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RELATIONAL PROVISIONS FROM PETS IN THE CONTEXT OF THE FAMILY

Implications for perceived social support and human health.

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DECLARATIONS

The data for the empirical study presented in chapter 3, 'Attachment as a source of security for pet owners: are people 'attached' to their dogs?' was conducted by the candidate as an undergraduate project. Data are re-analysed for presentation in this thesis.

The preliminary study presented in chapter 4 was a collaborative project with Rachael Harker to evaluate the use of the Network of Relationships Inventory scale with children. Results were presented at the Society for Companion Animal Studies Conference in Durham, 6th May, 1995.

Empirical work in chapter 5 was included in a paper presented at the International Society of Anthrozoology conference, University of Cambridge, July, 1996; and is in press: Podberscek, A.L., Paul, E. & Serpell, J.A. (Eds) *Companion animals and us: Exploring the relationships between people and pets.* Cambridge: CUP.

Chapter 6 draws on material summarised in a poster presented at the European Health Psychology Society conference, Dublin 1996.

Chapter 7 includes material presented in two papers at the 8th International Conference on Human-Animal Interactions, Prague, September, 1998.

SUMMARY

This thesis examines how the psychology of human relationships can be applied to the phenomenon of pet ownership. Current views on the origins of pet ownership and reasons for its popularity, and the application of concepts from the psychology of human-human relationships to human-pet relationships are reviewed. The most popular model, attachment theory, is critically evaluated and examined empirically in a preliminary study. Attachment seems not to provide a satisfactory model. A functional approach, investigating what human-pet relationships *do* rather than what relationships they resemble, was pursued in the remainder of the thesis.

Individuals in a pet-owning family may all interact with the pet in quite different ways, yet are often all labelled equally as pet owners. Investigation of human-pet relationships in the family context facilitated an analysis of characteristics of owning a pet, such as exclusivity. Differences among human-pet relationships were examined according to family role of the owner, and pet species.

Pets are frequently regarded as members of their owners' social network, and as a source of relational provisions at levels which are in some cases comparable to those from human relationships. For some pet owners, support from pets may have a buffering effect against stressful life events, and protect owners against adverse psychological symptoms.

Important differences were found between species. Dogs provide higher levels of provisions than cats, and cats are rated more highly than other pet species. There is therefore a need for caution against generalising from one species to pets in general.

The social provisions approach is shown to be productive, but it is not the only model from human social relationships that might be used, and alternative or complementary models should also be explored.

CHAPTER 1

Pet ownership in human society.

1.1 Introduction

This thesis examines relationships between people and their pet animals. A basic question that should be asked is whether *relationship* should be used in its broadest sense to refer to the connection between things (in this case people and pets) without implying anything in particular about the nature of that connection, or whether *relationship* can be used in the much more specific sense of a social or personal relationship. In other words, do relationships between people and their pets have much in common with the social relationships that people have with other people? To many pet owners, it seems intuitively reasonable that the answer is yes, and that the nature of the relationship clearly involves such notions as friendship, companionship, affection, love and so on. For those who take an academic approach to the issue, a relationship model of what goes on between people and their pets seems to provide a satisfactory conceptual framework, perhaps more satisfactory than known alternatives. However, the relationship model is a framework for further enquiry, not an answer. It implies that borrowing principles, concepts and techniques used in the study of human-human relationships might help us understand the nature of human-pet relationships. That is the approach taken in this thesis.

It is repeatedly pointed out in the literature that the scope of research on human relationships is extremely broad and fragmented (e.g. Berscheid, 1995; Hinde, 1997). This thesis focuses primarily on functional aspects of relationships, particularly supportive functions. This focus gives a particular cutting edge to enquiry about relationships between humans and their pets because of three key points. First, there

is substantial evidence that the supportive functions of relationships convey advantages for human health (e.g. Sarason, Sarason & Garung, 1997). Second, it is widely believed, though not particularly well substantiated in evidence, that pet ownership conveys advantages for human health (e.g. Serpell, 1998). Third, human relationships with their pets are often described in terms of support (e.g. Collis & McNicholas 1998).

The other important focus of this thesis is that functional aspects of human-pet relationships are examined in the context of other human relationships, especially the network of family relationships. This has two advantages. First, it facilitates comparisons between human-pet relationships and human-human relationships. Second, it, allows a fine grained analysis of what it means to be a pet owner. Outside the family context, the answer to the question of whether one is a pet owner or not is likely to depend on whether there is a pet in the household. In contrast, the answer to the same question posed within the family context is more likely to depend on whether one considers oneself rather than another member of the family to be the real owner, or perhaps whether it is "my" pet as opposed to a family pet. This has important methodological implications not just for psychological and social research into pet ownership, but also in marketing and related commercial contexts.

However, before embarking on an examination of these issues, the remainder of this chapter sets the scene by presenting what is currently known about the origins of pet ownership, the characteristics of pet owners and pets.

1.2 Origins of pet ownership

The domestication of animals is reported to have a history of 12,000 to 14,000 years (Clutton-Brock, 1995), beginning when early man was living in hunter-gatherer groups near the end of the last Ice Age. The wolf is believed to be the earliest species to be domesticated (Davis & Valla, 1978). The bones of wolves and early hominids

have been found together from more than 300,000 years ago (Olsen, 1985), and archaeological evidence suggests that the sites of occupation and hunting activities often overlapped. Leakey and Lerwin, (1977) comment that the similarity between the way of life of wild dogs and wolves and early mankind makes it unsurprising that there has been a long and intimate association between wild dogs and men. Clutton-Brock speculates that human hunters may have killed wolves for food and skins, and kept puppies as a potential food source. The more docile puppies would have been kept longer, and bred with others, leading eventually to the domestic dog. One of the most important areas that the two species had in common was the social co-operation of groups for efficient hunting. Somehow wild dogs or wolves are believed to have been co-opted into human hunting groups. The practical benefits of increased hunting efficiency gained by humans from cohabiting with wild dogs may account for the origins of the more intimate association, and ultimate domestication of dogs. Dogs may have enabled more efficient hunting through directly attacking prey, or by tracking wounded animals, and retrieving them from difficult terrain such as water or dense undergrowth (Clutton-Brock, 1984). Prior to this co-operative relationship, some theories suggest that mankind may have followed the more efficient canine hunters, and scavenged from their kills, while others argue that wild dogs may have become tolerated as scavengers around human camps taking unwanted items such as bones, and they became tamed and accepted by humans before more useful functions developed later.

Whether the dogs began their association with mankind as prototype pets, role model hunters or as working dogs, their inclusion in human society as anything other than a source of food and skins relies upon the ability of humans and dogs to interact co-operatively in a way that is unusual between species. Dogs communicate with each other with a range of vocal sounds, use of scents, physical postures and facial expressions. Humans seem to possess a tendency to intuitively interpret some of these behaviours as indicating emotional and intentional states, and use this to predict

and manipulate the behaviour of dogs. Regardless of whether the attribution of certain mental states to dogs is an accurate interpretation, or whether it is misplaced anthropomorphism, the practice is effective in enabling humans to anticipate a dog's likely actions. The dogs on their part seem to accept humans 'as if' they are dogs, and acquiesce to life in a pack made up of humans. The upright posture of humans may be important in dogs accepting humans as dominant members of their hierarchical social pack. Canine behaviours which function to enhance the social cohesion of the pack are often shared with humans, and interpreted by the humans as affectionate behaviour. For example, young wolves and dogs will lick the face of an adult dog when it returns to the pack in order to stimulate it to regurgitate food for them. Domestic dogs will often lick the face of their human 'pack member' when they return home in a similar way, and the humans frequently interpret this as a 'kiss' of welcome.

The exact nature of the functions of these dogs in early human groups remains largely a matter of speculation, and it is likely that they varied from one region to another depending on local needs. Uses could include: hunting, guarding (against human or other animal intruders), food, skins, garbage collectors (as they would eat any unwanted food), providers of warmth at night, pack animals (e.g. pulling sleds) and possibly as companions. As agriculture developed during the 7th to the 4th millennia B.C. , dogs were able to assist herding livestock, and protecting them against attack from predators, especially wild dogs and wolves (Clutton-Brock, 1984).

Some clues as to what mankind wanted from dogs may be found by looking at how mankind has used selective breeding to arrive at the great variety of dog breeds in the world today. The Romans were probably the first people to systematically breed dogs with the intention of producing different types: they produced distinctive fighting dogs, sheep dogs, guard dogs and lap dogs. Prior to that, evolution of domestic dogs was likely to have been a result of natural selection, with progeny that did not fit into human society being killed or driven off. Many breeds have the physical and

behavioural attributes to suit them to fulfil some of the practical benefits to humans as already discussed. They may or may not have been cherished as companion animals in addition to their role as working animals, however the lap dogs seem likely to have been exclusively pets. The neotenous characteristics of these dogs suggest the desire for infant-like traits: large eyes, small noses, playful natures, dependency, and their defining feature: they are small enough to sit on one's lap and be cuddled. Physical characteristics of infant humans differ in particular ways from adults. During human growth, the head-end of the embryo develops first. This leads to the newborn infants possessing a relatively large head to a medium sized body, and diminutive limbs and feet. This antero-posterior gradient then goes into reverse, and legs and feet grow in size faster than the head, until adult proportions are achieved. In addition to infants possessing relatively larger heads than adults, the shape and configuration of features on the head is different. Infants typically have a more bulbous cranium compared to the more slanted brows of adults, relatively larger eyes which lie lower on the face, bulging cheeks and smaller jaws. Lorenz, in 1943, argued that these neotenous characteristics trigger an innate response to nurture in adults. A response of affection and desire to nurture in reaction to these cues from one's own offspring clearly has adaptive benefits by encouraging the care of children. Lorenz considered that these 'innate response mechanisms', as he called them also respond to similar cues from other species. Many of the animals that humans are drawn to possess some characteristics of human infants, such as large eyes, bulging forehead and receding chins. Lorenz noted that the names of such animals in the German language often end with the diminutive suffix, *chen*, for example, Rotkelchen (robin), or Kannichen (rabbit).

Empirical work such as Alley (1981), and Ritter, Casey and Langlois, (1991) supports the theory that adult humans find neotenous features more attractive. Alley found that adults' perceived 'cuteness' of the drawings of infants decreased as the shape of the head changes as it does through human development from infancy to adulthood.

