction is to anthropomorphise or interpret canine behaviour in terms of human behaviour, then this is the basis, at least in part, for our
understanding of the relationship and how it develops.

Sanders (1993) does not consider canines to be literally human, but states that the human like qualities ascribed to dogs by their owners demonstrates that there is far more to the human-canine relationship than mere automated responses of mindless objects. Indeed, they can be as much the behaviour modifier as the one whose behaviour is modified. Humans in a relationship with a canine, typically ascribe to their companion many of the qualities used to describe “humanness”. Dog owners identify and report the subjective experience of their animals and perceive the minds of their pets in a manner seemingly paralleling that of those who care for Alzheimer’s (Gubrium, 1986) and severely retarded persons. Sanders suggests that research on the relationship between people and their companion animals, and people and speechless humans demonstrates the “undue emphasis traditionally placed on language as the foundation of intimate interaction, mind and thoughtful behaviour, and the generation of social identities” (Sanders, 1993, p.223).

1.7 RATIONALE

Recent demographic studies and other research into the pet-owner relationship in the Western world have found companion animals to be widespread. Different species are most popular in different regions, and lifestyle and housing in particular appear to be significant indicators of the likelihood of pet keeping, and the species of animal kept.

The series of studies in this thesis was proposed to ascertain pet keeping demographics, and the human-pet relationship in a lifestyle
not yet examined. While pet keeping demographics in Australia have been documented relatively recently (McHarg, Baldock, Heady and Robinson, 1995; Salmon & Salmon, 1983), demographics of companion animal ownership and the human bond with pets have not been explored thoroughly in New Zealand. In some cases the keeping of a companion animal species does not equate with keeping a pet - racing greyhounds, farm dogs, breeding cats, cats kept for mousing, and "pet" lambs destined for the dinner table, are not included in the traditional definition of pets.

The aim was therefore, not only to document the numerical frequency of ownership of "companion animal" species, but also to explore the nature of the relationship between New Zealanders and their pets. Previous human-companion animal interaction research has rarely considered intergenerational pet ownership and little has been proposed on the intergenerational aspect of relationships with pets.

These exploratory studies were proposed to set the scene for New Zealand pet ownership, to examine the prevalence of ownership of various species, reasons for pet ownership and for discontinuation of pet ownership, and the role of intergenerational learning on pet owners' attitudes and choice of animal - in short, to better define a successful human-companion-animal bond.

The third and main study in this series was to explore the communication that owners who are highly attached to their pets share with their animals. Much has been written on the therapeutic uses of pets in providing social support and companionship (Covert, Whiren, Keith, & Nelson, 1985; Davis and Juhasz, 1985; Kidd and Kidd, 1985; van Leeuwen, 1981; Levinson, 1980), but rather less has
been documented on the role of communication and nurturance. Johnson, Garrity and Stallones (1992), have suggested that pet attachment may be a substitute for social ties with humans, and Salmon and Salmon (1983) have found that pets are more important in the lives of those who are without a 'normal' family network, including childless couples and single persons, and those who are widowed, separated and divorced. Others have found that pets are nurtured family members even when other children are present in the family (Beck & Katcher, 1983; Katcher & Beck, 1986). Pet-bonding may not be so much of a child substitute, but an extension of nurturing when children or other dependents are not available, and sometimes even when they are. Humans like to nurture and pets give them the perfect opportunity to nurture a being that never grows up, and changes little in the level of dependency it has on the caregiver. They are dependent, and remain dependent throughout their lives, but they are not dependent to the extent that they curtail freedom of lifestyle - pets are easily contained when visitors arrive, or when an evening out is inviting. They do not require full time care in the way that young children do. They allow demonstration of affection which is typically not allowed between adults in public, but which appears in adult-child contact.

Several researchers (Katcher and Beck, 1983, 1986; Hirsh-Pasek and Treiman, 1982; Ferguson, 1977) have observed similarities between babyltalk, the language parents and other adults use to talk to infants, and the speech owners use to communicate with their pets. Further comparison of these groups may lead to an improved understanding of the communication in successful human-pet relationships.
II. STUDY 1

2.1 INTRODUCTION

Levinson (1980) stressed the importance of pets for children, particularly in their psychological development, and considered being close to animals and nature to be a basic human need. Not every family owns a pet, and among those which do, not every child is the sole owner of a pet.

Melson (1988) suggested that the variables which lead to the acquisition of a pet differ from those related to involvement with the pet. While the child is often the family member for whom the acquisition of a pet is considered, a parent is usually the decision maker, and if not the major care giver, then at least the overseer of pet care chores. It is to be expected that family demographic and personal factors such as socioeconomic status, employment and marital status exert some influence on the likelihood of acquisition of a pet, because they affect the parent who makes the pet owning decisions. In addition, the family lifestyle, including available time, space and the proximity of neighbours, who may object to the keeping of some species, may influence the type of pet selected.

A number of demographic variables relevant to pet ownership were previously examined and there appears to be some agreement on how these variables influence the pet-family relationship: households with plenty of space (ie owner-occupied, detached and rural), and families with children, are more likely to have pets (McHarg, Baldock, Heady and Robinson, 1995; Pedigree Petfoods, 1980; PFMA, 1982; both cited in Messent & Horsfield, 1983). The pet
ownership level was found to reach a peak in families with children at middle childhood, between 8 and 12 years (Paul & Serpell, 1992; Melson, 1988; Salomon, 1981; Kidd & Kidd, 1985), although high pet ownership for families with teenagers was noted (Albert & Bulcroft, 1988).

There appear to be similar numbers of boys and girls keeping pets (Covert, Whiren, Keith & Nelson, 1985; Melson, 1988; Paul & Serpell, 1992), although other studies found a significant tendency for boys to own more pets than girls (Kidd & Kidd, 1985). However, girls are more likely to be involved with the care of the pet than boys (Kidd & Kidd, 1990).

The number and birth order of children has also been shown to influence the ownership of pets in families, however, the findings are difficult to compare because many studies do not distinguish between child-owned, and family-owned, pets. While earlier studies found larger families more likely to be pet owners (Franti, Kraus, Borhani, Johnson, and Tucker, 1980; Griffiths and Brenner, 1971 cited in Messent and Horsfield, 1983), an effect which appears to depend on dwelling type and location (McHarg, Baldock, Heady, and Robinson, 1995; Pedigree Petfoods, 1980; PFMA, 1982 both in Messent and Horsfield, 1983), more recent studies demonstrated a negative correlation between the number of siblings in the family and pet ownership in primary school children (Melson, 1988; Rost & Hartmann, 1994; Paul & Serpell, 1992) and suggested the absence of a younger sibling may be an important factor in predicting pet ownership.

The intergenerational literature suggests that attitudes toward pets may be examined by considering previous pet ownership status.
Attitudes toward pets, like many other important lifestyle decisions, are thought to be influenced by the attitudes and actions of the most often encountered role model, generally the parents. Gage and Magnuson-Martinson’s (1988) description of intergenerational continuity of attitudes and values suggests that family values are highly influential in socialisation. Baron and Byrne (1984) have noted that children adopt particular values and interests which are typically those of their parents, and that by their late twenties these patterns of behaviour are firmly established and resistant to change. More specifically, Serpell (1981) has found positive attitudes to pet owning exhibited in childhood are related to positive attitudes toward pets in adults, and Kidd and Kidd’s (1997) pet-owning adult sample had significantly more parents and grandparents who owned pets, when compared to adults who had never owned pets, or had only owned them during childhood.

2.2 RATIONALE

The present study examined New Zealand data to establish the demographic variables associated with pet ownership by both family, and individual child. Distinction between family owned and child owned pets is important as it is likely that ownership may influence the motivation for acquiring and caring for the pet, and the nature of the child-pet relationship.

Although previous studies presented statistics of children’s pet owning characteristics (Rost & Hartmann, 1994; Paul & Serpell, 1992; Melson, 1988), New Zealand data are unavailable. The New Zealand lifestyle embraces small built up areas (from inner city Christchurch,
to semi-rural lifestyle blocks of 5-10 acres which can be reached by car in 15 minutes), and few apartment style dwellings. For the five year period to 1996, 14.6% of the population of New Zealand were residing in a rural area, the remaining 85.4% were urban dwellers (Statistics New Zealand, 1996). In the U.S. in 1990, only 3% of the population lived in rural areas (U.S. Department of Commerce, 1995).

The proportion of employment of all parents residing in the family household is examined because in many cases, this is more directly representative of how much time the parent has available for the pet, and for the children. In addition it allows the examination of single parent families and how often a parent is home on a comparable basis.

The advantages and disadvantages of pets according to parents are explored, and, as the major decision makers in pet acquisition, parents' reasons for providing a pet for their child. Finally, the effects of previous pet ownership are briefly explored by comparison with first time pet owning families who have acquired pets for their children. Parents who have owned pets only since their children were born are assumed to have acquired the pet, at least in part, for their children. Parents who had pets prior to having children are assumed to have owned pets for their own enjoyment.

The present study examined New Zealand data to establish the demographic variables associated with pet ownership by the family, and the child. Distinction between family owned and child owned pets is important as it is likely that ownership may influence the motivation for acquiring and caring for the pet, and the nature of the child-pet relationship. A number of previous pet ownership studies have not clearly distinguished between family pet ownership and pet
ownership by the target child, or by other individual family members (Covert et al, 1985; Kidd & Kidd, 1985; Melson, 1988; Rost & Hartmann, 1994). As Paul and Serpell (1992) have indicated, detecting gender differences in pet ownership is difficult to do using only family pet ownership data, because many families have both male and female children.

Parents' perceptions of the advantages and disadvantages of pets and their reasons for providing a pet for their children were also explored.

2.3 METHOD

2.3.1 Participants

The parents of 464 primary school children, aged between 8 and 12 years, from 8 schools in the Canterbury region of the South Island of New Zealand were asked to participate. The study was designed to examine pet ownership in families with children in middle childhood as a means of targeting the age at which pet ownership reaches a peak (Paul and Serpell, 1992; Kidd and Kidd, 1985; Melson, 1988; Salomon, 1981).

Gross yearly income for families of the children surveyed ranged from $13,500 to $92,000 with a median of $36,000. The average yearly wage in New Zealand is $32,500 gross (Statistics New Zealand, 1997). The schools surveyed for this study were all state funded. Approximately half the children attended schools in rural districts.
2.3.2 Materials

A parental questionnaire was used to gather information about the pet owning characteristics of families of 8-12 year olds. The questionnaire was designed to provide demographic information concerning the socioeconomic status and living locality of the family, and the child's age, number of siblings and position in the family. The questionnaire was then divided into two parts; pet owning families were asked to indicate their ownership of previous and current pets, who was the owner of the pet, the reason the pet had been obtained, and to estimate how frequently their child was involved in care for the pet. Families without pets provided information regarding the reason for not owning one, and their history and future intentions regarding pet ownership. Both groups were asked how important they thought it was for children to own pets. Questions concerning the reasons for acquiring or not acquiring pets, and advantages and disadvantages of pet ownership were open ended questions. The remainder of the questionnaire items, including demographic questions, were Yes/No and multiple choice check-boxes. The questionnaire is included in Appendix A.

2.3.3 Procedure

Permission for questionnaires to be distributed to parents was obtained from school principals prior to data collection. The questionnaires were distributed to children in the selected schools
with instructions to deliver them to their parents. An attached instruction sheet explained that the purpose of the study was to gather data on pet ownership in families of primary school aged children. Parents were asked to complete the questionnaire with respect to the child who had brought it home, and return it to the school. An incentive of entry into a draw for movie tickets was used to encourage the return of completed forms.

2.3.4 Data Analysis

Due to the non-normal distribution, and the predominantly ordinal nature of the data, parametric statistic assumptions could not be met (Ferguson and Takane, 1989). For this reason, the two-tailed, non-parametric statistical analyses chi-square, Spearman’s rho rank order correlations, and Mann-Whitney U were used. Throughout the study .05 was adopted as the level of significance.

2.4 RESULTS

2.4.1 Pets and demographic variables

In the following results the use of the term ‘family owned pets’ includes all pets which are owned by and live with the family or family members residing in the home with the target child. ‘Child owned pets’ are those owned solely by the target child.

A total of 312 correctly completed questionnaires were returned, representing a 69% response rate. Of these, 55% were from rural
families. Almost half the questionnaires were completed by parents with respect to female children (48%). The mean age of the children surveyed was 9 years 6 months (SD=1.15) with an age range from 8 years to 12 years 10 months.

2.4.1.1 Family Pet Ownership

The majority of families (89%) indicated that they owned at least one pet at the time of completing the questionnaire. Although it is possible that urban families without pets did not respond to the questionnaire as readily as those with pets, thus giving an exaggerated pet ownership rate, examination of the responses of two rural schools which had a 98% return rate suggested that the rural pet ownership rate was accurately reflected.

Rural families were more likely to own a pet, although the pet ownership rate for both groups was high. Over 97% of rural families indicated they owned at least one pet, while 78% of urban families were pet owners, and this difference was significant ($\chi^2 = 19.4, p<.001$). The modal number of pets owned by pet owning families was 2 (range = 48). As expected, rural families owned more pets (mode = 2) than urban families (mode = 1).

Spearman’s rho rank order correlation indicated a negative relationship between the number of children present in the family and family pet ownership ($r = -.38, p<.0001$), but not with the number of pets owned. The percentage of families owning pets as a function of the number of children present in the family is shown in Figure 1.
Every single-child family owned a pet, and ownership decreased as the number of children increased, except for an increase among the 4 child family group.

Figure 1. Percentage of families owning a pet as a function of number of children present in the family.
2.4.1.2 Species of pets

Table 1 illustrates the distribution of species owned by rural and urban families. Among pet owning families, the modal number of species owned was 2. Urban families typically owned fewer species of animal (mode = 1) than rural (mode = 2).

The most commonly owned animals were cats, which were owned by almost 71% of pet owning families, and dogs, which were owned by over half. Horses were the next most common for rural families and fish for urban homes, but when rural and urban groups were combined, fish and small mammals (rats, mice, guinea pigs and rabbits) were the next most owned species. Pets which did not conform to the labelled categories were combined into the ‘other’ group, and included fallow deer, frogs, lizards (skinks and geckos), an axylotyl and snails.

Distributions of the species of pets which were owned solely by children are also presented in Table 1. Many children owned more than one species. Over half the children who had a pet of their own, owned a cat. Dogs and fish were each owned by approximately a quarter of the children. Boys and girls were the individual owners of similar types of pets, however boys owned dogs as pets significantly more often than did girls ($\chi^2 = 10.1$, $p<.01$).
Table 1. Distribution of species of pets owned by rural and urban families and children.

<table>
<thead>
<tr>
<th>Species</th>
<th>% of families who own*</th>
<th>% of children who own**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
<td>Rural</td>
</tr>
<tr>
<td>Dog</td>
<td>34.8</td>
<td>70.0</td>
</tr>
<tr>
<td>Cat</td>
<td>61.7</td>
<td>80.1</td>
</tr>
<tr>
<td>Horse</td>
<td>1.4</td>
<td>28.1</td>
</tr>
<tr>
<td>Goat</td>
<td>0</td>
<td>12.9</td>
</tr>
<tr>
<td>Pig</td>
<td>0</td>
<td>9.4</td>
</tr>
<tr>
<td>Cow</td>
<td>0</td>
<td>8.2</td>
</tr>
<tr>
<td>Bird</td>
<td>16.3</td>
<td>15.8</td>
</tr>
<tr>
<td>Small mammal</td>
<td>18.4</td>
<td>17.0</td>
</tr>
<tr>
<td>Fish</td>
<td>12.8</td>
<td>24.0</td>
</tr>
<tr>
<td>Sheep</td>
<td>15.5</td>
<td>24.0</td>
</tr>
<tr>
<td>Other</td>
<td>2.8</td>
<td>2.3</td>
</tr>
</tbody>
</table>

* Percentage of families who own each species of pet (N=312).
** Percentage of children from pet-owning families who own each species of pet (N=175). The percentage of children from all families who own each species is shown in brackets (N=312).

2.4.2 Parents, parental employment and income

There was no significant difference in pet ownership between single parent and 2-parent (including step-parent) families. Pet ownership was positively correlated with household income (r = .45, p < .0001), and with the proportion (full-time/part-time/unemployed x number of parents in household) of parental employment (r = .80, p < .0001). Further analysis revealed that families in which no parent
was employed were less often owners of pets than families in which one or both parents were employed full or part time ($\chi^2 = 13.5, p< .001$).

In addition, the proportion of employment, but not the income, of parents was correlated with the number of pets owned by the family ($r = .20, p< .0005$), and the number of species owned by the family ($r = .22, p< .0001$). There was no relationship between the proportion of parental employment and the species of pets owned.

### 2.4.3 Child ownership of pets

Of the families who owned pets, more than half (63%) reported that the target child was the sole owner of at least one pet. There was no gender difference for individual pet ownership among children, and rural children did not own pets more often than their urban counterparts. Children who owned a pet of their own were more likely to live in a household with more pets (Mann Whitney $U=4706, p< .0001$) and more species of pets (Mann Whitney $U= 5128, p< .0001$) than children who did not have a pet of their own. Child ownership of a pet was also related to combined level of parental employment, ($r = .19, p< .005$), and household income ($r = .17, p< .005$).

An inverse relationship was found between the child owner of a pet and the number of other children in the family. Only-children and children with one sibling were more likely to be the sole owners of a pet than children with more than one sibling ($\chi^2 =11.2, p< .001$). Almost 85% of only-children were the sole owners of a pet compared with 63% of children with siblings ($\chi^2 = 4.3, p< .05$). As the number of
younger siblings in the family decreased, the likelihood of pet ownership by the child increased ($r = -.16$, $p< .005$).

Logistic regression of the perceived importance of pets, total number of pets, ownership of pets by parents before children were born, own room and number of siblings, onto child ownership of pets indicated an overall predictive effect of 69% ($\chi^2 = 45.4$, $p< .0001$). The total number of pets in the household, and whether the child had their own room were the only significant individual predictors at the .05 level.

2.4.4 Intergenerational pet ownership

A significant proportion of the pet-owning family sample (88%) had owned a pet prior to the current one ($\chi^2 = 80.2$, $p< .001$). Most (81%) current pet owning families had owned a pet at the time their first child was born ($\chi^2 = 53.4$, $p< .001$) and significantly more of these were rural than urban, ($\chi^2 = 6.1$, $p< .02$). Almost 96% of these families currently owned a dog or cat, compared to 87.3% of those who had not owned a pet until after their children were born ($\chi^2 = 5.9$, $p< .02$).

Pet ownership by parents prior to the birth of their children was significantly positively related to how important parents thought pets were for children ($r = .51$, $p< .0001$), and how much parents felt the child and family would be affected if the pet was no longer around ($r = .36$, $p< .0001$). There was also a positive relationship between prior parental pet ownership and current ownership of a pet by the child ($r = .62$, $p< .0001$). These families owned significantly more pets (Mann Whitney U= 3928, $p< .0001$), and more species of pets (Mann Whitney
U = 3882, p < .0001), than families who had acquired pets since their children had been born. They also attributed their pets “member of the family” status more often than other families ($\chi^2 = 4.4, p < .05$).

2.4.5 Relationships with pets

Of species which are generally considered “house pets” (dogs, cats, birds, small mammals and fish), 61% of rural families compared to 90% of urban families allowed the child’s favourite pet inside the house, ($\chi^2 = 13.3, p < .001$). Urban families were more likely to have their cats in the house than rural families, ($\chi^2 = 19.7, p < .001$), but no significant effects were found for other species. Parents who had owned pets prior to having children were significantly more likely to allow the current favourite pet in the house ($\chi^2 = 7.32, p < .01$). For appropriate species, every family who stated their pet had ‘member of the family’ status allowed their pet inside the house.

There was a positive relationship between the child being the sole owner of the pet and how much parents felt the loss of the pet would affect the child ($r = .34, p < .0001$), or the family ($r = .22, p < .0002$). Parents of girls estimated the loss of the pet would affect their child more than parents of boys ($\chi^2 = 47.8, p < .001$), but there was no effect of birth order or number of siblings. Parents who worked full time expected their children to be more affected by loss of a pet than children whose parents were less than fully employed (Mann Whitney U = 4340, p < .05).
2.4.6 Pet acquisition

Table 2 presents the reasons for getting a pet for the child as a percentage of all the reasons given. The main reasons parents gave for acquiring a pet for their child were because the child had wanted a pet, and to teach the child responsibility or to take care of a living being. Providing the child with a companion, or a pet of their own, were also often given as reasons for pet acquisition. More rural than urban families acquired the pet to give their child a pet of their own ($\chi^2 = 5.6, p<.02$) or as part of a hobby or sport ($\chi^2 = 7.7, p<.01$). When horses were removed from the latter analysis, this effect disappeared. There were no other significant differences in the reason for acquisition of different species of pets.

Children who were the youngest or the only child were given a pet more often because they “wanted it” than children who had younger siblings ($\chi^2 = 6.4, p<.02$), but were less likely to have been given a pet for teaching responsibility and care, than children with younger siblings ($\chi^2 = 7.4, p<.01$).

Children of parents who had acquired a pet to teach their child responsibility, cared for the pet less often than children whose parents had acquired a pet for other reasons ($\chi^2 = 10.6, p<.01$). Single parents were no more likely than 2 parent families to acquire pets for their child for companionship, however, there was a significant correlation between parental employment level and acquiring a pet as company for the child ($r = .48, p<.0001$).
Table 2. Frequency of reasons given for acquiring a pet for children as percentage of total reasons given.

<table>
<thead>
<tr>
<th>Reason for acquisition</th>
<th>Percentage of all responses</th>
<th>Percentage of rural responses</th>
<th>Percentage of urban responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child wanted it</td>
<td>25.1</td>
<td>21.5</td>
<td>30.7</td>
</tr>
<tr>
<td>Teach responsibility/care</td>
<td>22.0</td>
<td>20.1</td>
<td>25.0</td>
</tr>
<tr>
<td>Companion or to cuddle</td>
<td>10.6</td>
<td>9.4</td>
<td>12.5</td>
</tr>
<tr>
<td>Pet of child’s own</td>
<td>10.6</td>
<td>14.4</td>
<td>4.5</td>
</tr>
<tr>
<td>To replace pet/human</td>
<td>7.9</td>
<td>5.0</td>
<td>12.5</td>
</tr>
<tr>
<td>Hobby or sport</td>
<td>7.1</td>
<td>10.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Gift</td>
<td>7.0</td>
<td>6.5</td>
<td>8.0</td>
</tr>
<tr>
<td>Play</td>
<td>3.1</td>
<td>3.6</td>
<td>2.3</td>
</tr>
<tr>
<td>To grow up together</td>
<td>2.6</td>
<td>2.2</td>
<td>3.4</td>
</tr>
<tr>
<td>For school pet show</td>
<td>2.3</td>
<td>3.6</td>
<td>0</td>
</tr>
<tr>
<td>To give confidence</td>
<td>1.3</td>
<td>2.2</td>
<td>0</td>
</tr>
<tr>
<td>Allergic to other species</td>
<td>0.4</td>
<td>0.7</td>
<td>0</td>
</tr>
</tbody>
</table>

2.4.7 Advantages and disadvantages of pet ownership

The advantages and disadvantages of pet ownership, as a percentage of the number of responses given, are presented in Table 3. More than half the families (55%) with pets stated there were no disadvantages in owning a pet, while 12% of respondents claimed there were no advantages; more of the latter were urban respondents ($\chi^2 = 28.5, p<.001$).
Table 3. Perceived advantages and disadvantages to the child of having a pet in the family as a percentage of total responses given.

<table>
<thead>
<tr>
<th>Advantages</th>
<th></th>
<th>Disadvantages</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(total responses = 524)</td>
<td>---</td>
<td>(total responses = 332)</td>
<td>---</td>
</tr>
<tr>
<td>Responsibility</td>
<td>37.8</td>
<td>None</td>
<td>54.8</td>
</tr>
<tr>
<td>Love/Caring/Respect</td>
<td>19.9</td>
<td>Holiday Care</td>
<td>9.9</td>
</tr>
<tr>
<td>Companionship</td>
<td>17.9</td>
<td>Time/Work</td>
<td>9.9</td>
</tr>
<tr>
<td>None</td>
<td>12.0</td>
<td>Mess</td>
<td>8.1</td>
</tr>
<tr>
<td>Play</td>
<td>5.7</td>
<td>Cost</td>
<td>4.2</td>
</tr>
<tr>
<td>Ownership/Pride</td>
<td>2.9</td>
<td>Allergies</td>
<td>3.9</td>
</tr>
<tr>
<td>Interest/Activity</td>
<td>1.9</td>
<td>Disruption</td>
<td>3.0</td>
</tr>
<tr>
<td>Safety</td>
<td>1.3</td>
<td>Destruction</td>
<td>1.8</td>
</tr>
<tr>
<td>Confidence</td>
<td>0.6</td>
<td>Physical/emotional injury to child</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Too many/too few pets</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kills other animals</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Teaching responsibility to the child was seen as the main advantage of pet ownership, (38%), and the love, caring and respect given and received by pets was named as an advantage by 20%. The benefits of companionship were acknowledged by 18% of the sample.

The main disadvantages were finding holiday care for pets (33%), the time and work involved in caring for the pet (33%), and the mess (27%).
2.4.8 Caring for the pet

Thirty-eight families (14%) shared the pet care workload equally among all family members. Of the targeted children 20% did most of the work in caring for their favourite pet. Another 5% shared the majority of pet care work with one other person, and at least 38% of children were involved in the care of their favourite pet to an equal or greater degree than that of their parents or siblings.

Mothers were responsible for the majority share of pet care in 34% of families, and did at least half the work in 41% of families. In 8% of families, fathers did the majority of pet care chores, and did at least half the chores in 9%. Only 2% of families stated the majority of work for the target child’s favourite pet was done by another child in the family or someone other than a parent or the target child.

Urban children provided more physical care for their pets than did rural children ($\chi^2 = 5.5, p< .02$), and children who were the sole owners of their favourite pet engaged in pet care activities more than children who were not sole owners ($\chi^2 = 12.3, p< .001$).

The amount of pet care was positively related to the position of the child in relation to other siblings, ($r = .36, p< .0001$), with children with younger siblings tending to care more for their pets, and the number of siblings in the family ($r = .22, p< .0001$).

2.4.9 Families without pets

Thirty-four (11%) of the 312 families indicated they did not own a pet at the time of the survey. Only 4 (2%) rural families did not own
a pet compared to 21% of urban families \((\chi^2 = 28.6, p< .001)\). Of these, all the rural families had owned a pet at some time, but over a quarter (27%) of urban families had never been pet owners \((\chi^2 = 10.55, p< .01)\).

Of the pet-less families, 27.5% indicated that no adult living in the household had owned a pet during their childhood. Most pet-less families (83%) had children who had asked for a pet, and three quarters of the rural families claimed they would acquire a pet just for their child, while only 23% of urban parents would do so \((\chi^2 = 4.60, p< .05)\). The majority of pet-less rural families (75%) stated that they intended to acquire a pet within the next year. The preferred pets for these families were dogs (75%) and cats (25%). Just under 17% of pet-less urban families planned to get a pet in the next 12 months, with equal numbers intending to acquire cats and dogs.

Table 4 shows the reasons these families chose not to own pets. As many families gave more than one reason, the figures are presented as a percentage of the total reasons given, and as a percentage of the urban, and rural, families who returned questionnaires. Allergies were cited by 43% of urban families as one of the main reasons they did not own a pet. Lack of time to spend on the animal (33%) and restrictions imposed by the family lifestyle (33%) were other main reasons given. Cost was the main reason for rural families not owning pets.
Table 4. Reasons for not owning pets as a percentage of the total reasons given, and as a percentage of urban and rural families.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage of reasons</th>
<th>Percentage of families</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Urban</td>
</tr>
<tr>
<td>Allergies</td>
<td>20.0</td>
<td>43</td>
</tr>
<tr>
<td>Restrictions on lifestyle</td>
<td>15.7</td>
<td>33</td>
</tr>
<tr>
<td>Time</td>
<td>14.3</td>
<td>33</td>
</tr>
<tr>
<td>Cost</td>
<td>12.8</td>
<td>23</td>
</tr>
<tr>
<td>Too much bother</td>
<td>10.0</td>
<td>20</td>
</tr>
<tr>
<td>Death/loss of previous pets</td>
<td>7.1</td>
<td>13</td>
</tr>
<tr>
<td>Don’t like pets</td>
<td>5.7</td>
<td>10</td>
</tr>
<tr>
<td>Lack of adequate facilities</td>
<td>4.3</td>
<td>10</td>
</tr>
<tr>
<td>Family doesn’t want pets</td>
<td>5.7</td>
<td>10</td>
</tr>
<tr>
<td>Not allowed pets in house</td>
<td>4.3</td>
<td>10</td>
</tr>
</tbody>
</table>

2.4.10 The importance of pets

Among pet-owning families significantly more parents who had owned pets before their children were born rated pets as being very important or necessary for children than did parents who did not have a pet before the birth of their first child \( (\chi^2 = 11.5, p< .001) \). Families with pets were more likely to rate pets as very important or necessary for children than were non owners \( (\chi^2 = 2376, p< .001) \) and
ownership of the pet by the child was positively correlated with how important parents thought pets were for children \((r = .46, p < .0001)\). There was a positive relationship between the level of parental employment and how important parents thought pets were for children \((r = .20, p < .0005)\).

2.5 DISCUSSION

Pets are present in the majority of homes of middle-childhood children in New Zealand, and more than half of pet owning families report their child to be the sole owner of a pet. Pet ownership rates were affected by the living conditions of the sample families, most obviously with rural versus urban location, conforming to previous findings of a higher frequency of pet ownership, and a greater number of pets, and species of pets in rural families (Covert et al, 1985; Melson, 1988; Paul & Serpell, 1992). These findings are not surprising, given the amount of space available and the living conditions in each locality. Previous studies noted that pet ownership is higher in detached, owner-occupied homes (Messent & Horsfield, 1983), and this type of accommodation prevails in New Zealand, with 81% of the sample families living in their own home.

Although income has been linked with pet ownership (Albert and Bulcroft, 1988; Covert et al, 1985), in this study pet ownership was correlated more highly with the proportion of parents employed. Melson (1988) also noted pets to be more prevalent in families where mothers worked full or part time. There are several reasons why parents who spend less time with their children due to work commitments may provide pets for their families instead. The level
of parental employment is correlated with parents giving company for their child as a reason for pet acquisition, suggesting parents may perceive a deficit in their child’s environment. That parents who worked full time expected their children to be more affected by the loss of a pet supports the view that pets are considered able to compensate, at least in part, for the absence of a parent.

Alternatively, employed parents may consider their children to be independent and responsible enough to care for their own pet at an earlier age than children of unemployed parents, because many of their experiences already occur without constant parental supervision.

No gender differences were found in frequency of individual pet ownership or the amount of care children gave their pets. Like Rost and Hartmann’s (1994) study these data indicated that caring activities depended on whether the child was the owner of the pet. As previously noted by Salmon and Salmon (1983), mothers were the main caregivers of both family and child owned pets.

Whereas Paul and Serpell (1992) found that step-parent families had significantly more pets than single parent families and both Melson (1988) and Kidd and Kidd (1989) found 2-parent families more likely to have pets than single parent families, the current study found no significant effect of parent number.

Previous studies have found that large families or households are more likely to have a pet (McHarg, Baldock, Heady and Robinson, 1995; PFMA, 1982 cited in Messent & Horsfield, 1983), while others have noted that single child families are significantly more likely to have pets (Rost & Hartmann, 1994). In this study, ownership of pets by families and by individual children decreased as the number of
siblings in the family increased and youngest children and single children were more likely to have pets of their own than children with younger siblings. Paul and Serpell (1992) found a similar effect; their study indicated that children with no or one sibling owned a greater number of pets than children with many siblings. They suggest single and youngest children may use animals to “express feelings and perform behaviours that other children are able to direct toward their younger sisters and brothers (Dunn, 1984)” (Paul & Serpell, 1992, p.241).

Collectively, the importance of pets for children, total number of pets in the family, number of siblings, whether the child had their own room, and whether parents had owned previous pets significantly predicted child ownership of a pet, however only the total number of pets in the family and whether the child had a room of their own were predictive individually.

While there were few sibling status differences in reasons for acquiring pets for children, youngest and only children were more often given pets because they “wanted them”, and less often to teach them responsibility or to care for a dependent. These results are congruent with suggestions that parents of single children may feel concern about the possible loneliness of the child, or that children with no or few siblings may request pets more frequently than other children “because of a deficit they themselves perceive (either consciously or unconsciously) in their home environment” (Paul & Serpell, 1992, p.242). Such a deficit may exist in the availability of age-appropriate playmates, companions, or in the opportunity to explore authoritative, dominant and caretaking behaviours with a younger
sibling (Dunn, 1984).

The finding that parents of youngest and single children more often acquired pets because their child wanted it, and less often to teach them responsibility suggests at least two possibilities. Firstly, as Paul and Serpell (1992) suggest, single and youngest children may not consciously perceive a deficit in their environment, and the accompanying demands for pets are loosely termed "child wanted it" by parents, rather than as a request for playmates, companionship or authority. Secondly, that children with younger siblings are more often allowed pets to teach them responsibility is compatible with results of birth order studies, which strongly suggest that parents put more pressure for responsibility on first born children (Rothbart 1971; Abramovitch, Corter, Pepler, and Stanhope, 1986) and place fewer demands to assume adult qualities on youngest children who are often described as the "baby" in the family (Sutton-Smith and Rosenberg, 1970).

Parents who had acquired a pet for their child as a means of teaching the child responsibility, were significantly less likely to have the child care for the pet, which suggests that for these families at least, acquiring a pet for the child did not appear to make them responsible for the pet's welfare. Obviously, more specific research is required in this area to determine why parents perceive pets as being capable of teaching responsibility to children, and whether these perceptions can be supported by experimental measurement.

Further research may examine the extent of the differences in relationships between a child and a family owned, or child owned pet and may establish whether these differences are maintained into adulthood, and how they relate to subsequent relationships with pets.
III. STUDY 2

3.1 INTRODUCTION

The intergenerational literature suggests that attitudes toward pets may be examined by considering previous pet ownership status within the family. Attitudes toward pets, like many other important lifestyle decisions, are thought to be influenced by the attitudes and actions of the most often encountered role model, generally the parents.

Gage and Magnuson-Martinson’s (1988) review of intergenerational continuity of attitudes and values in a number of studies, suggests that family values are highly influential in socialisation. A variety of attitudes and values have been examined, and there appears to be a degree of similarity between parents and their adult children (Adcock and Bengston, 1980; Bengston et al 1974; Bengston and Troll, 1978; Kohn, Stomczynski & Schoenbach, 1986). Baron and Byrne (1984) have noted that children adopt particular values and interests which are typically those of their parents, and Troll (1985 in Gage and Magnuson-Martinson, 1988) adds that by the late twenties these basic frameworks of values and interests are firmly established and resistant to change, although Bengston and Lovejoy (1975) suggest the details may be altered by dynamic events throughout the life cycle. Brooks proposes that the immediate family is the main reference group because during the early years of the child’s life, there is minimal contact with any other group. The family, therefore, has almost exclusive influence on the
child's attitudes. Even when individuals do not identify strongly with their family of orientation, it has been noted that mere membership in a social group tends to influence the attitudes of individuals in concordance with those of the group (Siegel and Siegel, 1974).

There is some empirical evidence which demonstrates that adult attitudes to pets are closely related to previous exposure to attitudes toward pets during their childhood (Kidd and Kidd, 1990; Poresky, Hendrix, Mosier, and Samuelson, 1988). Serpell (1981) has found positive attitudes to pet owning exhibited in childhood are related to positive attitudes toward pets in adults, and Kidd and Kidd's (1997) pet-owning adult sample had significantly more parents and grandparents who owned pets, when compared to adults who had never owned pets, or had only owned them during childhood.

Paul and Serpell (1993) have also found that growing up with pets is related to positive attitudes to animals (and humans) in adulthood, and suggest that this may be a result of parental attitudes. They note that previous research has found political and religious orientation to be transmitted from parents to their children, and suggest that attitudes towards pets may be passed on in the same way. They propose that "the sorts of parents who encourage their children to have pets and to perceive them as important may also be the kinds of parents who would be keen on inculcating kindness and sympathy towards both animal and human others" (p. 334). Paul and Serpell's study provided support for the findings of Serpell (1981), Poresky et al (1988), and Kidd & Kidd (1989), that early experience of pet ownership seems to form a pattern which will direct pet attitudes and ownership in later life. They found that the number of pets their
subjects wanted to own in the future was positively correlated with
the number of pets owned during childhood, the number of pets
their families had owned during childhood and the number of
important pets they reported having had during childhood. Subjects
who claimed they would encourage their children to have pets also
reported significantly higher individual ownership, family
ownership and number of important pets.

Humane attitudes also appear to be passed between generations-
Paul and Serpell (1993) found those who currently were members of
animal welfare organisations to have had significantly more pets of
their own, more family pets, and more important pets than non
members. Attitudes to pets in both sexes, and empathy in males are
significantly positively correlated with individual pet ownership,
family pet ownership and the number of important pets. This
suggests that strong attachments to pets in adult life may have less to
do with owning a pet in childhood than they have to do with the
attitudes of their parents towards pets. As indicated in Study 1,
parents who allow their children to have pets do not necessarily want
or like pets themselves. Many parents acquired a "pet for the
children", but had not owned a pet themselves before their children
were born, suggesting that pets were not important to them in their
adult lives.

Gage and Magnuson-Martinson (1988) found only weak
evidence of intergenerational continuity of attitudes and values
about dogs. This study focused on the attitudes of new parents, and
their parents, to companion dogs in relation to a new baby in the
house and revealed that, although attitudes of grandparents
explained a small, significant proportion of their adult-children's
attitudes, social class and spouse's attitudes are more influential, and adult-children tended to have more positive attitudes than their parents.

3.2 RATIONALE

The results of Study 1 indicated that there may be some basis for the existence of an intergenerational continuity of attitudes towards pet keeping in families. Most pet-owning families had owned pets prior to the present one, and had owned a pet before the birth of their children. Of the families that did not own a pet, over one third said that no adult in the house had had a pet in the family as a child.

Families in which pets had been acquired since the children had been born owned fewer pets, fewer species of pets, and were less likely to own dogs or cats. Parents who had owned pets before having children were more likely to allow their pets inside the home, rated pets as very important or necessary for children, and had children who provided more care for their pets.

These findings suggest that parents who have had pets during their adult lives, but before having children, encourage their children to form an attitude towards pets that other parents do not. Parents who acquired pets purely for their children, and who had not previously owned pets in their adult life, appear to possess and pass on to their children a different attitude toward pets.

This study was designed to further explore the relationships families have with pets, and to examine the intergenerational continuity of pet ownership and attitudes held toward pets. Serpell (1981) has suggested that there is an intergenerational effect on the
species of pet owned through consecutive generations of families - that is, those who grow up with a dog are more likely to provide a dog for their children to grow up with, than those who grow up with cats.

A second objective of Study 2 was to explore the correlates of "attachment" to pets. Levinson (1984) has stated that the mere ownership of an animal is not sufficient to define a positive human-animal relationship. Rather, he suggests, the level of attachment or the attitudes people have toward their pets appear to provide a more logical definition. Several researchers (Cain, 1985; Katcher, Friedmann, Goodman and Goodman 1983; Voith, 1985) have found their subjects to give their pet "member of the family" status, but the meaning of this term when used for animals has not yet been explored. In Study 1 it was noted that significantly more of those who said their pet was "one of the family" were likely to allow their pet to live in the house. Those who attributed "family member" status to their pet did so in response to an indirect question. Respondents were not asked explicitly whether they considered their pet to be a family member due to the probability that the question was highly loaded to produce a socially desirable response. Given the enormous number of animals which are abandoned or left to be euthanised at animal shelters (Patronek and Glickman, 1994; Manning and Rowan, 1992; Nassar, Talboy and Moulton, 1992), "member of the family" for dogs and cats does not have the same meaning as it does for children and spouses. It is therefore suggested that "member of the family" status is not a useful construct, particularly when participants are asked closed questions regarding their pet's status. In this study, those who volunteer their pets' status as family members in response to indirect
questions will be assessed on various items to gauge how attached families are to the pet, and what it means for a pet to be a "member of the family".

3.3 METHOD

3.3.1 Participants

The parents of 380 primary school children, aged between 5 and 12 years, from three schools in the South Island of New Zealand were asked to participate. Income for families of the children surveyed ranged from less than $20,000 p.a. to more than $50,000. The median income was $37,520. The schools surveyed for this study were all state funded. Approximately half the children attended schools in rural districts.

3.3.2 Materials

A parental questionnaire was used to gather information about the intergenerational pet owning characteristics of families of 5-12 year olds. The questionnaire is included in Appendix B. Questions regarding the species of pets kept, and questions which were intended to explore the level of attachment to pets required short answers. The remaining questions asked respondents to tick the most appropriate of the options given.

The questionnaire was designed in four sections, and require the parents of the targeted primary school children to complete pet ownership and attachment details about their parents (Generation 1), themselves (Generation 2), and their children (Generation 3).
Section 1: Demographics

The first section was designed to provide basic demographic information concerning parental employment, living arrangements (rural vs urban) of the family, and the child’s age, number of siblings and position in the family.

Section 2: Pet ownership in Generation 1

All parents were asked to list the pets currently owned by Generation 1, and how attached they estimated Generation 1 to be to their favourite pets.

Section 3: Pet ownership in Generation 2

Parents were asked to list any pets which were present in their family during their childhood, and to state who had owned each pet. Parents were also asked whether they had owned a pet when their first child was born.

Section 4: Pet ownership in Generation 3

Parents were asked to list any pets currently in their children’s family, and whether the pets were family or individually owned. They were then asked to answer questions regarding their favourite currently-owned pet, including attachment to the pet and the type and frequency of interactions with the pet.

Parents were then required to answer items designed to explore the level of attachment to the pet; the extent they would go to to find a lost pet, and whether they would take the pet if the family shifted within New Zealand or between countries.

They were then asked to answer questions regarding their child’s
favourite currently-owned pet, including the child’s attachment to
the pet and the type and frequency of their interactions with the pet.

3.3.3 Procedure

Permission for questionnaires to be distributed to parents was
obtained from school principals prior to data collection. The
questionnaires were distributed to one child from each family in the
selected schools with instructions to deliver them to their parents.
An attached instruction sheet explained that the purpose of the study
was to gather data on pet ownership in families of primary school
aged children. Parents were asked to complete the questionnaire with
respect to the child who had brought it home, and return it to the
school. An incentive was used to encourage the return of completed
forms.

3.3.4 Data Analysis

Due to the non-normal distribution, and the predominantly
ordinal nature of the data, parametric statistic assumptions could not
be met (Ferguson and Takane, 1989). For this reason, the two-tailed,
non-parametric statistical analyses chi-square and Spearman’s rho
rank order correlations were used. Throughout the study .05 was
adopted as the minimum level of significance.
3.4 RESULTS

3.4.1 Demographics

A total of 287 completed questionnaires (response rate of 75.5%) were returned, 47.4% of which were completed about boys. The median age of the children who returned questionnaires was 8 years, and ages ranged from 5 years, 1 month, to 12 years, 3 months. Most (42.3%) children had one sibling, 32.8% had two siblings, and 13.7% had three or more siblings. Only 11.2% were the only child in the family. Questionnaires were most often completed by mothers (85%) and fathers (13.2%), with the remaining 1.8% completed by grandparents or step-parents.

Most children lived with both their mother and father (72.5%), or with their mother only (17.8%). Just over half of the sample lived in an urban setting (56.3%), with the remainder living in semi-rural (27.1%) or rural (16.6%) settings.

Most children (74.7%) had at least one parent in the household working full time, 12.3% had a parent working part time, and 13% had no adults working part or full time.

3.4.2 Pet ownership

3.4.2.1 Generation 1 (grandparents)

Questions regarding pet ownership by grandparents revealed that 64.7% of all grandparents were known to have had at least one pet at the time of the questionnaire. Table 4 below presents the species of pets currently owned by grandparents. Table 5 indicates the level of
attachment to pets that grandparents were estimated to have.

Table 4: Species of pets owned by Generation 1 (grandparents).

<table>
<thead>
<tr>
<th>Species</th>
<th>Maternal g/mother (%)</th>
<th>Maternal g/father (%)</th>
<th>Paternal g/mother (%)</th>
<th>Paternal g/father (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>dog</td>
<td>21.7</td>
<td>15.5</td>
<td>17.0</td>
<td>14.6</td>
</tr>
<tr>
<td>cat</td>
<td>37.9</td>
<td>27.0</td>
<td>23.5</td>
<td>14.6</td>
</tr>
<tr>
<td>bird</td>
<td>7.9</td>
<td>5.3</td>
<td>4.5</td>
<td>4.4</td>
</tr>
<tr>
<td>horse</td>
<td>0.8</td>
<td>0.4</td>
<td>1.0</td>
<td>1.1</td>
</tr>
<tr>
<td>cow</td>
<td>1.2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>rodent</td>
<td>1.2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>fish</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>other</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 5. Generation 1 (grandparents) attachment to favourite pet as estimated by Generation 2 (parents).

<table>
<thead>
<tr>
<th>Attachment to favourite pet</th>
<th>Maternal g/mother (%)</th>
<th>Maternal g/father (%)</th>
<th>Paternal g/mother (%)</th>
<th>Paternal g/father (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inseparable</td>
<td>14.3</td>
<td>10.2</td>
<td>8.5</td>
<td>9.8</td>
</tr>
<tr>
<td>Very close</td>
<td>45.1</td>
<td>39.8</td>
<td>38.7</td>
<td>27.9</td>
</tr>
<tr>
<td>Quite close</td>
<td>20.3</td>
<td>18.4</td>
<td>25.6</td>
<td>26.2</td>
</tr>
<tr>
<td>Likes pet</td>
<td>15.0</td>
<td>20.4</td>
<td>20.7</td>
<td>13.1</td>
</tr>
<tr>
<td>Neutral</td>
<td>3.0</td>
<td>7.1</td>
<td>1.2</td>
<td>8.2</td>
</tr>
<tr>
<td>Dislikes</td>
<td>0.8</td>
<td>2.0</td>
<td>0</td>
<td>1.6</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0.8</td>
<td>1.0</td>
<td>1.2</td>
<td>6.6</td>
</tr>
<tr>
<td>No response</td>
<td>0.8</td>
<td>1.0</td>
<td>4.9</td>
<td>6.6</td>
</tr>
</tbody>
</table>
3.4.2.2 Generation 2 (parents)

Most mothers had had a pet in the family during their childhood (88%), and 43.8% had been the sole owner of a pet. Fewer fathers had had family pets (69.4%), and only 20.9% had been the sole owner of a pet, but these differences were not significant. The species of family and sole-owned pets are presented in Table 6.

Table 6. Family-owned and sole-owned pets during the childhood of Generation 2 (parents).

<p>| Species | Family-owned pets | | Sole-owned pets | |</p>
<table>
<thead>
<tr>
<th></th>
<th>mother</th>
<th>father</th>
<th>mother</th>
<th>father</th>
</tr>
</thead>
<tbody>
<tr>
<td>dog</td>
<td>59.6</td>
<td>44.0</td>
<td>10.9</td>
<td>6.5</td>
</tr>
<tr>
<td>cat</td>
<td>77.5</td>
<td>48.2</td>
<td>18.9</td>
<td>5.1</td>
</tr>
<tr>
<td>bird</td>
<td>33.6</td>
<td>16.6</td>
<td>10.2</td>
<td>5.1</td>
</tr>
<tr>
<td>horse</td>
<td>9.4</td>
<td>4.2</td>
<td>5.1</td>
<td>0.9</td>
</tr>
<tr>
<td>cow</td>
<td>2.5</td>
<td>1.4</td>
<td>5.1</td>
<td>0.9</td>
</tr>
<tr>
<td>rodent</td>
<td>25.6</td>
<td>8.8</td>
<td>14.2</td>
<td>3.3</td>
</tr>
<tr>
<td>goat</td>
<td>2.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>sheep</td>
<td>7.9</td>
<td>5.5</td>
<td>6.2</td>
<td>3.3</td>
</tr>
<tr>
<td>pig</td>
<td>0</td>
<td>0.9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>fish</td>
<td>16.6</td>
<td>5.5</td>
<td>4.4</td>
<td>2.3</td>
</tr>
<tr>
<td>other</td>
<td>0</td>
<td>0</td>
<td>2.6</td>
<td>1.4</td>
</tr>
</tbody>
</table>

3.4.2.3 Generation 3 (child and child’s family)

At the time of completing the questionnaire 83% of families owned a pet. The species of pets owned are presented in Table 7. Of
the pet-owning families 85% said that they would have pets even if there were no children in the family, while 15% agreed that they only had pets for their children.

Table 7. Species of family-owned and child-owned pets in Generation 3 (child’s) families.

<table>
<thead>
<tr>
<th>Species</th>
<th>Family owned</th>
<th>Child-owned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>dog</td>
<td>46.6</td>
<td>109</td>
</tr>
<tr>
<td>cat</td>
<td>85.5</td>
<td>200</td>
</tr>
<tr>
<td>bird</td>
<td>15.0</td>
<td>35</td>
</tr>
<tr>
<td>horse</td>
<td>6.8</td>
<td>16</td>
</tr>
<tr>
<td>cow</td>
<td>0.4</td>
<td>1</td>
</tr>
<tr>
<td>rodent</td>
<td>10.7</td>
<td>25</td>
</tr>
<tr>
<td>goat</td>
<td>1.7</td>
<td>4</td>
</tr>
<tr>
<td>sheep</td>
<td>3.4</td>
<td>8</td>
</tr>
<tr>
<td>pig</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>fish</td>
<td>18.8</td>
<td>44</td>
</tr>
<tr>
<td>other</td>
<td>2.1</td>
<td>5</td>
</tr>
</tbody>
</table>

3.4.3 Child’s favourite pet

Children’s favourite pets were dogs (24.9%), and cats (58.7%). Other favourite pets included rodents (7.2%), birds (4.2%), and fish (3%). Larger pets were less popular, with horses (1.3%), cows (0.42%), and sheep (0.42%), even though almost half the sample lived in rural or semi-rural locations.

Children’s pets were most often obtained from previous owners (23.7%) and from breeders (22%). Other sources of pets were pet shops
(13%), strays (11%), the SPCA (9.8%), having owned the mother
(7.6%), from family members (7.2%), and other unspecified sources
(5.1%). Most pets had been acquired free either as a giveaway or
through owning the mother (56.6%), or as a gift (7.2%). Just over 21%
of pets had cost their owners between $1 and $100, 15% of pets cost
more than $100, and only 3% cost more than $500.

The reasons parents gave for obtaining pets for their children are
presented in Table 8 below. The percentages total more than 100%
because many parents included more than one reason. Frequencies
are calculated as a percentage of parents who gave that reason, rather
than as a percentage of the total number of reasons given.

Table 8. Reasons for acquisition of child’s favourite pet.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child wanted it / got attached</td>
<td>32.7</td>
</tr>
<tr>
<td>Company for child</td>
<td>4.1</td>
</tr>
<tr>
<td>Company for or to replace another pet</td>
<td>20.9</td>
</tr>
<tr>
<td>To teach child responsibility/love/care</td>
<td>21.0</td>
</tr>
<tr>
<td>It was cheap, takes up little space</td>
<td>1.5</td>
</tr>
<tr>
<td>Parent wanted that breed/species</td>
<td>25.5</td>
</tr>
<tr>
<td>Stray/save it</td>
<td>10.2</td>
</tr>
<tr>
<td>For child’s birthday/gift</td>
<td>5.1</td>
</tr>
<tr>
<td>As guard/for work</td>
<td>2.0</td>
</tr>
<tr>
<td>As part of a hobby</td>
<td>2.0</td>
</tr>
<tr>
<td>Allergies to other species</td>
<td>1.0</td>
</tr>
<tr>
<td>Bred it</td>
<td>2.0</td>
</tr>
</tbody>
</table>
3.4.4 Intergenerational continuity of pet ownership

Grandparents (Generation 1) who had a pet at the time of the questionnaire were significantly more likely to have included a pet in the family while raising their children (Generation 2) ($\chi^2 = 9.47, p<.001$) than grandparents without pets, but were not more likely to allow their children a pet of their own ($\chi^2 = 2.77, ns$).

The number of pets currently owned by Generation 1 was not significantly related to the likelihood of Generation 2 having had a pet in the family.

Parents (Generation 2) who had a pet in their family during their childhood were more likely to provide a pet for their children (Generation 3) than those parents who didn’t have a pet in their childhood ($\chi^2 = 28.6, p<.001$). Parents who had been the sole owners of pets during their childhood were not more likely to provide a family pet for Generation 3 than parents who had not been sole owners, but they were more likely to give their child sole ownership of a pet ($\chi^2 = 18.29, p<.001$).

Grandparents (Generation 1) who had a pet at the time of the questionnaire were more likely to have grandchildren (Generation 3) who had a pet in their immediate family, than grandparents without a pet ($\chi^2 = 5.0, p<.05$).

3.4.5 Ownership of pets before children were born

Before their children were born both parents had owned a pet in 41.6% of Generation 3 families, mothers had owned a pet in 24.5% of
families, and fathers owned pets in 6.2% of families.

The frequency of pet ownership in Generation 3 based on previous pet ownership by parents before their children were born are presented in Table 9. Couples who had owned a pet before the children were born, were more likely to own a pet in their Generation 3 families than those who did not own a pet before their children were born ($\chi^2 = 37.13$, $p < .001$). When both parents, or the mother, had owned a pet before having children most currently had a pet in the Generation 3 family. Significantly fewer Generation 3 families had a pet when only the father had owned a pet ($\chi^2 = 7.00$, $p < .005$), or when neither parent had owned a pet before having children ($\chi^2 = 29.49$, $p < .001$).

Pets owned by parents before having their children were predominantly cats (65.9%) and dogs (30.3%), although birds, horses and cows were also owned.

Table 9. Frequency of pet ownership in Generation 3 based on parents' pet ownership before children were born.

<table>
<thead>
<tr>
<th>Pet ownership in Generation 3</th>
<th>Frequency of pet ownership before children born (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both parents</td>
<td>94.7</td>
</tr>
<tr>
<td>Either parent</td>
<td>91.5</td>
</tr>
<tr>
<td>Mother only</td>
<td>91.0</td>
</tr>
<tr>
<td>Father only</td>
<td>76.5</td>
</tr>
<tr>
<td>Neither parent</td>
<td>60.0</td>
</tr>
</tbody>
</table>
3.4.6 Intergenerational continuity of species of pets

Generation 3 families that currently owned a dog were more likely to have had a parent who had a dog before having children (48%), than families who didn’t have a dog (20.4%), ($\chi^2 = 18.04$, p < .001). Parents of dog-owning families did not differ from non-owning families on whether they had been sole owner of a dog during childhood, but were more likely to have had a dog in the family during their childhood (72%) than parents of families without dogs (49.1%) ($\chi^2 = 11.46$, p < .001).

Parents of dog-owning families were more likely to have a grandparent with a dog (28.4%), than parents without dog in family (13.9%) ($\chi^2 = 6.88$, p < .01).

Generation 3 families that currently owned a cat were more likely to have owned a cat before having children (62%) than families that did not own a cat (28%) ($\chi^2 = 12.95$, p < .001). Parents of cat-owning families were no different on whether they had owned their own cat during childhood, but were more likely to have had a cat in the family during their childhood (80.1%) than parents of families without a cat (50%) ($\chi^2 = 15.18$, p < .001). Parents of cat-owning families were more likely to have a grandparent with a cat (43.2%) than non-cat owning families (18.8%) and this difference approached significance ($\chi^2 = 3.18$, p > .05).

Those families that currently owned birds were more likely to have owned a bird before they had children (13.3%) than families that
did not currently have birds (4.5%) ($\chi^2 = 4.7$, $p < .05$). Parents of bird-owning families were no different on whether they had owned their own bird during childhood, but were more likely to have had a bird in the family during their childhood (78.3%) than parents of families without bird (25.9%) ($\chi^2 = 51.04$, $p < .001$). Generation 3 families with a bird (13.9%) were more likely than families without a bird (5.9%) to have grandparents with a bird ($\chi^2 = 4.49$, $p < .001$). There were no differences between owners and non-owners of other species with respect to having other generations own that species - probably due to the low numbers of other species.

3.4.7 Intergenerational attachment

On the maternal side, grandmother’s level of attachment to her pet was correlated with mother’s attachment to her favourite pet ($r = .36$, $p < .001$), and to the child’s attachment to their favourite family or sole-owned pet ($r = .23$, $p < .05$). Grandfather’s attachment to his pet was related to mother’s attachment to her pet ($r = .27$, $p < .05$), and to the child’s attachment to their favourite pet ($r = .22$, $p < .05$). Mother’s attachment to her favourite pet was related to child’s attachment ($r = .39$, $p < .001$). When the child sample was divided by sex, mothers’ attachment to her favourite pet was significantly related to female child attachment to their pet ($r = .38$, $p < .001$), and to male child attachment to his pet ($r = .43$, $p < .001$).

On the paternal side the sample was small (n=24) and the only significant finding was that fathers’ attachment to pet was significantly related to boys’ attachment to their favourite pet ($r = .66$, $p < .05$).
3.4.8 Attachment

3.4.8.1 Children’s attachment to their pets

The majority of parents claimed their child was quite close (32.1%), very close (33.8%), or inseparable (6.4%) from the favourite pet, and almost 64% said their child would be affected ‘quite a lot’ or ‘enormously’ if the pet was no longer in their lives. Most parents (97%) estimated that if the pet died or was lost the child would be upset for at least a short period of time, and 15.5% said their child would have a great deal of difficulty in dealing with such a loss. Parents also said that 63% of families would be affected ‘quite a lot’ or ‘enormously’ if the pet was no longer in their lives. There were no differences between children’s attachment dependent on the child’s sex.

3.4.8.2 Correlates of children’s attachment to their pets

Only 10.2% of children spent more than three hours every day with their favourite pet. Most children spent between 1 and 3 hours per day (33.2%), or less than an hour every day (28.5%) with their pet. Just over 15% of children spent several hours a week with the pet, and 12.8% spent less than an hour a week with the pet. The amount of time spent with the pet was significantly related to the level of attachment the parent estimated the child to have for that pet ($\chi^2 = 183.6, p<.001$).

More than half (57%) the child sample showed affection to the pet every day by hugging, patting, or cuddling the animal. A further
25% showed affection to the pet on most days, and 10.6% once or twice a week. Only 7.7% showed affection less than once a week. There was a positive correlation between frequency of showing affection for the pet and attachment (r = .68, p< .0001).

Children were observed by their parents to talk with their favourite pet, excluding commands such as “sit”, several times a day (36.6%), at least once a day (28.1%), most days (21.3%), or once or twice a week (8.9%). A minority talked with their favourite pet less than once a week (3.8%), or never (1.3%). There was a positive correlation between frequency of talking with the pet and attachment (r = .60, p< .0001).

Almost a quarter (22.6%) of children were thought to confide in their favourite pet, 36.6% did not share secrets or problems with the pet, and 40.9% of parents said they didn’t know.

About half (51.9%) of children with a pet in the family had a nickname for their favourite pet, and this was positively related to attachment (r = .45, p< .0001). Of the children inseparable or very close to their pets 69.5% had a nickname for the pet, compared to 40.4% of less attached children (χ² = 18.94, p< .001). The types of nicknames used are presented in Table 10.

The level of attachment parents estimated their child to have for the pet was related to how the child would deal with the loss of the animal (r = .56, p< .0001), whether the child celebrated the pet’s birthday or Christmas (χ² = 44.7; p< .001), whether the child displayed photographs or pictures of the pet (χ² =114.8, p< .0001), and whether the pet was the child’s best friend (χ² =151, p< .001).
Table 10. Frequency of the types of nicknames used for children’s favourite pets.

<table>
<thead>
<tr>
<th>Nickname</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation of pet’s name (e.g., “Sparky” for “Sparkle”)</td>
<td>36.0</td>
</tr>
<tr>
<td>Terms of endearment (e.g., dear, sweetie, honey)</td>
<td>34.0</td>
</tr>
<tr>
<td>Physical description (e.g., blackie, shorty)</td>
<td>13.3</td>
</tr>
<tr>
<td>Behavioural description (e.g., mad-dog)</td>
<td>3.3</td>
</tr>
<tr>
<td>Relationship reference (e.g., baby, son, my girl, buddy)</td>
<td>8.7</td>
</tr>
<tr>
<td>Friendship reference (e.g., mate, buddy)</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Logistic regression indicated that the variables of the child showing physical affection for the pet, how the child would be affected if the pet was no longer around, the child’s ability to complete all pet care chores, and how much time the child spent with the pet have a predictive value for attachment of 53%. The former two variables each have individual predictive value of .0001, and the latter two are at the .05 level.

Attachment appears to be associated with species of pet as well. Table 11 presents the levels of attachment children have to their favourite pet, based on the species of pet. Due to the low numbers of children whose favourite pets were not dogs or cats, the level of attachment may not be representative for other species.
Table 11. Child’s attachment to favourite pet based on species of animal.

<table>
<thead>
<tr>
<th>Species</th>
<th>inseparable</th>
<th>very close</th>
<th>quite close</th>
<th>likes</th>
<th>neutral/dislikes</th>
</tr>
</thead>
<tbody>
<tr>
<td>dog</td>
<td>6.8</td>
<td>42.4</td>
<td>33.9</td>
<td>16.9</td>
<td>0</td>
</tr>
<tr>
<td>cat</td>
<td>6.6</td>
<td>34.5</td>
<td>32.4</td>
<td>25.7</td>
<td>0.7</td>
</tr>
<tr>
<td>horse</td>
<td>33.3</td>
<td>66.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>cow</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>bird</td>
<td>0</td>
<td>20.0</td>
<td>40.0</td>
<td>40.0</td>
<td>0</td>
</tr>
<tr>
<td>fish</td>
<td>0</td>
<td>0</td>
<td>57.0</td>
<td>43.0</td>
<td>0</td>
</tr>
<tr>
<td>rodent</td>
<td>5.9</td>
<td>17.6</td>
<td>17.6</td>
<td>52.9</td>
<td>5.9</td>
</tr>
</tbody>
</table>

3.4.8.3 Parents' attachment to their pets

Almost 64% of parent’s favourite pets were the same pets that were described as the child’s favourite pet. For that reason many of the demographic figures in the following section are similar to those under the child’s section.

Parents’ favourite pets were almost exclusively dogs (35.3%) and cats (57%), although birds (3.8%), fish (1.3%), rodents (1.3%), horses (.9%), and sheep (.4%) were present in small numbers.

The reasons parents gave for obtaining the pet are presented in Table 12.
Table 12. Reasons given for obtaining the parent’s favourite pet.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For child</td>
<td>24.1</td>
</tr>
<tr>
<td>For company</td>
<td>3.2</td>
</tr>
<tr>
<td>Company for, or to replace another animal</td>
<td>16.4</td>
</tr>
<tr>
<td>Like breed/always had one</td>
<td>29.1</td>
</tr>
<tr>
<td>Stray/to save it</td>
<td>10.9</td>
</tr>
<tr>
<td>It was a gift</td>
<td>0.5</td>
</tr>
<tr>
<td>As guard/for work</td>
<td>6.4</td>
</tr>
<tr>
<td>As part of a hobby</td>
<td>3.2</td>
</tr>
<tr>
<td>Bred it</td>
<td>6.4</td>
</tr>
</tbody>
</table>

Almost half of parents’ favourite pets were acquired from the breeder (24.3%) or from a previous owner (25.5%). The SPCA was the next most popular means of acquiring a pet (12.8%), followed by strays (10.6%), family members (8.9%), pet shops (6.8%), owning the mother (6.8%), and other sources (4.3%).

Almost 65% of pets were acquired free (56.6% as giveaways or through owning the mother, and 7.7% as a gift). Almost 18% paid between $1 and $100 for their favourite pet, 14% paid between $100 and $500, and only 4% paid more than $500.

3.4.8.4 Correlates of parents’ attachment to their pets

Almost three-quarters of parents said they were inseparable (10.1%), very close (36.6%), or quite close (27.8%) to their favourite pet, and a further 21.1% said they liked the pet. Only 4.4% said they disliked or were indifferent to the pet.
More than half the parents spent more than an hour each day with the pet (more than 3 hours a day = 28.6%, 1-3 hours per day = 28.2%), while a quarter spent less than an hour each day, and 18% spent up to several hours per week. The amount of time spent with the pet was significantly related to the level of attachment the parent had for that pet ($\chi^2 = 342.4$, $p < .0001$).

Most parents showed affection to their favourite pet every day (68%), most days (19.3%), or at least once a week (6.1%), and talked to the pet several times a day (57%), every day (21.9%), or most days (11.4%). There was a positive relationship between attachment and the frequency of showing affection to the pet ($r = .70$, $p < .0001$), and the frequency of talking with the pet ($r = .65$, $p < .0001$). Almost a quarter (24.1%) of parents said that they confided in their favourite pet by telling them problems and sharing secrets. Half (50.2%) of the parent sample had a nickname for their favourite pet. Of the parents who were inseparable or very close to their pet almost 70% had a nickname for the animal, compared to 34% of those who were less attached to the pet ($\chi^2 = 51.1$, $p < .001$). The types of nickname used are presented in Table 13.

If the pet was no longer in the family 23.9% of parents said they would be affected enormously, 42.5% would be affected quite a lot, 17.3% would be affected moderately, and 14.4% would be affected a little or not at all. This was positively related to how attached the parent was to the pet ($r = .66$, $p < .0001$).
Table 13. Types and frequencies of nicknames used by parents for their favourite pets.

<table>
<thead>
<tr>
<th>Nickname</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation of pet's name (e.g., “Sparky” for “Sparkle”)</td>
<td>32.6%</td>
</tr>
<tr>
<td>Terms of endearment (e.g., dear, sweetie, honey)</td>
<td>20.8%</td>
</tr>
<tr>
<td>Physical description (e.g., blackie, shorty)</td>
<td>14.7%</td>
</tr>
<tr>
<td>Behavioural description (e.g., mad-dog)</td>
<td>3.9%</td>
</tr>
<tr>
<td>Relationship reference (e.g., baby, son, my girl, bubby)</td>
<td>14.0%</td>
</tr>
<tr>
<td>Friendship reference (e.g., mate, buddy)</td>
<td>14.0%</td>
</tr>
</tbody>
</table>

Most parents said they would have a great deal of difficulty in coping with the loss of this pet (15%), would be upset for some time (43.8%), or for a short time (32.7%). Only 8.4% said they would not be very upset, or would find it easy to deal with the loss. The difficulty in coping with the loss of the pet was related to how attached the parent was to the pet ($r = .76, p<.0001$).

Most parents felt that pets were necessary (20.4%), or very important (51.3%) in their lives, 21.2% were neutral, and 7.1 % said that pets were not very important or not at all important in their lives.

Almost a quarter (23%) of parents always included the pet in family celebrations of birthdays and Christmas, and another 34.4% sometimes did. A quarter of parents displayed a photograph or drawing of the pet.

When asked if their family could live without a pet 7.3% said that they could easily do so, 14.2% said they could without much difficulty, 22.8% could with some difficulty, 15.1% could with a lot of
difficulty, and 40.5% said that they could not live without a pet.

The level of attachment varied between species as shown in Table 14 below. Parents were more likely to be inseparable from or very close to their dogs, than to their cats ($\chi^2 = 16.58$, $p<.001$), or other species ($\chi^2 = 16.65$, $p<.001$), and more likely to be inseparable from or very close to cats than to other species (excluding dogs) ($\chi^2 = 4.63$, $p<.05$).

Table 14. Parents’ attachment to favourite pet based on species of animal.