Ritter et al. asked participants in their studies to evaluate 6 month old infants with regard to their age, appearance, attractiveness, and developmental maturity. More attractive infants were rated as younger than the less attractive infants. The less attractive infants were assessed as more able in range of cognitive and motor abilities than a 'typical' 6 month old infant. These findings are consistent with the evaluation of age influencing perceived levels of competence, but are contradictory to other research that links higher perceived attractiveness to higher levels of perceived competence (e.g. Stephan & Langlois, 1984). The final part of Ritter et al's study helps to resolve this apparent contradiction. They suggest that there are two kinds of judgement involved that are based in different evaluative components of facial characteristics: they measured the number of specific skills attributed to infants in a particular domain such as motor skills or communication skills; and also the global competence rating for the domain based on 1-5 Likert type ratings. They found that while the infants rated as older also had more specific skills, those rated as more attractive had higher global ability.

The evolutionary function of increasing the probability of the survival of helpless offspring is plausible for responses to infants of the same species, however there is also evidence that stimuli from non-humans can elicit similar responses, even from non-animate objects such as teddy bears (Morris, Reddy & Bunting, 1995), or cartoon characters like Bambi or Mickey Mouse (Gould, 1980). Morris et al., and Gould found that the bears, and Disney characters changed over time, such that they were produced with increasingly neotenous characteristics, presumably in response to human preference for creatures with these features. In a similar way, people may have shown a preference for dogs with these baby-like characteristics as a result of an innate tendency to find them 'cute' without necessarily being consciously aware of what motivated their choice. This preference would lead to increased survival and breeding opportunities for dogs with these neotenous features. It seems then that at least since Roman times if not earlier, some dogs have fulfilled a role as a companions

to humans amongst other more practical functions.

Since the foundation of the Kennel Club in Britain in 1873, dog breeders aspire to produce dogs which conform to a standard laid down by the club, referring to specific requirements of physical appearance, and also giving details of the desired character of the dog. Prior to that, breed names were more rooted in function than appearance, for example, bulldog was a term used for any dog used for bull baiting (Rowan, 1988). In some breeds, the dogs are now divided into two lines: working dogs, who are suited to a functional role such as hunting; and 'show dogs' who conform to the look required by the breed standard. People also spend money to alter the appearance of their animals with cosmetic surgery such as ear cropping and tail docking, or elaborate grooming which goes beyond the requirements of the animal's welfare. The importance of the appearance of the dog, and not merely its functional ability, suggests that the aesthetic quality of the look of the animal also plays a part in why some people devote time and resources to dogs as pets.

Dogs in strictly non-practical roles such as lap dogs have been found in association with the most wealthy strata of societies, especially royalty (Serpell, 1996). The British monarchy has a tradition of keeping pet dogs dating back at least to Mary Queen of Scots, and continuing up to the present day. In China, the Mandarin Ch'ing Dynasty bred the predecessors of the Pekinese dogs of today. The rich and powerful had available resources to support non-working domestic pets, whereas poorer folk did not. Once the link between pet keeping and wealth and power was established, pets were able to fulfil a role as status symbols. In Britain, pet keeping for companionship only seems to have gradually spread from the nobility to the middle classes in the late 18th, early 19th century, and only become widely acceptable (and affordable) from Victorian times (Ritvo, 1988).

The exact origin of the domestication of the cat is unknown. Cats are thought to have

emerged from the wild more recently than dogs, around 3 to 4 thousand years ago in the Fertile Crescent of the Middle East, during a period when civilisations flourished (Robinson, 1984). In these early times of farming and stock-keeping, the mouse was able to exploit the grain-rich environment of human settlements and increased in numbers, as is evidenced by masses of skeletons found during archaeological investigation of dwellings. The presence of wild cats (Felis silvestrus-libyca) in human settlements may be due to the cats having 'invited' themselves in to prey on the abundance of mice in human settlements, rather than any deliberate purposeful behaviour on the part of humans to encourage them to help deal with the mice.

The process of domestication was accelerated by the Egyptians, who protected and worshipped cats for their role in religion (Malek, 1993). Baldwin (1975) proposes that the sequence of stages leading up to domestication was as follows: prior to *c.* 7000 B.C., cats competing with man for small birds and mammals; *c.* 7000-4000 B.C. half-wild cats scavenging early settlements; *c.* 2000-1000 B.C. early domestication, with cats fulfilling a religious role; *c.* 1000 B.C. onwards, secularisation of cat keeping in Egypt, and spread of cat keeping to other countries. The practice of keeping cats on board ships as a combination of vermin killer, good luck charm and companion helped the spread of cats around the world (Robinson 1988). The Romans are credited with introducing the cat to Europe during the first millennium, and specifically to Britain in *c.* 400 A.D., (Zeuner, 1963). During the Middle Ages in England, cats were kept for protection against rats and mice. Evidence for the appreciation of cats for attributes other that their hunting skills at that time is sparse, however their are exceptions such as an Irish monk who wrote a poem about his cat, Pangur Ban (Thomas, 1983, p.109). By the early Stuart period, there is evidence of authentic cat lovers, like the Earl of Southampton who was painted with his cat while imprisoned in the Tower following the Essex rebellion. One of the earliest tabbies imported in the 1630's was bought for £5 by Archbishop Laud, who was particularly fond of cats. Also in the 1630's prominent Leeds merchant, John Harrison had holes

cut in his doors to allow his cats free access 'even to the best room of the house'. In the reign of Charles II, Defoe observed that few houses in London were without cat, some keeping several, (Defoe, 1960).

At the same time, there was still much cruelty to cats. They were associated with witchcraft and Satanism, and frequently burned to drive out the devil; for example, *"On New Year's Day in 1638 in Ely Cathedral, a live cat was roasted on a spit before a boisterous crowd"* (Thomas, 1983, p.109). During the reign of Charles II, it was the practice in Pope burning processions to stuff the burning effigies with live cats so their screams added to the dramatic effect (Thomas, 1983). Also it was popular sport at country fairs to shoot cats suspended in a basket. However, attitudes began to change towards the mid seventeenth century; for example, when the cat belonging to Walter Stonehouse, Rector of Darfield, Yorkshire died, he buried her in his garden and wrote a Latin verse epitaph (Gunther, 1922). Thomas believes that the popularity of cats increased as standards of domestic cleanliness rose. In 1809, William Bingley observed that it was because of the animals' cleanliness and elegance that some people were *"passionately fond of cats"* and he also noted that cats exhibited *"many pleasing traits of character"*, and were *"susceptible of considerable educational attainments"* (ibid. p.110). Mayhew (1861) reported that in London there was at least one cat for every 10 people, and twice as many cats as dogs.

The relationship between humans and cats can offer some practical benefits to humans, with cats operating as effective vermin exterminators. This benefit may be achieved without the close co-operation with humans required for most working dog functions; the cat follows its natural instincts to hunt when it wishes to, and goes alone. The practical uses of cats do not, however, seem to be an important motive for much of the cat keeping today. With the exception of farm cats, many cats are kept on expensive diets which hardly encourages them to go out and catch rodents for their keep. Indeed it is common practice to attach a bell to the collar of pet cats to sabotage

the hunting of birds, despite the fact that this would also make it more difficult to catch unwanted vermin.

Unlike dogs, cats remain physically more like their wild ancestors, and do not have the range of breeds with clear functions created by human control of breeding. They are often admired for their grace of movement and playfulness. Perhaps it is the combination of physical attractiveness and their independence or 'wildness' that is appealing to humans living in environments which are largely detached from the natural world. They are able to enjoy a playful and safe relationship with an animal which goes out to hunt, and yet chooses to return to their home. Levinson (1969) conjectures that pets help overcome a sense of alienation from nature that can be experienced in modern society. Serpell (1996) also proposes that pets may provide a connection with the natural world for people living in urban environments.

Cats and dogs are by far the most popular species kept as pets (see below), however there are many others. Horses and ponies, like dogs, take part in both practical tasks and recreational pursuits with their owners. Other more exotic species, e.g. tarantulas or pythons, are a more recent inclusion in the pet owning phenomenon, and are not generally physically different from wild members of their species, and usually are confined to tanks or cages, living less intimately with their owners.

There is evidence that pet keeping (as distinct from the mere presence of domesticated animals for useful functions) was fashionable in Britain, among the well-to-do, since the Middle Ages. Thomas (1983, p.110) says, *"But it was in the sixteenth and seventeenth century that pets seemed to have established themselves as a normal feature of the middle-class household, especially in the towns, where animals were less likely to be functional necessities, and where an increasing number of people could afford to support creatures lacking any productive value."* Pet species at this time extended beyond cats and dogs to include monkeys, tortoises, otters, rabbits,

lambs and squirrels. Topsell (1607, p. 658) says of the latter, that they were *"sweet, sportful beasts and ... very pleasant playfellows in a house."* By the eighteenth century, the range of species increased to include hares, mice, hedgehogs, bats and toads (Wright, 1898; Borlase, 1758; Smith, 1768; Bingley, 1809). The keeping of caged birds for their songs (e.g. canaries, nightingales, goldfinches, larks and linnets) or for their ability as mimics (e.g. parrots, magpies and jackdaws) is noted since Elizabethan times (Cooper, 1573). James I had a pet kingfisher, and Charles II a pet starling (Bourcier, 1974; Latham & Matthews, 1970).

It is difficult to determine with great confidence when pet keeping began, as opposed to the keeping of domestic animals for practical purposes, but there is certainly evidence to suggest that it has a history of hundreds if not thousands of years. The next section will outline the ubiquitous nature of pet keeping in modern society.

1.3 Present patterns in pet ownership.

Pet ownership today is a practice that is widespread throughout many societies in the world. A pattern of particularly high levels of pet ownership seems largely consistent over Europe and the USA with around 50% of households keeping pets (table 1.1).

According to statistics collected by veterinary organisations and pet food manufacturers (Fogle, 1994), Poland is Europe's greatest pet owning nation, with almost half of all households keeping dogs, and around a third with cats. In contrast, Japan has relatively few households with cats and dogs (12% and 5% respectively), but has the fastest growth in dog ownership of any of the countries surveyed. Although statistics on levels of pet-ownership are not available for other countries in Asia and Africa, the practice is found in many societies, from tribes who live primitively with few resources to more affluent societies. Clutton-Brock, 1984 states, *"Dogs today are found in every region of the world that is inhabited by man."* Countries where there is no pet ownership (at least officially) are the exceptions rather

than the rule. An example is China, where the political system has proscribed 'bourgeois' pets.