<table>
<thead>
<tr>
<th>Species</th>
<th>inseparable</th>
<th>very close</th>
<th>quite close</th>
<th>likes</th>
<th>neutral/dislikes</th>
</tr>
</thead>
<tbody>
<tr>
<td>dog</td>
<td>15.9</td>
<td>51.2</td>
<td>24.4</td>
<td>8.5</td>
<td>0</td>
</tr>
<tr>
<td>cat</td>
<td>7.0</td>
<td>31.3</td>
<td>28.1</td>
<td>27.3</td>
<td>6.1</td>
</tr>
<tr>
<td>horse</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>bird</td>
<td>11.1</td>
<td>11.1</td>
<td>33.3</td>
<td>33.3</td>
<td>11.1</td>
</tr>
<tr>
<td>sheep</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>fish</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>50.0</td>
</tr>
<tr>
<td>rodent</td>
<td>0</td>
<td>0</td>
<td>33.3</td>
<td>66.7</td>
<td>0</td>
</tr>
</tbody>
</table>

If their favourite pet was lost almost 20% said they would do everything possible to get the pet back. Ten percent of families would ask neighbours, look, and advertise with a reward, and a further 43.9% would ask, and look, but would advertise only if there was no monetary cost involved. Twenty-one percent said they would only ask and look, 2.2% would only ask, and 2.6% would do nothing.
When asked what would happen to the family's pets if the family had to move to another part of the country, 80.9% said that they would take the pets with them, and another 6.8% said they would take the pets if it was reasonably easy. When asked what the family would do with their pets if they had to move overseas, 29.9% said they would definitely take the pets, and just over 12% would take them if convenient. A large proportion would give pets away to family or friends (19.5%), or to strangers (35.5%). Of the pets which had family member status, 37.9% would definitely not go with the family if they moved overseas, and a further 19.1% would only be taken if it was convenient. Only 43% of these family members would definitely travel with the family to a new country. Further details are presented in Table 15.

Table 15. What would happen to the pet if the family had to move to Auckland or overseas.

<table>
<thead>
<tr>
<th>Action</th>
<th>Auckland %</th>
<th>Auckland N</th>
<th>Overseas %</th>
<th>Overseas N</th>
</tr>
</thead>
<tbody>
<tr>
<td>give away</td>
<td>5</td>
<td>12</td>
<td>36</td>
<td>82</td>
</tr>
<tr>
<td>give to family/friends</td>
<td>6</td>
<td>13</td>
<td>19</td>
<td>45</td>
</tr>
<tr>
<td>euthanise due to age</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>euthanise</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>take if convenient</td>
<td>7</td>
<td>16</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>definitely take</td>
<td>81</td>
<td>191</td>
<td>30</td>
<td>69</td>
</tr>
</tbody>
</table>
3.4.9 ‘Member of the family’ status of pets

Of the 52.1% of parents who said their favourite pet had “member of the family” status, 65.1% were inseparable, or very close to this pet, 18.1% were quite close, and 15.7% liked the pet, and 1.2% neither liked of disliked the pet.

If the pet was lost, 37.8% would advertise, an additional 13.4% would also offer a reward, and 33% would do everything possible to get their “family member” back. Almost 16% however, would not pay to advertise or offer a reward to get their family member back.

When compared to those who did not give their pets “family member” status, those who did were more likely to: advertise, offer a reward, or go to any extent to retrieve a lost pet ($\chi^2 = 42.1$, p< .001), take the pet with them if they moved to Auckland ($\chi^2 = 11.9$, p< .001), or overseas ($\chi^2 = 21.5$, p< .001), allow appropriate species of pet inside the house ($\chi^2 = 12.4$, p< .001), have the pet sleep in their own or their child’s bedroom ($\chi^2 = 9.0$, p< .01), and use a nickname for the pet ($\chi^2 = 9.4$, p< .01).

Logistic regression using the variables of what would happen to the pet if the parent moved overseas, how much time was spent with the pet, how often the parent talked to the pet, how often secrets or problems were shared with the pet, and how the parent felt they would cope with the loss of the pet, were regressed onto attachment to the pet, and indicated an overall significant predictive value of 68% (p< .0001). What would happen to the pet if the parent moved overseas was a significant individual predictor of attachment at the
.05 level, and the sharing of secrets was a predictor at the .001 level, with the remaining variables individual predictors at the .0001 level.

3.5 DISCUSSION

The results of this study suggest that there is an intergenerational aspect to pet ownership, attachment to pet, and species of pet, at least with respect to cats and dogs.

The results indicate support for the intergenerational continuity of pet ownership. Generation 1 adults who own pets are more likely to have provided a pet or pets for their children during their childhood, than Generation 1 adults who do not have a pet, and their grandchildren are more likely to have pets in their families.

If Generation 2 (parents) had pets in the family when they were children, they were more likely to provide pets in the family for their Generation 3 children. If they had been sole owners of a pet, they were more likely to give their child sole ownership of a pet.

Baron and Byrne (1984) note that until their teenage years, children are likely to imitate the attitudes and beliefs of their parents, even though they do not necessarily comprehend the rationale behind the attitude. If, as Baron and Byrne suggest, children adopt the attitudes and values displayed by their parents, and form well-established patterns of behaviour before their late twenties, it seems reasonable to assume that the grandparents (Generation 1) in this study are engaging in behaviours they had formed in their mid to late twenties. This would suggest that the pet-owning and attachment behaviours displayed currently are essentially representative of the attitudes and values they adopted while raising their (Generation 2)
children.

Interestingly, the intergenerational effect of pet ownership does not depend on those in Generation 2 having sole ownership of a pet during their childhood, but rather, on the presence or absence of a pet in the family. Thus it seems that the presence of a family pet coupled with what children learn about relationships with pets from their closest role models are instrumental in the development of attitudes toward pet ownership in later life.

Values about pet ownership may develop from a classical conditioning pairing of the pet with the expression of an unwavering attitude, and simple modelling of observed behaviour of other family members, or reinforcement of the acquisition of values acceptable to the family from active praise by parents for child behaviour which approximates their own, and displeasure for opposing views (Baron and Byrne, 1984). Therefore parents who are animal lovers, and who feel they profit a great deal from their interactions with pets may foster the same attitudes and behaviours in their children, resulting in giving their children the optimal opportunity to benefit from pet ownership. At some stage, parental praise as reward for appropriate behaviour is supplemented by the benefits received directly from the pet, and the quality of the relationship.

Unfortunately the intergenerational continuity of attitudes toward pets is also likely to encourage pet ownership behaviours and attitudes that are negative. For example, "...one woman swears by 'pound puppies' because her family moves a lot. In each town they adopt a puppy from a shelter because it gives her children something to look forward to and it would otherwise be put to sleep...The next time they move, they just take their puppy - now an older, harder-to-
place dog - back to the shelter” (Shuman, 1996, p 74).

There are, of course, those who have had a family pet during childhood, but not adulthood. These people may be accounted for in a number of ways using the intergenerational theory. Firstly, circumstances may not allow adults to acquire a pet. Busy roads, long working hours, and accommodation that doesn’t allow pets are all reasons why pets may not be acquired by those who have had pets in their childhood. Secondly, as Kidd and Kidd (1997) found in their interviews with adults those who had owned pets in childhood but not in adulthood were significantly more likely to report unpleasant experiences with pets, than current pet owners, or those who had never owned a pet.

Thirdly, while they may have had a family pet during childhood, the attitudes provided by their parents towards that pet may have been negative. In some cases, pets become a nuisance to feed, exercise and find holiday care for, especially when the parents acquired the pet purely “for the children” but end up shouldering the responsibility themselves after the novelty has worn off. The child then becomes exposed to the view that pets are a nuisance, and more bother than they are worth, often because pets that receive little attention become difficult to handle to the extent that no contact with the pet is rewarding. The attitude of the parents toward not just the ownership of a pet, but toward the pet itself is an important factor.

Attachment to pets also appears to be influenced by the attitudes of previous generations. Attachment to pets by children is related to the level of attachment their mothers, and their mothers’ parents have for their pets. The reason this effect was found only on the
maternal side of the families is probably due to the very small number of questionnaires completed by fathers. The questionnaire asked only for the respondent parents’ attitude and attachment toward their favourite currently owned pet, and only 24 fathers’ attachment levels were included in the data.

Intergenerational continuity of the species of pet chosen was also apparent. Generation 2 who had a dog in their childhood were more likely to have parents, and children, with dogs. This finding supports the work of Serpell (1981) who observed that people tend to have the same species in adulthood as they did in childhood.

This study found an intergenerational effect for dogs, cats and birds. It is possible that the relatively low numbers of other species resulted in a floor effect, however most of the remaining species were those which require a specific lifestyle. Horses, cows and sheep, for example, are generally owned by those in rural environments, and horses in particular make expensive pets. Secondly, large farm animals tend to require physical abilities which many in Generation 1 may no longer have. Further, the intergenerational continuity of ownership of a particular species of pet, does not preclude the family from owning additional species, but indicates that the intergenerational species is kept by the family regardless of other species.

As expected, “member of the family” status does not necessarily mean that the pet is treated as a member of the family. While different species vary in their needs, and this must be considered when determining “family member” status (for example, for most families allowing a horse inside the house is not appropriate whether they are family members or not), it is clear that, in general, families
do not extend the same consideration to their non-human family members. Some families stressed that their pets really were given "family member" treatment and that they would do "absolutely anything" to retrieve a lost pet and would not consider moving overseas unless the whole "family" could go - indeed some families commented that they had already brought animals from their previous homes in Canada and South Africa. However, some respondents would do little to find a lost "family member", especially if a financial cost was involved, and most families said they would leave the non-human family member behind if they shifted overseas. This finding suggests that claims made by previous researchers about pets having family member status are perhaps not as literal as once thought. Cain (1983) found that 87% of respondents agreed that their pet was a member of their family, and in a later study (1985) reported that of her sample of almost 900 families 68% agreed that their pet was a full family member, and 72% said that the pet usually or always had "people status". Others have found between 50- 80% of pet owners to ascribe family member status to their pets (Katcher, Friedmann, Goodman and Goodman 1983; Voith, 1981). The most common family status of the pet is described as "child" although whether pets are ascribed family member status is independent of the presence of other humans, including children, in the household (Katcher & Beck, 1986).

Due to the high probability of the question "Do you consider your pet to be a member of the family?" being loaded to elicit answers consistent with social norms, an indirect method of assessing "member of the family" was used. It was noted in Study 1 that a high proportion of respondents cited the pet's family member status in
response to the question “Why is your pet allowed inside the house?” Indeed, every respondent that claimed that their pet was a family member allowed that animal inside the house if it was an appropriate species. In this study the item was included as a measure of family status, with the result that over half of the sample responded to this question with “member of the family” as one of their reasons. There are two main weaknesses of this method. Firstly, animals that are typically not allowed inside the house are not included in the “member of the family” analysis, and secondly, the process is susceptible to under-estimation of those who consider their pets to be family members, because there may be respondents who do consider their pet to be a family member, but who did not state that as a reason for allowing the pet in the house. The differences found between those who consider their pets “family” and those who do not are therefore also likely to be under-estimated. Nevertheless, in this study “family member” pets did seem to receive better treatment than other pets, though not on the same level as human family members. Those who described their pets as family members tended, more than those who didn’t include their pets as family, to allow appropriate species in the house, to have the pet near them when they sleep, to go to greater lengths to retrieve a lost pet, to take the pet with them if they move, and to use a nickname for the pet. Rowan (1988) states that the names, and nicknames, given to pets may reflect the status people assign to their animals, and suggests that human names in particular may signify high status.

The use of a parent completed questionnaire to assess the attitudes of grandparents, parents, and children is a weakness of the study. Parents do not necessarily possess an accurate understanding of
their parents' or child's relationship with their favourite pet. However, parents were offered the option of "don't know" regarding the relationship their parent had with their pet, and in some items which referred to the child's relationship with their pet. There were however, several advantages of using one questionnaire to assess three generations of attitudes toward pet keeping. Firstly, many of the children in the sample, due to their age, would have been unable to accurately answer questions regarding their pet ownership details. Secondly, the use of one respondent per family allowed a greater sample size than could have been sourced if more than one generation from each family was required to complete the questionnaire. Finally, using a single respondent from each family allowed some consistency between responses to questions asked of each generation. Questionnaire items may have been interpreted differently by each generation. A grandparent, for example, may feel they are inseparable from their pet, while a parent in the same family may have a similar relationship with their pet but feel they are only quite close to that animal. By using one respondent the same interpretation is used for the three generations of the family, and because the study is concerned mainly with how pet ownership and attitudes are related within families, respondents who tend to systematically over- or underestimate do not affect the results of the population.

The literature on intergenerational continuity of attitudes about pets requires further research, particularly concerned with fathers' attitudes to pets. In this study, fathers and grandfathers were less often cited as the owners of pets during both childhood and their adult life. It may be that, because mothers were actually completing
the questionnaire, information concerning the fathers pet ownership was less detailed than their own pet ownership history, however, respondents still indicated grandfathers to own fewer pets than grandmothers, suggesting that women may be more likely to own pets than men. Paul and Serpell (1992) have found that father’s, but not mother’s, beliefs about the importance of pets for children are positively correlated with the number of pets owned by the child. These findings indicate an area where more rigorous research could be targeted.

Work on such topics is instrumental to our understanding of how attitudes towards pets are developed, maintained, and in some cases, altered throughout the lifespan.

IV. STUDY 3

4.1 INTRODUCTION

Why do we talk to pets? Manning (1983) states that communication is the behavioural basis of the social structure of mammalian societies, and that social carnivores, such as wolves, communicate their relationships within a group by utilising a highly developed system. It is therefore probable that such a finely tuned communication system may exist between domestic dogs and their human companions.

Manning explains “all of us have seen how sensitive dogs are to transgression of the social norms, for example, showing patterns of behaviour that may be described as “jealousy” if undue attention is
given to new individuals. Years of experience of each other’s signals and responses clearly bring to each partner in this relationship an acute sensitivity to the mood and intentions of the other as indicated by tiny behavioural changes, which may be unconscious on the human side" (p.11).

Considering the length of time humans have kept animals purely for companionship, the percentage of Western world households that include a pet, and the number of experiments aimed at teaching a variety of other species to use human language (Sebeok & Rosenthal, 1981), there is surprisingly little documentation on how people talk to their pets (Sanders, 1993). Studies on human-animal communication are typically non-verbal, and often focus on teaching the higher apes to use sign language (Gardner & Gardner, 1972; Patterson, 1978), or symbols (Premack, 1971), but they do not commonly involve the everyday, verbal communication with a pet.

Indeed, the social roles of pets have only been examined within the past twenty or so years, following the proposition that social relationships have an influence on mental and physical health (Lynch, 1977; Ory & Goldberg, 1983).

Research on the human-pet relationship has yielded the following findings on communication between people and their pets.

4.1.1. Pets as family members

Pets are widely considered to be family members by those who own them (Sanders, 1993). A large percentage of pet owners describe their pets as family members by spontaneous report when asked why
they tolerate undesirable behaviour from their pets (Voith, 1981), or when directly questioned (Katcher, Friedmann et al 1983; Katcher, 1981; Ganster and Voith, 1983). Cain (1985) reported that of her sample of almost 900 families 68% agreed that their pet was a full family member, and 72% said that the pet usually or always had “people status”. Others have found between 50-80% of pet owners to ascribe family member status to their pets (Katcher, Friedmann, Goodman and Goodman, 1983). The most common family status of the pet is described as “child” although whether pets are ascribed family member status is independent of the presence of other humans, including children, in the household (Katcher & Beck, 1986).

4.1.2. Social exchanges between people and pets

Pet owners report frequent interaction and communication with their pets. Many pet owners spend a great deal of time interacting with their pet, and often sleep with them in the same room or same bed (Beck and Katcher (1983), Katcher, Friedman et al 1983). Katcher, Friedman, Goodman & Goodman (1983) reported that over 66% of dog owners and 95% of bird owners talked to their pets. Beck and Katcher (1983) reported that 98% of clients at their veterinary clinic agreed that they talked to their pets, and 80% reported that they “talked to the animal in the same way that they talked to people” (p. 44). Beck and Katcher (1983) report that over 30% of their subject group of pet owners confide in their pets, and Katcher et al (1983) found a higher percentage of dog owners to confide in their pets than
bird owners.

Cain (1985) found that 77% of her large military family sample believed their pet understood them when they talked or confided in them, 73% said their pet communicated back to them, and 59% said their "pet understood them and was sensitive to their moods" (p.7).

Children, too, talk to their pets, and Macdonald (1981) found 84% of his child sample talked to their pets, and 65% believed that the pet understood what they said. Kidd and Kidd (1985) in a study of children aged 3-13 noted that 61% of their sample believed their pets talked or communicated in some way, and 51% considered their pets to be capable of understanding what they were trying to communicate. The latter was reported significantly more often by children between the ages of 7-11 years, than those aged 3-6 years.

4.1.3. Health and talking to pets

Talking to pets appears to be calming. Lynch, Thomas and Long (1980), while examining human speech and arousal, noted that when subjects read aloud or spoke to others, blood pressure and heart rate rose. When subjects rested silently or were spoken to, blood pressure and heart rate fell. Talking to an animal produces less elevation and sometimes even decreases blood pressure to below resting level (Katcher, Friedmann, Beck and Lynch, 1983; Katcher, 1981; Katcher, Beck and Levine, 1983; Baun et al, 1984). Katcher and Beck (1983) also found that children’s blood pressures were lower when reading aloud or resting when the experimenter’s dog was present than when it was not present.
Why would talking to an animal be more relaxing than talking to another human being? Firstly, Katcher (1981) claims, animals do not evaluate what humans say: they are non-judgmental. Katcher suggests that outside experimental conditions there exists a wide range of circumstances in which talking exposes persons to the risk of evaluation, correction, punishment, inattention, contradiction and unwanted advice and instruction. Most experimental subjects, when speaking, believe they are being evaluated or judged in some way, a characteristic labelled “evaluation apprehension” by Rosenberg (1965 in Katcher, 1981). Talking to animals is one situation which doesn’t expose the speaker to such risks. Further, talking to an animal can allow verbalisation of concerns without the necessity of considering opinions and solutions which do not appeal.

Secondly, Fox (1975) suggests animals are perceived by their owners as empathetic whether or not they actually are. In Sanders’ study owners credited their dogs with the ability to reciprocate the recognition of emotions in others and to offer comfort when it was needed. Beck and Katcher (1983) noted up to 80% of pet owners described their pets as sensitive to their feelings.

Finally, Katcher (1981, supported by the work of Baun et al, 1984; and Friedmann, Locker, and Thomas, 1986) noted that the role of a physical display of affection with animals resulted in lower blood pressure than when the interaction was with other humans, suggesting that even non-verbal interactions with pets are less stressful, and leave fewer openings for evaluation, than do similar interactions with humans.
4.1.4. Talking and tactile relationships

A large proportion of verbal communication with pets involves touching the pet. Katcher and Beck (1986) found that it was extremely difficult to separate talking from touching when participants communicated with their animals. Participants always spoke to their animals when they were petting them, without regard for the experimenters, observers, or monitoring equipment. While these observations were made in experimental conditions, Katcher et al’s (1983) report that every dog owner and over 90% of bird owners touched or handled their animal every day, indicates that talking to pets is a frequent occurrence. There was also no difference observed between male and female subjects in the affectionate touch they use for their pets (Katcher, Friedmann, Goodman and Goodman, 1983) although it has been found that women use more intimate touch than men in public places (Goffman, 1976 in Katcher and Beck, 1983).

4.2 CHARACTERISTICS OF SPEECH TO PETS

Dialogue between people and their dogs, cats and birds appears to have particular characteristics. Katcher and Beck (1983) describe the changes in facial expression when talking to pets as involving a generalised decrease in muscle tension of the face, particularly around the eyes and brow. The lips are frequently open and slightly pursed, and a relaxed smile is often present. The speech directed toward pets may be higher in pitch than adult-directed speech, and the speech pattern consists of short sentences,
frequent questions and rising terminal pitch. Questions are often followed by silent periods in which the speaker may solicit eye contact with the animal, and sometimes the speaker will provide an answer to their own question, particularly if there is no behavioural response from the animal. The voice is softer than in speech to adults, and lower in volume in an intimate space so that, at times, it appears audible only to the pet. Katcher and Beck (1983) noted that subjects occasionally translated to the experimenters in a louder voice what they were saying to their animal.

Katcher and Beck (1986) suggest that several characteristics of speech to pets are also apparent in the language used by parents when speaking to young infants. They summarised their observations of these characteristics of speech to pets as:

“(1) where possible the head of the person is placed close to the head of the animal;

(2) the volume of the voice is reduced, sometimes to a whisper;

(3) the voice pitch is raised above that used for conversation with other people;

(4) the rate of speech and the length of individual utterances of sound are decreased;

(5) there is considerable verbal play with the words, combinations of words and sounds, and stress and length of syllables; and

(6) utterances are terminated with a rising inflection to emphasize or pose a question, in order to create a pseudo-dialogue with the animal. In this “dialogue” either the
person may supply a response or insert a pause as if to permit a response" (p. 108).

Katcher and Beck (1983) suggest that these behavioural characteristics of speaking to pets are linked to changes in blood pressure, and that these changes would be expected to reduce arousal (Katcher and Beck, 1986). Friedmann et al. (1983 in K & B 1983) have found an association between rapidity of speech and magnitude of blood pressure elevation during speech. Ekman, Levenson and Friesen (1983) have observed cardiovascular changes, measured by heart rate and skin temperature, are linked to emotional states if such states are associated with facial expressions. When subjects voluntarily produced the muscle movements of particular facial expressions, they also generated the cardiovascular changes associated with those emotions. The facial expressions present when speaking to pets described by Katcher and Beck may be directly related to the blood pressure changes also present when talking to animals.

4.3 BABY TALK DEFINITION

Several of the characteristics of speech to animals which are recognised by Katcher and Beck are also present in a simplified language register used to talk to very young children. Baby talk, previously known as motherese, has been well documented in the child language literature and there has long been fierce contention over the effectiveness of the special language register and its role in organising and comprehending the speech style of the caregiver.
It is widely accepted that language is acquired directly from the learner's environment, and hence, that the linguistic characteristics of the caregiver (how and when they speak) affect language learning (Gleitman, Newport and Gleitman, 1984). Indeed, it has been asserted that baby talk is specifically tailored to the teaching of language. The Motherese Hypothesis states that particular properties of caretaker speech play a causal role in language acquisition (Gleitman, Newport and Gleitman, 1984).

4.3.1 Grammatical simplicity

Snow (1977a) has proposed that the semantic characteristics of baby talk are generally limited to what the child is already capable of producing, and this limitation is what makes baby-talk grammatically simple.

4.3.1.1 Mean length of utterance

Mean length of utterance is used as a measure of linguistic complexity in speech to young children (Snow, 1991). The baby talk speech-style is characterised by short, simple utterances (Snow 1972; Snow and Ferguson, 1977). The average length of utterance in baby talk addressed to two-year old children ranges from 3-8 words (Snow, 1991) while utterances to adults average 9-11 words in length (Newport, Gleitman, and Gleitman, 1977). Adjectives and adverbs in babytalk are used at a rate of one, or at most two, per sentence (Snow, 1991), and sentences rarely contain more than one idea.
4.3.1.2. Sentence Types

Sentence types in baby talk are predominantly in imperative and question form, with fewer declaratives than are used in speech to adults (Newport et al., 1977; Hirsh-Pasek and Treiman, 1982). While in speech to adults questions are generally a request for information, when addressed to children they are almost always used in situations where the speaker already knows the answer (Snow, 1991).

4.3.1.3. Deixis

One property of babyltalk which appears to have a teaching function is deixis (Newport, 1976). Diectic utterances are those which name a referent by means of a variable whose identification depends on the speakers and their situation (there is a book; here's your shoe; that's your train). "There, here's and that's" refer to things which depend on the situation, what is around or focused on at that moment (Newport, 1976). Deixis links the subject of the utterance with its spatial, temporal, and personal contexts (Tanz, 1980). Diectic utterances to children can be seen as labelling concepts (for example, horse), which provide the appropriate syntactic form for sentences with a labelling function (for example, that is a horse).

Newport et al. (1977) report a relatively large proportion of deictic utterances or labelling sentences (approximately 16% of all utterances to children) are made by caregivers to children.
4.3.1.4 Redundancy

Baby talk typically involves clear enunciation and many repetitions, either partially or in full (Cross, 1977; Newport et al, 1977; Snow, 1972). Speech to children often consists of a relatively small number of words, repeated in a number of different combinations, for example:

*Put the donkey on the floor over there. The donkey. That’s right, the donkey. Yes, over there. Put it over there. On the floor. Put the donkey over there. Over there on the floor. Put it there.*

Although the style is often informal and isolated noun-phrase combinations, such as *on the floor*, may occur, true grammatical errors are rare (Gleitman, Newport and Gleitman, 1984).

4.3.1.5 Semantic restrictions

Snow (1991) has pointed out that babyltalk is limited to the here-and-now. The content is usually restricted to objects and events which are in view, rather than imagined or remembered entities, and the verb tense used reflects this.

Babyltalk is effectively limited to discussions of what the child can see and hear, what they are doing, holding or playing with, and what is happening around them. Discussions of previous or future experiences are infrequent and when they occur, are often practised routines in which the child provides previously learned answers in response to parental cues.
4.3.1.6  Simplification and word sounds

Babyspeak has some characteristics which appear to be universal, regardless of what the adult language is. Consonant cluster simplification or substitution such as tummy for stomach, is typical of babyspeak in English, Dutch, Comanche American Indian, and Papiamentu Spanish (Snow, 1991).

Syllable reduplication such as yum-yum, and onomatopoetic and rhyming words such as itsy-bitsy are common.

4.3.1.7  Diminutives

Diminutives are a commonly used characteristic of babyspeak. While diminutives in English occasionally make use of suffixes such as -kin, as in babykin and lambkin, -ette as in kitchenette, and -ling as in duckling, they typically have the hypocoristic ending -y or -ie as in dog; doggy, or blanket; blankie (Gleason, Perlmann, Ely & Evans, 1994). Hypocoristic is derived from the Greek words koros ‘boy’, kore ‘girl’, and korizesthai ‘to caress’ (Gleason et al, 1994), and imply the speaker’s approval and affection for the object. Gleason et al point out that, for example, ...“parents say that’s a bunny, but are unlikely to point at an insect on the wall and say look at the roachie” (p. 51).

The use of diminutives in child-directed speech is restricted to a small pool of words, including proper nouns, some body parts, kinship terms, games, and with objects of immediate relevance to the child. The types of diminutives used decline with the child’s age, and
mothers tend to use more diminutives and a greater range of diminutives than fathers do (Gleason et al, 1994).

4.3.1.7 Pronouns

Snow (1991) notes that pronouns used in babytalk show certain deviations from normal usage. The word "we" is often used instead of you, for example, are we hungry? for are you hungry?, and Wills (1974 in Snow, 1991) notes similar pronoun variations, such as isn't it a cute baby? for aren't you a cute baby? and Mamma's going now for I'm going now (Snow, 1991, p. 201).

4.3.2 Intonation patterns

Prosodically, speech to children is higher pitched than speech to adults, probably because it attracts children's attention. Garnica (1977) has documented the higher mean fundamental frequency, wider frequency range and more frequent use of rising frequency contours in speech to 2 year old children than in speech to adults. Fernald and Simon (1984) found in their German sample that even with newborns, mothers use "higher mean frequency, wider frequency excursions, longer pauses, shorter utterances, and more highly stereotyped frequency contours than in speech to adults" (p. 59). Stern, Spieker, Barnett, and MacKain (1983) found exaggerated frequency contours and repetitiveness to be more pronounced in speech to 4 month old infants than in speech to younger or older infants, although these prosodic features remain prominent in
mothers' speech to infants.

The prosodic modifications of higher mean pitch, higher pitch maxima and minima, greater pitch variability, shorter vocalisations, and longer pauses are the most consistently observed prosodic modifications (Garnica, 1977; Jacobson, Boersma, Fields, & Olsen, 1983; Stern et al 1983; Fernald & Simon, 1984; Papousek, Papousek, and Haekel, 1987). Modifications of prosody to 12 month old infants appear comparable across languages of French, Italian, Japanese, German, and British and American English, and in both fathers and mothers (Fernald, et al 1989).

Studies which have focused on whether specific prosodic forms are associated with specific communicative intentions suggest low pitch and falling pitch contours are more likely to be used when soothing a distressed infant (Papousek, Papousek, and Bornstein, 1985). Rising pitch contours are more commonly used to engage attention and elicit a response (Ferrier, 1985; Ryan, 1978) and bell shaped contours occur when the mother is trying to maintain the attention of the child (Stern, Sperker and MacKain, 1982). These relations between prosodic form and communicative intention appear to be universal across language (Fernald, 1992).

Very young babies have been shown to be more attentive to female than male voices (Brazelton quoted in Korner, 1973). This may be an innate characteristic, or children may learn that high pitched speech is directed to them and that they should listen (Snow, 1991). Either way, it allows children to attend to what is directed to them and ignore potentially confusing adult conversations.

The exaggerated intonation of baby talk has two potential functions according to Snow (1991). Firstly, it makes speech clearer for
the listener because it causes the content words in the sentence to be stressed heavily. The content words are those crucial to the child’s understanding of the message.

Secondly, the exaggerated contour makes it easier for the listener to decipher the type of utterance. Questions, imperatives and declaratives have markedly different intonation patterns in baby talk and this enables the child to associate syntactic form with meaning, or at least with what is required in the form of a response. Imperative contours indicate the listener should do something, while question contours with rising terminal pitch encourage an answer.

4.4 THEORIES OF THE FUNCTIONS OF BABY TALK

The few researchers who studied child language acquisition prior to 1960, emphasised the importance of the language the child was exposed to (e.g. Allport, 1924; Miller and Dollard, 1941; Skinner, 1957). Chomsky (1959) argued that the "input language" was too disorganised, fragmented and generally imperfect to be solely responsible for child language development.

During the 1970’s, the existence of a special language register was accepted and it was recognised that the language directed to children was considerably more structured than previously supposed (Ferguson, 1977). The prevalent hypothesis for the existence of such an infant-directed register was that its primary function was the teaching of language to young children. Initial research therefore focused on the relationship between the semantic and syntactic content of caregivers’ speech and the development of the infants’
language acquisition (Fernald, 1994, and see Snow, 1977).

Later research, however, suggests that child-directed language fulfils pre-linguistic functions as well. Mothers modify their speech not only to infants at a linguistic producing level of development, but also use exaggerated intonation and simplified speech forms to children under one year of age (Fernald, 1994; Kaye and Charney, 1980; Ryan 1978; Snow, 1977b) "...who thus cannot benefit by the syntactic and semantic simplifications of this register" (D’Ordorico and Franco, 1985, p. 571). In addition, from as young as three or four years of age, children themselves appear to modify their speech style when talking to younger listeners (Sachs and Devin, 1976; Andersen and Johnson, 1973), and seem to do so by simplifying, repeating and using attention-getters in a similar way to adults (Snow, 1977a).

According to Fernald’s (1994) model, these characteristic patterns of infant directed speech serve initially to attract attention, to communicate “affective meaning”, and to “modulate arousal and affect” (p. 65). She maintains that parents’ speech to their infants gradually begins to serve linguistic functions when the child approaches one year of age.

Fernald’s model emphasises prelinguistic regulatory functions of intonation in parent-infant interaction, based on biological predispositions as the main determinants of the “use and effectiveness of exaggerated intonation in speech to infants” (p. 65).
4.4.1 Design features of infant-directed prosody

Fernald (1994) suggests that the characteristic prosodic patterns of babble talk address the perceptual limitations of the infant, and allow the child to ignore irrelevant material by utilising signals which indicate the salience of relevant acoustic material. These features are also apparent in the calls of birds and mammals to their conspecifics. They are designed to "transcend the noise of the environment" (p. 84), in which the species lives, and are tuned to the perceptual capacity of the addressee. Newport, Gleitman and Gleitman (1977) have also suggested that "...the child may listen primarily to high pitched speech, to speech accompanied by pointing, eye-contact and other gestures, to speech which begins by calling his name and to speech which contains some familiar words. That is, he may attend selectively when he has reason to suppose that he is being addressed..." (p. 111).

Fernald (1994) suggests that speech to infants is designed to compensate for the perceptual, attentional, and cognitive limitations which result from immaturity. Young infants, for example, have higher auditory thresholds than adults (Schneider, Trehub, and Bull, 1979). The elevation of the fundamental frequency of the voice when talking to children compensates for this sensory limitation by utilising a pitch range more perceptible to the infant. Furthermore, she points out, the continuous elevated and exaggerated pitch of babble talk may facilitate processing by the infant by simplifying the tracking of the voice of a single speaker. While adults also track the prosodic contours of speech to follow a single speaker, they are able to
use linguistic and acoustic structure (Nooteboom, Brokx, & DeRooij, 1976). Infants must rely on the prosodic coherence of the speech stream in selectively attending to a particular speaker.

Wiley (1983) recognises the features selected for increasing signal detectability in noisy environments as conspicuousness, redundancy, small repertoires, and alerting components, all of which, Fernald points out, are characteristic of infant-directed speech in humans. The conspicuousness or perceptual prominence in infant-directed speech arises from the elevation of pitch, expansion of pitch range, short vocalisations clearly isolated by long pauses (Fernald et al, 1989).

Redundancy, particularly the repetition of parts of a signal, or an entire signal, is prevalent in infant directed speech. Stern et al (1983) report over 50% of phrases from mother to 2 month old infant are repeated. Small vocal repertoires mean fewer and more distinctive categories for signal classification, reducing the potential for errors in identification of signals. Fernald notes that mothers tend to use prosodic contours specific to the interactional context, for example, low pitch for comfort. The first words infants learn are typically those which feature distinctive prosody, such as ‘uh-oh’, ‘bye-bye’ and ‘peek-a-boo’ (Fernald, 1994, p. 84).

Alerting components advertise to the listener when the message component of the signal is about to begin. They occur frequently in nonhuman animal ritualised calls, and in infant-directed speech where the speaker will say, for example, ‘look’, or ‘what’s that?’, or call the child’s name, in an elevated pitch to attract their attention before labelling objects.
4.4.2 Ferguson's functions of babytalk

Ferguson (1977) describes the babytalk register as one of a set of simplified registers available for use in addressing babies as well as others, such as foreigners or nursing home residents, who are perceived as having reduced linguistic competency. The characteristics of the babytalk register include; “simplification (eg., omitting inflections or replacing pronouns with proper names); clarification (eg., speaking slowly, with clear pronunciation and many repetitions); and the expression of positive affect through the use of intonation and hypocroristic, or diminutive, affixes, which convey endearment” (Gleason et al, 1994, p. 51).