Table 1.1 *Percentage of households with pets* (From Marsh, 1994)

Country	Dogs %	Dogs No. (m)	Cats %	Cats No. (m)	any pet %
Germany	13	4.7	10	5.2	36
Netherlands	19	1.4	21	2.0	52
Denmark	28	0.7	18	0.5	53
France	24	10.0	26	8.0	57
Bel/Lux	30	1.7	25	1.8	54
UK	26	7.3	21	7.0	51
Ireland	34	0.5	24	0.3	50
Italy	23	6.0	21	7.0	44
Spain	25	4.0	18	2.0	42
Portugal	20	1.3	19	0.8	35
Total EU	23	37.6	19	34.6	49
USA	38	53.2	32	62.0	58

In the UK today, pet ownership is so prevalent that households are more likely to have companion animals of some kind present than to have children: approximately 48% of households keep pets compared with around 31% of households with any children under the age of 16. These figures are from a survey conducted by GfK Marketing Services Limited for Pedigree Petfoods 1995, based on interviews with a representative sample of 10,083 householders. This pattern is supported by data in Social Trends 27 (1997), with pet ownership reported as occurring in approximately half of all households, and 39% of households including either dependent or non-dependent children. It is also the case that pets and children often go together. Table 1.2 shows that the percentage of households with pets is higher for households which also have children.

Table 1.2 *Pets frequently occur in families* . (Source: Pedigree Petfoods Pet Ownership Survey, GfK Marketing Limited, 1996)

Size of household	Percentage households with pets
1	31.0
2	47.8
3	60.6
4	65.1
5+	64.9

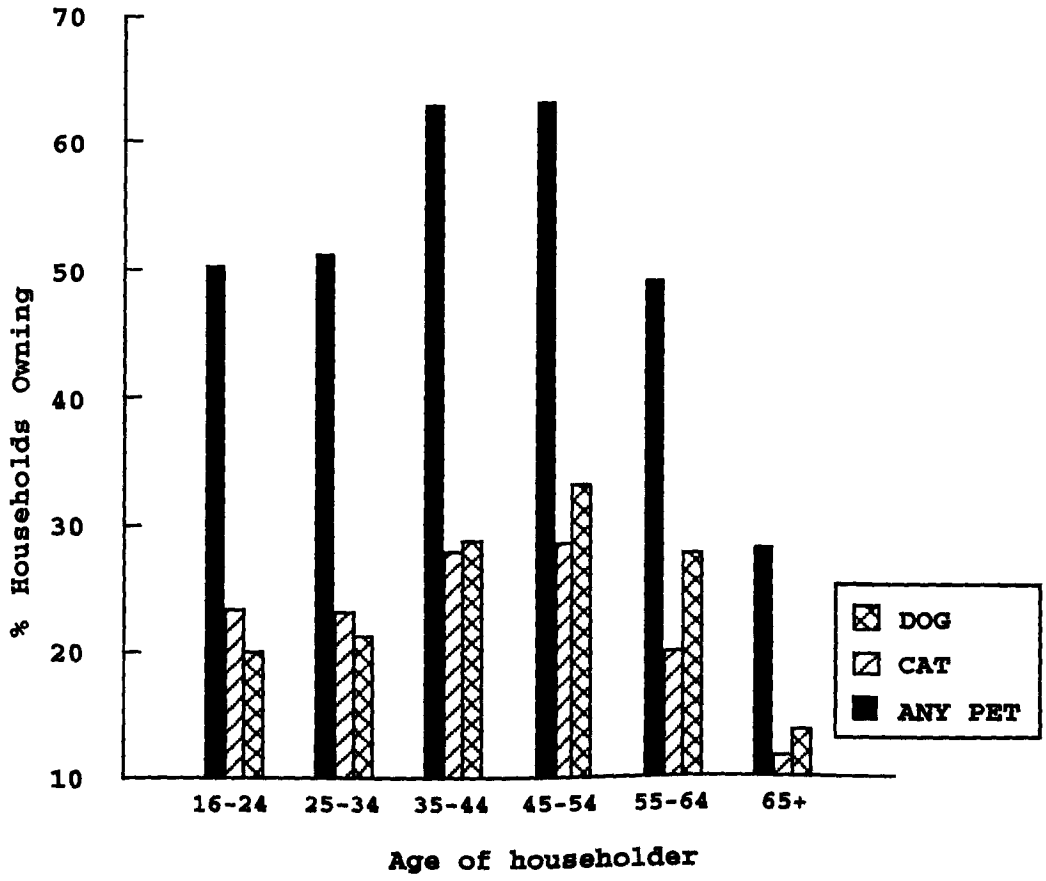
Presence of children (age in years)	Percentage households with pets
0-5's only	49.8
6-15's only	73.8
0-5 & 6-15's	59.6
no children	43.3

The age of the householder interviewed (usually the woman of the household) showed that people over retirement age are least likely to keep pets, see figure 1.1. Households where the mother or wife in the family is aged 35-54 are most likely to keep pets.

The GfK survey indicates that pet ownership is common across the social grades however there are some differences in trends for particular pet species, e.g. keeping caged birds becomes less common as one goes up the social scale. Figure 1.2 shows over 20% of households of all of the social grades own dogs. Social grade C2 has the most pets overall, and DE the fewest. Cats are more popular than dogs in social grades AB and C1, but cats more popular than dogs in C2 and DE. Social grade

classifications are determined by the occupation of the chief income earner in a household. Social grade A is upper middle class (high level manager, administrator or professional); B is middle class (intermediate manager, administrator or professional); C1 is lower middle class (supervisory or clerical, junior manager or professional); C2 is skilled working class (skilled manual worker); D is working class (semi and unskilled manual worker); and E is at the lowest level of subsistence (on pension or benefits only, casual or lowest grade worker).

Figure 1.1 *Pet ownership by age.* (Source: Pedigree Petfoods Pet Ownership Survey, GfK Marketing Limited, 1996)



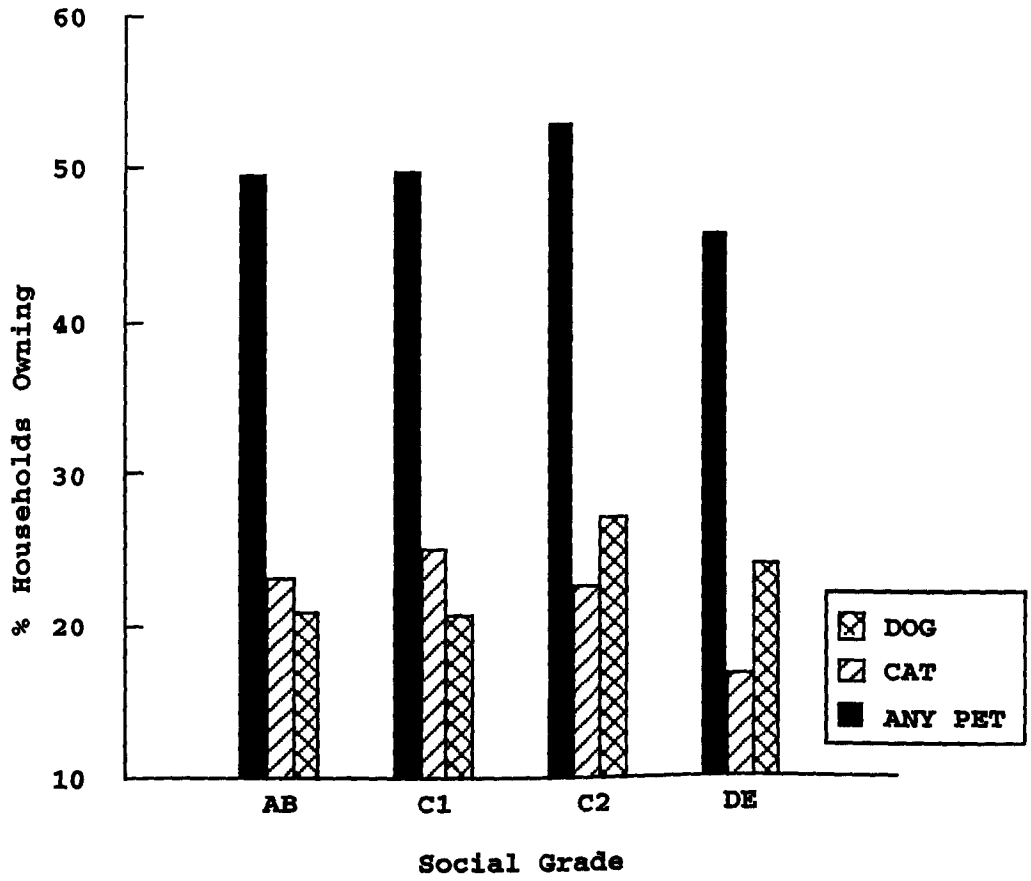
The demographic data give the characteristics of households which have pets, but does not distinguish between individuals within the household in terms of who owns the family pet. This issue of ownership is a key one in research which has sometimes treated pet ownership as a simple categorical variable depending on the presence of a

pet in the household. As each family member in a pet-owning household may interact with the pet in different ways, or even not interact with it at all, the concept of ownership in the context of the family is an interesting one. The issue of *who* owns the family pet is of particular importance for interpretation of research into links between pet ownership and health, and is explored in the empirical work presented later. The degree to which individuals in families consider themselves as pet owners may be influenced by the framing of the question. For example if the question is asked *outside* the context of the family *'do you have a pet?'* or *'do you own a pet?'*, they may answer *'yes'* even though they may not be considered *the* particular owner of the pet amongst their family members. Perceptions of ownership are examined in the empirical work reported in chapter 5, and characteristics which predict the degree of ownership are identified in order to understand what pet ownership means to individuals in the family context.

The current high levels of pet ownership in Western society are sometimes described as having grown from more modest levels over the past 30-40 years (e.g., Serpell, 1986). There is sound evidence that the number of pet cats and dogs have increased during that time, however it is not clear from the increase in animal population alone whether this represents an increase in the *percentage* of households keeping pets, or whether the pet population is just keeping pace with the growth in human population. Data from the Pedigree Petfoods survey of 1963 (Anderson, 1975) show that the overall percentage of households with pets in the UK was at a similar level (49%) 33 years ago to that found today implying that it is the increase in human population, and the even greater increase in the number of households (due to a trend for smaller household size) which accounts for the increase in pet population rather than an increase in the proportion of households with pets. A similar pattern is reported in the US, where cat and dog populations have doubled since the early 70's, however the compound annual growth of 1.3% is very similar to the compound annual growth in household formation of 1.2% (Mars Inc. proprietary information - 1995 US Pet

Ownership Survey). Therefore, it does not seem to be the case that any recent changes in society have encouraged a greater percentage of people to keep pets as the penetration of pet-ownership in society has been fairly stable over recent years. Perhaps it is the higher living standards, and lack of other priorities compared to the 1930's and 40's that have allowed today's pet owners to lavish more attention on their animals, and so give them a greater focus in our lifestyles, thus making them *seem* more prevalent?