Ferguson (1977) outlines three functions of baby talk, and suggests that they are responsible for its universal survival as a component of language structure and use; communication and self-expression; teaching language; and socialisation.

Communication and self expression combined are the first of Ferguson's primary functions of baby talk. Baby talk, as a simplified register, appears to be largely a means of improving communication when “one of the participants has only a limited ability to use language normally” (Ferguson, 1977, p. 222).

Sachweh (1998) noted that secondary baby talk to the institutionalised elderly occurred more frequently in speech to more physically frail, dependent rest home residents, particularly those who were unable to communicate verbally. Further, Sachweh describes one resident “her utterances are frequently misunderstood
due to the fact that her mother tongue is French, which many nurses do not speak. Thus, she receives even more secondary baby talk than other residents" (p. 62).

Baby talk simplifies normal speech, by removing the complexities of speech to adults, and clarifying and modifying it to suit the abilities of the listener (Ferguson, 1977; Brown, 1977). Nurses of the institutionalised elderly also employ simplifying strategies such as using a restricted, present tense vocabulary, and by using few conjugated verbs, to challenge the listeners’ comprehension abilities as little as possible (Szagun, 1991). Caretakers have also been noted to use exaggerated intonation, and repetition, to direct the listeners’ attention (Szagun, 1991).

Baby talk appears to be relatively easy for the listener to understand, thus facilitating more successful communication, and some of its properties, particularly prosodic features, function to increase the attention holding and intelligibility of the adult’s speech to the listener. Getting the attention of the child and keeping it are necessary for the maintenance of communication, so cues to the child to pay attention, such as frequent use of the child’s name, higher pitch, and alerting components, have a social function in marking the speech as directed toward a child listener (Garnica, 1977).

Secondly, baby talk facilitates self-expression of the emotions of the adult towards the listener and the situation. It allows the speaker to express emotions, affection, amusement, caring and protectiveness which normal speech does not allow (Ferguson, 1977). Sachweh (1998) noted that nurses used secondary babytalk more often to speak to their favourite or least favourite elderly rest home residents, than to other residents.
Fernald (1992) has documented the stereotyped prosodic contours of particular affective states, and found a relationship between prosodic form and communicative function. Comfort vocalisations, for example, have a smooth "legato" quality, while prohibitive vocalisation have a sharp "staccato" sound (Fernald, 1994, p. 62). Further, infants from English-speaking families respond with positive affect to infant-directed approval vocalisations, and with negative affect to infant-directed prohibition vocalisations when the speech is in English, German, or Italian, but not in Japanese (Fernald, 1994). As young as five months, infants respond differentially to positive and negative vocalisations, even before they show consistent selective responses to positive and negative facial expressions (Fernald, 1994). In addition infants are more responsive to affect vocalisations in infant-directed speech than in adult-directed speech, and respond appropriately, with more positive affect elicited to positive, than to negative vocal expressions (Fernald, 1994). Babytalk therefore, appears to have a role in facilitating the identification of social roles and behaviours for the child.

It is likely that at least one function of babytalk is concerned with the teaching of language to linguistic novices although some theorists have suggested that the baby talk register is specific to teaching language (eg Levelt, 1975; de Paolo and Bonvillian, 1978; Bynon, 1968) and is tailored to the child’s linguistic and communicative level. As the listener’s language skills and particularly receptive ability (ability to process and decode) develop, long utterances, semantically new and isolated utterances and the use of pronouns increase. At the same time, expansions, repetitions, references to the child’s activity and stock phrases such as ‘please’ and
‘ok’ decrease as the child’s linguistic ability develops (Cross, 1977).

Subsequent research however, has indicated that while various characteristics of baby talk may increase or decrease with the child’s developing linguistic abilities, they do not necessarily cause the development of child language. Expansions, for example, are “syntactically correct and complete versions of telegraphic utterances which retain all the content words of the child utterance in the original order” (Snow, 1977, p.39) which seem designed to teach children about the correct structure of language. Although they occur frequently in speech to young children (Brown and Bellugi, 1964) research has indicated that expansions have little effect on improving language production in children (Brown and Hanlon, 1970; Cazden, 1965; Nelson, Caruskaddon and Bonvillian, 1973; Feldman, 1971) although children who receive expansions and recast versions of their complete sentences (repetition of the child’s sentence in a new syntactic form) show an improvement on language abilities (Nelson, Caruskaddon and Bonvillian, 1973).

Newport et al (1977) have suggested that babytalk is tailored to the immature cognitive or intellectual level of the child. The Semantic Primacy theory is based on the assumption that children learn to talk only because the meaning of most of the speech they hear is obvious. Baby talk is generally restricted to the here-and-now, that is, adults talk about what the child is currently doing or what they are looking at, holding or playing with. The language development process is seen as being led and controlled by the child’s cognitive development (Macnamara, 1972). As children learn to identify and categorise objects, and to recognise cause and effect, they can start to associate adult utterances with certain facts or objects.
or events. As previously mentioned, deictic utterances appear to have a role in teaching the child the links between the subject, and the spatial, temporal and personal contexts. For example, in the utterance “the dog is over there”, the word “dog” expresses the subject, “there” denotes that the dog is spatially at some distance from the speaker (as opposed to “here”), and “is” signifies that speaker refers to the current position of the dog (as opposed to “was”, or “will be”).

Expansion also appears to have a role in teaching language to young children (Newport, 1976). Expansion occurs when a child’s foreshortened or ungrammatical utterance (book, table) is repeated in a syntactically correct form (yes, the book is on the table).

Parents’ utterances to children offer a simplified description of what appears to be important in the present situation, that is, they express in adult language what the child is experiencing, for example, “your milk is all gone’ to a child who has just emptied his glass” (Snow, 1991, p. 203). Nelson et al (1973) report that when the first 50 words a child learns match what their mothers think are important concepts, children will have less difficulty in learning language (Snow, 1991, p. 203).

Finally, the socialisation function of baby talk offers the identification of the social roles which require differentiation by the developing child (Ferguson, 1977). In all societies words exist for distinguishing between male and female, age, and degree of kinship, and parents use words to make these distinctions very early in the infant’s life. Words such as “mama”, “dadda”, and “bub-bub” are used to signify the relationships and sexes of caretakers and baby, and caretakers typically use them only to the child. Ferguson notes that
female caretakers are more likely than males to use these words for socialisation, and older children use them only to children younger than themselves. In addition words and phrases which indicate values are also used as socialising functions. The words "pretty" and "yukky" are often used early in the child’s life to denote society’s values for objects.

Ferguson adds that, in addition to his three main functions of baby talk, other uses may exist in adult, or post-infantal child vocabularies, such as in providing euphemisms for taboo words, talking to foreigners, and talking to pets.

4.5 A SPEECH REGISTER FOR DEPENDENTS?

D’Odorico & Franco (1985) suggest that it is worthwhile to consider babtalk as one example of a wider phenomenon in which speakers use characteristics of language according to their listeners. This approach is founded on the concept of “conversational constraints” used by Shatz & Gelman (1973) who showed that some of the syntactic features of babtalk to two-year-olds appeared to be constrained by the perceived comprehensive abilities of the listener, for example, a child able to produce linguistically suitable responses, or a pre linguistic child. Further, Newport, Gleitman and Gleitman, (1977) suggest, the language is constrained by the nature of the situation, “largely from the fact that the mother wants her child to do as he is told right now, and very little from the fact that she wants him to become a fluent speaker in the future” (p. 112). D’Odorico & Franco (1985) state that Snow’s (1978) hypothesis that the characteristics of speech to infants are determined by the speaker’s
attempt to keep the child's attention, "may be interpreted as a constraint operating inside conversations with very young children" (p. 568).

Phillips' (1973) has found evidence to suggest that true babtalk does not appear reliably until children are old enough to respond to adults' speech, although Bingham (1971) found that when adults believe that prelingual children are cognitively advanced and can understand much of what is said to them, they elicit simplified speech. Adults who are not willing to treat the infant as a participant in the interaction do not simplify their speech. Snow (1977a) has further stated "it has been suggested that adults' persistent attempts to carry on conversations with inadequate conversational partners may account for several of the striking features of the mothers' speech style, such as the redundancy and the high frequency of questions" (p. 37).

Brown (1977) points out that if we consider that babtalk is created by a combination of communication-clarification and expressive-affective components, we would also expect that babtalk should maintain this formula in its applications of 'extended use' to pets, plants, lovers, and all other recipients of this language. Feelings of affection, he claims, can be easily assumed, but such recipients will never comprehend or learn to speak, except in the case of lovers, who do not need instruction in language. If babtalk is limited to infants, then at least one component of it, the expressive-affective one, could be extended to other recipients such as pets. Brown (1977) suggests that "persons, animals and things whose primary characteristic is cognitive and linguistic incompetence will be addressed in a one-dimensional COMM (communication-clarification) register; and that
persons, animals and things whose primary characteristic is the inspiration of affection will be addressed in a one-dimensional AFF (expressive-affective) register. Persons combining cognitive and linguistic incompetence with the inspiration of affection and intimacy will be addressed in the two-dimensional COMM-AFF register which is, in fact, BT (babytalk)’” (p. 6). Ferguson’s suggestion that babytalk is only one of a set of registers designed to communicate with those felt to be unable to understand normal adult language, allows the extension of components of babytalk to various other listeners.

A second possibility is that the components of the babytalk register are so conjunctive that they are extended to other recipients as a unit, even though some characteristics do not apply to the listener or the situation (Brown, 1977). Ferguson (1977) has also suggested this possibility with respect for the avoidance of personal pronouns in speech to elderly persons. He suggests that the avoidance of first and second person singular pronouns, which may be explained in child-directed speech as a means of teaching the pronoun usage, cannot be given the same explanation when it is observed in speech to elderly patients. He claims that this use of pronouns is one of the expressive features of babytalk, and suggests that these features may be extended as a unit, even though it has no useful function for either recipient or speaker.

4.6 DIFFERENCES BETWEEN SPEECH TO CHILDREN AND TO PETS

A number of authors have commented on the similarity of the language used in addressing infants, and that used in speaking to pets

While Bynon (1968) explicitly states that the BT register in the Berber language could not be used to animals or between lovers, Ferguson (1977) suggests that

"...it is hard to believe that there is no extension at all to situations which call for some aspect of the values of BT, since registers tend to be extended by analogy, metaphor, and 'semantic' extension in the same way other units and levels of language are extended. Use of BT to animals is well documented for English and reported for Marathi but goes unmentioned in most BT studies. Read (1946) gives a number of examples including Shaw's Androcles and the Lion and modern newspaper stories; one American linguist of my acquaintance claimed never to use BT at all, only to realize she spoke almost constant BT to her cat. Since it seems safe to assume that the speaker is not attempting either to make his speech easier to understand or to teach the animal to talk, the use of BT to animals must be expressing affection or reinforcing the speaker's own feeling of taking care of the animal" (p. 230).

While speech to children and speech to dogs appear to share some properties, research has also revealed some subtle but nevertheless salient distinctions between baby talk and the language people use to communicate with their pets.

Garnica (1977) and Stern (1977 in Reilly and Bellugi, 1996) have noted that communication with children is higher pitched and has wider intonation contours than speech to pets. Katcher and Beck (1986) have also suggested that there are important differences
between dialogue with a pet and the speech typically used with children, and suggests that the adult-child dialogue has been modified for use with animals. The most obvious of these differences are the use of facial expressions and the level of excitement expressed in the dialogue (Katcher and Beck, 1986).

Firstly, parents tend to use exaggerated facial expressions to children. Stern (1977) has shown that facial displays to infants occur more frequently and in more exaggerated forms than to adults (Reilly and Bellugi, 1996). Katcher and Beck (1986) have noted that the facial expressions used with animals are more composed, and calmer. The brow is usually smooth, the nasal-labial fold flat and the eyes are often partially closed. The smile used is of less intensity than that used for infants, and in comparison to facial displays made to children, those made to pets are more relaxed.

Secondly, the level of arousal communicated to children through speech style and facial expression exceeds that used in pet-directed speech when the communication setting is intimate (Katcher and Beck, 1986). Katcher and Beck suggest that using an arousing speech style to communicate with pet dogs, for example, is likely to cause an active and unrestrained animal to escape or attack, or to alter the intensity of the interaction so that it resembles play rather than intimacy.

Only one study has empirically examined speech to dogs and to children. Hirsh-Pasek and Treiman (1982) studied the language between 4 owners and their dogs in a laboratory setting, and compared their dog-directed speech to their experimenter-directed speech. They found differences between speech to dogs and adults were similar to the differences that previous research had found
between speech to children and adults. Hirsh-Pasek and Treiman found the mean length of utterances to dogs, like speech to children, to be significantly shorter than utterances to adults.

Like speech to children, the proportion of declarative statements was significantly lower in speech to dogs than adults, and the proportion of imperatives higher. However, unlike the high frequency of questions asked of young children (Snow, 1977a) the proportion of questions to dogs was not significantly higher than to adults.

Present tense verbs, repetition, tag questions and grammatical correctness of utterances are all more frequent in speech to children than in speech to adults, (Remick, 1976; Newport et al, 1977) and these tendencies are paralleled in utterances to dogs (Hirsh-Pasek and Treiman, 1982).

One clear difference between speech to dogs and to children found by Hirsh-Pasek and Treiman was that speech to dogs contained no more diegetic utterances than were present to adults, although a large proportion of speech to children contains such utterances (Newport et al, 1977).

Hirsh-Pasek and Treiman (1982) noted during their observations that the language used to communicate with dogs contained diminutives such as “cutie” and “ballie”, and a high pitched voice with extreme intonations (p. 233). They concluded that while the structural properties of these two languages are surprisingly similar, functional and social differences in the expression may arise. Their interpretation of these findings was that babytalk was not elicited purely in response to the linguistic level or cognitive abilities of the child, but more probably as a modified response to the social
responsiveness of the interactant.

The apparent similarities between speech to children and speech to dogs suggest some interesting issues. Bakker-Renes and Hoefnagel (1974) found that the type of activity engaged in can have a large influence on the speech of the parent as measured by length of utterance and length of paraphrase (Snow, 1977a). Mothers' speech was more complex in unstructured situations such as playing, chatting, and book reading, than in more structured caretaking activities such as bathing, mealtimes, and dressing (Snow, 1977a). Snow et al (1976) also found book reading to elicit more complex speech than free play. These studies, according to Snow (1977a), clearly indicate that speech to children cannot be "...characterised as a single corpus..." (p. 37), because it varies as a function of the type of activity engaged in, and the communicative demands of the situation.

This suggests that studies which compare types of baby talk across subjects must make a particular effort to keep the situation which elicits the behaviour constant. In particular, when comparing speech to children with speech to dogs, the observational situation should be as similar as possible for each observation. This means that observing baby talk to pets while engaged in a particular fun activity should be compared to baby talk to humans engaged in the same (or a similar) fun activity, rather than, for example, during a caretaking activity. Hirsh-Pasek and Treiman (1982) recorded women preparing their dogs for an intelligence test, and compared their speech to utterances made by parents to their infants in previously published papers by other authors. The similarities found were significant, however, the comparison of owner-pet utterances to a variety of
utterances under varying situations did not offer a sound statistical comparison. In particular, Hirsh-Pasek and Treiman's sample were told to 'prepare' their pets for an evaluation, while the data on speech to infants it was compared to had been collected by informing subjects that researchers (for example, Newport et al, 1977) were studying the child's language learning.

Katcher and Beck's (1986) study also appears to have compared observations of human-pet interactions in one setting (a veterinary waiting room) with human-child interactions of unknown situation. The point here is that although these studies appear to have observed similarities between pet and child addressed speech, the contexts in which they were observed may have presented an unrepresentative view of baby talk communication because in effect there are two independent variables in these observations: the recipient of the speech, and the context of the communication.

4.7 RATIONALE

Previous research in the child language and companion animal fields has not adequately described the nature of verbal communication between dog owners and their pets. Few studies Katcher and Beck (1986), and Hirsh-Pasek and Treiman (1982) have made observations of verbal interactions from humans to their pets. This research has been restricted to, and hindered by, small sample sizes and incompatible data collection procedures, and by generalised observation without empirical documentation. Moreover, the effect of the level of attachment of the owner to the pet has not been considered, and speech to dogs has not been compared directly to
speech to children.

Interaction with pet dogs has occasionally been described as a substitute child relationship (Johnson, Garrity and Stallones, 1992), and dog owners often describe their pet as a family member (Katcher, Friedmann et al 1983; Katcher, 1981; Ganster and Voith, 1983; Cain, 1985). Katcher and Beck (1986) found that the most common family status of the pet is described as “child” even when children are present in the household.

The language and manner of speech used to communicate with pets often appear to be similar in structure to the ‘baby talk’ used with very young children. Speech patterns such as rising terminal pitch, repetition and a high level of questioning are associated with the language used to talk to infants and previous studies have noted similarities in the ways in which people communicate with pets and children (Katcher and Beck, 1986; Hirsh-Pasek and Treiman, 1982).

Brown (1977) has suggested two alternatives for the extension of babytalk to recipients other than infants. Firstly, he has proposed that the components of speech to infants, which address linguistic and cognitive incompetence, and the expression of affection, are so intertwined or conjunctive that they are extended to other recipients as a single unit of babytalk rather than as individual components which meet the recipients’ needs. This results in those characteristics thought to teach language being used in speech to pets. If this is the case it would be expected that there would be no, or very few differences between speech to children, and speech to others who are perceived as unable to communicate normally.

Secondly, Brown suggests, only those components of babytalk appropriate to recipients may be used in registers used to speak to
them. Ferguson (1977) has suggested that there exists a type of language used in communicating with dependents, and that speech to those who are considered unable to understand language in the usual way, pets, young children, the institutionalised elderly and the mentally handicapped, all use this reservoir with various alterations made to suit the nature and abilities of the listener. If this is assumed, then verbal communication with pets should involve similar speech characteristics as speech to children, for those characteristics which can be applied to both groups of dependents.

According to Brown, those recipients whose primary characteristic is the elicitation of affection would receive only the expressive-affective register; those whose main characteristic is linguistic or cognitive incompetence would receive the communicative-clarification register; and those who are both linguistically and cognitively incompetent and elicit affection would receive both expressive-affective and communicative-clarification register.

This would mean that if those components of babyltalk currently thought to be critical to teaching infants to talk were to be found in speech to dogs, then they may actually hold some function in addition to language teaching, or a different function altogether.

The difficulty with the second of Brown’s alternatives is that, while it may be obvious that the adult second-language learner, who is incompetent without eliciting our affection, would receive the communicative-clarification register, and infants, being both incompetent and affection-inspiring, would receive both registers from their parents, it is difficult to see where pets fit in. Even though in pets and lovers “...the inspiration of affection and intimacy is
strong without there being any question of cognitive or verbal incompetence” (Brown, 1977, p. 6), Brown acknowledges that he is unable to decide whether pets and lovers would receive a two-dimensional speech register of communicative-clarification and expressive-affective components, or a one-dimensional expressive-affective component only. Ferguson (1977), on the other hand, proposed that in speech to pets “... the speaker is not attempting either to make his speech easier to understand or to teach the animal to talk...” (p. 230), and therefore assumes that babytalk to pets “...must be expressing affection or reinforcing the speaker’s own feeling of taking care of the animal” (p. 230). Ferguson does not detail why he feels pet owners do not feel the need to communicate with their animals by making their speech easier to understand, and more recent findings suggest that at least one of the functions of babytalk, and secondary babytalk, is to communicate effectively with the recipient, and to hold their attention in order to do so.

Brown (1977) further suggests that social status may be responsible for speakers addressing pets and infants with the COMM-AFF register, but adult second-language learners with only the COMM register. Not only is the speaker not affectionately attached to the recipient in the latter case, but the status of both is relatively equal. Addressing the foreigner with words such as doggie and bye-byes would be insulting, whereas the same does not apply to children and pets because both are of a lower status to the speaker.

Newport, Gleitman and Gleitman (1977) also present a multifactor functional model of babytalk based on the constraints that (a) there are few topics of conversation between caregivers and children - babytalk, they suggest, is a set of instructions for the child to look or
act in a particular way (b) the attention and processing capabilities of
the child must be minimised, and (c) the caregiver will have to use
some special features to ensure minimal misunderstanding. Deixis
and repetition, they suggest, may be factors here which could have a
teaching function. Pine (1994) supports this view on a number of
points. Firstly, he claims, although caregivers can occasionally be
observed teaching their children 'language', for example, teaching
them to say 'please' and 'thank-you', speech to children more often
involves directing the actions or attention of the listener. Secondly, it
accounts for the similarities between child-directed speech and
speech directed at dogs, foreigners, and three-month-old infants not
yet capable of learning language. The features of babyl talk used to each
of these groups are more readily explained as a means of
communicating with a non-competent language speaker than as a
means of teaching language.

4.8 HYPOTHESES

There were three main purposes of the study. Firstly, the study
was designed to explore the characteristics of speech to dogs as much
loved family members, based on the scant literature surrounding the
topic. Secondly, Brown's and Ferguson's theories on the function and
format of babyl talk to dependents suggested that examination of dog-
directed language, and its comparison to child-directed language may
prove to be a useful adjunct to the speech to dependents literature.
Newport, Gleitman and Gleitman's (1977) multi-factor theory was
one of the first to suggest that the characteristics of babyl talk may not
serve an explicitly language teaching function, and hence may be
applicable to other recipients of the babytalk register, such as dogs.

Based on the observations made by Katcher and Beck (1986), and Hirsh-Pasek and Treiman (1982) it was hypothesised that speech to dogs would be of similar structure and content to speech directed to children between 6 and 36 months. This would be consistent with the existence of a simplified language register for speech to recipients who are limited in their ability to use language to communicate.

While the main functions of speaking baby talk to infants are thought to be communication, self-expression, socialisation, and language teaching, it was hypothesised that, because the purpose of the language used with each recipient varies with their communicative needs and capabilities, speech to dogs would differ from speech to children to some extent. It was predicted that speech characteristics consistent with language teaching and at least some aspects of socialisation would be used with significantly less frequency in speech to dogs than in speech to children.

It was further expected that speech to dogs would be similar to speech to children at the pre-lingual level (6-12 months) on all babytalk characteristics because while both are capable of eliciting expressive-affective responses, both are limited in the cognitive and lingual responses they are able to make, and which are thought to be required for the elicitation of true babytalk (Philips, 1973), and neither is at a language-learning stage.

The third purpose of the study was to examine whether two aspects of pet ownership, attachment, and the paedomorphism of the pet, influenced the speech directed to dogs. It was hypothesised that dog owners who were highly attached to their pets would be more likely to use baby talk than owners who were less highly attached to
their pets. Given the functions of babytalk as outlined by Ferguson (1977), babytalk was expected to be higher in frequency to highly attached pet owners, at least in terms of the display of affection. As Levinson (1984) has suggested, ownership of an animal does not necessarily equate to having a positive relationship with it. The results of Study 2 indicate that the level of attachment to the pet is positively related to the frequency of talking to pets, the amount of affection shown, and the pet’s status as a family member. In child language studies baby talk produced by mothers has been found to differ from baby talk produced by childcare workers (Cross, Nienhuys, & Kirkman, 1983), and it is possible that this difference is also due to the type or intensity of attachment.

Hirsh-Pasek and Treiman (1982), in examining the speech used to pets, did not assess the level of attachment their subjects had with their dogs. As owners who are highly attached to their dogs tend to show more affection and talk more frequently to their pets, and to use terms of endearment more often than less attached owners, it appears that at least some of the measures of babytalk used by Hirsh-Pasek and Treiman could have been affected by not determining the level of attachment dog owners felt for their pets.

It was also hypothesised that owners of dogs which were highly paedomorphic (babyish in physical appearance) would use speech to their pets which more closely resembled speech to young children, than owners of dogs which were less paedomorphic.

Humans and other animals which display the physical characteristics of juveniles tend to be perceived as young and dependent regardless of their age. The paedomorphic characteristics of domestic animals appear to elicit the same nurturing behaviours
that human infants do, and appear to stimulate affectionate care and nurturing (Katcher and Beck, 1987).

If paedomorphic animals are capable of eliciting the same protective and nurturing responses in humans that paedomorphic humans elicit, it seems plausible that they would be capable of eliciting verbal responses that human infants do as well.

Finally, a comparison of the responses of children and dogs to the language directed toward them was proposed, because it is possible the feedback received from dependents may influence the ongoing utilisation of particular language characteristics. Although it is well recognised that the frequency of babtalk features decreases as the child becomes more linguistically advanced (Lindfors, 1987), there is little in the child-language literature concerning the non-verbal responses children give to babtalk, and whether these responses have any influence on the elicitation of further child-directed language. Snow (1977b) has demonstrated the effect of children’s vocalisations on parents speech to them - the caretaker often takes both roles in the conversation if the child does not respond, “You like that don’t you? Yes, I do”, use smiles, yawns and sneezes as if they are conversational responses, and phrase their utterances so that any action by the child can be used as a response, or as a new conversation topic:

Child: (smiles)
Mother: You like banana, don’t you?
Child: Cat
Mother: No, cats don’t like banana
Child: Dog
Mother: Yes, dogs chase cats, don’t they?
However, the incidence of answering questions, responding to attentionals, and obeying directives has not yet been thoroughly assessed. It was hypothesised that children and dogs would respond non-verbally in similar frequencies to the characteristics of babtalk, and that the frequency of responses for both groups would be high to elicit further utterances from caregivers.

4.9 METHOD

4.9.1. Object

(i) To ascertain the similarities and differences in speech to two groups of dependents: children under the age of 3 years and pet dogs. To compare speech to pet dogs with speech to children aged 6-12 months (under 13 months), 13-24 months, and 25-36 months to evaluate the cognitive level pet owners perceive their dogs to possess.

(ii) To assess the effects of owner attachment to dog and paedomorphism of dog on quality of communication.

(iii) To explore the non-verbal response frequency and type elicited by child-directed and dog-directed speech.

4.9.2 Participants

(i) Video participants
A total of 45 respondents, 19 parents and 26 dog owners, were obtained from the placement of the following advertisement in the main city newspaper.

*Parents of 6-36 month old toddlers, and/or owners of much-loved dogs are needed to make videos of their child or pet for a University of Canterbury study. The study is looking at how children and dogs respond to voices.*

*Video cameras are available on loan, and every participant receives a copy of their video. Parents go into a draw for $100 worth of children’s clothing, while the dog owner draw is for $100 worth of pet products of their choice.*

The parent group consisted of 16 mothers and 3 fathers of 19 infants aged between 6 and 36 months. The mean age of the children videoed was 22 months, (range = 30), and 10 were boys. The mean age of participating parents was 32 years, 4 months (range 24-35 years).

The child sample was later divided into three age groups; under 13 months, 13-24 months, and 25-36 months. There were 5 children in the under 13 months group, and seven each in the 13-24 and 25-36 month groups.

Of the initial sample of 26 dog owners, 7 failed to meet the criterion of scoring 60 or less out of a possible 108 on the Pet Attachment survey. The dog owning group therefore consisted of 13 female and 6 male owners, with a mean age of 37 years, 1 month (range 20-57 years). The mean age of the dogs was 5 years 6 months (range 6 months - 15 years), and 8 were male.

The participants therefore consisted of 19 parents and 19 dog
4.9.3 Materials

(i) The Pet Attachment Survey

The Pet Attachment Survey (PAS) was developed in 1984 by the Center to Study Human-Animal Relationships and Environments (CENSHARE) to assess human-animal attachment levels for conventional companion animals such as cats and dogs. The development of the PAS was based on a number of sources, including Ainsworth and Bell’s (1974) work on the three types of attachment between infant and caregiver: secure, anxious/resistant, and anxious/avoidant, illustrated by the elements of behaviour and proximity during the caregiver’s absence and return (Holcomb, Williams, and Richards, 1985). Items from Katcher, Friedmann, Goodman and Goodman’s (1983) questionnaire on attachment are also included in the PAS.

The Revised Pet Attachment Survey (rPAS) is a 27-item questionnaire in which each item is rated on a 4-point Likert scale (1 = almost always, 2 = often, 3 = sometimes, 4 = almost never). The rPAS is included in Appendix C. The rPAS is scored by summing the ratings given by the subject for each of the 27 items. The maximum score of 108 indicates a very low level of attachment. The minimum, and most highly attached score, is 27.

The rPAS consists of two dimensions of attachment; intimacy (11 items) and relationship maintenance (16 items) (Holcomb, Williams, and Richards, 1985). The intimacy subscale addresses
1) attitudes surrounding emotional importance; 2) physical proximity; and 3) planning for close physical proximity. The relationship maintenance subscale addresses 1) behaviours broadly related to physical and sensual interaction; 2) communication; 3) time and financial investment (Holcomb, Williams, and Richards, 1985, p. 32)

Internal reliability measures of the rPAS using a Cronbach’s alpha indicate an internally consistent instrument with coefficients of 0.83 for the relationship maintenance subscale and 0.74 for the intimacy subscale. Construct validity data indicates that the rPAS is an appropriate instrument for measuring human-animal attachment on the dimensions of relationship maintenance and intimacy (Stevens, 1990).

(ii) Video-recording equipment
A hand held Panasonic video camera and a 3 hour unrecorded video tape was provided for each participant. Tripods were also made available for participants.

4.9.4 Procedure

Participants were contacted to explain the purpose of the study and the requirements of participation. All participants were informed on initial contact that the experiment was concerned with how their child or dog responded to elements of the participant’s voice such as the words used, tone, and pitch.
equipment themselves, or ask a member of their household to complete the filming, but that the interaction filmed was to be between parent and child, or owner and dog. Participants were not required to appear on the video themselves, but were informed that their voice should be clearly audible.

Participants were asked to film eight situations involving interaction between participant and dependent which were selected to be applied to both dogs and to children so that comparisons could be made. The instruction sheet described the required eight situations and offered examples for both groups. The instruction sheet is presented in Figure 1 below. Where instructions given to dog owners differ from instructions to parents, the instructions given to dog owners are presented first, with the instructions given to parents in parentheses on the following line.

All participants were instructed on the use of the video equipment for the purposes of the study, and were asked to video as much interaction with their dependent as possible. Participants were able to use the video equipment for up to 10 days to complete their filming.

Following data collection, participants were informed that the study was also concerned with the participants' speech in addition to the reaction of the dependent, and were asked to complete consent forms for their continued participation with this understanding.
Figure 1: Instructions provided to parents and pet owners for videoing their dependents.

INSTRUCTIONS

Please do your best to film the following situations

A general introduction
e.g. introduce your child/pet, describe his or her personality, age, likes and dislikes. Try to video your child/dog as much as possible, and get them to respond to you, so we can see their personality come out.

Leaving for a period of time
e.g. going out and leaving your child/pet at home, or with another caregiver.

Greeting after a period of separation
e.g. greeting your pet after returning home or collecting your pet from kennels or care.
(e.g. greeting your child after returning home or collecting your child from daycare.)

Play and/or active interaction
e.g. your pet playing with someone. Try introducing a toy or new object eg a mirror, or squeaky toy and discover the reaction.
(e.g. your child playing with someone, their reaction to a new object or toy, completing activities.)

Demonstration of a learnt behaviour
e.g. basic or cute things like sit, roll over, or fetch. Reaction to certain words or actions e.g. “walk”, picking up lead, opening fridge door, rattling car keys.
(e.g. basic or cute things like getting your child to point to the right
colour, follow a ball, dance, etc (will depend on age.)

Grooming/Bathing
e.g. pet being bathed/groomed/trimmed. Include things like having to catch your pet first if necessary.
(e.g. your child being bathed/changed/dressed/having hair or nails cut. Include things like having to catch him or her first if necessary.

Feeding
e.g. mealtimes, including the few minutes before feeding when you are preparing food and pet is hungry.
(e.g. mealtimes, including the few minutes before meals when you are preparing food and your child is hungry.)

Bedtime routine/Putting to bed/Sleeping
e.g. including calling pet to sleeping place, tucking in.
(e.g. reading a story, saying goodnight to each other, tucking in.)

Following the collection of video data, the breeds of dogs participating in the study were rated for paedomorphosis. A total of 16 members of the New Zealand Kennel Club Judges’ Association were asked to participate during a regular club meeting, and all members present agreed. There were 12 female and 4 males in the group, with a mean age of 47 years (range 33-78 years). All were recognised as New Zealand Kennel Club qualified judges of purebred
dogs.

A brief questionnaire was developed as a measure of paedomorphism of each of the breeds of dog involved in the video study. The questionnaire included the following description of paedomorphism:

"Most very young mammals have a distinctive babyish appearance. The characteristics of babyish forms in general are large eyes and head in relation to body size, large protruding forehead, short limbs, and rounded shapes, for example, Mickey Mouse is a babyish form of a real mouse. In dogs, floppy ears are more juvenile than pricked ears, because in most breeds pricked ears are not present in young puppies, but develop later in life.

Many domestic dog breeds have been developed so that even in maturity, they display both the behaviour and appearance of a young animal. This is called paedomorphism and results in a reduction in the rate of change in development, so that the adult passes through fewer growth stages and resembles a juvenile stage of its ancestor. Thus in many ways domestic dogs resemble wolves which have not yet reached maturity."

In addition, four pictorial examples of paedomorphism in humans, rabbits, dogs and birds were provided in each questionnaire. Participants were instructed to rate a total of 23 dog breeds, including those breeds in the video study, on their degree of paedomorphism by considering the following attributes: 1) overall proportions of head and body; 2) shape, size and position of eyes and ears; 3) overall proportions and shape of braincase and foreface; 4) protrusion of forehead; 5) size, and 6) roundedness of shape.
Each breed was rated on a 7-point scale ranging from 1 (very babyish) to 7 (not at all babyish). Participants were instructed to assume that the wolf was rated as 7 on this scale. The Paedomorphosis questionnaire is included in Appendix C.

4.9.5 Coding

4.9.5.1 Speech to dependents

Participant utterances were transcribed from videotape by two transcribers working independently. The final transcripts represented utterances on which both transcribers agreed. Utterances in which particular words were unintelligible were excluded from the analysis. This made up 1.3% of total utterances.