Figure 1.2 *Pet ownership by social grade* (Source: Pedigree Petfoods Pet Ownership Survey, GfK Marketing Limited, 1996)



1.4 What is a pet?

It is difficult to define any physical or behavioural characteristics which can help identify a particular animal as a pet, rather than as say a pest or food source. Some characteristics like neotenous faces, being small and furry or being playful may apply

to certain groups of pets, but do not fit many others. Examples of species from almost every phylum are kept as pets. The only common criteria for describing an animal as a pet are that pets are non-human species yet live with, and are looked after by humans for reasons that are not primarily commercial, as a source of food or for any other practical function. This is the definition of pet that will be used in this thesis. The term pet was chosen rather than the more politically correct 'companion animal' (Shapiro, 1997), as no prior assumption is made that all animals kept for non-practical purposes are party to companionate relationships with their owners. For some owners the animals may simply provide a hobby or interest. Companion animals are therefore seen as a sub-set of pets.

The same species of animal may be viewed as pets by some people yet perceived quite differently by others: spider, and snakes can be objects of fear and disgust for some, pets for others; pot-belly pigs, rabbits, and ducks can be food or family members; rats can be poisoned as vermin, used as laboratory animals or kept as pets; dogs can fulfil a multiplicity of roles including fierce guard, sheepdog, guide dog for the blind, object for competition in shows or sport and gambling; use in research; substitute person, or canine companion.

The role attributed to a particular species (e.g. as potential food or friend) is in part determined by cultural differences. In the west, dogs are largely treated as loyal companions; in the middle east they are usually seen as filthy scavengers; in Korea, they are eaten by humans. Cultural differences in attitudes to animals which are sometimes kept as pets may be apparent between near neighbours as well as between distant lands, for example French acceptance of eating horsemeat is generally frowned upon in Britain. Differences in attitude to, and treatment of, the same species can also occur within particular societies. Some species such as rabbits, ducks and pigs are kept within western societies as pets by some people, and as farm animals for human consumption by others. Dogs fulfil a wide variety of functions (see above), and even

within the same society there are huge inconsistencies in treatment ranging from pampered pet to disposable commodity (rescue kennels are full of unwanted pets), and the use of dogs in laboratory research. Furthermore, inconsistencies may be found not only between people in a society, but within individuals. It is not unknown for people with pet rabbits to enjoy eating 'anonymous' rabbits.

Table 1.3 *Percentage of UK households with each pet species.* (Source: Pedigree Petfoods Pet Ownership Survey, 1996)

Pet type	Percentage households owning
Any type	49.0
Dog	23.4
Cat	21.4
Gold fish	9.3
Rabbit	3.9
Budgerigar	3.6
Hamster	3.2
Other	2.8
Other caged bird(s)	2.6
Tropical fish	2.4
Guinea pig	1.6
Horse/pony/donkey	1.1
Canary	0.8
Marine fish	0.3

The percentage of households with pet cats or dogs far exceeds the percentage with any other species (see Table 1.3), making cats and dogs the canonical pet species. Table 1.1 shows that in the UK alone there are approximately 7 million dogs and 7 million cats. The Pedigree database of these annual surveys, and statistics from

Social Trends 27 (1997), show a trend of the UK dog population in very slow decline, and the cat population slowly increasing. This may be due to the increasing tendency for both parents in families to work outside the home and for more people to live alone (Social Trends 1997), thus making responsible dog ownership difficult.

There is a recent fashion for 'cyber-pets' like the Tamagotchi, both among children and adults. These are small electronic devices which display an image of a pet on a tiny screen. The cyber-pet require various buttons to be pressed at intervals representing the provision of food, play etc. If the correct buttons are not pressed, the pet 'dies', however, unlike a living pet, the Tamagotchi can simply be resurrected at the touch of a button. Clearly, there are important differences between these passive machines and living creatures. Cyber-pets have a small set of fixed set of 'responses' to their owners. Despite this, they seem have been a popular outlet for what at a superficial level at least, appear to be nurturant feelings, where owners care for the virtual pets to the extent of leaving them with 'cyber-creches' when they are not able to personally attend to them. It remains to be seen whether these electronic 'pets' will persist, and perhaps become the forerunners of more sophisticated "robot-pets", or whether they are simply toys, and go the way of 'pet rocks' and other fads in toy marketing.

To conclude, this chapter has outlined the difficulty in defining pet ownership by simple analysis of pet species, social/cultural context, or aspects of the human owners. Although the typical pet is a cat or dog, many other species are kept. Also, simply being a cat or dog does not guarantee pet status. A dog in China is highly unlikely to be a pet. In canine loving Britain, it is much more likely to be a pet, but *could* alternatively be subject to unpleasant laboratory treatment for research purposes, or kept in kennels and used only for hunting, and euthanased when too old for this function. People who choose to share their homes, time and resources with pets are found across national borders, cultures, social classes and other demographic factors.

The origins of the domestication of the most common pet species, cats and dogs, can be explained by way of practical benefits to humans, however there is a long history people keeping pets for non-practical purposes. Today, the practical benefits no longer apply to the large proportion of humans who devote considerable resources to pets. Further exploration of the pet ownership will therefore focus on the nature of the interactions between pet owners and their animals, and consider models which can help to provide an account of the pet phenomenon.

CHAPTER 2

Social relationships as the basis for human-pet interactions.

2.1 Introduction

In much of the literature on pet ownership it is assumed that human-pet interactions are based on social relationships, and further, that it is reasonable to use models of the psychology of human-human relationships to investigate them, for example, talking of the relationship in terms of attachment. However, there is seldom any explicit justification given for applying these models to cross species relationships.

Informal discussions on whether it is appropriate to describe interactions between people and pets as social relationships often evoke one of two extreme responses. The first is that the idea of pets as party to social relationships with humans is nonsense because pets are not human, and hence incapable of the cognitive or linguistic abilities required; the likely reasons for pet owners to think they have important relationships with their pets are that they are driven to the abnormal practice of interacting socially with other species because there is something wrong with, or lacking in their human relationships and that they are guilty of anthropomorphism. The alternative response is that some pet owners 'obviously' have close relationships with pets, and that other domesticated social species like the dog can provide them with companionship, love and affection, and loyalty. To these people, it is 'common sense' that pets can be loving and supportive companions. Serpell (1996) observes a similar polarisation of views.

A consideration of human-pet interactions as social relationships raises several issues: what are the characteristics of social relationships; what do relationships *do* for people; in what ways do human-pet interactions share the characteristics and functions

of human relationships; in what ways may a relationship model *fail* to fit pet ownership; what other possible models of pet ownership should be considered? Any progress in the study of human-pet interactions will depend upon careful critical evaluation of whether a relationship model of any kind is appropriate If so, what kinds of relationship models are most appropriate and what are their limitations? Are there any non-relationship models that are useful?

The study of human relationships has been approached by many domains within psychology such as developmental, clinical and social psychology. Each sub-discipline has tended to focus on individual types of relationship which have most relevance to their own particular interests, e.g. developmental psychologists on sibling-sibling and parent-child relationships. Berscheid (1994, 1995) notes that this has resulted in the building of islands of knowledge about discrete relationship types that are hard to integrate in an attempt to identify underlying processes common to all relationships. Psychologists in the past have tended to focus more on the individual within a relationship and, since the cognitive revolution, this has continued with causal conditions located as representations 'within the head' of the subject. Sociologists and anthropologists on the other hand have examined human relationships at the macro level, examining environmental, cultural and historical accounts. Berscheid (1995) calls for any would-be grand theorists of interpersonal relationships to find a theory which would provide useful guidance for those engaged in the study of *any* relationship type. This would require an approach which integrates considerations of individuals within relationships as well as the contextual influences, particularly the cultural norms associated with particular types of relationship, as an important set of causal conditions which influence the patterns of interactions between the relaters. She describes the goal of those in pursuit of a grand theory of relationships as seeking to understand the pattern of regularities in the interactions between the partners of any relationship. Mini-theories specific to particular relationship types still have an important place in accounting for patterns of

interactions specific to relationships of a particular type, and for differences across type.

There have been some attempts to provide larger scale theories, or at least to account for similarities and differences across several types of relationship. For example, Fiske (1992) proposes that all people refer to 4 psychological models (communal sharing, authority ranking, equality matching and market pricing) as schemata used to construct and construe relationships. Kelley, Berscheid, Christiansen, Harvey, Huston, Levinger, McLintock, Peplau & Peterson (1993) look at features of close relationships, a large group of relationships which subsumes many relationship types. However, as Hinde (1997) observes, there is still not yet a single, overarching theory which has been accepted as unifying the diverse theoretical approaches to the study of relationships. In absence of any dominant unifying theory, it would be possible to examine human-pet interactions in the context of many different models of relationships where each may provide useful insights into the similarities and the differences between human-pet and human-human relationships. The literature on human-pet interactions, however, has tended to focus on a small range of theories such as attachment and social support. These major models of relationships referred to in studies of human-pet interactions literature will be considered next.

2.2 Human-pet interactions within an attachment relationship

Human-pet relationships are most frequently described in the literature as attachments, with humans attached to their pets. There are several problems with the quality of this literature: failure to describe the particular construct of attachment that the research is intended to investigate, poorly designed scales to measure attachment (including reliance on a single item), and poor construct validity. It is not pedantic to require researchers to describe their constructs of attachment, but rather a necessary requirement in an area which attracts enquiry from disciplines which each has its own set of jargon. Without explicit description of the constructs that terms such as

attachment describe, much time and energy may be spent in unproductive arguments rooted in semantic differences in the use of terminology rather than differences on points of principle. In general use, attachment means feeling affection for someone, however its use in psychology is usually with specific reference to Bowlby's (1969) theory of attachment between infants and their primary caregiver, or a development of it applied to adult-adult relationships, e.g. Ainsworth (1989). Bowlby describes attachment as a biologically based system which functions to keep infants safe by providing a means by which they can maintain close proximity to their primary caregiver. Ainsworth, Blehar, Wales & Wall (1978) observed how the style of attachment behaviour exhibited by children was influenced by the caregivers' behaviour. Their evidence indicates that a child who has a constant available caregiver will become 'securely' attached, and gain confidence to explore their environment. Infants with inconsistent or unreliable caregivers may become 'anxious' or 'avoidant' in their behaviour. Anxious children will cling to their caregiver, whereas avoidant children will appear aloof on the return of a caregiver despite their obvious distress at separation. Through this experience of their first important relationship, the child forms a cognitive working model that can influence later relationships. Some psychologists believe that attachment does more than just provide an *influence* on the development of models of relationships in later life; they argue that the attachment system persists into adulthood, and is the basis of some adult-adult relationships. This view was strongly promoted by Hazan & Shaver (1987, 1994) and by Bartholomew & Horowitz (1991). More searching conceptual and empirical analyses of the issues are provided by West and Sheldon-Keller (1994) and Sperling and Berman (1994).