A total of 8500 utterances to dogs and 6700 utterances to children were transcribed and coded for a number of sentence types and speech characteristics by two independent coders. The sentence types and speech characteristics were defined as:

1. Sentence type

a. Declaratives

Statements which declare something, usually the speaker’s thoughts, opinions or observations, for example, it’s a beautiful day.

b. Imperatives

Utterances which direct the dependent to behave in a certain
way, for example, *sit down; don’t touch that.*

c. Questions

All utterances that were phrased in the form of a question.

(i) Yes/No Questions

Questions which were answerable by a yes or no even when no answer was expected or given, for example, *do you want a biscuit?*

(ii) Open-ended Questions

Questions which asked who, what, where, when, why, or how, even when no answer was expected or given, for example, *what is this? and where’s your ball?*

d. Uncoded

A number of utterances remained uncoded for sentence type due to failure to clearly fulfil the requirements for any of the above categories. Uncoded utterances included such phrases as “*Oh dear*, “*Uh-oh*,” and “*M m m m*”.

2. Speech Characteristics

a. Mean length of utterance (MLU)

The average number of words in each sentence or phrase.
b. Repetition
   (i) Full repetition
   An utterance which is an exact repetition of the previous utterance.

   (ii) Partial repetition
   An utterance in which up to two words vary from the preceding utterance. The original meaning of the utterance must be retained.

c. Praise
   Statements that compliment or reward the dependent for doing something well.

d. Deixis
   The labelling of objects and concepts by means of a variable whose identification depends on the speakers and their situation. For example, in the utterances there is a cat; here's your ball; that's your toy the words there, here's and that's refer to things which depend on the situation, and what is around or focused on at that moment.

e. We
   Use of the term "we" to refer to just one person, either the speaker or the dependent, for example, we have to have our bath now.

f. Use of name
   Use of the dependent's name or nick name.
g. Relationship reference

References to the relationship between the speaker and the dependent, such as mum, dad, and son.

h. Abbreviation of sentence

Utterances which are contractions of grammatical sentences, such as you going out? rather than are you going out?

i. Manners

Use of forms of politeness such as please, thank-you, and ta.

j. Total Attentionals

All attempts to attract or direct the attention of the dependent, including name use and exclamations such as look!

k. Tag Questions

Declarative statements with a question tagged onto the end, for example, you like that, don’t you?

l. Diminutives

The addition of a prefix or affix to convey the meaning small or unimportant, or to express affection, for example, wee, ballie, bathies.

m. Endearments

Terms of affection or endearment, such as dear, darling, sweetheart, and honey.

n. Whispering
o. Grammatical errors

Utterances that are purposely grammatically erroneous, for example, *mummy and daddy is go to bed now*.

p. Interpretations

Statements which make inferences about the wants or likes of the dependent, such as *you like the balloon*.

q. Translations

A statement made by the speaker which expresses an opinion as if it is that of the dependent. For example, *come on dad, hurry up with my milk, I’m hungry*.

r. Attentionals

Words or exclamations which serve to attract or maintain attention such as *hey!* or *look!*

s. Past/future references

Utterances which refer to situations, events and objects which are not immediately present, for example, *what are we going to do tomorrow*?

t. Verbs

Each new verb used in speech to dependents was scored. Verbs which had previously been used in dialogue to the dependent were not scored, nor were variations of previously scored verbs. For example, if *run* had been scored, then running would not be scored as a new verb.
u. Nouns

Each new noun used in speech to dependents was scored. Nouns which had previously been used in dialogue to the dependent were not scored, nor were variations of previously scored nouns. The context that words were used in was taken into account when coding nouns and verbs, for example, the word bath was coded as a verb in the context *I am going to bath you* and as a noun in the sentence *get in the bath*.

4.9.5.2 Dependents’ responses to babytalk

As the study was only concerned with non-verbal responses, only caregiver utterances which did not receive a verbal response from the dependent were included in the data analysis. Responses from dogs, and from children under 25 months were coded, however, responses from older children, which were often verbal, were eliminated from the analysis.

Each caregiver utterance was coded as above, and the response of the dependent to the utterance was recorded. Responses were recorded only for utterances which were intelligible and appeared to be directed toward the dependent. The response of the dependent was only encoded when it fitted one of the coding categories and was unambiguous. A number of responses were not coded due to the video camera being not focused on the dependent immediately following the utterance.

A total of 2156 responses of dogs and 2313 of children were recorded. The coding categories were defined as:
a. Looks at caregiver
   Dependent looks at the speaker

b. Looks at object
   Dependent looks in the direction of the object that the speaker is referring to

c. Obeys the speaker.
   While predominantly directed at imperatives, this also applied to questions eg Why don’t you put your toys in the box

d. Partial obey.
   The dependent begins to obey the speaker but does not complete the action for example, a child who picks up toys and move toward the box but does not put the toys in it

e. Approach.
   Dependent approaches the speaker

f. Turn away.
   Dependent turns or moves away from the speaker

g. Disobey.
   Dependent produces a behaviour incompatible with obeying the speaker, for example, speaker says “don’t touch that” dependent then touches the article.
h. Ignore or no response.
Dependent gives no response to what the speaker says.

4.9.6 Data Analysis

The frequency with which each characteristic occurred was compared between dog and child samples, and between the dog sample and each of the three age groups (less than 13 months, 13-24 months, and 25-36 months) of the child sample. t-test analyses were used to ascertain differences between groups on frequencies of speech characteristics and responses. The Pearson’s product-moment correlation coefficient was used to describe relationships between speech to dependents and measures of attachment and communication.

4.10 RESULTS

4.10.1 Attachment to pets

Of the 26 participants initially in the dog owning group seven were excluded from further participation based on their Pet Attachment Survey score being above 60. In addition the dog owner group was divided into two sub-groups based on their PAS score. High attachment dog owners were those who had scored less than 50 on the PAS and Low attachment were those who scored between 50 and 60. There were 9 dog owners in the High attachment group, and 10 in the Low attachment group.
4.10.2 Paedomorphosis results

The King Charles Spaniel and Griffon were rated as the most paedomorphic breeds included in the study, while the pointers and German Shepherd were rated the least paedomorphic. The breeds of dogs videoed in the study and the ratings of paedomorphosis attributed to each breed by the NZKC Show Judges Association are presented in Table 16.

Table 16. Canine Breeds included in the study and the NZKC Show Judges ratings of paedomorphosis where 1 = extremely juvenile form, and 7 = not juvenile at all.

<table>
<thead>
<tr>
<th>Breed</th>
<th>Number in study</th>
<th>Paedomorphosis rating mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>King Charles Spaniel</td>
<td>1</td>
<td>1.67</td>
<td>.86</td>
</tr>
<tr>
<td>Griffon Bruxellois</td>
<td>1</td>
<td>1.78</td>
<td>.97</td>
</tr>
<tr>
<td>Cocker Spaniel</td>
<td>1</td>
<td>3.78</td>
<td>1.39</td>
</tr>
<tr>
<td>Boxer</td>
<td>2</td>
<td>3.88</td>
<td>1.36</td>
</tr>
<tr>
<td>Golden Retriever</td>
<td>1</td>
<td>4.00</td>
<td>.71</td>
</tr>
<tr>
<td>Dachshund (Miniature)</td>
<td>1</td>
<td>4.11</td>
<td>1.45</td>
</tr>
<tr>
<td>Poodle</td>
<td>1</td>
<td>4.2</td>
<td>1.48</td>
</tr>
<tr>
<td>Fox Terrier</td>
<td>2</td>
<td>4.33</td>
<td>1.22</td>
</tr>
<tr>
<td>Jack Russell Terrier</td>
<td>1</td>
<td>4.55</td>
<td>1.13</td>
</tr>
<tr>
<td>Bearded Collie</td>
<td>1</td>
<td>4.67</td>
<td>.87</td>
</tr>
<tr>
<td>Labrador</td>
<td>2</td>
<td>4.88</td>
<td>.93</td>
</tr>
<tr>
<td>Dalmatian</td>
<td>2</td>
<td>5.00</td>
<td>1.22</td>
</tr>
<tr>
<td>German Shorthaired Pointer</td>
<td>1</td>
<td>5.33</td>
<td>1.12</td>
</tr>
<tr>
<td>Pointer</td>
<td>1</td>
<td>5.67</td>
<td>.87</td>
</tr>
<tr>
<td>German Shepherd</td>
<td>1</td>
<td>6.44</td>
<td>1.01</td>
</tr>
</tbody>
</table>
4.10.3 Speech to dependents

4.10.3.1 Characteristics of speech to dependents

The frequency of each of the speech characteristics was measured as a percentage of the total utterances transcribed from each participant group. The frequency of babytalk speech characteristics to dogs, and to children, is illustrated in Table 17.

Table 17. Mean frequency of occurrence of sentence types and speech characteristics in speech to dogs and children as a percentage of total utterances.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>dog</td>
<td>M  SD</td>
<td>M  SD</td>
<td>M  SD</td>
<td>M  SD</td>
</tr>
<tr>
<td></td>
<td>Percentage of total utterances*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>31.8</td>
<td>12.9</td>
<td>36.1</td>
<td>7.6</td>
<td>38.7</td>
</tr>
<tr>
<td>Imperative</td>
<td>36.5</td>
<td>12.1</td>
<td>20.8</td>
<td>9.7</td>
<td>10.3</td>
</tr>
<tr>
<td>Yes/No questions</td>
<td>13.7</td>
<td>7.4</td>
<td>26.8</td>
<td>4.7</td>
<td>27.0</td>
</tr>
<tr>
<td>Open-end questions</td>
<td>9.0</td>
<td>4.6</td>
<td>14.2</td>
<td>4.6</td>
<td>14.9</td>
</tr>
<tr>
<td>Uncoded</td>
<td>9.0</td>
<td>3.4</td>
<td>2.1</td>
<td>1.3</td>
<td>9.1</td>
</tr>
<tr>
<td>Percentage of yes/no to open ended questions**</td>
<td>41.1</td>
<td>14.1</td>
<td>34.3</td>
<td>9.0</td>
<td>35.5</td>
</tr>
</tbody>
</table>
Table 17 continued

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MLU (words)*</td>
<td>M  SD</td>
<td>M  SD</td>
<td>M  SD</td>
<td>M  SD</td>
</tr>
<tr>
<td>2.8 0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Repetition</td>
<td>13.0 2.4</td>
<td>5.7 3.9</td>
<td>9.9 3.7</td>
<td>6.1 4.5</td>
</tr>
<tr>
<td>Partial Repetition</td>
<td>4.7 2.0</td>
<td>2.4 1.4</td>
<td>2.9 0.6</td>
<td>2.7 1.8</td>
</tr>
<tr>
<td>Praise</td>
<td>11.4 6.1</td>
<td>5.1 3.6</td>
<td>5.6 5.0</td>
<td>6.2 4.1</td>
</tr>
<tr>
<td>Deixis</td>
<td>0.5 0.7</td>
<td>1.0 1.1</td>
<td>2.0 2.2</td>
<td>0.7 0.6</td>
</tr>
<tr>
<td>We</td>
<td>1.0 1.1</td>
<td>2.0 1.6</td>
<td>2.7 2.0</td>
<td>1.7 1.0</td>
</tr>
<tr>
<td>Relationship reference</td>
<td>2.3 3.3</td>
<td>3.9 2.5</td>
<td>7.1 2.0</td>
<td>3.8 2.6</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>9.0 4.7</td>
<td>16.0 4.3</td>
<td>12.5 1.3</td>
<td>17.7 4.4</td>
</tr>
<tr>
<td>Manners</td>
<td>0.5 0.9</td>
<td>1.9 1.8</td>
<td>1.1 1.7</td>
<td>2.4 2.1</td>
</tr>
<tr>
<td>Name use</td>
<td>16.6 9.3</td>
<td>9.2 6.4</td>
<td>7.1 5.3</td>
<td>13.4 6.9</td>
</tr>
<tr>
<td>Attentionals</td>
<td>2.1 1.9</td>
<td>1.1 1.2</td>
<td>1.7 2.1</td>
<td>1.0 1.2</td>
</tr>
<tr>
<td>Total Attentionals</td>
<td>18.7 9.4</td>
<td>10.3 6.4</td>
<td>8.8 3.8</td>
<td>14.4 6.9</td>
</tr>
<tr>
<td>Tag questions</td>
<td>2.1 1.6</td>
<td>3.4 3.1</td>
<td>2.2 1.6</td>
<td>3.0 2.4</td>
</tr>
</tbody>
</table>

Percentage of total utterances*
Table 17 continued

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  SD</td>
<td>M  SD</td>
<td>M  SD</td>
<td>M  SD</td>
</tr>
</tbody>
</table>
| Speech
| Diminutives  | 3.0 3.4      | 1.2 1.3           | 3.5 0.7             | 1.4 1.1             | 2.5 1.0             |
| Endearments  | 4.3 5.9      | 3.3 5.7           | 7.7 6.1             | 0.7 0.6             | 1.2 7.4             |
| Whispering   | 1.1 1.7      | 0.7 0.9           | 2.1 0.6             | 0.6 0.6             | 0.2 0.4             |
| Grammatical errors | 0.3 0.5 | 0.1 0.2 | 0 0 | 0.2 0.2 | 0 0 |
| Interpretations | 1.5 1.3 | 0.7 0.8 | 1.3 1.6 | 0.5 0.5 | 0.7 0.7 |
| Translations  | 0.8 1.2      | 0.2 0.3           | 0.5 0.1             | 0.2 0.4             | 0.1 0.1             |
| Past/future references | 0.6 0.7 | 1.0 1.0 | 0.1 0.1 | 0.6 0.6 | 1.7 1.1 |
| Verbs        | 9.1 3.2      | 13.6 5.8          | 12.5 7.2            | 14.0 3.3            | 13.6 7.8            |
| Nouns        | 19.6 6.7     | 20.8 5.0          | 19.6 8.0            | 20.0 4.4            | 22.1 4.8            |

*except MLU which is presented as the average number of words per utterance.

**mean frequency of open-ended questions as a percentage of all questions.

The most frequent sentence type used in speech to dogs was the imperative (36.5% of all utterances), followed by the declarative (31.8%). Children more often received declarative sentences (36.1%) than any other sentence type, followed by Yes/No questions (26.8%).
A total of 17.7% of all utterances to dogs were repetitions of previous utterances. Total attentionals made up 18.7%, and praise also accounted for a large proportion of utterances (11.4%). Dog owners abbreviated 9% of utterances to their pets, but used deixis (0.5%) and manners (0.5%) rarely. Nouns (19.6%), and verbs (9.1%) made up a large proportion of all utterances.

The most frequent babyltalk characteristics of speech to children were abbreviations (16%), total attentionals (10.3%), nouns (20.8%) and verbs (13.6%). Name use was also frequent for children (9.2%).

4.10.3.2 Comparison of speech characteristics used to dogs and speech characteristics used to children.

Using mean scores of the occurrence of each speech characteristic, the frequency of each speech characteristic used to dogs was compared to the frequency with which it was used in speech to children. The comparison between speech to dogs and speech to all children in the sample aged 6 - 36 months was made using t-tests. Speech to dogs was then compared with speech to each of the three age groups of children; under 13 months, 13-24 months, and 25-36 months.

The comparison of the mean frequency of speech characteristics used when talking to dogs and to children is presented in Table 18.
Table 18. t-test comparison analyses of the frequency of characteristics of speech occurring in babytalk utterances to dogs and to children.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>rs</td>
<td>rs</td>
<td>rs</td>
<td>rs</td>
</tr>
<tr>
<td>Imperative</td>
<td>3.03**</td>
<td>3.66**</td>
<td>3.10**</td>
<td>2.19*</td>
</tr>
<tr>
<td>Yes/no questions</td>
<td>-4.54****</td>
<td>-3.03***</td>
<td>-4.59****</td>
<td>-3.99***</td>
</tr>
<tr>
<td>Open-ended quest.</td>
<td>-2.22*</td>
<td>-2.13*</td>
<td>-2.42*</td>
<td>-2.49*</td>
</tr>
<tr>
<td>Proportion yes/no to open end questions</td>
<td>rs</td>
<td>rs</td>
<td>rs</td>
<td>rs</td>
</tr>
<tr>
<td>MLU</td>
<td>-6.21****</td>
<td>rs</td>
<td>-4.82****</td>
<td>-7.56****</td>
</tr>
<tr>
<td>Full repetition</td>
<td>6.30****</td>
<td>rs</td>
<td>5.09****</td>
<td>9.66****</td>
</tr>
<tr>
<td>Partial repetition</td>
<td>2.99**</td>
<td>rs</td>
<td>2.30*</td>
<td>3.60**</td>
</tr>
<tr>
<td>Praise</td>
<td>3.95***</td>
<td>rs</td>
<td>2.10*</td>
<td>3.18**</td>
</tr>
<tr>
<td>Deixis</td>
<td>rs</td>
<td>-2.60*</td>
<td>rs</td>
<td>rs</td>
</tr>
<tr>
<td>We</td>
<td>rs</td>
<td>-2.26*</td>
<td>rs</td>
<td>rs</td>
</tr>
<tr>
<td>Rel. reference</td>
<td>rs</td>
<td>-2.44*</td>
<td>rs</td>
<td>rs</td>
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<td>-4.23****</td>
<td>-3.29**</td>
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<td>Endearments</td>
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Table 18 continued

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<td>-3.36**</td>
<td>-2.09*</td>
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</tr>
</tbody>
</table>

**** = p < .0001, *** = p < .001, ** = p < .01, * = p < .05

1. Sentence types

a. Declarative

There were no significant differences in the mean percentage of declaratives used in speech to dogs and to children under three years of age, nor between speech to dogs and to children at any of the three age groups.

b. Imperative

Imperative statements were used significantly more often in speech to dogs than in speech to the entire child group (t(36) = 3.03, p < .001), and than each of the three age groups of children; under 13 months (t(22) = 3.66, p < .001), 13-24 months (t(24) = 3.10, p < .001), and 25-36 months (t(24) = 2.19, p < .01).
c. Questions

(i) Yes/No Questions

Yes/No questions were asked significantly more often of children than dogs in each of the three age groups of children; under 13 months ($t(22) = 3.03$, $p < .001$), 13-24 months ($t(24) = 4.59$, $p < .0001$), and 25-36 months ($t(24) = 3.99$, $p < .001$). and over all age groups ($t(36) = 4.54$, $p < .0001$).

(ii) Open-ended Questions

Open-ended questions were asked significantly more often of children than dogs in each of the three age groups of children; under 12 months ($t(22) = 2.13$, $p < .05$), 13-24 months ($t(24) = 2.42$, $p < .05$), and 25-36 months ($t(24) = 2.49$, $p < .05$). and over all age groups ($t(36) = 2.22$, $p < .05$).

(iii) Open-ended questions as a percentage of total questions

There were no significant differences in the percentage of open-ended questions as a function of all questions in any of the groups.

2. Speech characteristics

a. Mean length of utterance (MLU)

The mean number of words in each utterance was significantly shorter in speech to dogs than in speech to children between 6-36 months ($t(36) = 6.21$, $p < .0001$). However, when the child sample was split into age groups, the MLU was shorter in speech to dogs than in speech to children aged 13-24 months ($t(24) = 4.82$, $p < .0001$) and 25-36
months groups (t(24) = 7.56, p< .0001), but there was no difference between MLU for dogs (2.8) and for children under a year old (3.2).

b. Repetition

(i) Full repetition

Full repetition of utterances occurred significantly more often in speech to dogs than in speech to children (t(36) = 6.30, p< .0001). There was no difference in the frequency of repetition between speech to dogs and speech to children under 13 months, but dogs received more repetition than children aged 13-24 months (t(24) = 5.09, p< .0001) and 25-36 months (t(24) = 9.66, p< .0001). There was a negative correlation between age of child and frequency of full repetition (r = -.55, p< .02).

(ii) Partial repetition

Partial repetition occurred significantly more often in speech to dogs than in speech to children(t(36) = 2.99, p< .01), and to children in the 13-24 (t(24) = 2.30, p< .05) and 25-36 (t(24) = 3.60, p< .01) month age groups but there was no difference between speech to dogs and speech to children under 13 months.

c. Praise

When repetition of praise was controlled for, dogs received more praise than children(t(36) = 3.95, p< .001). However when age groups were considered dogs received similar amounts of praise to younger children but more praise than children 13-24 months (t(24) = 2.10, p< .05) and 24-36 months (t(24) = 3.18, p< .01).
d. Deixis

Deixis was significantly higher in speech to children under 13 months than to dogs but was no different at any other age.

e. Use of ‘We’

The use of the word ‘we’ to refer to just one person occurred more often in speech to children under 13 months than in dogs, but there was no difference in frequency between dogs and older children.

f. Name use

The use of the name of the dependent occurred more often in speech to dogs than to children in the 25-36 months group, but was not significantly different to child groups of other ages.

g. Relationship reference

There was no difference in the frequency of references to the speaker’s relationship to the listener (mum, dad, son etc) between dog owners and parents of children 13 months and over, however dog owners used these references significantly less than parents of children under 13 months of age.

h. Abbreviation of sentence

Speech to children contained significantly more abbreviation of sentences, such as “You going out?” instead of “Are you going out?”, however there was no difference in the frequency of abbreviations in speech to dogs and to children under 13 months
i. Manners

Parents of children in the 13-24 and 25-36 months age groups used manners significantly less frequently in speech to their dependents than dog owners did. The frequency of manners in speech to children under 13 months was not significantly different from speech to dogs.

j. Total Attentionals

Attentionals, including the dependents' name, and utterances such as "Look" were significantly higher to the dog group than to the child group, however, there were no difference in the percentage of total attentionals used with dogs and the under 13 months group or the 13-24 month group of children.

There were no significant differences between speech to dogs and any age group of children on the following:

k. Tag Questions

Tag questions were asked in similar frequencies across all groups.

l. Diminutives

The use of diminutives such as 'ballie' and 'bathies' was not significantly different in frequency between dog and child groups.

m. Endearments

No differences were found in the frequency of terms of endearment used for dogs or children.
n. Whispering

There was no difference between dog-owner and parent-groups in the frequency of whispering to dependents.

o. Grammatical errors

No differences were found in the grammatical accuracy between groups. Grammatical errors occurred infrequently in both samples, with only two dog owners and one parent using grammatical errors.

p. Interpretations

There were no significant differences in the frequency of interpretations between child and dogs groups.

q. Translations

No differences were found in the frequency of translation between speech to children and speech to dogs.

r. Attentionals

There were no differences in the frequency of attention directing utterances between dog and child groups.

s. Past/future references

Past and future references in speech to dogs did not vary significantly from speech to children under 25 months, but were significantly lower than in speech to children 25-36 months old ($t(24) = 3.24, p < .01$).
t. Verbs

Verbs were less frequent in speech to dogs than in speech to children aged 13-24 months and 25-36 months, but there was no difference in the number of verbs used in speech to children under 13 months.

u. Nouns

There were no differences at any age group of the number of different nouns used.

4.10.3.3 Attachment to dogs and speech characteristics of owners

T-test analyses of the frequency of characteristics of speech from owners highly attached to their dogs, compared to the frequency of these characteristics in parents’ speech to children are presented in Table 19. There were fewer differences between speech from highly attached dog owners and parents, than between all dog owners and parents.

The more highly attached the owner was to the dog, based on PAS scores, the more open-ended questions were asked \((r = .39, p < .05)\), and there was a positive correlation between attachment to the dog, and the mean length of utterance \((r = .42, p < .05)\).

When the dog group was split into high (less than 50 on PAS) and low (50 or more on PAS) attachment, there was a significant difference in the frequency of interpretations between the high attachment group and children aged 13-24 months \((t(14) = 2.7, p < .05)\), and aged 25-36 months \((t(14) = 2.3, p < .05)\), but no difference between the dog group and children under 13 months.
The difference in the frequency of translation between those in the highly attached dog group, and the entire child sample was significant (t(21) = 2.54, p<.05). There was no difference, however, between the highly attached dog group and children under 13 months.

Highly attached dog owners used fewer verbs than parents of 13-24 month olds (t(24) = -2.66, p< .05), and the difference between dog owners and parents of 25-36 month olds approached significance (t(24)=-1.96, .07)

Highly attached dog owners used significantly fewer nouns in speech to dogs than all parents (t(36) = -4.86, p< .0001), and this difference held across parents of 6-12 month old (t(22) = -2.3, p< .05), 13-24 month old (t(24)= -3.8, p< .01) and 25-36 month old children (t(24)=-4.5, p<.001).

Table 19. t-test comparison analyses of the frequency of babytalk characteristics of speech to highly attached dogs and to children.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Imperative</td>
<td>2.70*</td>
<td>2.98*</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Yes/no questions</td>
<td>-4.11***</td>
<td>ns</td>
<td>-3.20**</td>
<td>-2.80*</td>
</tr>
<tr>
<td>Open-ended questions</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Proportion of yes/no to</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
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<tr>
<td>open ended questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLU</td>
<td>-2.97**</td>
<td>ns</td>
<td>-2.97*</td>
<td>-4.40**</td>
</tr>
<tr>
<td>Full repetition</td>
<td>3.71**</td>
<td>ns</td>
<td>3.20**</td>
<td>6.90****</td>
</tr>
<tr>
<td>Partial repetition</td>
<td>3.30**</td>
<td>ns</td>
<td>2.20*</td>
<td>3.30*</td>
</tr>
</tbody>
</table>
The only differences between speech from highly attached dog owners and speech from parents of children under 13 months were the use of more imperatives (t(9) = 2.98, p < .05) and less whispering.
(t(9) = 8.0, p< .0001).

4.10.3.4 Paedomorphism of dogs and speech characteristics of owners.

There was a positive correlation between paedomorphism (babyish appearance) of the dog and use of diminutives (r = .53, p< .05), the use of endearments (r = .67, p< .01), and the use of deixis (r = .4, p< .05).

When t-test analyses were completed, speech to the most paedomorphic dogs (those that were rated on average 4 or less on the 7 point scale) differed from speech to children under 13 months only on measures of imperatives (t(9) = 3.1, p< .01) and whispering (t(9) = 4.3, p< .01). There was no difference in the use of deixis between these two groups. t-test analyses are presented in Table 20.

Table 20. t-test comparison analyses of the frequency of occurrence of babytalk characteristics in speech to highly paedomorphic dogs and speech to children.

<table>
<thead>
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<th>children</th>
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<tr>
<td></td>
<td>all</td>
<td>&lt;13 mths</td>
<td>13-24 mths</td>
<td>25-36 mths</td>
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<tr>
<td>dog high paedomorphism</td>
<td>df=23</td>
<td>df=9</td>
<td>df=11</td>
<td>df=11</td>
</tr>
<tr>
<td>Declarative</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Imperative</td>
<td>ns</td>
<td>3.07**</td>
<td>2.20*</td>
<td>ns</td>
</tr>
<tr>
<td>Yes/no questions</td>
<td>-3.47**</td>
<td>ns</td>
<td>-2.60*</td>
<td>-2.20*</td>
</tr>
<tr>
<td>Open-ended questions</td>
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<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Proportion of yes/no to open ended questions</td>
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<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>MLU</td>
<td>-3.57**</td>
<td>ns</td>
<td>-3.80**</td>
<td>-5.90***</td>
</tr>
<tr>
<td>Full repetition</td>
<td>3.60**</td>
<td>ns</td>
<td>2.78*</td>
<td>7.03****</td>
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<tr>
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<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>children all</td>
<td>children &lt;13 mths</td>
<td>children 13-24 mths</td>
</tr>
<tr>
<td></td>
<td></td>
<td>df=23</td>
<td>df=9</td>
<td>df=11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td>ns</td>
<td>ns</td>
<td>2.60*</td>
</tr>
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<td>Praise</td>
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<td>ns</td>
<td>3.43**</td>
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<td>ns</td>
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<td>ns</td>
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<td>Name use</td>
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<td>ns</td>
<td>ns</td>
<td>2.40*</td>
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<td>ns</td>
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<td>Abbreviation of sentences</td>
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<td>ns</td>
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<td>ns</td>
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<td>ns</td>
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<td>ns</td>
<td>2.29*</td>
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<td>ns</td>
<td>ns</td>
<td>2.80*</td>
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<td>Whispering</td>
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<td>ns</td>
<td>-4.30**</td>
<td>ns</td>
</tr>
<tr>
<td>Grammatical errors</td>
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<td>2.64*</td>
<td>ns</td>
<td>ns</td>
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<td>Interpretation</td>
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<td>ns</td>
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<td>ns</td>
<td>ns</td>
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<td>Verbs</td>
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<td>-2.30**</td>
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</tbody>
</table>

**** = p<.0001, *** = p<.001, ** = p<.01, * = .05
4.10.3.5 Responses of dogs and children to babytalk

Dogs responded to 91.1% of all utterances from their caregivers, compared to 57.4% of children ($\chi^2 (2216) = 39.6$, $p < .001$). The frequency of responses from dogs and children in each age group to questions and other sentence types are presented in Table 21.

Table 21. Percentage of each utterance type of babytalk eliciting a response from dependent groups.

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Percentage of utterances responded to</th>
</tr>
</thead>
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<tr>
<td></td>
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</tr>
<tr>
<td>All dogs</td>
<td>91.1</td>
</tr>
<tr>
<td>High PAS dogs</td>
<td>91.2</td>
</tr>
<tr>
<td>All children</td>
<td>57.4</td>
</tr>
<tr>
<td>Children&lt;13m</td>
<td>49.0</td>
</tr>
<tr>
<td>Children&gt;13m</td>
<td>62.5</td>
</tr>
</tbody>
</table>

A comparison of the frequency of responses dependents made to caregivers' speech characteristics is presented in Table 22. A comparison of responses made to highly attached (PAS) owners and parents is included in italics.
Table 22. t-test comparison analyses of the frequency of responses made by dogs with highly attached owners, and by children, to dependent directed language.

<table>
<thead>
<tr>
<th>Dependent</th>
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<th>child</th>
<th>child</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>&lt;13m</td>
<td>&gt;13m</td>
</tr>
<tr>
<td>All dogs</td>
<td>df=29</td>
<td>df=22</td>
<td>df=24</td>
</tr>
<tr>
<td>High PAS dog</td>
<td>df=16</td>
<td>df=9</td>
<td>df=11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>6.63****</td>
<td>5.79****</td>
<td>4.61***</td>
</tr>
<tr>
<td></td>
<td>7.87****</td>
<td>5.79***</td>
<td>2.39*</td>
</tr>
<tr>
<td>Imperative</td>
<td>4.07***</td>
<td>10.10****</td>
<td>2.32*</td>
</tr>
<tr>
<td></td>
<td>3.20**</td>
<td>9.41****</td>
<td>ns</td>
</tr>
<tr>
<td>Yes/No question</td>
<td>8.80****</td>
<td>6.42****</td>
<td>8.68****</td>
</tr>
<tr>
<td></td>
<td>6.51****</td>
<td>4.78**</td>
<td>6.64****</td>
</tr>
<tr>
<td>Open-ended question</td>
<td>4.80****</td>
<td>4.74***</td>
<td>3.89**</td>
</tr>
<tr>
<td></td>
<td>3.71**</td>
<td>4.04**</td>
<td>3.16**</td>
</tr>
<tr>
<td>Name</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Praise</td>
<td>4.20***</td>
<td>11.38****</td>
<td>2.55***</td>
</tr>
<tr>
<td></td>
<td>2.89*</td>
<td>9.70****</td>
<td>ns</td>
</tr>
</tbody>
</table>

****=p<.0001, ***=p<.001, **=p<.01, *=p<.05

4.10.3.6 Types of responses to babytalk

Dogs and children responded to question type utterances with similar frequencies of looking at the object the speaker was referring to, obedience, partial obedience, approaching the speaker, and turning or
moving away from the speaker. Dogs responded to questions significantly more often than children by looking at the speaker (t(29) = 2.63, p< .01), while children were significantly more likely to disobey the speaker (t(29) = 2.12, p< .05), or not respond to the speaker at all (t(29) = 3.08, p< .005).

For other types of utterance, dogs were significantly more likely to obey (t(29) = 4.20, p< .001), and to approach the speaker (t(29) = 1.78, p< .05), while children were more likely to ignore or otherwise not respond to the speaker (t(29) = 8.65, p< .0001). The comparison analyses for response types to each of the sentence types may be seen in Table 23.

a. Declaratives

Of the responses children made to declarative utterances 29.8% were looking at the speaker, compared to 58.9% of responses from dogs (t (29) = 2.82, p< .01). When the age groups of children were considered, there was no difference between dogs and children over 13 months, but there was a difference between dogs and children under 13 months (t( 22) = 2.4, p< .05). Children ignored or made no visible or audible response to 49.7% of declarative utterances directed toward them, while dogs made no response to only 11.2% (t (29) = 6.63, p< .0001).

b. Imperatives

Children obeyed significantly fewer imperative statements (34.3%) than dogs (54.8%), (t(29) = 2.4, p< .05). Children (31.1%) ignored or made no discernible response to significantly more utterances than dogs (7.9%) (t (29) = 4.07, p< .001).
Table 23. Mean frequency of dog and child responses to babytalk speech characteristics, as a percentage of all responses.