In a paper which critically examines the extension of attachment concepts to adult relationships, Ainsworth (1989) differentiates between affectional bonds and attachment. Affectional bonds are relationships with individuals (not groups) which are enduring; there is a desire to remain close, expressed by at least an intermittent

desire to re-establish proximity; joy on reunion; distress at inexplicable separation; grief at permanent loss, and the object of affection is not replaceable or interchangeable with another. Attachment relationships include these characteristics, but have an additional component: the feelings of comfort and security provided by the presence of the attachment figure. Thus attachments are a subset of affectional bonds. By this definition, the relationship of a child to a parent is typically an attachment. However, the parent will not normally derive feelings of comfort and security from the presence of a child, therefore the relationship of the parent toward the child is more appropriately described as an affectional bond (Ainsworth, 1989). The reason for this emphasis on feelings of comfort and security is that, for Bowlby, the rationale for postulating attachment as a distinct kind of relationship is that attachment behaviour was postulated to be controlled by a motivational system whose function (in evolutionary terms) was to ensure the physical safety of the infant. The absence of the primary caregiver gives rise to feelings of insecurity in the infant, which causes various kinds of distress behaviour to be initiated with the goal of ensuring the proximity of the caregiver who can then deal with any source of danger or threat. This central role for security/insecurity in attachment theory implies that feelings of comfort and security should also be criteria for the concept of attachment to be applied to human-pet relationships (Collis & McNicholas, 1998). Security features prominently in proposed measures of human-human attachment (Crowell & Treboux, 1995).

In the human-pet relationships literature, it is frequently unclear what is meant by attachment in a particular study because of a failure to explicitly define the construct that the researchers intend to investigate. In Garrity, Stallones, Marx & Johnson's (1989) study entitled *"Pet ownership and attachment as supportive factors in the health of the elderly"*, both 'attachment' *and* support from human-human relationships were measured on the same three point scale according to the number of confidants available to the participant. This means that no distinction was made between

attachment and supportive relationships. The concepts of attachment and support may have things in common (Sarason, Pierce & Sarason, 1990) but there are also important differences. Collis & McNicholas (1998) observe that attachment theory implies a typological approach to relationships in that it presumes that child-to-parent attachments are different in kind to parent-to-child caregiving relationships, sexual relationships between adults, and similar biologically-based categories, whereas support provides a functional perspective: what do relationships *do* for people. Moreover, supportive functions do not map on to categories such as attachment or affectional bond. For example, it is easy to think of an individual providing informational or practical support without any affectional bond existing, let alone an attachment.

These conceptual difficulties are compounded by measurement problems. Garrity, Stallones, Marx & Johnson (1989) effectively ignored the multi-dimensional nature of support from human relationships (e.g. emotional support, esteem support, informational support) by using a single item measure whereas participants' 'attachment' to pets, which should be a simpler construct, was measured using a 6 item scale. These six items included questions such as *"Do you talk to your pet?"* and *"Do you talk to others about your pet?"*.

Later, the same four authors, Stallones, Marx, Garrity & Johnson (1990) use an 8 item scale to measure participants' attachment to pets that does not contain any of the items in their previous study. Instead, questions include *"How often do you take your pets along when you visit friends or relatives?"*, *"Do you keep a picture of your pet in your wallet or on display in your home or office?"*, *"To what extent do you agree with the statement 'pets should have the same rights and privileges as family members?' "*, and *"Would you say that owning a pet has helped your health?"*. Cronbach's alpha for these items was found to be 0.75, and all questions loaded on a single component when principal component analysis was applied to the data. Stallones et al. use these

findings to argue that the scale measures a single dimension of pet attachment. The scale may measure some single dimension, but what it is that links these 8 questions is difficult to pin down to any conventional construct of attachment: some of the items are not directed at the particular relationship the participant has with their pet as an individual, but ask about attitudes to pets in general, or ask about behaviours which may be more indicative of the physical and behavioural characteristics of the animal (e.g. its suitability to go visiting) rather than the quality of the relationship. Other than listing the 8 items, Stallones et al. do not offer any clear description of the construct of attachment they wish to explore, or how it is related to the other variables. As a result it is difficult to link their findings to other theories, or to other studies on "pet attachment", which appear to be using the term attachment in a quite different way.

Three of these authors, Johnson, Garrity & Stallones (1992), persisted in trying to refine an instrument to measure attachment to pets. They report on a 23 item scale, the Lexington attachment to pets scale (LAPS). The items were drawn from other scales, including ones intended to measure constructs that are not explicitly labelled as attachment: the companion animal bonding scale (Poresky & Hendrix, 1987), the pet attitude inventory (Wilson, Netting & New, 1987) and the pet attitude scale (Templar, Salter, Dickey, Baldwin & Velber, 1981). This time, they argued that the items were chosen on theoretical considerations and are mostly concerned with affection for the pet. The basis for this is their conclusion that this aspect of relationships *"is most closely related to well-being"* (p.162). Johnson et al. report impressive Cronbach's alpha coefficients for the internal consistency of the LAPS, despite the fact that while some of the items ask about aspects of the participants' affection for a particular pet, others are about attitudes to pets generally: *"pets deserve as much respect as humans do"*; and how pets can influence other relationships: *"Quite often my feelings toward people are affected by the way they react to my pet"*. Indeed, Principal Components Analysis revealed 3 components in the scale which the

authors described as *"general attachment"* , *"people substituting"* and *"animal rights/animal welfare"*. An indication of construct validity was sought by asking interviewers to give a subjective rating of participants' attachment to their pets on a 4 point scale from 'not at all attached' to 'very attached'. These ratings were positively correlated with the attachment scores from LAPS. Johnson et al. admit that *"ideally these ratings would have been made by individuals unaware of the respondent's answers to the LAPS"* (p,172). This seems something of an understatement given that the interviews were conducted by telephone, and interviewers would not have seen how participants behaved with pets. What else could these subjective results be based upon other than the LAPS responses? This lack of rigour does little to improve the credibility of the research into human-pet relationships, which is rarely reported in mainstream psychology journals. Whatever it is that the LAPS does measure may still be of interest, regardless of what label it is given, but confusion due to using the label 'attachment' can detract from this.

Endenberg (1995) describes attachment with reference to Bowlby's theory, but measures 'strength of attachment' by asking participants to draw a line representing how much they are attached to a pet without providing any guidance of the definition of attachment that they should be considering. The length of line was used as an index of how attached they are to the pet: the longer the line, the more attached they are. In Serpell's (1996) paper on *"Evidence for an association between pet behaviour and owner attachment levels"* he also uses a single item measure of attachment, simply asking participants to choose a level of attachment to the pet from: 1. not particularly attached, 2. moderately attached, and 3. very attached. Both of these examples assume that participants not only refer to the same concept of attachment as each other, but that it is also the one that the researcher has in mind.

Melson, Peet & Sparks (1991) investigated children's attachment to their pets. They refer to Bowlby's theory, and Ainsworth's criteria for attachment, but only include the

aspects relating to affectional bonds: *"a lasting emotional tie between individuals such that the individual strives to maintain closeness to the object of attachment and acts to ensure that the relationship continues"* (p.55). They do not include the additional criterion that Ainsworth requires to distinguish attachment from other types of affectional bonds: *"there is, however, one criterion of attachment that is not necessarily present in other affectional bonds. This is the experience of security and comfort obtained from the relationship with the partner..."* (Ainsworth, 1989, p.711).

Melson et al. measured dimensions of attachment which they describe as behavioural attachment, affective attachment and cognitive attachment. This is an interesting approach that looks at what children do with their pets, how they feel about them and how they conceptualise their relationship with the pet. It is therefore disappointing that the scales used to measure them do not appear to match up to the constructs satisfactorily. Not all of the items used are detailed, but of those given for the attachment behaviour scale, some seem more related to other constructs, for example one item is: 'shows fear of pet'. The affective attachment scale includes the behavioural item *"talks about pet"*. The nature of what is said about the pet would need to be analysed in order to determine whether or not the talk was evidence of an emotional link to the animal. It is important to clarify what the scales purport to measure, as Melson et al. go on to link these results to the socio-emotional development of children. If an association between the 'pet attachment' measures and socio-emotional development is brought about by some causal mechanism, it is necessary to be clear about what is measured in order to hypothesise testable models for the mechanism.

The problems outlined in the above examples are not untypical of the literature. In general, if attachment is meant in the Bowlby-Ainsworth sense then it is necessary to find out whether the relationship fulfils the criteria for attachment at all, such as proximity seeking associated with feelings of security, before looking at the nature or

degree of the attachment. If these are evident, the type of attachment behaviour displayed could be assessed as secure, avoidant or anxious etc. If however, attachment is used in a more general sense, it is still necessary to describe the criteria the researchers require, for example Ainsworth's criteria for affectional bonds.

2.3 The human-animal bond

The term 'bond' is also used in a variety of ways in the literature. Sometimes it is a broad interpretation referring to a group or species, as in *"the child-pet bond"* (Alper, 1993), or *"the human-animal bond"* (Edney, 1993a). This is in contrast to the way that Bowlby or Ainsworth would apply the term to describe the particular affection and attraction that one individual may feel for another (Collis & McNicholas, 1998). The Companion Animal Bonding Scale (Poresky & Hendrix, 1987) uses eight items on this scale are said to *"represent the diverse behavioural aspects of the human-animal bonding process"* (p.745). The items include behaviours like cleaning up after the pet; activities which imply proximity such as travelling with the pet or having it sleep near; and feelings about how close the relationship is. Again, as for attachment, it is important to be clear in the use of terminology concerning the nature of 'bond' an author has in mind: a particular biologically based process, the affection of one individual for another, or an umbrella term to include various relationships that humans have with pets. It is reasonable to investigate human-animal interactions as bonds or attachments, but little progress is likely unless those engaged in the research employ clear constructs which can be related to current theories.

2.4 Human-pet interactions occurring within a supportive relationship

In the voluminous literature on social support in human-human relationships (discussed further in chapter 6), two models are proposed to describe the functions of social support. The 'buffering effect' model suggests that support gives protection from the adverse effect stressful life events can have on health. In other words, the benefits of support will only be apparent in stressful circumstances. The 'main effect'

model says that good support gives an on-going benefit to health regardless of particular stress levels, (Cohen & Wills, 1983).

Different theorists offer slight variations on the dimensions of support (Caplan, 1974; Cobb, 1976; Cohen & McKay, 1984) however the following are commonly cited:

1. *Emotional support: the ability to turn to others for comfort in times of stress, leading the person to feel cared for in times of stress*
2. *Social integration or network support: the feeling of being part of a group with common interests and concerns (this may range from close relationships such as within a family, to work relationships or casual friendships that enable social and recreational activities*
3. *Esteem support: the bolstering of a person's sense of competence and self-worth, value to others, respect, and self-respect (e.g., giving positive feedback regarding a person's abilities or worth)*
4. *Tangible/practical/instrumental support: the giving of concrete assistance or resources (e.g., the provision of physical help with a task and lending money at a time of financial difficulty)*
5. *Informational support: the provision of advice or guidance*
6. *Opportunity to provide nurturance: the need to be needed*

(Collis & McNicholas, 1998, p115).

It seems plausible that pets can offer some dimensions of support such as emotional support, esteem support and outlet for nurturance. Emotional support or esteem support may be perceived to be available by their owners. Other dimensions such as informational support or instrumental support are unlikely to be found from pets apart from perhaps dogs who may protect their owners and their property, or working dogs such as guide dogs for the blind.

Katcher (1983) compares the emotional support that owners report from pets with that given by clinical therapists or counsellors: they listen attentively; do not dominate the conversation; are not judgmental; and give unconditional positive regard and total confidentiality. Stewart (1996) endorses this argument for pets as a source of emotional support, and takes up the comparison of pets with therapists. The literature on support in human-human relationships concludes that subjectively *perceived* support is more important that objectively defined *received* support in terms of providing a benefit. This means that whether or not pets are actually able to provide some types of support, their owners may still derive benefits if they believe that the pets are supportive.

In the literature on human social support, there is often mention of the importance of matching the nature of support to the nature of the stressor or the needs of the recipient (e.g. Cutrona & Russell, 1990; Cohen & MacKay 1984). The repertoire of types of support available from pets may be more limited than from humans so that, in principle, their potential for responding with a type of support that matches the need of the recipient might be quite limited.

Despite many references to pets as a source of support in the literature, there are few attempts to measure this empirically. In some instances the hypothesis that pets are a source of support is simply asserted, for example Friedmann & Thomas (1995) refer to pet ownership as a *"nonhuman form of social support"* (p.1213) with no theoretical or empirical justification. Other attempts to measure support are unclear, for example Garrity et al. (1989), as discussed above, measure pet 'attachment' but go on to equate it with support.

One dimension of support which lends itself more easily to empirical research is social integration or network support. Pet dogs have been found to act as social facilitators. Mugford and M'Comisky (1975) used the term 'social lubricant' to

describe the effect of introducing a budgerigar in to the homes of elderly people. Some participants commented that the presence of the bird was an ice breaker, providing a focus for conversations with others, and attracting children to visit more frequently. Messent (1983) found that people out walking with a dog enjoyed more social interaction than those without: they were more likely to gain attention from other walkers; conversations that the dog walkers had with others lasted longer than those without dogs; and dog walkers were more likely to engage in a conversation than others than those alone or those walking with infants in a pram. A study by McNicholas and Collis (1998) showed that the basic effect of a dog as acting as a catalyst for social encounters was not a function of the dog soliciting attention from others, nor was it confined to typical dog-walking areas such as parks where it could be argued that what was measured was dog walkers greeting one another. In addition, McNicholas and Collis showed that the effect was robust in that it was a strong effect even when the dog handler was dressed in a very unattractive manner. The social lubricant or social catalyst effect of dogs may be especially important for enhancing the lives of disabled people. Eddy, Hart & Boltz (1988) observed an increase in social encounters with disabled people with service dogs compared to those without a dog. Mader, Hart & Bergin (1989) report similar findings for disabled children.

In principle, additional human social contacts may give an enhanced feeling of social embeddedness, and the new human contacts may develop into new potential sources of support. There is fairly good evidence that for disabled people, having a service dog enhances subjective well being (Hart, Hart & Bergin, 1987; Lane, McNicholas & Collis, 1995). It is less clear this kind of effect enhances the network of supportive relationships of people in the general population, and whether this enhances well being. A study by Collis, McNicholas and Harker (1998) found no differences in the size of social networks between dog owners, cat owners and non owners, and no difference in the supportive functions served by these relationships. Many of the dog owners in this study reported that there were people in their social networks who had

been met, or the relationship maintained, by virtue of pet ownership. However, the very large majority of such relationships were in the category of casual acquaintances and very unlikely to provide supportive functions.

There are several studies which have looked at the role of pets as moderators of stressful life events, and measured the influence on health, e.g., Siegal (1990). While social support from pets is a plausible candidate for the mechanism to explain any stress buffering effect of pet ownership, there is seldom any attempt to measure it directly. This consideration of pets as a source of support is developed further in chapter 6.

2.5 Human-pet relationships functioning to reduce loneliness.

Loneliness has been investigated as a function of pet ownership. Pets that are kept as companions animals are widely believed to help their owners avoid feelings of loneliness, e.g., Friedmann et al. (1980), Sable (1995). In a retrospective study of people who acquired a hearing dog (an assistance dog for deaf people), Hart, Zasloff & Benfatto, (1996) found that participants reported being significantly less lonely compared to the period before they had the dog. Zasloff & Kidd (1994), however, found no significant difference in loneliness ratings on the Revised UCLA Loneliness Scale (Russell, Peplau & Cutrona, 1980), when comparing pet owning and non-pet owning female college students. Of those living with pets, there was no significant difference in loneliness between participants measured as highly attached to pets compared with those with low attachment. They did find, however, that participants living entirely alone were more lonely than either those living with pets and no people, people and no pets, or people and pets.

Weiss (1973) made a distinction between two types of loneliness: the loneliness of social isolation, and the loneliness of emotional isolation. He considered that the former was a result of absence of an adequate social network, whereas the latter was

the result of the lack of a close attachment relationship. Weiss (1974) also proposed that humans require a range of provisions from their social relationships: attachment, social integration, reliable alliance (a sense that relationships are stable and will endure), guidance, reassurance of worth, and an opportunity for nurturance. Individual relationships may be specialised in their provision, and no single relationship can fulfil all of a person's needs, therefore in order maintain a sense of well-being, a number of different relationships are required.

Weiss' approach combined two separable elements. One is that the notion of provisions is useful for describing the range of functions available from social relationships. Weiss' list of provisions is, in fact, wider in scope than traditional accounts of support, though most elements of support can be identified with one or more of Weiss' provisions. Emotional support is likely to be available from an attachment relationship or affectional bond; social integration appears in both constructs - social provisions and social support; reassurance of worth would enhance self esteem; guidance would provide informational support; opportunity for nurturance fulfils the need to be needed and may well provide esteem support, and so on. The second element of Weiss' account is that it is a it is a *needs model* in that if some provisions are not available then this has deleterious effects - loneliness. Weiss was a psychiatrist who worked with troubled people, so it is not surprising that he was concerned with trying to understand the nature of loneliness and other problems concerning social relationships. It is nonetheless quite possible to accept the descriptive utility of the provisions approach without necessarily accepting that his list of provisions represents needs that have to be met - just as it is possible to accept the biochemistry of amino acids without assuming the necessity for all of them in the human diet.

Weiss's idea that people require a 'fund of sociability' which needs to be fulfilled by a diverse network of relationships is an interesting model for the examination of

human-pet interactions. It has been very influential in social support research, and underpins a number of methodological approaches (e.g. Cutrona & Russell, 1990; Furman & Buhrmester 1985). It also provides a framework for asking questions such as: what social functions do pets fulfil, how do pets fit into the network of human relationships, and do pets complement provisions from human relationships, or are they used to compensate for deficits? These questions are pursued in Chapter 5.

2.6 Non-social models of human-pet interactions

Hirschman (1994) discusses roles and functions of pets which do not require a social relationship where the pet could be described as an active party, but rather a passive tool used to achieve a particular purpose. In some cases the pet may be fulfilling a role as a fashion accessory, or part of an image management strategy (e.g. owners who acquire a Labrador to go with the green wellies and Range Rover), in others, the pet may be an absorbing hobby rather than a sentient creature with which one has a relationship. For example, when recruiting pet owners for a study, the author was told by a woman who had 3 Border Collies that she was not suitable to take part in a study which was investigating the relationships people have with their pets, as she had her dogs to compete in Agility matches, implying that her dogs were little more than the equivalent of golf clubs to a golfer. Pets may also be aesthetically pleasing ornaments (Council for Science and Society, 1988). Many pets have beautiful form, colour, markings, and graceful movement. In parts of Europe it is common to see caged birds outside shops and houses to fill the air with pleasant song; UK stately homes still have decorative peacocks in their grounds; and exotic fish in large tanks are seen on display in homes and reception areas of hotels and businesses. These animals are rarely named or handled, and seem to fulfil a role more akin to that of potted plants or muzak, rather than that of companion animal. However, some of the non-social roles for pets may occur alongside a social one, such as people who compete in dogs shows and enjoy the hobby and also value their pets as important companions.

It is important to note that although owners may gain psychological benefits from pets, this does not necessarily mean the benefits are derived from a social relationship, e.g., self esteem may be enhanced by pet keeping, akin to pride derived from other hobbies like gardening or stamp collecting. However, as Harker (1997) points out, it seems unlikely that people would be considered to have a relationship with their stamps in the same sense as they have relationships with other people. It is therefore prudent to refrain from the assumption that *all* pet-owners have social relationships with their pets.