Percentage of responses to sentence type

<table>
<thead>
<tr>
<th>Sentence type</th>
<th>Look</th>
<th>Look/object</th>
<th>Obey</th>
<th>Partial obey</th>
<th>Turn away</th>
<th>Disobey</th>
<th>Appr.</th>
<th>Non response</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Declarative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>child</td>
<td>29.83</td>
<td>9.11</td>
<td>1.39</td>
<td>0.74</td>
<td>2.95</td>
<td>4.45</td>
<td>1.80</td>
<td>49.68</td>
<td>50.32</td>
</tr>
<tr>
<td>dog</td>
<td>58.92</td>
<td>5.11</td>
<td>11.18</td>
<td>0</td>
<td>11.33</td>
<td>2.23</td>
<td>0</td>
<td>11.19</td>
<td>88.81</td>
</tr>
<tr>
<td>Imperative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>child</td>
<td>3.63</td>
<td>12.18</td>
<td>34.31</td>
<td>7.16</td>
<td>0.45</td>
<td>0.69</td>
<td>10.44</td>
<td>31.09</td>
<td>68.91</td>
</tr>
<tr>
<td>dog</td>
<td>6.82</td>
<td>7.38</td>
<td>54.81</td>
<td>5.41</td>
<td>4.20</td>
<td>1.49</td>
<td>11.88</td>
<td>7.89</td>
<td>92.11</td>
</tr>
<tr>
<td>Yes/No question</td>
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<td></td>
</tr>
<tr>
<td>child</td>
<td>30.79</td>
<td>11.51</td>
<td>3.54</td>
<td>0</td>
<td>3.13</td>
<td>1.06</td>
<td>3.45</td>
<td>47.10</td>
<td>52.90</td>
</tr>
<tr>
<td>dog</td>
<td>71.05</td>
<td>10.09</td>
<td>5.46</td>
<td>0</td>
<td>5.94</td>
<td>1.00</td>
<td>0</td>
<td>6.42</td>
<td>93.58</td>
</tr>
<tr>
<td>Open-ended question</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>child</td>
<td>32.67</td>
<td>23.16</td>
<td>2.45</td>
<td>0</td>
<td>3.04</td>
<td>0.54</td>
<td>0</td>
<td>38.14</td>
<td>61.86</td>
</tr>
<tr>
<td>dog</td>
<td>46.61</td>
<td>30.17</td>
<td>3.72</td>
<td>0</td>
<td>2.45</td>
<td>3.01</td>
<td>0</td>
<td>6.84</td>
<td>93.16</td>
</tr>
<tr>
<td>Name</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>child</td>
<td>42.25</td>
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<td>0</td>
<td>0</td>
<td>12.32</td>
<td>0</td>
<td>5.81</td>
<td>39.62</td>
<td>60.38</td>
</tr>
<tr>
<td>dog</td>
<td>48.07</td>
<td>2.38</td>
<td>9.40</td>
<td>1.43</td>
<td>15.74</td>
<td>0.71</td>
<td>3.45</td>
<td>11.63</td>
<td>88.37</td>
</tr>
<tr>
<td>Praise</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>child</td>
<td>29.01</td>
<td>12.50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>58.49</td>
<td>41.51</td>
</tr>
<tr>
<td>dog</td>
<td>42.37</td>
<td>2.12</td>
<td>1.16</td>
<td>0.27</td>
<td>9.44</td>
<td>0.41</td>
<td>1.43</td>
<td>7.04</td>
<td>92.96</td>
</tr>
</tbody>
</table>

c. Yes/No questions

Dogs responded to yes/no questions by looking at the speaker (71.1%) significantly more often than children (30.8%) did (t(29) = 5.13,
p< .0001). Children (47.1%) were more likely than dogs (6.4%) to ignore or not respond to yes/no questions (t(29) = 8.8, p< .0001).

d. Open-ended questions

Children (38.1%) were significantly more likely to ignore or otherwise not respond to open ended questions than dogs (6.8%) (t (29) = 4.8, p< .0001).

e. Name

There were no differences between groups in the responses given to use of the dependents' names.

f. Praise

Children(58.5%) were significantly more likely than dogs (7.0%) to ignore or fail to respond to praise (t(29)= 4.2, p< .0005).

4.11 DISCUSSION

4.11.1 Presentation of discussion of results

This section will begin with a brief summary of the results of Study 3, followed by a comparison of the speech characteristics received by dogs and by children, and how these might relate to the broad functions of babyltalk proposed by Ferguson (1977): communication and attention maintenance, self-expression, language teaching, and socialisation. The paedomorphic characteristics of dogs and attachment of dog owners to their pets will then be discussed, followed by the responses of the dog and child groups to the speech addressed to them.
4.11.2 Summary of results

Overall, the language used to communicate with pet dogs was similar to the language used to address infants in the majority of the speech characteristics examined, as evidenced by the lack of significant differences between the groups. Further, on several speech characteristics speech differences were found between dogs and children aged 13 months or more, but not between dogs and younger children, indicating that speech to dogs does not vary greatly from speech to very young children. The main differences between the parent and dog-owner groups appeared in those speech characteristics typically defined by the child language literature as having a language teaching role. Some of these differences however, did not hold for the children under 13 months who were at a pre-lingual stage. The attachment the dog owner had for their dependent, and the dogs' level of paedomorphism also appear related to the speech characteristics used in communication.

The responses made by children and dogs to their caregivers' utterances varied quite considerably in many respects, particularly in the frequency of responding, and obeying.

When speech to dogs was compared to speech to children who were under one year of age, there were even fewer differences in the ways in which parents and dog owners addressed their dependents. Some of the differences observed between speech to dogs and speech to children aged 6-36 months were not observed between speech to dogs and speech to children aged 6-12 months, however, some differences which were not evident in the comparison of speech to dogs and to the entire child group were observed in this group.
4.11.3 Characteristics of speech to dogs and to children

4.11.3.1 Sentence types

There were few differences in the ways parents and dog owners talked to their dependents. One of the most obvious differences is the relative proportional use of each sentence type within communication. As a proportion of all sentence types used, dogs were addressed more often by imperative utterances, closely followed by declaratives, than any other speech types. Children, irrespective of age group, were addressed more often by declaratives than other speech types, with yes/no questions being the next most prevalent. Open ended questions were the least frequently used sentence types for all groups.

Imperative statements occurred significantly more often in speech to dogs than in speech to children. The proportion of utterances categorised as imperatives in dog directed speech was lower than observed by Hirsch-Pasek and Treiman (1982) (36.5% in this study compared to 50.4% found by Hirsch-Pasek and Treiman), which may be attributable to the differences in sample selection and methodology between the two studies. Hirsch-Pasek and Treiman, for example, used only 4 “master-dog dyads”, but did not establish the attachment of owner to dog. They also obtained much of their data from a waiting room where subjects had been instructed to “prepare” their dogs for an intelligence test, and some (unspecified) data collection in the subjects’ homes, while speech to adults was measured in a different context. Bakker-Renes and Hoefnagel (1974) found that the type of activity engaged in can have a large influence on the speech of the parent. In the
current study, all participants were asked to collect data in each of situations. Situations in which speech to dogs and speech to children could not be compared, for example, reading a story to children, were excluded from the data analysis.

Even though dogs were more often spoken to using imperatives, both parents of infants and owners of dogs used declarative statements as approximately a third (32-36%) of utterances to their dependents. This is in accord with the work of Hirsh Pasek and Treiman (1982) found 28.9% of utterances to dogs were declarative. Newport et al (1977) have also reported that child-directed language contains relatively few declaratives (around 30% compared to 87.9% of utterances to adults), but a high proportion of imperatives and questions. Hirsh-Pasek and Treiman (1982) found a high proportion of imperatives in their dog sample (50.4%), significantly higher than in speech to adults. The proportion of questions they found to dogs was relatively low (20.9%), and not significantly different than in speech to adults. Newport et al found 18% of utterances to be imperatives, and 44% to be questions of some type.

Cross (1977) found, in her child sample, that about a third of utterances were questions, about a third were declaratives, 6% were deixis, and 7% imperatives.

4.11.3.2 Speech characteristics: communication

Some features of babytalk have been suggested to make speech easier to understand. These characteristics include repetition, and short sentences (MLU). The results of this study, consistent with previous child-language studies, suggest that these features are frequent in speech
to children. They are also frequent in speech to dogs, and in several instances speech simplifications occurred more frequently to dogs than to children, for example, the MLU to dogs was significantly less than to children. The MLU to children increased with the age of the child. This finding may be related to the number of imperatives directed toward the sample groups. Imperatives to dogs were observed to be short utterances (sit. stay) while imperatives to children tended to be longer -(come over here, sit down here with mummy... ), however, dogs received more imperatives than children did. Thus the sentence type appears to be connected to the MLU.

As with the comparison between the entire child sample and dogs, children under one year of age received significantly fewer imperatives, and more questions than dogs received. However, while the entire child sample received longer MLU than the dog sample, speech to children under one year of age did not differ significantly from the dog sample on this measure. As the MLU increases with the age of the child from 3.2 for children under a year old in this study to an adult MLU of 9-11 (Newport, Gleitman, and Gleitman, 1977) it is possible that dogs owners perceive their pets to have a level of comprehension similar to that which parents perceive their children under a year old to have.

Speech to children contained more abbreviation of sentences than speech to dogs, even though dogs received more repetitive statements and these were often abbreviated from the primary utterance.

In their child samples Newport et al (1977), and Cross (1977) found frequencies of abbreviations similar to those found here. Cross however, noted that abbreviated or otherwise incomplete utterances even less frequently to relative strangers. She suggests this may be a function of the familiarity of the speaker with the listener, and the formality of the
interaction, thereby representing informal language which is common in everyday conversation. Given that all but one dog-owner had raised their pets from puppies it seems unlikely that familiarity is affecting the difference between samples.

There was, however, no significant difference in abbreviation frequency between speech to dogs and to children under a year old, with both groups receiving fewer abbreviations than the older children. Newport et al (1977) suggest that abbreviations or deletions make sentences simpler for the listener to process, by keeping the utterance short. If this is the case it appears that the frequency of abbreviations tends to increase if and when the dependent becomes lingual, and then decrease again as their linguistic abilities mature. Cross (1977) has also noted that abbreviations occur with decreased frequency to older family members.

Full and partial repetition of sentences and phrases also occurred more often in speech to dogs than in speech to children, and seems to be designed to enhance comprehension (Wesche, 1994) by clarifying previous utterances (Ferguson, 1977). Ferguson notes that repetitious utterances in babtalk follow similar patterns to repetition in adult speech communities - when an utterance to the listener is perceived by the speaker to be poorly understood, the speaker repeats the original utterance in a slower, more enunciated, or more complete way, or may reword the utterance in an attempt to clarify the utterance. Hirsh-Pasek and Treiman (1982) found 23% of utterances to dogs to involve repetition, as did Newport et al (1977) in their child sample. This study found a much smaller amount of repetition (dogs=17.7%, children =9.1%, 12.8% for children under 13 months). The difference in this study from previous research may be due to the defining characteristics of
“partial” and “full” repetition. In this study partial repetition was defined as “up to 2 words different from the (immediately) preceding utterance”), whereas Newport et al defined partial repetitions as “utterances which repeat, in whole or in part, previous ...utterances” (p.117).

The finding that language directed toward children less than one year old did not differ significantly from dog directed language in the amount of full or partial repetition, suggests that parents of very young children and owners of dogs address their dependents at a similar cognitive level, and may perceive them to be functioning at a similar level. A similar amount of repetition to dogs and children under 12 months suggests speakers consider the attention span of these individuals at a similar, and low level. As children age, repetition decreases, but rephrasing increases, suggesting speakers recognise an increase in comprehension.

The functions of repetition are somewhat complex. Firstly, Gleason (1977) noted, a lack of response to the initial utterance from the dependent results in repetition by the speaker. Very young children, like dogs, have not learned to give the nods, grunts and other feedback appropriate to the facilitation of ongoing conversation.

Secondly, when the dependent is attending to something, the parent may offer a label for the item, and then expand on their own utterance. (Car. Car. It’s a red car), probably as a lexical lesson.

Thirdly, repetition occurs even when a dependent understands the initial utterance, and is complying with it, because, according to Gleason (1977) of the directive function of language. The caregiver narrates the behaviour as if supplying the parts of speech that the dependent is not yet able to provide - the dependent’s own “inner speech”. Children who
have started to talk are often observed “narrating” their own behaviours (I put block there. And there. Block.).

A further function of this type of repetition may be to reinforce the connection between the utterance and the behaviour should the speaker feel that the compliance was due to coincidence, rather than comprehension. Newport et al (1977) tentatively suggest that repetition may have a function in language acquisition because it might influence vocabulary and syntax by allowing “rehearsal or comparison among forms” (p.129). If this were the case, it is difficult to explain why repetition should be directed toward dogs that will never acquire spoken language more than toward young children.

The findings suggest that dog owners are simplifying their speech in an effort to maximise communication with their pets. If these speech characteristics exist to increase the level of communication between caregiver and dependent, why should speech to the dog sample contain more of these characteristics than speech to the children? Firstly, although the entire child sample received fewer of these “communication characteristics” than dogs, the pre-lingual children (that is, under one year old) received similar amounts of these characteristics to dogs. It appears then, that these characteristics may be particularly useful in communicating with pre-lingual or non-lingual listeners, and that as the listener develops language skills, the use of these characteristics declines. In dog-directed utterances, these characteristics remain present because the dog remains at the same linguistic level throughout its adult life. It would however, be useful to examine speech to puppies, which are likely to be at a lower comprehension level than adult dogs. Initial observations suggest that speech to puppies contains more extreme levels of some babytalk.
characteristics, such as high pitch and more questioning, than speech to adult dogs.

Newport, Gleitman, and Gleitman (1977) note that some features of babyltalk have a social function in maintaining the interaction between child and adult because, they claim, getting the attention of the child and keeping it are necessary for maintenance of communication. Indeed, Snow (1972) has shown that children are less attentive when speech directed to them is not of the typical babyltalk format.

At least one function of questions in babyltalk seems to be attracting the attention of the dependent by the terminal rise in pitch. Garnica (1977) has suggested "it is not uncommon to observe an adult asking a child listener a question and then answering the question if the child does not respond immediately to complete the exchange. The completeness of the question/answer sequence in terms of a communication unit is best seen if one thinks of the question forming the first half of a contour (ending with a rising pitch terminal) and the answer continuing the contour and simultaneously the completion of the exchange. The presence of many rising pitch terminals may serve, then, not only to regulate the conversation between adult and child but also to keep the child's attention" (p.83).

Snow (1977a; 1979) argues that the high frequency of questions are the result of mothers trying to communicate with their children, and they are representative of mothers attempts to maintain a conversation with an inadequate speech partner (Narasimhan, 1998, p. 81).

In addition to communicating information (is this your donkey?), and checking for, and maintaining attention, questions may be associated with a style of conversation-eliciting speech (Pine, 1994). The results of this study indicated that questions of both the 'yes/no' and 'open-ended'
type were addressed more often to children at all participating age groups than to pets. One reason for this may be the high frequency of lexicon lessons directed at children, in the form of open-ended questions. Parents asked *What's this called?*, *What does the sheep say?*, and other questions which required, and often received, verbal answers from the child. Dogs did not receive questions which were tutorial in nature. Although questions are typically viewed as a request for information, they are used for more than one function (Lindfors, 1987). Yes-no questions may be used to elicit agreement or disagreement from the listener (*do you like that?*), but they may function as action-directives (*can you pass me that toy?*) when a yes or no response would be inappropriate.

Newport et al (1977) have noted that children are often “galvanised into action by such speech as they attend to and comprehend, even on those rare occasions when an action response was not the intent of the speaker” (p.124). Shipley, Smith and Gleitman (1969) have shown children under two years of age are as likely to throw a ball (when they are physically able to) when they hear the word “ball” as when they hear “throw me the ball”. Young children tend to respond to questions with actions rather than with information - action interpretation is easier for them than information interpretation (Shatz, 1975). Indeed, McDonald and Pine (1982) have found a negative relationships between the use of imperatives and conversation-eliciting characteristics such as questions. It appears that dog owners, rather than using questions as action directives, favour the use of imperatives. This would account for the higher use of imperatives, but lower use of questions by dog owners compared to parents.

Tag questions (*you like that, don't you?*) were used in similar
frequencies by parents and dog owners. Tag questions are proposed by Lindfors (1987) to serve mainly to engage the dependent in conversation, rather than as sources of information.

Interpretation and translation occurred in similar frequencies for dogs and children at each age group. Gleason (1977) suggested that speaking for the dependent is one way of ensuring an ongoing conversation. When dependents cannot maintain their part in the exchange, the caregiver talks for them. She claims a similar behaviour occur when one of the conversation partners is aphasic, or has a speech impediment and the second conversational partner is tempted to answer for them. In this way conversation with pre-lingual or just-lingual dependents is maintained, and children slowly learn to take their conversational roles. Why then, should translation and interpretation occur in speech to dogs? If Gleason's theory is applied, it would indicate that for their owners, dogs are conversational partners. Owners interpreted their dogs' behaviours in the same way that parents interpreted the behaviours of their children. In support of this theory Katcher and Beck (1986) have also noted that if pet owners do not supply the response for their pet, they often leave appropriate pauses after their utterances, for a reply, as they would in conversation with a human.

Consistent with the proposal that many characteristics of babyltalk are designed to gain and maintain the attention of the dependent in order to communicate, are the findings that characteristics that get and maintain the attention of the dependent also tend to be used more frequently to dogs.

Dogs and children of each age group received similar amounts of whispering, and other attention eliciting and maintaining speech characteristics. Name use was more frequent for dogs and younger
children. Total attentionals, including name use and attentionals such as ‘Look!’, occurred more frequently to the dog group than to children between 25 and 36 months, but was not different from that addressed to younger children.

Attentionals, frequent use of the listener's name, whispering, high pitch, and rising terminal pitch of questions may all be seen as examples of features which elicit and maintain the attention of the listener. Higher pitch, for example, is a unique characteristic which indicates that the speech is directed toward a child (or dog) listener. Whispering may be simply an expansion of the pitch range at the lower end of the range. Both ends of the range stand out and have attention getting properties.

Garnica (1977) notes that at some point between the ages of two and five, the attention span of children improves greatly, allowing more subtle and less frequent use of attention-getting and attention-maintaining speech characteristics. Dogs owners then, talk to their pets as if they have a similar attention capacity to children under two years of age.

Newport, Gleitman and Gleitman (1977) have noted "... that the child may listen primarily to high pitched speech, to speech accompanied by pointing, eye-contact and other gestures, to speech which begins by calling his name and to speech which contains some familiar words. That is, he may attend selectively when he has reason to suppose that he is being addressed..."(p. 111).

Dogs received more praise than the entire child group, however children under one year of age received similar amounts of praise as dogs, even when the higher amount of repetition in dog-directed speech was controlled for. Amount of praise to children declined after 24 months of age.
While dogs and children under one year received more praise than older children, the quality of the praise also differed. Older children appeared to more often receive specific praise which included reference to the praise-eliciting behaviour, such as “that was nice of you to share with your brother”. The praise uttered to dogs and younger children appeared generally to be less focused in nature, and typically involved phrases such as “good boy” and “you are clever” immediately following, but without reference to the behaviour the dependent had produced.

Speech to young children often relies heavily on the objects, people and activities present in the child’s environment (Lindfors, 1987). There were no differences in the frequency of past-future references between speech to dogs and to children under 24 months in this study, however, children between 25 and 36 months received more past-future references than dogs. Apparently owners of dogs and parents of children under two years do not expect their dependents to understand references to objects or concepts unless they are present in the immediate environment. Cross (1977) has found that mothers’ references to non-immediate events are highly related to her measures of the child’s receptive abilities, that is, the child’s ability to understand the meanings of sentences. Brown (1977) agrees that the frequency of reference to non-immediate events increases with the development of the child.

4.11.3.3 Speech characteristics: self expression

Snow (1977) proposed that baby talk also facilitates the speaker’s expression of emotions toward the listener and the situation, and it allows the demonstration of affection, irritation, protectiveness, understanding and amusement. Some characteristics of babytalk may
demonstrate feelings of nurturance evoked by the juvenile characteristics of the recipient (Snow, 1996). Brown (1977) also suggested that expressions of affection in babytalk would be apparent whenever the speech was directed to anything that inspired affection. Owners who are attached to their pets are therefore likely to exhibit babytalk characteristics that express their affection for their dependent.

It is not surprising therefore, that terms of endearment (darling, sweetheart), interpretations (you like that), translations (Do you want that? Yes I do mummy) and diminutives (doggie) occur in similar frequencies in speech to dogs and to children, because both parents and dog owners feel the need to express their affection for their loved one. Interpretations and translations express that the caregiver knows (or at least think that they know) what the dependent is feeling. Diminutives are primarily used to imply the speaker's approval and affection for the object (Gleason, Perlmann, Ely & Evans, 1994). The use of diminutives appears to decline with the increasing age of the child (Gleason et al 1994), and the results of this study indicate that diminutive use declined when children were more than one year old.

Parents of children under one year of age used "we" to communicate "you" or "I", and "our" to refer to "your" more often than dog owners did. There was no difference on this measure between the dog sample and the entire child sample. The use of "we" to refer to "you" or "I" occurs most frequently to very young children and seems to reflect the amount of dependency the listener has on the speaker for that activity. At less than 12 months most activities involve the parent as well as the child, and the child may be seen as an extension of the parent rather than an individual. Although dogs and older children rely on their caregivers a great deal they also have a greater degree of autonomy
in almost every aspect, including mobility and eating. Utterances such as “we’re going to have a bottle now” and “we ready for our bath?” imply, correctly, that the infant is unable to drink, or bathe, without the speaker. Older children and dogs are more independent and capable of completing these activities with minimal caregiver input. Kemper, Finter-Urczyk, Ferrell, Harden and Billington (1998) have found that speakers who were asked to give instructions to elderly persons used “we” more when the older adults simulated dementia than when they acted normally.

4.11.3.4 Speech characteristics: language teaching

Many researchers in the child-language field have proposed language acquisition to be the primary function of babble (Ferguson, 1977; Leveit, 1975; de Paolo and Bonvillian, 1978; Bynon, 1968). The feature of babble most commonly identified as having a language teaching role is deixis (Newport et al, 1977; Newport, 1976; Hirsh-Pasek and Treimen, 1982).

The results of this study however, suggest a more complex role. There was no difference in the incidence of deixis between child directed and dog directed speech, but when children under one year were isolated from the child sample, deixis was significantly higher in frequency to this group than to dogs, and approached significance when compared to the other child groups (t (18)= -2.02, p< .06). The higher use of deixis to pre-lingual children does not support the notion of deixis as a language teaching device, because it would be expected to be used at its highest frequency when children are learning to talk. Ingram (1989) has suggested that parents might use a different type of speech to the pre-
linguistic infant, and not begin to teach language until the child shows some evidence of acquiring language during the period of single word utterances. Snow (1977b) found that baby talk changes when children are around 1 year old, with fewer contentless utterances used than during the prelinguistic period of development. Snow (1977) also noted that, based on the premise that the primary use of babytalk is to teach language, a number of researchers agree that it is used from the age of about one until about three or four.

The amount of deixis found in speech to children in this study was much less than that found by Newport et al (1977). These researchers found 16% of utterances to children aged 12-27 months to be deictic, but only 2% of speech to adults. Hirsh-Pasek and Treiman found 1.2% of utterances to dogs were of this form, not significantly different from their adult sample of 2.0%. In this study however, deixis was found less frequently, with 0.5% in the dog sample, 2.0% in the youngest child sample, and only 1.0% in the entire child sample. The differences may be due to the environment in which the utterances were recorded. Newport et al’s sample were recorded, in their own homes, by the researchers, and participants told that children’s language learning was of interest and that they should be ‘natural’. Speech to the experimenter during the sessions was analysed as the adult to adult speech. Hirsh-Pasek and Treiman’s dog-owner sample were told that they were to ‘prepare’ their dog for an intelligence test in a laboratory setting for some of the data collection, circumstances which could elicit vastly different speech from a home visit. It is probable that the situations and the information and instructions given to the participants in these two studies have affected the observance of deixis to the extent that a direct comparison between the two is misleading.
In this study parents and dog owners were informed that the purpose was to examine how their dependent responded to speech directed at them, with the intention of minimising socially desirable responses and beneficent subject bias. In addition, speech to children was recorded in the same eight situations in which it was recorded to dogs, rather than using different activities and environments for each sample group.

Except for those under one year of age, a wider range of verbs was used in speaking to children than to dogs. This may be explained simply by the wider range of verbs applicable to children over a year old. As previously discussed, a large number of the utterances directed toward dependents are action directives, and there is little point in commanding younger children or dogs to sing, skip, dance, or whistle. This limitation of dogs and very young children may be responsible for their reception of fewer verbs. While it could be argued that younger children and dogs just do not have the cognitive capabilities to process as large a number of verbs as older children, there are two reasons why this does not adequately explain the results. Firstly, there is little in the child-language literature to suggest that caregivers “fine tune” their speech to the child’s current language abilities (Cross, 1977; Newport et al., 1977, Newport, 1976), and secondly, if verb use was limited to the cognitive capacities of the listener, it could also be assumed that noun use would be, yet there were no differences in the number of different nouns addressed to dogs or children at any age.
4.11.3.5 Speech characteristics: socialisation

The final group of speech characteristics are those thought to be involved in the socialisation of the dependent (Ferguson, 1977). Babytalk is used for socialisation, because it offers a means of identifying the socially acceptable roles of the child or pet, and the appropriate behaviour of those roles. For example, the use of manners was, overall, significantly higher in speech to children than in speech to dogs, which is not surprising, considering that this social response is expected from children but not from dogs.

Manners were used infrequently to dogs and to children under 12 months, probably because they not applicable to their social needs or their cognitive capacity. However, there were no differences between groups on the use of relationship reference terms such as son, mummy, and daddy which, it could be argued, also have socialisation value in demonstrating the roles the dependent and caregiver have in society and their relationship to each other.

Although no difference was observed in the frequency of relationship references between the dog and the entire child samples, children under one year of age received significantly more relationship references than dogs. By the age of 13 months nearly all children are able to use single words in meaningful ways (Bee, 1989), and among the words learnt are ‘ma’ and ‘da’ (Schachter and Strage, 1982). The use of these words by the child may signal to the parents that the child has at least some cognizance of the kinship, whereby the use of references to kinship declines in child-directed speech. Relationship references in speech to dogs, at the same level as to older children, suggest that the pet is regarded with familiarity and affection, and as kin.
4.11.4 Characteristics of pets and babtalk: paedomorphism in dogs and characteristics of speech

Dogs judged to be highly paedomorphic or babyish in form received more repetition, praise, diminutives, translation, interpretation, and grammatical errors than the entire child sample, and fewer verbs and yes/no questions, and shorter MLU.

Several speech characteristics of speech to children under a year old were apparent in greater frequency among the owners of highly paedomorphic dogs. When speech to highly paedomorphic dogs was compared to speech to children 6-12 months, only two differences were found; imperatives remained higher in speech to the dog group, and whispering occurred more frequently to the child group. Open-ended questions were used with similar frequency to the parent sample, although the entire dog owner group used fewer open ended questions than the entire child group.

The previously noted higher frequency of deixis to children 6-12 months when compared to dogs, disappeared when only the data from highly paedomorphic dog owners was used. There was also a significant association between paedomorphism and the use of deixis, a characteristic previously suggested to be absent in speech to dogs (Hirsh-Pasek and Treiman, 1982).

In addition to these similarities, correlations between the babyishness of the dogs and the frequency with which diminutives and endearments were used suggest that the precursor of paedomorphism for babtalk is not species-specific. The increase in babtalk characteristics in speech to highly paedomorphic dogs, but not to less
paedomorphic ones, indicates that visual indicators of extreme youth are involved in the elicitation of nurturing speech characteristics. The relationship between the paedomorphic rating of dogs, and the number of diminutives, and endearments directed towards them, suggest that a juvenile appearance elicits further self-expression characteristics from the caregiver. Berry and McArthur (1985) have also found that adult males with a 'babyface' are perceived by others to possess more juvenile psychological characteristics than those with a more mature face.

4.11.5 Characteristics of pets and babytalk: attachment to dogs and characteristics of speech

Dog owners who were highly attached to their pets used similar speech characteristics to those used by parents of children under a year, but used more imperatives, repetition, praise, and translations than parents of the entire child sample. That highly attached dog owners did not use more diminutives than parents, but owners of paedomorphic dogs did, suggests that diminutives are used as a function of babyishness rather than attachment or familiarity.

Dog owners who were more attached to their pets used speech which contained more words per utterance (higher MLU), and asked more open-ended questions than owners who were not so highly attached to their pets. Both characteristics more closely approximate speech to children. Owners who were highly attached to their pets used a slightly longer MLU of 3.0 than the entire dog owner sample, although this increase did not alter the significance of the difference between dog owners and parents. However all dog owners were quite highly attached
to their pets as determined by the PAS, and the similarities between high PAS and low PAS of participants may have been the result of a ceiling effect.

4.11.6 Responses of dogs and children to babytalk

These results provide a comparison of the responses made by children and dogs to baby talk. They do not however, take into account the detail or, in many ways, the content of the language directed toward them.

Dogs overwhelmingly responded to more utterances from their caregiver than children did. Children under the age of one year responded less frequently than older children, although there was little difference in the frequency of responses made to questions.

Children under one year of age responded to just under half of all utterances directed toward them, while dogs responded to over 90%.

Responses rates differed depending upon the type of utterance made, suggesting that characteristics of babytalk vary in their functions. Children, for example, made the highest percentage of responses to attentional utterances which included their name, and responded least to socialisation utterances of praise, while dogs responded most often to yes-no and open-ended questions, and least often to names and declaratives.

Not only did dogs respond more often when they were spoken to, they also obeyed imperatives more often. Children failed to respond to a surprisingly large number of utterances of all sentence types, however, when a response was made both dogs and children were more likely to
look at the speaker for all sentence types, except for imperatives where
the most common response of both groups was to obey.

It is tempting to conclude that the responses of dependents support
the notion that simplified speech is more effective in communicating
given that dogs receive simpler speech with shorter MLU's, and respond
more often and more appropriately to speech than children do. However, MLU to dogs was not significantly different from MLU to
children under 13 months, although it is possible that parents of 6-12
month olds made demands beyond the comprehension and
developmental abilities of their child. Such an assumption however,
would dispute the claims made by Snow (1977) that infant directed
speech is restricted to what children are capable of producing
themselves.

Snow (1972) suggested that aspects of babytalk (specifically the
simplification and redundancy) were at least partially dependent on the
reactions of the listener. It seems however, that the link between
reaction and future pattern of babytalk is more complex.

Surprisingly, parents continued to use questions, names,
whispering, and other babytalk characteristics, even though responses
from children were not encouraging. Dogs responded well to all speech
characteristics measured, which could explain why babytalk to dogs is
maintained, however the lack of response from children suggests that,
for children at least, babytalk is modulated by the needs of the speaker
rather than by feedback from the listener. It appears then, that either the
reinforcement for speaking babytalk to children is sufficiently strong that
it holds its value even when babytalk is rewarded infrequently, or that
the rewarding values for the speaker are not the responses of the
listener.
Studies on deaf children, to whom babytalk is still used with some, though remarkably few, differences from babytalk to hearing children (Gallaway and Woll, 1994), also suggest that the function of BT is concerned more with the speaker than with the immediate responses of the recipient.

Obviously babytalk is tuned, to some extent, to the cognitive, linguistic and physical capabilities of the listener in general. Kemper et al (1998), for example, have found that some but not all aspects of speech are altered when an elderly listener simulates dementia compared to when they perform naturally.

Even though dogs received significantly fewer yes-no and open-ended questions, they responded to significantly more of these than children did. As previously discussed, one of the functions of yes-no questions is to direct the actions of the listener, and dog owners frequently use utterances such as “do you want to go for a ride in the car?” as a means of instructing the dog to go to the car. Informally, it was noted that yes-no questions were rarely used as an action directive to dogs unless they signalled an experience the dog was expected to enjoy.

It was expected that caregivers would use, more frequently, the utterance types which elicited the best response rates, but this was not the case. Dogs respond to a high proportion of all utterances directed toward them, and children respond to around half of all utterances, though they responded to almost 70% of imperatives. There are several possible explanations for these findings. Firstly, children under the age of two may lack a general awareness of what is occurring in the environment around them, and are unable to attend to all the stimuli they encounter. Parental utterances may be responded to when they are sufficiently salient and distinguishable from the attraction of other
stimuli present in the environment. As Brown (1977) proposes, attracting and maintaining the attention of the dependent is necessary for communication to occur. When other stimuli hold more attraction for infants than parental utterances, children attend to other stimuli to the exclusion of all else. They may ignore or not respond to parental utterances simply because they are unaware of them while their concentration is focused elsewhere.

Adult dogs, on the other hand, do not appear to be distracted by the overwhelming number of stimuli that children are drawn to. There is less then, for a dog to attend to, and the likelihood of attending to speech addressed specifically to the dog is increased. Secondly, dogs rely more heavily on sound and touch, than they do on vision (Masson, 1997). Vision appears to be the dominant sense in the human (Duke-Elder, 1958; Schiffman, 1990). It is not surprising then, that dogs attend to auditory stimuli directed toward them more than children do.

Dogs obeyed more demands and commands than children, and this may be an effect of just how much of the message got through. Selective attention to the most attention eliciting stimuli would mean that children would obey only a percentage of imperatives given, because they are aware of only a percentage. Dogs on the other hand, are aware of more utterances addressed to them, and in addition, they have fewer options when it comes to compliance.

A further possibility relates to the use of questions as action directives. If children are likely to throw the ball when the hear the word ball (Shipley, Smith and Gleitman,1969) , then perhaps they are also as likely to throw the ball when they hear “don’t touch the ball”. If children respond by action to speech, then even “don’t touch the ball” becomes an action directive for the word “ball”.

Finally, it may be that dog owners simply demand obedience and responsiveness more from their pets than parents do from their children. It was observed that parents often did not appear to notice that their child had not responded to their utterances, and they would continue to talk as if they had been responded to. The greater frequency of repetition received by dogs may indicate that their owners continue to make demands until the animal not only responds, but responds with the desired behaviour. Dogs are trained from puppies to respond to various sounds and signals, and many are trained using a system of positive reinforcement. For dogs, responding to an utterance increases the chance of being positively reinforced. Children are in the process of learning the boundaries of interaction and conversation, while the adult dogs in this study had already attained the level of conversational partner expected by their owners.

Further, if there is a positive reinforcement for children to respond to adults' utterance, it may not hold the same reinforcing power as some other activity the child is engaged in, and is consequently ignored in favour of a more rewarding behaviour. Even though dogs obeyed imperatives and were consequently praised more often than children, the lack of response children gave when they were praised suggests that this type of reinforcement is less rewarding for them than other aspects of their environment.
V. GENERAL DISCUSSION

The results of the three studies presented here indicate the broad range of relationships humans have with their animals. The general discussion will firstly present a general discussion of survey findings, limitations, and future directions, from Studies 1 and 2 in Section 5.1. In Section 5.2 the discussion of the main study, Study 3, will outline the findings in the context of some of the present models of babytalk speech registers, and in Section 5.3 an outline the development of a new model which encompasses and describes the eliciting factors of a special speech register to dogs, and other listeners. Finally, Section 5.4 will discuss the limitations of the main study, and present future directions for research.

5.1 STUDY 1 AND STUDY 2: PET OWNERSHIP

Pets are widely owned by New Zealand families with primary school age children with more than half of children in the sample owning a pet of their own.

Interestingly, cats rather than dogs were the most prevalent species kept as pets. Most overseas studies report that the dog is the most commonly kept, and preferred, pet (Covert, Whiren, Keith & Nelson, 1985; Albert & Bulcroft, 1988; Beck, 1983; Kidd & Kidd, 1985, 1990; Rost & Hartmann, 1994), although cats have become more prevalent than dogs in the UK since 1993 (PFMA, 1993).

Parents appear to use pets to compensate for their absence from the child's environment. Parents who spend little time in the home
due to work commitments, often provide a pet as company for the child.

It has also been widely suggested that pets are able to compensate for the lack of a sibling by assuming the role of companion and playmate (Blue, 1986; Covert et al, 1985; Kidd and Kidd, 1985; Levinson, 1980; Salomon, 1981; Paul and Serpell, 1992). Previous studies have found that children without younger siblings tend to play with their pets more than children with younger siblings (Melson, 1988), and single children acquire pets for play more than children with siblings do (Siegmund & Biermann, 1988 cited in Paul & Serpell, 1992).

Although this study found pet ownership by the child increased as the number of siblings decreased, there was no tendency for parents of only or youngest children to acquire a pet as a playmate for their child more than parents of middle or oldest children, nor did parents put forward concerns about their youngest or only child’s lack of opportunity for authority or caregiving. However, this study explores the parental reason for pet acquisition without consideration of the child’s reason for wanting a pet.

A number of parents felt that giving their child a pet would encourage the child’s sense of responsibility. Obviously, more specific research is required in this area to determine why parents perceive pets as being capable of teaching responsibility to children, and whether these perceptions can be supported by experimental measurement.

This study illustrates some of the differences in relationships between children and their own pets, and family owned pets, and emphasises the importance of establishing ownership of the pet.
before examining attachment variables in future studies. While many studies report child pet ownership to range from 70-90% of families (Melson, 1988; Kidd and Kidd, 1985; Salomon, 1981), only a few distinguish between child ownership of the pet and a pet in the family (Rost and Hartmann, 1994).

Many pets, particularly dogs, do not distribute their affection equally among family members. Often one family member is singled out and the majority of quality interaction exchanged with that person. When this is someone other than the target child the quality of the interaction the child and pet engage in is reduced. Attempting to play with, or gain the affections of a pet which is inattentive to anyone but its owner, can be unrewarding to say the least, and unrewarding interactions are unlikely to continue. Although some pets are able to spread their affections equally among family members, and indeed, are owned by the whole family, the distinction between individually owned and family owned pets is extremely important, because it influences the amount of rewarding interaction between child and pet, which in turn affects the extent to which the child feels responsibility and affection for the pet. Further research on this issue may examine the extent of the differences in relationships between a child and a family owned, or child owned pet.

The second study expanded on the finding in Study 1, that pet ownership may have come under the influence of intergenerational continuity of attitudes. Study 2 indicates that not only pet ownership, but also the species of pet owned, and the level of attachment to pets are all linked with the values and attitudes towards pets in previous generations. Further research may establish whether these differences are maintained into adulthood, and how they relate to subsequent
relationships with pets, and the attitudes passed on to future generations.

The use of one family member as the source of all information about that family may perhaps have affected results. The most obvious ways in which this could occur are that the nature of the questions, regarding three generations of the same family, may indicate the purpose of the study to participants, and so result in participant bias.

A second concern was that the measurement of attachment used was extremely basic and could have been subject to socially desirable responses. The measure of attachment was simply a scale asking participants how attached they (and their parents, and child) were to their favourite pet, with the options of inseparable, very close, quite close, like pet, neither like nor dislike pet, and dislike pet. Although a range of responses was given, indicating that socially desirable responses were unlikely, the item remains a weak measure of attachment. Further, examination of the "member of the family" status attributed to pets indicates that administration of an attachment measure such as the Pet Attachment Survey (CENSHARE, 1984), or the Lexington Attachment to Pets Scale (Johnson, Garrity and Stallones, 1992) would have offered a more reliable measure of attachment.

The literature on intergenerational continuity of attitudes about pets requires further research, which may compare the pet ownership of parents with that of their adult children, including more rigorous measurement of the quality of the relationship with pets, rather than simply the number of pets owned. Work on such topics is instrumental to our understanding of how attitudes towards pets are
developed, maintained, and in some cases, altered throughout the lifespan.

5.2 STUDY 3: TALKING TO DEPENDENTS

It is apparent from the results of Study 3, that babtalk is a speech register directed toward those listeners perceived to be unable to communicate in the normal way. Similarities were greater between the two non-lingual groups, dogs and children under a year old. The similarities between speech to dogs and speech to children indicate support for the consensus that babtalk is motivated by a desire to communicate rather than a desire to teach language.

Richards (1994) has noted that a large proportion of the child language literature has assumed the role of baby talk in teaching language to be a large one, for example, "..these results...certainly suggest that 'motherese' is an effective teaching language" (Furrow and Nelson, 1986, p.175) and "considerable evidence....supports the view that particular aspects of adult talk to children may affect how children learn to talk" (Lieven, 1984, p.15). Immediately following Chomsky's assertions that babtalk was restricted in scope and degenerate in quality, there was a tendency to view any difference in child directed speech and adult directed speech as evidence of the language teaching component (Lieven, 1994). Observations of babtalk in many cultures, including Arabic, Berber, Cocopa, Comanche, English, French, Gilyak, Greek, Hidatsa, Japanese, Kannada, Kipsigis, Latvian, Luo, Maltese, Marathi, Romanian and Spanish (Brown, 1977) suggested evidence for a universal language
teaching register. Yet it has also been pointed out that the causal
effects of babyltalk on language acquisition have yet to be
demonstrated (Smith 1989; Cook, 1991 in Richards 1994). Richards
(1994) claims that much of the evidence of "causal" relationships
between various speech characteristics of parents and language
acquisition of their children is inconsistent. He cites the example of
Hardy-Brown (1983) in which a comparison of two often-cited studies
(Newport, Gleitman, and Gleitman, 1977; Furrow, Nelson, and
Benedict, 1979) indicates that of the 24 mother-child correlations they
had in common, "...only one relationship was statistically significant
and in the same direction in both" (p. 74). The difficulty, he claims, is
a function of the interpretation as well as the results, and he notes
that Newport et al’s (1977) study has been cited as evidence for
(Weistuch and Byers Brown, 1987) and against (Smith, 1989) the
positive effects of babyltalk. Gleitman et al (1984) also note that
although they found a great many correlations between maternal
speech characteristics and child language acquisition, one of these was
a (positive) 0.99 correlation between maternal unintelligibility and an
increase in verbs per utterance produced by children. Further, as
Brown (1977) has stated "if BT (babyltalk) is an effort to provide
language lessons, it is certainly employed with some very
unpromising pupils. By some reports, these include pet animals and
household plants" (p.12). Brown suggests that "it may not be BT but
rather the AFF (expressive-affectionate) component that is used in
these cases" (p. 12).

However, deixis and repetition, the characteristics of speech
which, it could be argued, are those which are pertinent to the
development of language, are also evident in speech to dogs. That
these 'language-teaching' characteristics of babytalk are present in speech to listeners who will never learn to talk further indicates the lack of support for babytalk as a language acquisition device. Further, Newport et al found no relationship between deixis and child vocabulary growth, which would appear to be the most obvious "effect" of deixis should it be responsible for teaching language.

There was no difference between children and dogs on the use of deixis, except that children not yet capable of producing language received more deixis than dogs. This characteristic appears to be aimed toward children in a pre-linguistic or possibly a peri-linguistic stage. That dogs rated paedomorphic were associated with higher rates of deixis, suggests that an extremely youthful appearance may be an indicator of this characteristic.

If repetition was a language teaching function why should dogs receive it more than children? It may be that as well as having a language teaching function it also holds other functions. As noted in the results, dogs receive more imperatives, and both respond and obey more often than children. This may in part be related to the amount of repetition received by dogs. Whether repetition holds language teaching functions for children, they are obviously not the only functions, as this study shows. Newport et al (1977) noted that researchers often claim repetition might aid vocabulary and syntax building by allowing rehearsal or comparison among forms, because repetition is negatively associated with the child's age and linguistic abilities. They suggest that young children with limited language abilities are less likely to attend to, understand and obey the caregiver's utterance. The caregiver then repeats it. If the child does not attend to the initial utterance because he or she is, in effect,
unaware of it, then the second rendition of that utterance is not a repetition to the child. Newport (1976) found that children were not more likely to respond to repeated utterances in any serial position - the repetition is irrelevant to a child that has not attended to the initial utterances. In this situation it seems unlikely that repetition holds the function of teaching vocabulary. Further, Newport et al also (1977) found that a large number of repetitions are imperatives. Imperatives, they claim, are poor teachers of language, and they often do not include direct reference to the object concerned (put it there) does not provide a word for 'it'.

In addition, studies of speech to the institutionalised elderly indicate that repetition occurs frequently in that situation also (Kemper et al, 1998; Sachweh, 1998) and it seems unlikely that language teaching would be a concern here. Teaching language may be a function of babytalk, but it is not necessary, nor is it the only function.

Richards proposes that to claim babytalk is necessary for language acquisition, evidence that an absence of babytalk is always accompanied by an absence of language acquisition is required. Such evidence would need to be the universal use of a particular characteristic, or set of characteristics, in all languages and cultures in which normal language acquisition occurs, and its absence of use from children who fail to learn some aspect of language. Although Snow (1976) has claimed that "...it is probably safe to say that all cultures have some baby-talk forms", and Bohannon and Warren-Leubecker (1988 in Lieven, 1994) have proposed a "recognition that children the world over are presented with a special language register"(p.90), Lieven (1994) suggests that there is not necessarily a
case for the universality of babtalk.

Lieven (1994) briefly summarises the two main positions on the application of babtalk to language learning as 1. that babtalk to children is universal and therefore of central importance in language acquisition, and 2. there are cultures which never use speech to pre-lingual children, yet the children learn to speak, presumably from attending to adult-adult conversations.

Lieven points out that theories for language acquisition are based largely on studies of middle- or upper middle-class English or American children learning the English language. Children are unable to learn a non-native language simply by listening to television which provides sentences but little information regarding their meaning (Snow, Arlman-Rupp, Hassin, Jobse, Joosten, and Vorster 1976), and neither did the hearing child of deaf parents in Sachs and Johnson’s (1972) study learn from the television. However, research has indicated that not all cultures alter their speech to children, and, of those cultures which do, the alterations are not necessarily the same.

Speakers of Quich’e Mayan (Guatemala) (Pye 1986; 1992) do not speak conversationally to infants, in the belief that infants are physically and spiritually vulnerable, and hence must remain calm and quiet (Lieven 1994, p59). They do however, talk to their babies using low, monotonic, “crooning” speech (Pye, 1986), and a lower pitch than when conversing with adults, a high pitch being reserved for high status people (Berstein Ratner and Pye, 1984). In the Kaluli of Papua New Guinea, the babbling of infants is discouraged in the belief that such vocalisations belong to the infants’ closeness to the animal
and spirit world (Schieffelin 1985 in Lieven 1994). In Samoa, speech is altered only when addressing a being of superiority to the speaker. Parents and older persons are of higher status than offspring and youth, hence language is not adapted when speaking to infants (Ochs 1985 in Lieven 1994).

In Quich’e Mayan (Pye 1986), Warlpiri (Bavin 1992), and Trackton (Heath 1983), for example, children are spoken to very little until they can produce sentences containing at least several words (Lieven 1994), and while Kaluli (Schieffelin 1985) and Samoan (Ochs 1985) children are exposed to a language teaching style by adults they still spend much of their time listening rather than taking an active part in the conversations occurring around them (Lieven 1994). Blount (1972 in Brown, 1977) found in Luo that the number and frequency of babytalk features decreased after the first word was heard, while in English, Lord (1975) found speech was less complex and more like babytalk after the mother had recognised the child’s first word.

As Cruttenden (1994) points out, in cultures in which people do not talk to prelinguistic babies, adjustments to speech cannot occur. These findings, that babytalk is not present universally, suggest that babytalk cannot be necessary for language acquisition.

Babytalk may however, be necessary for language acquisition in some situations. Lieven (1994) suggests that it is possible that the special characteristics of babytalk may serve functions that are accomplished by other behaviours in cultures that do not talk to prelinguistic children. She notes that almost every study which reports “...an absence of speech to prelinguistic children also report that the baby is continually present in the social space: in a sling on
the mother’s back, on someone’s lap, in another child’s arms etc” (p. 61). Studies of children in cultures where babytalk is widely used indicate that only one parent (generally the mother) cares for the child for the majority of the time, and that children are not carried around all day, but are left to play or sleep for some of the time. Language studies of cultures where babytalk is less widely used suggest that children somehow make sense of information from exposure to language use in their everyday situations and routines (Lieven, 1994). Schieffelin (1985) notes that in such cultures, there is a great amount of talk about the child, if not to it, and that infants attend to the speech that occurs in their environment. Trackton children, for example, whose parents believe that children must learn things for themselves rather than be taught, start to talk by echoing the ends of utterances which they hear in adult conversations (Heath 1983). Children appear to bring the ability to imitate what they hear to language learning, and adults in many cultures appear to “...demand echoic imitation from their children” (Lieven, 1994, p.73).

There is evidence in English children over 12 months that they are able to understand conflicts occurring between their caregiver and older siblings (Dunn and Munn, 1985), and that 24-36 month old even intervene in them (Dunn and Shatz, 1989). It may be that infants attend to the same intonation patterns in adult speech that are exaggerated for them in babytalk.

One characteristic of baby talk thought to maintain the infant’s attention on the speaker is the raised fundamental frequency and pitch range (eg Cruttenden 1994). While this adaptation does not appear to occur in some cultures, Schieffelin (1985) reports that Kaluli caregivers may hold the infant up and facing away from them and
“speak for them” using a high pitched voice (like a puppet). The verbal component of this behaviour was also observed in the current study - especially from dog owners, although they did not necessarily use high pitch. In fact, dog owners tended to use a low pitched voice, particularly if the dog was large in size, or elderly. The Quiche Mayan culture uses a lower than normal pitch, although it is still clearly distinguishable from the speech used to adults, and hence may still serve the purpose of offering the infant a distinct pitch range.

Peters (1983) and Cruttenden (1994) have suggested another function of babytalk to be to assist the infant to recognise and produce segmented speech by the use of stress patterns, “...which emphasise content words, longer pauses between clause boundaries, etc” (Lieven, 1994, p. 61). In non-babtalk cultures this feature is absent, but as Lieven points out, these children are able to produce “...unanalyzed, rote-learned segments which they have picked up in routinized situations (e.g. Warlpiri: Bavin 1992; Kaluli:Schiefelin 1985)” (p. 62), just as well as children from babtalk cultures.

Lieven summarises that children from both babtalk and non babtalk cultures have skills which may help them to “...construct utterance-meaning pairs in the absence of large numbers of more or less explicit examples: (1) the capacity for generative word play with echoic imitations; (2) quite remarkable memory for the relation between an utterance not fully understood and the pragmatics of the situation in which it was initially uttered (Snow 1983); and (3) a sensitivity to the frequency and routinization of utterances and events (Lieven 1987)” (Lieven, 1994, p.62).

The idea of babtalk being an ingenious method of giving language lessons is appealing but even if there was conclusive
evidence for the universality of such a speech register, it must be remembered that infant status is also universal. Brown (1977) suggests that "...with respect to any other speaker of the language, an infant, and indeed every infant, is less competent linguistically and cognitively, and is an object of some affection. As a result, BT (babytalk) can be widely useful; it is the way to talk to babies" (p. 7).

There is no clear evidence that children who fail to learn language at a similar rate or level as their peers have been deprived of any specific characteristics of the babytalk register. Lack of conversational interaction may affect hearing children of deaf parents who receive much of their linguistic information from television (Ervin-Tripp 1973), and general linguistic deprivation may result in cases such as Genie (Curtiss, 1977), but such findings are not specific to babytalk.

To demonstrate that babytalk is sufficient for language acquisition, Richards (1994) proposes, the effects of the language register would have to be isolated from the effects of any other potentially influencing factors, such as exposure to the adult register. Babytalk appears to be one way of enabling children to learn to speak the language of their community, but it is not essential. Children seem able to learn from language forms other than babytalk and Lieven (1994) notes that "...children in these cultures are immersed in a structure of meaning which may well need less articulation in terms of Baby Talk directed at them precisely because they are a much more integral part of it" (p. 63).

When talking to dogs, the speech characteristics of babytalk which appear to have a communication function are remarkably similar to those used in speech to children, particularly those at a pre-
lingual stage. Babytalk is an effective method of communicating with both dogs and children, and the responses and compliance gained, especially from dogs, indicates that it is an effective means of controlling and directing behaviour. Communication characteristics did vary between children and dogs, however, one communication characteristic appeared to replace the other (open-ended vs imperative).

The similarity of affectionate speech directed to dogs and to children indicate that babytalk also functions as a means of expressing some kind of nurturance or attachment.

Fernald (1994) suggests that babytalk is designed to compensate for perceptual, attentional, and cognitive limitations which result from immaturity. Further, the acoustic pattern of the vocalisation also communicates meaning to the infant about the motivational state and intentions of the speaker, because the speech patterns are the result of physiological and motor responses which are related to the motivation and intentions. This connection between motivational states and specific vocal features appears to occur in many avian and mammalian species. Morton (1977) observed that low frequency, harsh sounds typically signal threat or hostility in the animal repertoire, while Fernald (1994) has noted that a decrease in mean frequency and frequency range, accompanied by a harsh voice, expresses irritation and anger in child-directed language. High frequency, tonal sounds reflect fear, appeasement or friendly approach in avian and mammalian species (Morton, 1977), and signals enjoyment and happiness in child-directed language (Fernald, 1994).

Morton (1977) has explained the observed association between
acoustic structure and motivational state in terms of maximising the survival chance of the organism. Harsh, low frequency vocalisations give the impression of a larger body size, and hence, have been selected for as an acoustic signal in hostile situations, in much the same way that piloerection has been selected for as an apparent visual increase in body size. Higher-frequency, tonal vocalisations elicit approach and support because they give the impression of a small, non-threatening animal. They are therefore used by many animals in fearful or friendly motivational states.

Ohala (1984) has applied Morton’s explanation to the acoustic patterns in human speech, and has observed that descending contours are typically associated with assertive intentions, and ascending contours with non assertive, or soothing intentions. This apparent "sound symbolism" suggests selection for "acoustic features related to characteristics of both production mechanisms and complementary perceptual response biases" (Fernald, 1994, p.77).

Child-directed praise is therefore positive in tone - it expresses the positive feelings of the speaker, and rewards and encourages the child (Fernald, 1994), and prohibitions are negative in tone. Fernald notes that "whether or not the mother feels anger when producing a prohibition, she uses a sound well designed to interrupt and inhibit the child’s behaviour" (p.64). Although tone and pitch were not measured in this study, informal observation suggests that speech to dogs follows similar intonation patterns to speech to children. This has also been observed by Katcher and Beck (1986).

According to Fernald’s (1994) model, these characteristic patterns of infant directed speech serve initially to attract attention, to communicate “affective meaning”, and to “...modulate arousal and
affect" (p. 65). This model seems to be supported by the results of this study. She maintains that parents' speech to their infants gradually begins to serve linguistic functions when the child approaches one year of age.)

Brown's (1977) first hypothesis, that the linguistic-communicative (COMM) and expressive-affectionate (AFF) components of speech to infants are conjunctive and therefore extended to other recipients as a single unit of babble rather than as individual components which meet the recipients' needs, is not supported by these, or other results. In this study quite a number of similarities were observed between speech to dogs and speech to children, but there were differences in deixis and verb use. Studies of language to foreigners do not indicate that language teaching and communicative components of speech are accompanied by affectionate expressions, although foreigner talk shares a great many characteristics with babble (Wesche, 1994). Giving directions to a non-native speaker incorporates short, simplified sentences, many repetitions and questions, and exaggerated intonation, but not usually diminutives, endearments or 'dependency' pronouns such as 'we' or 'our' instead of 'you' and 'your'. Further, if the units were inseparable, Brown's model does not account for the changes in speech characteristics as the child ages. Even though speech to well-loved dogs generally does utilise both communicative and affectionate characteristics, it appears that communicative components of speech to infants are separable from affectionate components.

Brown's (1977), second hypothesis, is similar to that of Ferguson (1977). Both proposed that only those components of babble
appropriate to the nature and abilities of the recipients are used to speak to them. This view is somewhat supported by the results. Communicative and affectionate characteristics of speech were directed to both listeners. The socialisation characteristics appropriate to dogs were directed to dogs, but manners were not. Verbal communication with pets involves similar speech characteristics to speech to children, for those characteristics which can be applied to both groups of dependents.

5.3. A THREE-FACTOR MODEL OF THE ELICITATION OF A SIMPLIFIED SPEECH REGISTER

A number of speech registers similar in structure to babyltalk have been recognised. These include patterns of speech to pets, deaf, elderly, and non-native language speakers. Although these registers appear similar to babyltalk, they all appear to differ from it in subtle ways. Several authors have proposed that speech to cognitively or linguistically incompetent listeners utilises speech characteristics appropriate to the listener and the situation, yet no model has yet been devised which accounts for the various needs of listeners.

The results of Study 3 suggest that although speech to well loved dogs is no different from speech to young children in many aspects, there are differences. That these differences are significant suggests that such dialogue follows a distinct pattern depending on the relationship between speaker and listener.

The number of types of foreign language registers suggests that different characteristics are used depending on the linguistics and cognitive abilities of the listener but also on the intention of the
speaker - speech to immigrant industrial workers is quite different from the speech directed to students acquiring a second language by instruction (Wesche, 1994).

Child-language research has indicated that speech by mothers to their children differs from speech of other caregivers, including secondary caregiver fathers and pre-school age siblings (Barton and Tomasello, 1994) to children. They found that fathers and siblings are more directive of the conversation, and the behaviour of the listener, and use fewer conversation-maintaining devices such as questions, resulting in shorter conversations.

Secondary baby talk studies have noted that the perceived communicative ability of elderly listeners has an effect on the speakers' utterances, but so do age stereotypes concerning incompetence and dependence (Hummert and Ryan, 1996). Thimm, Rademacher & Kruse (1998) have found that more patronising features of language occur when the elderly person is perceived as incompetent rather than competent but that even competent elderly are spoken to differently from younger persons. This study has found that even among the “highly attached” pet owners in the sample, those who scored more highly on the Pet Attachment Scale differ in the speech they use to their pets from pet owners who score less highly. The most highly attached owners used speech that differed from the speech of parents of children under 13 months only on imperatives and whispering, while the whole dog owner sample differed from the parent sample on other speech characteristics such as questions, deixis, relationship references, and the use of “we”.

It is clear then that even within the boundaries of what the listener requires for communication, the needs, abilities and attitudes
of the speaker also have a powerful influence. It therefore seems
impossible that any model will be able to account for each of the
numerous variations apparent in such speech registers, however a
model is proposed to account for what appear to be the main factors
controlling speech to those dependents who elicit it. Shatz and
Gelman (1977) have noted that “a speaker’s understanding of the
context-sensitive constraints operating on conversational interaction
governs his or her speech adjustments. The ways in which these
constraints influence the speaker’s output depend on the specific
communicative demands of a given situation as well as the
cognitive-social status of the given participants in an interaction”
(p.189).

The following model is an attempt to define the use of speech
registers to the linguistically and cognitively incompetent as a
function of their needs. It is based on Hummert and Ryan’s (1996)
model of patronising talk, with the inclusion of an additional
dimension. Hummert and Ryan (1996) proposed a model of
Patronizing Talk to account for the psycholinguistic features present
in speech directed at older adults. The speech accommodations made
in talking to the elderly include simplification of sentences and
vocabulary, clarification strategies of loud, slow speech with
exaggerated intonation, and an emotional tone described by
Hummert and Ryan as either overbearing with excessive use of
imperatives, or overly affectionate with the use of diminutives and
endearments.

Hummert and Ryan note that both baby talk to the elderly and
controlling talk to the elderly are perceived as patronising, even
though the psycholinguistic features of each are quite distinct. Their
model of patronising talk is based on the roles of control and care in interaction with older persons. They suggest that control and care dimensions may each vary from low to high depending on the desire of the speaker to accomplish task or power goals. O'Connor and Rigby (1996) propose two similar dimensions- warmth and superiority.

Hummert and Ryan's model combines the levels of care and control to achieve 4 types of language: directive language is the combination of low care and high control; babble talk is high care, high control; overly personal language is achieved by high care and low control; and superficial speech by low care and low control. Hummert and Ryan's model of patronising talk seems to account for the speech types seen in conversations with the elderly, however, it does not distinguish between the many types of recipients of a babbletalk type speech register. The third dimension required to do this is the dimension of communication.

As illustrated in Figure 2, the characteristics of dependent directed language appear to depend on the two dimensions presented by Hummert and Ryan (1996), care, and control, and the further dimension of the communicative abilities of the listener. Figure 3 illustrates a two-dimensional format of the three-factor model.

Factor 1: Control

One of the functions of dependent speech registers seems to be controlling and directing the behaviour of the listener, which is elicited in response to the speakers' perception of the listener as a low status individual. High control messages include an explicit statement of what behaviour the speaker desires from the listener, for
Figure 2. The three-factor model of the elicitation of simplified speech

Figure 3. A two-dimensional illustration of the three-factor model of simplified speech
example, "sit down". Thus imperatives (commands and demands) are utilised in speech to dependents mainly to control their behaviour. Katcher and Beck (1987) have noted that for both children and animals, some amount of domination is required in raising a socially healthy member of the community; "it is not possible to raise a well-behaved pup, bird, or child unless they are effectively subordinated" (p.178). As the control features increase, the likelihood that the listener will perceive the message as polite or respectful will decrease (Hummert and Ryan, 1996).

Child language researchers claim that caregivers often want or need the listener to perform a certain action at a certain time (right now), and babyltalk is often a set of instructions for the child to act (Newport, Gleitman and Gleitman,1977; Pine, 1994; Shatz and Gelman, 1977). Speech to older persons, particularly to the institutionalised elderly, also include a high proportion of controlling utterances (Hummert and Ryan, 1996).

Further, the level of control the speaker has over the listener is concerned with the status the speaker attributes to both themselves and the listener. Controlling statements are rarely addressed to those of higher status without the type of modification which turns an imperative (do this for me) into a question (would you do this for me?).

Factor 2: Care

The level of care required by the listener, and given by the speaker to the listener has an effect on the type of speech characteristics elicited. Care is defined here in two ways: the emotional attachment felt for
the listener (how much the speaker cares about the listener), and the physical dependency the listener has on the speaker (how much the speaker cares for the listener). The high care speech includes features which "show positive regard for the the recipient as a person" (Hummert and Ryan, 1996, p.153), and reflect the desire of the speaker to realise relationship or affiliation goals (O'Keefe, 1991). The attainment of such goals, according to Hummert and Ryan, attenuates the threat of high control features present in the dialogue. It is proposed that both the emotional attachment the speaker experiences for the listener and the physical dependency the listener has on the speaker will be factors in the speech characteristics elicited.

a. Emotional attachment

Listeners to whom speakers are not emotionally attached (foreigners, institutionalised elderly, institutionalised mentally disabled) to a high degree are likely to receive fewer expressions of affection. Although this model would also predict that very young children should receive more emotional expression from their parents or primary caregivers than from adults with whom there is little emotional attachment (such as daycare staff), the difference may be a subtle one owing to the enjoyment humans receive from nurturing young mammals (Katcher and Beck, 1987). High emotional attachment is likely to elicit speech characteristics such as endearments, diminutives, and pet names. However words such as "dearie", which may be intended to demonstrate high care, may also be considered by the listener to be patronising.
b. Physical dependency

The second factor of the care dimension involves the physical dependency the listener *appears* to have on the speaker. Although speakers may not normally be emotionally attached to dependents such as the institutionalised elderly, the older person remains dependent on the speaker for physical care, and may therefore receive affectionate speech characteristics, and dependency phrases such as "we" which suggest the speaker perceives a lack of autonomy on the part of the listener. Sachweh (1998), for example, has noted that the most physically frail and dependent in her elderly sample received the most secondary babytalk.

The appearance of physical dependency also elicits special speech characteristics. As Struhsaker (1971) has noted, the loss of juvenile physical characteristics is associated with a decline in protective responses and an increase in aggressive one in primates. Lorenz (1943) argues that the juvenile appearance characteristics of infant humans and other animals aid in the survival of the infant by eliciting positive affect, increasing the attention and protection of the infant, and decreasing the intensity of responses to behaviours which would otherwise provoke aggression. As found in Study 3, the appearance of extreme youth in dogs seems to trigger the same speech characteristics that extreme youth in infants does.

Factor 3: Communication

The third dimension on which speech characteristics depend is the level of communicative ability the speaker judges the listener to
possess. This appears to be concerned with the cognitive and linguistic abilities that the speaker perceives the listener to have. Sachweh (1998) however, demonstrates that perceptions are not always accurate by describing an Alzheimer's patient whose utterances were not understood by the nurses, and who, on receiving countless repetitions and high pitched utterances, told the speaker "I endure everything you say, as if I wasn't right in my head!" (p. 62).

Bingham (1971) found that when adults believe that prelingual children are cognitively advanced and can understand much of what is said to them, they elicit simplified speech. Adults who are not willing to treat the infant as a participant in the interaction do not simplify their speech. Sachweh (1998) noted that secondary baby talk to the institutionalised elderly occurred more frequently in speech to those who were unable to communicate verbally. Further, Sachweh describes that one resident’s "...utterances are frequently misunderstood due to the fact that her mother tongue is French, which many nurses do not speak. Thus, she receives even more secondary baby talk than other residents" (p.62).

Those who are perceived as being of low communicative ability are addressed more frequently with speech characteristics designed to simplify and clarify information, and to attract and maintain attention. Obviously, attention eliciting characteristics will be used with more frequency when attention of the listener is more difficult to attract, or maintain. Non-native language speakers attempting to learn the native language are less likely to elicit attentionals as young children who are easily distracted. Those characteristics of speech thought to hold language teaching functions, such as deixis, are also likely to fit here.
5.3.1 Summary of the model

This model predicts that babyltalk, as directed to young children, will be elicited by the factors of control and care by the speaker and the perceived limited communicative abilities of the listener. The frequency with which control, care, and communication related speech characteristics are used will depend on the level of control, care, and communication accommodations the speaker perceives to be required by the listener.

Although the three dimensions of the model are presented in Figures 2 and 3 as categorical variables to reduce the complexity of the figure, it is proposed that speakers’ control, care, and communication for their listeners lies on a continuous scale. Thus the model will provide for individual variations of speakers and listeners on these dimensions, and the alterations in language directed toward children as they increase in linguistic competency, and decrease in dependency.

When one or more of these factors is absent, it is proposed, the speech register elicited will not include the characteristics associated with that factor. Thus, the speech register to non-native language speakers, as indicated by Point 1 in Figure 3, will use the speech characteristics conducive to communication (slow, simplified speech with exaggerated intonation, and repetition), but rarely the speech characteristics related to control or care. As non-native language learners improve in their communicative abilities, the speech characteristics related to communication will decline until speech approximates the language used among adults of the same native
language.

The model predicts that speech to infants, the institutionalised elderly, and to some dogs will involve high levels of control, care and communication characteristics. This is indicated by Point 8 on Figure 3. The pattern of speech to dogs will depend upon the relationship between dog and owner. When owners are as highly attached to their pets as the dog-owners in Study 3 were, speech characteristics based on control, care and communication are expected to be elicited, because each of these factors is relevant in the communication between highly attached owners and their pets. Dog owners who are not highly attached are expected to utilise speech characteristics related to control and communication, as indicated by Point 5 on Figure 3. A similar use of language may be observed when the speaker attempts to give technical instructions, such as reading a map, to persons they perceive to be incompetent (Thimm, Rademacher, and Kruse, 1998).

As the linguistic competency of children increases, the speech they receive contains fewer characteristics related to communication and attention seeking, although the care and control characteristics of speech remain high. This is illustrated by Point 7 on the model. Eventually the level of control the speaker has over the listener declines as the child becomes more and more independent. The level of physical care declines and the language used more closely approximates that used between adults.

Language between adults is also illustrated by this model. Point 2 on the model illustrates the proposed basis of the language characteristics used in speech between adult acquaintances. The low control, low care, and high level of perceived communicative ability
suggest that dialogue between adult acquaintances would contain few directives, few expressions of affection, and few simplification and attention-seeking characteristics. Point 4 suggests that low control, high care and high communicative ability might result in the type of affectionate and intimate speech used between cognitively and verbally competent lovers, as suggested by Brown (1977). The high control, low care, and high communicative ability dimensions illustrated by Point 6 may present the type of speech used by those in highly directive roles such as judges, military superiors, and prison wardens. The speech characteristics of this combination of dimensions would be primarily directive, with a minimal expression of affection, and little simplification of speech.

The type of speech elicited depends not only on the listener, but also on the situation. None of these speech types is used in every utterance to dependents. Parents and dog owners do not always use a simplified speech register when talking to their dependents, and adults sometimes include directives in their speech to acquaintances, depending on the nature of the relationship and the situation. The examples used here are extreme to indicate the range of speech characteristics used, and to emphasise the role of the three dimensions in producing various speech types. Finally, it must be stressed that it is the perceptions of the speaker that determine the language register used, rather than the actual abilities of the listener.