2.7 Pet ownership as a parasitic relationship

Archer (1997) proposes a Darwinian account of pet ownership, with pets exploiting human responses which had previously evolved to facilitate human relationships. Initially, pet ownership is a puzzling phenomenon when viewed from an evolutionary perspective: humans provision other species, with corresponding loss in what is available to the pet owner, and their human family. Archer argues that the benefits to evolutionary fitness are largely or exclusively to the pets, and at a cost to humans. He considered the health benefits reported to accrue to pet owners (reviewed in chapter 6) but regarded them as either minor benefits to general health and well-being, or associated with conditions of later life, such as coronary heart disease. As such, they would have little impact on reproductive success, especially when netted against the costs of caring for and feeding the animal. Money spent on pets decreases funds available to be spent on children. Also, the pets may present health hazards to the children, giving another negative influence on evolutionary fitness.

Archer proposes that the reason for this apparent evolutionary paradox, is that pets have adapted to fill a niche as social parasites on their human hosts. Pets have evolved features such as neotenous characteristics which manipulate human behaviour by triggering mechanisms that evolved to facilitate human-human relationships. If pet ownership is viewed as a parasitic relationship, it is however an odd one with the host

seeking out its own parasite, and electing to co-habit with it when it could simply choose not to. Further, the host often has a hand in selectively breeding the parasite in order to allow it to become more successful. However, the population of pets has increased in line with increases in its human host population (see statistics in chapter 1), suggesting that pet species have found a successful niche.

This is not to say that humans do not receive many benefits from their pets that may enhance their quality of life. Archer acknowledges that pet owners may gain more satisfaction from their relationships with pets than some human relationships due to the unconditional nature of many human-pet relationships. The model, however, is one based evolutionary fitness, so only matters which influence this are of relevance. Archer observes that feeding a cuckoo chick may be rewarding for a reed warbler, and fulfil a need to nurture, but it is not adaptive in an evolutionary sense.

Archer's model is interesting, especially as a foil to a body of literature which is generally focused only of positive views of pet ownership, however it has several problems. First, it is using the model of Darwin's theory of natural selection, however the development of pet species, especially dogs, has not simply evolved in the 'survival of the fittest' sense. The picture is more complicated, with humans taking an active role in determining the development of species through selective breeding. Also, Archer relies heavily upon the human response to neotenous characteristics in his account. Many pets do not retain these features into adulthood, or do not ever display them, and yet still have a place in human households. Next, costs to human fitness are postulated, however there is no evidence to support this. The fact that humans may choose to keep pets, and also choose to dispose of them has important implications. It seems likely that pets who become a burden such that they are a threat to human survival, will be rejected by their owners. This is unlike the typical parasitic relationship, where the host can do little to avoid the parasite, or rid itself of them. Finally, as detailed in chapter 1, pets occur most often in households which

also have children. It does not therefore seem likely that pets are supplanting human offspring.

2.8 Pet ownership as slavery

The keeping of domestic livestock is likened to human slavery by Manning & Serpell (1994), in that they are treated as property and afforded few rights. They quote from Roman writers who talk of human slaves and livestock in the same category: *"The class of instruments which is articulate, the inarticulate and the mute: the articulate comprising the slaves, the inarticulate comprising the cattle, and the mute comprising the vehicles..."* Varro (p.31). Animals have been at the bottom of a pyramid of domination over the 10,000 years or so since the first species were domesticated. They are treated as property, used for food, other bi-products, scientific research, sport and entertainment. Over the past 200 years, human slavery has become outlawed in most societies, however animals are treated in much the same way.

Some might think that modern pets are pampered, and treated as family members, and it is therefore absurd to think of them in terms of slaves. However, pets are still property in law; their freedom is restricted with cages, collars and leads, and for the convenience of owners, they are frequently castrated or spayed and may be euthanased whenever they owner chooses. Pets are often denied company of their own species, even social animals like dogs, and kept in unstimulating, 'unnatural' conditions. In some countries it is still accepted for surgery such as ear cropping and tail docking to be done for cosmetic rather than functional purposes relating to the animal's welfare. Dogs have traditionally had 'masters' and are asked to obey 'commands' without question. A certain discomfort with this terminology seems to be emerging, indicated by changes in the language associated with pet ownership. Increasingly, dog trainers teach how to provide 'cues', rather than give commands; coercive or punitive training methods are falling from favour; and pets have 'carers' not owners. Shapiro (1997) calls for language to be used with more care in order to

avoid speciesism, for example, not contrasting humans versus animals, as this implies that humans are not also animals. Even the term non-human animal is to be avoided as it *"valorises human animals above all other animals"* (p.22). Inaccurate and denigrating metaphors such as "to rat on someone" are also criticised. Considering the pervasive use of animal names as terms of abuse, (e.g., cow, pig, mare, donkey, dog), it is unlikely that changes to more politically correct language will come easily. Changes to attitudes are moving slowly away from that of a slave-like relationship, but in the meantime pets are still property to be bought and sold.

2.9 Pet ownership as a pathological relationship

Rynearson (1978) observed that there are situations where people form pathological relationships with pets. He notes that most human-pet relationships are harmonious (which is probably an over-simplification). However, when abnormal developmental frustration occurs, such as formation of insecure or avoidant attachments to caregivers, humans may come to distrust human relationships and displace an over determined need for attachment onto pets who are often available as a reliable source of affection and outlet for nurturance. Anxious attachment usually results in the child becoming clinging and over dependent, however Rynearson describes an alternative coping strategy to deal with fear of separation. Attachment is still craved, but the individual seeks to satisfy this by being a source of nurturance themselves, manifested in compulsive caregiving. The subsequent intensity of resulting human-pet relationships can cause further problems. For example, a persistent displacement of attachment from human relationships to pets may become pathological if it becomes so narrowly focused on the animal that normal human relationships are excluded, and the person suffers intense and complicated grief when the animal dies. Rynearson highlights aspects of pets which make them attractive partners in a relationship: they are reliable, available, accepting and outlets for nurturance. Their lack of spoken language that provides what he calls a pre-verbal attachment attitude which satisfies a regressed human need to nurture.

Rynearson also outlines literature on conflicted relationships between humans and pets including bestiality, and aggression which involve cruelty to the animals. Ascione (1993) found links between aggression and cruelty to pets and to other vulnerable family members such as elderly relatives or children. Pets are an easy target for such abuse, as they are items of property, and are unable to speak out. In addition to these obviously cruel relationships, pets may be party to low level neglect: kept in confined conditions without any stimulation or adequate exercise.

2.10 Limitations of the relationship model for pet ownership.

Species differences between any pet and a human mean that a pet will bring something (or fail to bring something) to the relationship process which is distinct from what another human would bring, therefore theories based on observations of human-human interactions *may* not be appropriate to human-pet relationships. Any generalisation of theories from human psychology to cover human-pet relationships therefore needs to be put to empirical test or otherwise justified. Further, generalisations between theories of, for example, human-dog relationships cannot be assumed to apply to relationships with other pet species. As Zasloff (1996, in title) says, "A dog is not a cat is not a bird". Lack of shared spoken language is the obvious major divide between humans and all pets, as Hinde (1988, p. 20) says: *"The uniquely human attribute of a spoken language is associated with behaviour of a different order of complexity from that found in animals."* Some relationship theorists place requirements such as language of participants in relationships that would either preclude animals (and human infants), or make it doubtful that they could engage in a relationship as rich as that between humans. For example Duck (1994) considers that shared meanings between relaters are essential elements of relating. Considerable importance is placed upon language as the vehicle for individuals to arrive at a shared meanings. He says (p. 3), *"Relationships are composed of two individuals who come to one another with some linguistic, cultural,*

human, and individual baggage, but nevertheless can proceed, through their interaction, to create substantial shared understandings of the world, which they frame in their talk with one another and enact in their everyday relational behaviour. Scholars of relationships would be wrong to ignore that linguistic baggage. Like other baggage, it is not only a hindrance (since it restricts the freedoms that relaters have to discuss, construct, and transform their relationship experiences) but also may contain paraphernalia that provide opportunities, as well. Everyday talk and routines reify, sustain, develop, and in some cases diminish, the co-ordinated interdependence that constitutes a relationship."

Duck's view requires relaters to share a conscious awareness or belief that 'you and I have a relationship'. He views relationships as social constructions, where the construction is a continuing process. The process is never finished, and so relationships cannot be regarded as completed entities, or containers of people. The nature of any relationship is constantly open to change through the perpetually constructive activities of relaters. These constructive activities are constituted in talk, thought and behaviour. The importance of discourse for Duck's model of relationships is indicated by the title of his 1995 paper: " Talking relationships into being" . This model of relationships is therefore difficult to apply to cross-species relationships. We may talk to animals, but cannot enjoy discourse, or know with any confidence what they understand, or what the relationship means to them, if anything at all.

Models of relationships such as Duck's which take a dynamic approach to relationships, or take the dyad as the unit of analysis are problematic for an analysis of the human-pet relationship. Costall (1996) calls for such a mutualist approach to be applied to the study of human-pet relationships. He is critical of psychologists for a tendency to treat pets as passive, independent variables, and for disregarding the contribution that they make to the relationship. The experiences of both parties in a

dyad clearly bring something to the dynamics of the relationships, but there are difficulties in determining the nature of pet's experience. It is possible to look at the behaviour of the animals, but without a shared language it is difficult to infer the nature of the pet's experience with any certainty. The subjective nature of the pet's experience of the relationship may seem intuitively apparent, however it is elusive to methods which demand scientific rigour.

2.11 Attraction of social relationship models

Considering pet ownership as a social relationship is in tune with the folk psychological view of many pet owners. Several studies report high percentages of people regarding pets as family members: Albert & Bulcroft, 1988 (87%); Cain, 1983 (87%); Hirschman, 1994 (80%); Voith, 1983 (99%). These studies reporting high levels of people rating pets as family were pet focused, and participants were prompted to consider pets as family. However, while there are many people who consider pets as family, the proportion may not be as high as the data above suggest. Fisher et al. (1998) found that the framing of the question influenced the percentage of people who described pets as family. When participants were asked to list members of their family, only 17% of pet owners spontaneously included their pets. This compares with 56% of pet owners including pets as family if specifically asked to consider pets. Most studies in the literature on companion animals adopt the latter procedure, and may find even higher percentages. Even taking the lower figures, however, this still means that many pet owners consider pets among a group of their closest relationships.