5.4 LIMITATIONS AND FUTURE

There are several limitations in the design of Study 3 which might have affected results. Firstly, results were not analysed based
on the sex of the speaker (the dog owners and the parents) which may have affected the findings. Some studies have noted a gender difference in the amount and type of accommodations in speech to children (Barton and Tomasello, 1994), to the elderly (Thimm, Rademacher & Kruse, 1998), and in intimate relationships (Holmes, 1990). Sachweh (1998) found males to use fewer diminutives, fewer repetitions, no terms of endearment, a more limited vocabulary, and fewer imperatives than female carers did. Women, therefore, appear more likely to produce affectionate utterances, but more likely to produce controlling utterances. Women also appear to be more likely to use tag questions (Dubois and Crouch, 1975). Even though Kemper (1994) found speaker sex to be irrelevant for speech style to the elderly, others (Sachweh, 1998; Thimm, Rademacher & Kruse, 1998) have suggested that being the primary caretaker may have an effect, and in Western societies women are still the primary caregivers of children. In this study, there were twice as many male dog owners as parents, however in each case the dog owner was the primary caregiver of the dog, while the fathers were not the primary caregivers of their children. If sex of the speaker had affected the outcome of this study, it is likely that the dog owner group, which contained more males, would have produced fewer expressions of affection and imperatives than the parent group. That the groups did not differ on self-expression measures, and that dogs received more imperatives indicates that sex of the speaker did not affect results in the expected direction. However, it is possible that the parent group produced fewer self-expressions and imperatives because at least 3 of their sample were not the primary caregiver. A sample more suitably matched for sex and caregiver primacy would have been more
desirable. Further, owner and parent groups were not matched for socio-economic status or family circumstances. Matching in future studies would improve the power of comparison between these two groups.

Secondly, although a great deal of the child-language literature has been concerned with the use of exaggerated intonation and pitch, the nature of the data collection was such that measurement of these variables would have been impractical. As parent-child and owner-dog interactions were recorded in each participants' home rather than a laboratory, there was an extreme range of background noise, which included children's high-pitched verbalisations, dogs barking, televisions, radios, and a variety of other auditory interference. These noises could not have been reliably separated from caregivers' utterances. While laboratory recording could have overcome much of this interference, it would have compromised the range of situations in which the dependents were filmed, and possibly affected the language used by caregivers in talking to their dependents. A number of participants remarked that they would not have participated had they been required to appear on the video. In addition, while some caregivers claimed that they did not alter their speech to dependents when others were listening because "if we change the way we speak to him for someone else's benefit it may interfere with communication", or "most people know what I think about my dog and if they don't, I don't care", others said they did change their speech style because "other people may think it is silly, and therefore embarrassing". This indicates that evaluation apprehension may have been a source of participant bias in a laboratory situation. There is also the possibility that participants
behaved differently on video than they would in natural circumstances, although this effect was minimised as much as possible as caregivers were informed that the aim of the study was to examine dependents' responses to speech until data collection had been completed. Participants were then told that their speech was also of interest to the study. Although all participants consented to the use of this material, several stated that they would have felt self-conscious or nervous completing the task had they known of the true purpose.

While the number of utterances recorded and analysed was high, the number of participants was relatively low. This meant that some results were drawn from a very small pool when groups were further divided by age of the child, or attachment to the pet. The duration of each parent or owner's video varied substantially and there was no matching of time spent on each activity between groups. This could have influenced results somewhat, if, for example, parents spent longer filming bathtime activities than owners did. This could be controlled for by coding for example, the first ten minutes of each activity recorded. There is potential for research that compares speech characteristics in matched activities between groups.

Finally, the fact that all dog owners included in the study were required to be reasonably highly attached to their pet means that the results are not representative of the way in which dog owners in general speak to their pets. As indicated in Study 2, 'family member' status means different things to different people. Although the recruitment advertisements requested "much-loved dogs", not all respondents scored highly on the PAS, and one of the lowest scorers later had their dog euthanised for a relatively minor misdemeanour.
The results therefore reflect the communication between only highly attached dog owners and their pets.

There are many possibilities for future studies. Speech to dogs could be examined to explore the characteristics used by owners less attached to their pets than those in this study. It may be that the speech characteristics used to dogs are useful in identifying the type of relationship or attachment that dog-owners have with their pets. Speech to other species of pets could also be explored, particularly animals, such as horses, which have not become so increasingly paedomorphic with domestication as dogs have. A further area of interest might be to select a group of participants who are both the parents of an infant, and highly attached to a pet dog. Comparison samples matched for caregiver sex and caregiver experience could be studied.

Finally, the three factor model of the elicitation of a simplified speech register requires rigorous testing and may be applicable to a wide range of recipients of simplified speech. These might include speech to hospital patients, the independent elderly, mentally handicapped, and deaf persons, all of whom have been noted to receive modified speech (Ferguson, 1977; Thimm et al, 1998; Gallaway & Woll, 1994).

The language teaching aspect of this speech register remains elusive and the proposed model does not attempt to provide for the use of language teaching speech characteristics. These characteristics, particularly deixis, have not been strongly supported as language teaching devices in the child-language literature, and their role in speech to dogs, other than as a means of communication and labelling of objects, is difficult to account for. For now, the results of
this study suggest that Brown (1977) may be right in suggesting that "...adults are chiefly trying to.....communicate, to understand and to be understood, to keep two minds focused on the same topic" (p.12).

5.5 CONCLUSION

The relationship humans have with their pets is complex. The vast percentage of people who keep pets suggests it is a relationship worthy of detailed examination. These studies have emphasised the broad range of relationships humans have with companion animals. Pets are acquired not only as companions and friends, but also as playmates, teachers of responsibility, and compensation for absent parents, and absent children. The type of relationship people achieve with their pets appears to be strongly related to early exposure to the human-pet relationships of others.

For some, pets are used to fulfil human social needs, and as such are often treated as a member of the human social group, and are spoken to in a manner similar to that in which dependent humans are addressed. The speech characteristics related to the dimensions of care, control and communication appear to retain the same importance regardless of the "non-human" status of much loved pets. Relationships of such importance surely deserve further study.
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APPENDIX A

CHILDREN AND PETS SURVEY

Questionnaire for Study 1
Questionnaire

Children and Pets Survey 1997

Dear Parents,

You are invited to participate in the research project Children and Pets by completing the following questionnaire. The aim of the project is to gather basic data on the status of pets in New Zealand families with primary school aged children. We would appreciate your time in completing this form and returning it to the school. Every child who returns a form will be entered in a prize draw.

The questionnaire is anonymous, and you will not be identified as an informant without your consent. To ensure confidentiality and anonymity you do not need to give your name or address. You may at any time withdraw your participation, including withdrawal of any information you have provided. By completing the questionnaire, however, it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved.

Your involvement in this project will involve completion of the following questionnaire which will take you about 10 minutes.

The project is being carried out as part of a Ph.D. study by Sarah Fifiield who may be contacted at Phone/Fax (03) 3277505. She will be pleased to discuss any concerns you may have about participation in the project.

When completing the questionnaire please:

- refer to the child who brought this questionnaire home.
-when family questions are asked, include only those living with you.
-if there is a pet living with you complete sections 1 and 2.
-if there is not a pet living with you complete sections 1 and 3.
Section 1: Family

1. Is your child □ male □ female

2. How old is your child? years____ months____

3. How many brothers and sisters does your child have? brothers____ sisters ____

4. Is your child the youngest or oldest child in the family? □ youngest □ oldest □ middle

5. Of the children currently living with you is your child’s position?
   □ youngest □ oldest □ middle

6. What is your relationship to your child?
   □ mother □ father □ other ___________ (specify)

7. Are you living in
   □ own home □ rented home □ other (such as with family or friends)

8. Are you living in □ town □ semi-rural □ rural

9. Are you living on □ less than 1/4 acre □ 1/4 to 3 acres □ more than 3 acres
   (1/4 acre = 40 perches =1012 sq m, and 3 acres = 1.2 ha approx)

10. Does your child have his/her own room? □ yes □ no

11. How many parents and other adults live the house?
    parents____ other adults____

12. How many parents are employed? full time____ part time____

13. How many other adults are employed? full time____ part time____

14. What is the approximate combined income of the household?
    □ $0-20,000 □ $20,001-35,000 □ $35,001-50,000 □ $50,001 or over
Section 2: Families with pets

If you have a pet living with your family please complete the next section. If not, skip to Section 3. Do not include farm animals or guard dogs unless they are also special pets.

1. My family owns and lives with these pets (include the number owned)
   
   Number
   
   ___ dog
   ___ cat
   ___ horse/pony/donkey
   ___ goat
   ___ pig
   ___ cattle
   ___ caged birds
   ___ mice/rats/rabbits/guinea pigs
   ___ fish
   ___ any other pet(s) __________________ (species)

2. Which of the following pets have you had in the past but do not have now (numbers not necessary)
   
   □ dog
   □ cat
   □ horse/pony/donkey
   □ goat
   □ pig
   □ cattle
   □ caged birds
   □ mice/rats/rabbits/guinea pigs
   □ fish
   □ any other pet(s) __________________ (species)
3. Does your **child** own any of the following pets?

☐ dog  
☐ cat  
☐ horse/pony/donkey  
☐ goat  
☐ pig  
☐ cattle  
☐ caged birds  
☐ mice/rats/rabbits/guinea pigs  
☐ fish  
☐ any other pet(s) ____________ (species)

4. Did you have a pet in the family when your first child was born?  
☐ yes  ☐ no

The following questions refer to the pet the child likes best. He or she does not have to own that pet.

5. My child’s **favourite** pet is a____________ (species)  
   This pet is owned by  
☐ child  
☐ another child in the family  
☐ parent  
☐ whole family  
☐ other (specify) ____________

6. The member of the family this **pet** prefers is ____________

7. Whose idea was it to get this pet? _________________

8. Did you obtain this pet most for your child?  
☐ yes  ☐ no

9. If yes, **why** was the pet obtained for your child? ____________________________________________
10. Who looks after most of this pet's needs (feeding, grooming, cleaning up, exercising etc)

11. How often does your child care for the pet?
   - always
   - often
   - sometimes
   - occasionally
   - never

12. How often does your child have to be reminded to care for the pet?
   - always
   - often
   - sometimes
   - occasionally
   - never

13. What are the advantages to your child of having a pet in the household?

14. What are the disadvantages to your child of having a pet in the household?

15. Does anyone in the household dislike this pet? □ yes □ no

16. If this pet is a dog/cat/bird/fish/small caged animal is it allowed inside the house
   □ yes □ no Why or why not

17. If the pet was no longer around how much would it affect your child?
   - not at all
   - a little
   - moderately
   - quite a lot
   - enormously
18. If the pet was no longer around how much would it affect the rest of the family?
   □ not at all
   □ a little
   □ moderately
   □ quite a lot
   □ enormously

19. How important is it for children to have pets?
   □ not important at all
   □ not very important
   □ neutral
   □ very important
   □ necessary

20. Do you consider that this pet is a member of your family?
   □ yes       □ no
Section 3: Families without pets

1. Has your family ever owned a pet? □ yes □ no

2. Did any adult family member, currently living in your household, have a pet as a child? □ yes □ no

3. What are the main reasons you don't own a pet now?
   □ don't like pets
   □ allergies
   □ not enough time
   □ not allowed pets (eg. in rented accommodation)
   □ too much expense
   □ too much bother
   □ no adequate facilities (eg. no room, no fences)
   □ other family members don't want pets
   □ too much of a tie
   □ other (specify) ____________________

4. Do you intend to get a pet in the next year? □ yes □ no

5. Has your child ever asked for a pet? □ yes □ no

6. Would you get a pet just for your child? □ yes □ no

7. If you were to get a pet what would it be?
   □ dog
   □ cat
   □ horse/pony/donkey
   □ goat
   □ pig
   □ cattle
   □ caged birds
   □ mice/rats/rabbits/guinea pigs
   □ fish
   □ other pet(s) ______________ (species)
8. How important is it for children to have pets?
   - not important at all
   - not very important
   - neutral
   - very important
   - necessary
APPENDIX B

INTERGENERATIONAL ATTITUDES TO PETS SURVEY

Questionnaire for Study 2
UNIVERSITY OF CANTERBURY
Department of Psychology

INFORMATION

Dear Parents,
You are invited to participate in the research project “Families and pets” by completing the following questionnaire which will take about 15 minutes. The aim of this project is to establish information on how New Zealand families of primary school children feel about pets. We would appreciate your time in completing this form and returning it to the school. Every child who returns a form will be entered in a prize draw.

The results of the project may be published, but you may be assured of the complete anonymity of data gathered in this investigation: you are NOT required to give your name or address. You may at anytime withdraw your participation, including withdrawal of any information you have already provided. By completing the questionnaire, however, it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved.

This study is being carried out by Sarah Fifield who can be contacted at the University of Canterbury (03) 366-7001, ext. 7781, or ph/fax (03) 3277505. The project has been reviewed by the University of Canterbury Human Ethics Committee.

* *

If you are able and willing to answer further questions, please complete the form below and return it to the school (separate from the questionnaire), so we can contact you. If you prefer, you can mail it to Sarah Fifield, Psychology Department, University of Canterbury, Private Bag, Christchurch. Participants may be required for further research about families with and without pets, and also for studies about the ways in which people communicate with their pets. Some participation may be paid or have other incentives.

________________________________________________________________________

Yes I would be prepared to be contacted about participating in future studies.

My family has/has not got a pet

Name

You can get in touch with me by ___________________________________________________________________

(phone number or address or e-mail)
HOW TO COMPLETE THIS QUESTIONNAIRE

If you have a pet in the family complete the white (section 1) and blue (section 2) pages.
If you do not have a pet in the family complete the white (section 1) and pink (section 3) pages.

***************

*Please do not let your child complete the questionnaire. We cannot use questionnaires completed by children.
*Please do provide as much information as you can. If you feel your answer does not fit in with any of those provided, write your own. Add any comments you think may be relevant. The more detail you can provide, the better. Remember, you do not need to give your name.

***************

The questionnaire targets three generations of family.
*Generation 1: Your parents (the grandparents of the child who brought home this survey).
*Generation 2: You, the parents (or guardians) of the child who brought home this survey.
*Generation 3: The child who brought home this survey

***************

Single parent families: The questionnaire provides space for information about two parents. If there is only one parent in the household just fill in the answers relevant to you.

For example: If you are a single mother, complete the sections about yourself and your parents, but not about the father of the child, or his parents.
Section 1: Family

1. Is your child a ☐ boy ☐ girl

2. How old is your child? years____ months____

3. How many children are in the family? ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

4. Is this child the ☐ youngest ☐ middle ☐ oldest ☐ only
   ☐ twin/triplet (with ☐ older siblings ☐ younger siblings)
   ☐ other ______________ (specify)

5. What is your relationship to the child?
   ☐ mother ☐ father ☐ other ______________ (specify)

6. Who is currently living in the household?
   ☐ mother ☐ step-mother
   ☐ father ☐ step-father
   ☐ children How many? __________
   ☐ grandparent
   ☐ others Please specify who ___________________

7. Are you living in ☐ town ☐ semi-rural ☐ rural

8. Does your child have his/her own room? ☐ yes ☐ no

9. How many parents in the household are in paid employment?
   Mother/step mother: full time_____ part time_____
   Father/step-father: full time_____ part time_____
10. Are you completing questionnaires for more than one child at this school? [ ] yes [ ] no
If yes, please put a code name on each questionnaire so we can tell they are from the same family. Use the same word or number on each questionnaire.

MY CODE NAME IS ........................................

* ........................................

Generation 1: Child’s Grandparents

Mother’s parents

11. Please list the pets currently owned by your parents, and state who owns each pet.

<table>
<thead>
<tr>
<th>Type of pet</th>
<th>Owned by (mother/father/both)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

12. How attached is your mother to her favourite pet

[ ] inseparable  [ ] neither likes nor dislikes pet
[ ] very close   [ ] dislikes pet
[ ] quite close  [ ] don’t know
[ ] likes pet

13. How attached is your father to his favourite pet

[ ] inseparable  [ ] neither likes nor dislikes pet
[ ] very close   [ ] dislikes pet
[ ] quite close  [ ] don’t know
[ ] likes pet
Father's parents

14. Please list the pets currently owned by your parents, and state who owns each pet.

<table>
<thead>
<tr>
<th>Type of pet</th>
<th>Owned by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mother/father/both)</td>
</tr>
</tbody>
</table>

15. How attached is your mother to her favourite pet

☐ inseparable  ☐ neither likes nor dislikes pet
☐ very close  ☐ dislikes pet
☐ quite close  ☐ don't know
☐ likes pet

16. How attached is your father to his favourite pet

☐ inseparable  ☐ neither likes nor dislikes pet
☐ very close  ☐ dislikes pet
☐ quite close  ☐ don’t know
☐ likes pet
**Generation 2: You, child’s parents**

17. Although it may have been some time ago please try to list all the pets present in the family when you were a child, and who owned each pet.

Parent 1 (the parent filling out this form)

<table>
<thead>
<tr>
<th>Type of pet</th>
<th>Owned by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mum, dad, family, me, older sister etc)</td>
</tr>
</tbody>
</table>

Parent 2 (the other parent of the child, if living in the same household as the child)

<table>
<thead>
<tr>
<th>Type of pet</th>
<th>Owned by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mum, dad, family, me, older sister etc)</td>
</tr>
</tbody>
</table>

18. Did you have pets in the family just before your first child was born?  □ yes □ no

If yes Who owned them

What kind of pets were they

19. Have your children ever asked for pets

□ frequently

□ occasionally

□ sometimes

□ never
20. Have the children or family ever had a pet which was

☐ given away  ☐ sold  ☐ put to sleep
(when it was not ill)

21. The main reasons for this were

- couldn’t be bothered
- too much of a tie
- disliked pet (any family member)
- shifted to accommodation
  - that doesn’t allow pets
- cost
- got another pet
- allergies
- couldn’t cope
- behaviour problems (specify)  

22. Where did you get that pet from:

- ☐ breeder
- ☐ SPCA
- ☐ pet shop
- ☐ stray
- ☐ owned the mother
- ☐ from a family member
- ☐ from a previous owner (not the breeder)
- ☐ other (specify) ____________________________

23. How much did you pay for that pet?

- ☐ nothing, it was free
- ☐ more than $100 but less than $500
- ☐ nothing, it was a gift
- ☐ $500 or more
- ☐ less than $100

24. Do you have a pet in the family now?

- ☐ yes  Go to Section 2 (blue pages)
- ☐ no  Go to Section 3 (pink pages)

End of Section 1
Section 2

Families who currently own pets

1. Please list all the pets currently in the household. Specify who owns each pet. Do not include farm animals, guard dogs or any other animal unless its major role is a pet.

<table>
<thead>
<tr>
<th>Species</th>
<th>Number</th>
<th>Owned by</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

2. If there were no children in the household would there be pets in it right now? □ yes □ no

3. If the pet died, or was lost, the family or pet owner would....
   □ get another pet as soon as possible
   □ get another pet after a short time (within 3 months)
   □ get another pet after a long time (after more than 3 months)
   □ not get another pet
   □ depend on circumstances (please explain)

4. If the favourite pet was lost to what extent would you go to get it back?

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
5. If you had to move to another country what would happen to the family's pets?


6. If you had to move to Auckland what would happen to the family's pets?


* 

**Generation 3: Your child**

7. Have your children ever asked for a type of pet which you have never owned before?  
   □ yes □ no

What was the pet they asked for, and did you get that pet? ________________________________


In the remainder of this section refer to the child who brought this questionnaire home, and their own pet if they have one. If they do not own a pet use the pet in the family you consider to be their favourite.

8. In the following questions will you be referring to:
   
   □ my child's own pet (if the child owns more than one, use the favourite)
   
   □ a family pet (my child does not have a pet of his/her own).
   
   Who owns this pet?
   
   □ whole family
   
   □ children in the family
   
   □ parent(s)
   
   □ another child in the family
   
   □ other __________________________

9. What species is the pet? __________________________
10. Where did you get the pet from:

- breeder
- SPCA
- pet shop
- stray
- owned the mother
- from a family member
- from a previous owner (not the breeder)
- other (specify) ____________________________

11. How much did you pay for the pet?

- nothing, it was free
- nothing, it was a gift
- less than $100
- more than $100 but less than $500
- $500 or more

12. What were the main reasons you obtained this pet?

________________________________________________________________________

________________________________________________________________________

13. When you acquired the pet did you consider that it may help teach the child responsibility or to care for something?  

☐ yes  ☐ no

14. Has owning the pet increased the child's responsibility?  

☐ yes  ☐ no

Explain why or why not

________________________________________________________________________

________________________________________________________________________

15. If the pet is a dog, cat, or bird is it allowed in the house?

☐ yes  ☐ no

Explain why or why not

________________________________________________________________________

________________________________________________________________________

16. What happens to the pet when the family goes on holiday

________________________________________________________________________

________________________________________________________________________

17. Who looks after most of this pet's:

feeding __________________________ cleaning __________________________

grooming __________________________ exercising __________________________

taking to vet, worming, flea treatment etc __________________________
18. How often does your child have to be reminded to care for the pet?

- always  
- occasionally
- often  
- never
- sometimes  
- never (the child is not required to care for pet)

19. If all pet care chores for the child’s pet were given to the child (and no reminders given) the care of the pet would be:

- excellent  
  (all pet care would be completed competently)
- very good  
  (competent but very occasional forgetting)
- adequate  
  (sometimes forgetting or not attending chores)
- poor  
  (often forgetting chores)
- non-existent  
  (pet would get very little or no care at all)

20. How much time does the child spend with the pet

- more than 3 hours every day  
- several hours a week
- 1 - 3 hours every day  
- less than an hour a week
- less than an hour every day  
- hardly any time at all

21. How often does your child cuddle or show affection (hug, kiss, pat etc.) to the pet?

- every day  
- less than once a week
- most days  
- never
- once or twice a week

22. How often does the child talk with the pet (not including commands like ‘sit’ or ‘stay’)

- several times a day  
- once or twice a week
- every day  
- less than once a week
- most days  
- never

23. Does your child confide (share problems or secrets etc) in the pet?

- yes  
- no  
- don’t know

24. Does your child use nicknames or terms of endearment for the pet, eg dear, darling etc

- yes  
- no

What are they
25. Where does the child's pet sleep
- outside/own kennel/barn etc
- garage
- house but not in the bedroom
- child's bedroom but not on the bed
- child's bed
- adults bedroom
- adults bed
- somewhere else

26. Which family member does the pet prefer to be with
- child who brought this survey home
- another child
- parent
- another family member
- no preference
- someone else

27. How attached to the pet is the child
- inseparable
- very close
- quite close
- child likes pet
- child neither likes nor dislikes pet
- child dislikes pet

28. If the pet was no longer around how much would it affect your child?
- not at all
- a little
- moderately
- quite a lot
- enormously

29. If the pet was no longer around how much would it affect the rest of the family?
- not at all
- a little
- moderately
- quite a lot
- enormously

30. If the pet died or was lost the child would....
- have a great deal of difficulty in dealing with the loss
- be upset for some time
- be upset for a short period of time
- not be very upset
- find it easy to deal with the loss
31. How important is it for your children to have pets?

☐ not important at all
☐ not very important
☐ neutral
☐ very important
☐ necessary

32. Is this pet your child's best friend

☐ yes  ☐ no  ☐ don't know

33. Does your child celebrate the pet's birthday and/or Christmas

☐ yes ☐ no

34. Does your child display a photo or drawing of the pet

☐ yes ☐ no

35. What are the advantages to your child of having a pet in the household?

________________________________________________________________________

________________________________________________________________________

36. What are the disadvantages to your child of having a pet in the household?

________________________________________________________________________

________________________________________________________________________

**Generation 2 : You**

In this section refer to the pet in the family you have the best relationship with

37. Who owns this pet?

☐ whole family
☐ other parent
☐ a child/children in the family
☐ you
☐ both parents
☐ other _______________________

38. What species is the pet? ______________________
39. Is this the same pet which you used to answer the questions about your child  □ yes □ no

40. Where did you get the pet from:

□ breeder
□ SPCA
□ pet shop
□ stray
□ owned the mother
□ from a family member
□ from a previous owner (not the breeder)
□ other (specify) __________________________

41. How much did you pay for the pet? (optional)

□ nothing, it was free
□ nothing, it was a gift
□ less than $100
□ more than $100 but less than $500
□ $500 or more

42. Why did you obtain this pet?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

43. If the pet is a dog, cat, or bird is it allowed in the house  □ yes □ no
Why or why not
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

44. What happens to the pet when the family goes on holiday
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

45. Who looks after most of this pet's:

feeding ____________________________________ cleaning _________________________
grooming ___________________________ exercising ___________________________
taking to vet, worming, flea treatment etc ____________________________________
46. How often do you care for the pet?
   □ every day □ less than once a week
   □ most days         □ never
   □ once or twice a week

47. How often do you cuddle or show affection to the pet? (cuddling, kissing, stroking, etc)
   □ every day □ less than once a week
   □ most days         □ never
   □ once or twice a week

48. How often do you talk with the pet (not including commands like 'sit' or 'stay')
   □ several times a day □ once or twice a week
   □ every day                 □ less than once a week
   □ most days                      □ never

49. Do you confide (share problems, secrets etc) in the pet? □ yes □ no

50. Do you use nicknames or terms of endearment for the pet, eg dear, darling, baby etc
    □ yes □ no
    What are they

51. How much time do you spend with the pet
    □ more than 3 hours every day □ several hours a week
    □ 1 - 3 hours every day            □ less than an hour a week
    □ less than an hour every day      □ hardly any time at all

52. Where does the pet sleep
    □ outside/own kennel/barn etc □ your bedroom but not the bed
    □ garage                          □ your bed
    □ house but not the bedroom       □ somewhere else
53. Which family member does the pet prefer to be with

- [ ] child
- [ ] parent (you)
- [ ] parent (other)
- [ ] another family member
- [ ] no preference
- [ ] someone else

54. How attached to the pet are you

- [ ] inseparable
- [ ] very close
- [ ] quite close
- [ ] like pet
- [ ] neither like nor dislike pet
- [ ] dislike pet

55. If the pet was no longer around how much would you be affected?

- [ ] not at all
- [ ] a little
- [ ] moderately
- [ ] quite a lot
- [ ] enormously

56. If the pet was no longer around how much would it affect the rest of the family?

- [ ] not at all
- [ ] a little
- [ ] moderately
- [ ] quite a lot
- [ ] enormously

57. If the pet died or was lost you would...

- [ ] have a great deal of difficulty in dealing with the loss
- [ ] be upset for some time
- [ ] be upset for a short period of time
- [ ] not be very upset
- [ ] find it easy to deal with the loss

58. How important is it for you to have pets?

- [ ] not important at all
- [ ] very important
- [ ] not very important
- [ ] necessary
- [ ] neutral
59. Do you celebrate the pet’s birthday or Christmas

☐ always  ☐ sometimes  ☐ never

60. Do you display a photo or drawing of the pet

☐ yes  ☐ no

61. Could your family live without a pet

☐ yes, easily
☐ yes, without much difficulty
☐ yes, with some difficulty
☐ yes, but it would be very difficult
☐ no, the family would never be without a pet

End of Section 2
Thank you for your time in completing these questions
Section 3: Families without pets

1. Has your family ever owned a pet?  □ yes  □ no

2. What are the main reasons you don’t own a pet now?
   □ don’t like pets  □ too much expense
   □ allergies  □ too much bother
   □ not enough time  □ other family members don’t want pets
   □ not allowed pets (eg. in rented accommodation)  □ too much of a tie
   □ no adequate facilities (eg. no room, no fences)  □ previous death of other pets (eg. on nearby roads)
   □ other (specify)

3. Have you ever considered having a pet in the family?  □ yes  □ no

4. Do you intend to get a pet in the next year?  □ yes  □ no
   Why or why not

5. How important is it for your children to have pets
   □ not important at all  □ very important
   □ not very important  □ necessary
   □ neutral
6. How important is it for you to have pets?
   - □ not important at all
   - □ not very important
   - □ neutral
   - □ very important
   - □ necessary

7. Do you think caring for a pet of their own helps children to become more responsible?
   - □ yes
   - □ no

   Why or why not
   ________________________________________________________________
   ________________________________________________________________

8. Will you allow your child to have a pet when they are older
   - □ definitely
   - □ probably
   - □ probably not
   - □ definitely not
   - □ don't know

9. What do you feel are the advantages to children of having pets
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

10. What do you feel are the disadvantages to children of having pets
    ________________________________________________________________
    ________________________________________________________________
    ________________________________________________________________

End of Section 3. Thank-you for your help
APPENDIX C

a. THE PET ATTACHMENT SURVEY

b. THE PAEDOMORPHOSIS QUESTIONNAIRE

Questionnaires for Study 3
**PET ATTACHMENT SURVEY**

(Please indicate your response on each item by circling the appropriate number.)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Your pet bites, growls or hisses at you.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Within your family, your pet likes you best.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. You like to touch and stroke your pet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. You are too busy to spend time with your pet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. You verbally or physically discipline your pet when she/he fails to obey or does something inappropriate.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. You prefer to be with your pet than with most people you know</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. You spend time each day playing with or exercising your pet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Your pet comes to greet you when you arrive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. When your pet misbehaves you hit him/her</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. You talk to your pet as a friend</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Your pet is aware of your different needs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. Your pet is a nuisance and a bother to you</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. Your pet pays attention and obeys you quickly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. You confide in your pet</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. You consider your pet to be a member of the family</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. You play with your pet when he/she approaches</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. You spend time each day training your pet</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. You show photos of your pet to your friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. When you feel bad, you seek your pet for comfort</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. You spend time each day grooming your pet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21. You feel sad when you are separated from your pet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. You ignore your pet when he/she approaches.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. When you come home, your pet is the first one you greet</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. You like to have your pet sleep near your bed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. You like to have your pet sleep on your bed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. You have your pet near you when you study, read or watch TV.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. Your pet tries to stay near you by following you.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. You buy presents for your pet</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29. You don’t like your pet to get too close to you</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*©1984 CENTER TO STUDY HUMAN-ANIMAL RELATIONSHIPS AND ENVIRONMENTS.
THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY
INFORMATION

As a member of the New Zealand Show Judges Association you are invited to participate in the research project “Paedomorphism in canine breeds” which is being completed as part requirement for a PhD in Psychology. This project is one of a series of studies in the field of communication between species.

The purpose of the study is to determine the paedomorphism, or “babyishness” of selected pure-bred dog breeds. NZ Show Judges Association members are asked to participate as persons knowledgable about the physical appearance of canine breeds.

Participation in this study requires you to complete a short questionnaire on your impression of the physical appearance of various canine breeds.

The results of the study may be published, however, participation is anonymous: you are not required to give your name. Participants will be collectively identified as members of the New Zealand Show Judges Association.

Completion of this questionnaire implies consent to the above conditions, however you may at any time withdraw your participation, including withdrawal of any information you have already provided.

This study is being carried out by Sarah Fifield (under the supervision of Prof. K. T. Strongman), who can be contacted at University 366-7001, ext. 7781 or at home 327 7505.

Paedomorphism in canine breeds

Most very young mammals have a distinctive babyish appearance. The characteristics of babyish forms in general are large eyes and head in relation to body size, large protruding forehead, short limbs, and rounded shapes, for example, Mickey Mouse is a babyish form of a real mouse. In dogs, floppy ears are more juvenile than pricked ears, because in most breeds pricked ears are not present in young puppies, but develop later in life.

Many domestic dog breeds have been developed so that even in maturity, they display both the behaviour and appearance of a young animal. This is called paedomorphosis and results in a reduction in the rate of change in development, so that the adult passes through fewer growth stages and resembles a juvenile stage of its ancestor. Thus in many ways domestic dogs resemble wolves which have not yet reached maturity.
Instructions

We would like you to rate the following breeds on how juvenile or babyish their physical appearance is. Examples of juvenile (babyish) and non-juvenile forms of humans, rabbits, dogs and birds are illustrated below.

Please rate each breed on a scale from 1 (very babyish) to 7 (not at all babyish) the extent to which you feel each of the breeds exhibit paedomorphosis at maturity.

*Assume that the wolf is rated as 7 (not at all babyish) on this scale.
*Base your answer on your general impression of how the breed actually appears rather than on what the standard requires.
*You should consider the following attributes of each breed in making your decision:

Overall proportions of **head and body**
Shape, size and position (front or side placement) of **eyes** and **ears**
Overall proportions and shape of **braincase and foreface**
Protrusion of forehead
Size
Rounded shapes
<table>
<thead>
<tr>
<th>Breed</th>
<th>very babyish</th>
<th>not at all babyish</th>
</tr>
</thead>
<tbody>
<tr>
<td>King Charles Spaniel (not Cavalier)</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Bull Terrier</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Miniature Long haired Dachshund</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Boxer</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Bearded Collie</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>German Shepherd</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Griffon Bruxellois</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Fox Terrier</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Siberian Husky</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Jack Russell</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Bichon Frise</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>English Pointer</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Keeshond</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Labrador</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Pug</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Golden Retriever</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Poodle</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Whippet</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Cocker Spaniel</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Pembroke Corgi</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>German Shorthaired Pointer</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Australian Terrier</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Dalmatian</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

PUBLICATIONS

doi: 10.2752/089279399787000426

A Pet for the Children: Factors Related to Family Pet Ownership

Authors: Fifield, Sarah J.; Forsyth, Darryl K.
Source: Anthrozoos: A Multidisciplinary Journal of The Interactions of People & Animals, Volume 12, Number 1, 1999, pp. 24-32 (9)
Publisher: Berg Publishers

Abstract:
The demographic variables related to pet ownership in New Zealand families of 8-12-year-olds were investigated. Questionnaire surveys were used to establish data from 312 families of primary school children. Family composition, reasons for pet acquisition, and the advantages and disadvantages of pets were also examined. Almost 90% of families owned at least one pet, and over half of these families included a child who was the sole owner of a pet. Parental employment level, living locality, and sibling status (number and position) were related to pet ownership. Parents acquired pets for their children mainly to teach responsibility and care, or because their child had asked for the pet, and these reasons were related to sibling status. Perceived advantages of pet ownership included teaching responsibility and care, love, respect and affection, and companionship. Over half the sample claimed no disadvantages of pet ownership. The most common disadvantages were finding holiday care, the time and work involved in pet care, and the mess caused by animals. Implications for future research include the distinction between child-owned and family-owned pets, the reasons for acquiring pets and their effect on the relationship with the pet, and comparisons of parent and child beliefs about the role of the family pet.