There are several reasons for assuming that psychological processes used by humans in the perception of human-pet relationships are common to those used in human-human relationships. Firstly, it has been argued that it is implausible that we should have developed a separate 'toolbox' of mechanisms to govern our relationships with pets when existing processes for human relationships may be

transferred to human-animal relationships. Collis & McNicholas (1998, p.106-7) phrase this assumption: *"It is unlikely that the human species has evolved or otherwise acquired a set of psychological processes whose primary function is to serve relationships with companion animals; it is much more likely that these processes are "borrowed" from those used in human-human relationships."*

As Collis & McNicholas go on to say, evolutionary theory would expect the 'old' processes to be applied usefully to new contexts. To this point it may be added that if we *had* evolved new psychological processes to deal with human-pet relationships, it would also seem likely that we would have developed a different vocabulary to distinguish them. We do not however have a separate vocabulary to describe relationships with pets: they are frequently referred to in the same terms as those used for human relationships: companions, man's best friend, or as family members; owners say they are attached to their pets, love them, and suffer grief at their death (Archer & Winchester, 1994; Gerwolls & Labott, 1994; Stallones, 1994).

The second case is supported by the human propensity to anthropomorphise and treat other animals and even objects (machines, systems...) "as if" they are human... e.g. Kennedy (1992) argues that we do this in order to make sense of the behaviour or events that we observe. Whether or not the animal or object *actually* has the mental states ascribed to it, anthropomorphising is often a helpful strategy for explaining patterns of events, and hence increasing ability to predict future events. While Kennedy vehemently opposes sloppy, or unconscious use of anthropomorphism when interpreting animal behaviour in an academic context, he does acknowledge that in the way just described, it can serve a useful function. He also says that anthropomorphising is unavoidable as it is built into us by both nature and nurture.

Ascribing a theory of mind to other animals, systems or objects implies that we are perceiving them 'as if' they were human, and responding to them accordingly. This

ascription does not always depend on a rational belief that the other party has a conscious mind: how many people whisper words of encouragement to their cars to start on cold mornings, give them names, and admit to being 'attached' to them? They know that the machines do not hear, let alone understand their words, yet are still lured into suspending disbelief and behaving 'as if' they did. Given that we have far more in common with a sentient animal such as a domestic dog than with a machine, and hence more reason to suppose that it may have some sort of mental experience, it is even more likely that humans would interpret their behaviour in terms of mental states. People intuitively interpret body language of dogs as displaying their emotional states: a dog that wags its tail is happy, one baring its teeth is angry or fearful, and so on; or even intentional stances: a dog scraping the door with it's paw 'wants to go out', possibly because it 'knows' that it must not urinate in the house. Indeed, so pervasive is the tendency to anthropomorphise, that outside of an academic audience, the notion of interpreting a dog's behaviour in any other way is likely to be thought of as absurd. Fidler, Light & Costall, 1996 found that those with experience of living with a pet were more likely to explain animal behaviour using mentalist terms (beliefs, desires etc.) than those who have not experienced living with pets. However, the knowledge that we can have of *how* pets experience their interactions with humans is limited (Nagel, 1974). Because of the inherently subjective nature of the conscious experience of other animals, the lack of a shared physiology, and the lack of any shared language, it is not possible to know how they experience their interactions with humans, but only to make inferences that are based on their behaviour. As knowledge of the mental states of other species is limited, it is not possible *either* to completely rule in or rule out human-*like* mental states to these creatures.

If we accept that people naturally anthropomorphise, and treat pets as if they were human-like thinking beings, it follows that an investigation of the human 'end' of human-pet interactions can be informed with reference to processes used in human-

human relationships. This argument does not apply to the dynamics of the relationship which are likely to be influenced in differing ways by the different pet species. The behavioural repertoire of species must have some influence on the potential ways in which relationships can develop, for example: dogs can engage in many recreational and practical activities with humans, and as another social species, they adapt well to living with people, whereas the range of possible interactions with a goldfish are more limited. The distinction between the perceptions of the relationship and the relationship processes is not entirely 'clean', as the processes will influence perceptions and vice versa. Taking an approach that focuses on human perceptions of the human-pet relationship, rather than the dynamics of the relationship itself avoids the thorny issue of what the non-human participant in the relationship is *actually* capable of experiencing and contributing.

2.12 Conclusions

The questions over whether *some* pet owners do have relationships with their animals, and how they are similar to or different from human-human relationships remain. Certainly, many pet owners do consider their pets as companions with whom they do have important relationships: they describe them as family members and suffer grief at their loss. This means that people may believe that their interactions with pets constitute a relationship, but these beliefs *may* be based on inappropriate anthropomorphism and not reflect the real nature of the pet's participation in the interactions. Even if the animal is not cognitively capable of the mental states attributed to it, they may still be deemed to be significant others to many pet owners, and nonetheless be a potential source of relational provisions. An example of this was found when a child taking part in a pilot study reported that one of her two goldfish was an important source of emotional support: in answer to the question, 'If you were feeling sad, or ill, who would you most like a cuddle from?' When this response was queried by asking how Goldie gave her a cuddle, she explained that when she was crying, she would go to the fish bowl and let her tears fall into the water. Goldie

would then swim up and nudge her finger. To this child, the response from the fish made her feel as if she had been cuddled, and gave her comfort. It seems highly unlikely that the fish was responding to her to her emotional state in the way that the child described, but she did gain real comfort from the response.

The limited and predictable behavioural repertoire of pets, plus the lack of a shared language, will clearly restrict the scope of any possible relationship. The question arises, therefore, whether the relational provisions from pets can be translated as equivalent to those provided by human relationships, e.g., how can provision of the opportunity for nurturance from pets compare with that of human relationships. An answer may be that the restricted behavioural repertoire, and especially the lack of a shared language, means that pet owners may project whatever they wish onto their animals. The animal can never verbally challenge the owner's interpretation of their behaviour (like Goldie, above). Hence, a lack of cognitive ability and behavioural repertoire on the part of the pet species may limit the pet's ability to *actually* engage in a social relationship with a human, however this may not handicap the owner from *perceiving* that they have a relationship, and gaining relational provisions from it.

The question of what various pets are really capable of, behaviourally or cognitively, will differ greatly from species to species. It is, for example, more plausible to consider that a sophisticated social species like the domestic dog is more capable of really taking an active part in a relationship than say a goldfish. The question of whether any of these species are actually experiencing any of the mental states attributed to them, or whether they are passive reflectors of anthropomorphism must remain an issue for other comparative psychology, ethology and philosophy theses. This thesis will focus on the *perceptions* of pet owners who frequently perceive their pets as significant others, with whom they do have relationships. These human-pet relationships cannot be the same as human relationships simply because they are not between two humans, but between a human and another species. The pet will bring

(or fail to bring) different things to the relationship that are particular to its species. Some aspects of human relationships are not available from any pet species, such as sex (apart from a minority of abusive relationships) or practical help with information. It is plausible that other provisions such as companionship and an outlet for nurturance are potentially available from pets - either genuinely given, e.g. the companionship and affection from a pet dog, or perceived by anthropomorphic projection onto the unwitting animal. To say that human-pet relationships are (must be) inherently different from human-human relationships is not, however, to imply that they cannot be important and highly valuable to some people. It is rather to say that the differences due to species-specific characteristics cannot be ignored.

The question of whether relational provisions from pets are comparable to those obtained from humans is put to empirical test in chapter 5. Participants reported on their relationships with pets, family members and other important human relationships on the same scale in order to examine where human-pet relationships may be similar in provisions to human relationships, and where they differ.

CHAPTER 3

Attachment as a source of security for pet owners: are people 'attached' to their dogs?

3.1 Introduction

As discussed in chapter 2, the term attachment has been frequently used in previous studies to describe relationships between people and their companion animals (e.g. Stallones, 1988, Garrity et al, 1989). The use of this term is, however, often problematic. Many of the studies in the literature do not necessarily use 'attachment' in the sense one may assume it to be used in psychology journals. Unfortunately, exactly what is meant by attachment in these contexts is often not defined explicitly, and implicit meanings vary from paper to paper. This chapter presents a preliminary study which seeks evidence for human-pet 'attachment' in the sense of attachment theory set out by John Bowlby (1969, 1973, 1980) and developed by others such as Mary Ainsworth (Ainsworth et al, 1978; Ainsworth 1989). If the results indicate that there is some support for the human-pet relationship as an attachment, then it will be worth persisting with the model that has dominated the human-pet relationships literature. If it does not, then it may be more fruitful to proceed an with alternative approach.

Attachment theory was developed by Bowlby to describe the relationship that babies form with their primary care givers. It has also been argued that this same cognitive relationship model persists into adult life, where it shapes relationships with other adults, e.g. romantic love attachments (Hazan & Shaver, 1987). A clear exposition of adult attachment is given by Ainsworth (1989). Ainsworth describes adult attachment as having a number of components. These components include those of affectional bonds: they are enduring; there is a desire to remain close, expressed at least an intermittent desire to re-establish

proximity; joy on reunion; distress at inexplicable separation; grief at permanent loss, and the object of affection is not replaceable or interchangeable with another. Ainsworth then makes explicit the criterion which makes attachment a *particular type* of affectional bond: *"there is, however, one criterion of attachment that is not necessarily present in other affectional bonds. This is the experience of security and comfort obtained from the relationship with the partner..."* (Ainsworth, 1989, p.711). This is the definition applied to the term attachment in this paper.

The strategy employed to determine whether attachment occurs between people and their companion animals, was to look for this 'feeling of security and comfort' identified by Ainsworth as a unique marker for attachment. Reviewing the arguments that person-pet relationships were attachment-like, Collis & McNicholas (1998) distinguished between two types of security - one where the pet may provide 'real', rationally appraised security benefits (e.g. deter an intruder), and another where there is no practical response which the pet may provide, so the basis of security for the owner is likely to be from the affective nature of the relationship.

A further type of 'security' benefit from the pet was also explored. This relates to the idea that the presence of the animal means that one is not brought to conscious awareness of being alone, and hence liable to thoughts of the vulnerability of being alone. The source of this feeling would not depend upon the non-replaceable nature of the relationship, but could be achieved through the presence of alternative companions. This is a less positive source of security, more a means of avoiding insecurity. A set of questions relating to how much the animal may 'make its presence felt', e.g. how vocal it is, how much attention it needs, was included, to explore which situations these factors aligned with.

Hazan and Shaver (1987) investigated attachments formed by adults. They compared the types of attachment (secure, anxious, avoidant) formed by individuals with their mother, with the romantic love attachments they formed as adults. The consistency in attachment types found by Hazan and Shaver may however be due personality traits in the participants, rather than the influence of the attachment model formed in childhood. To avoid this problem of interpretation, the approach in this report compares the ranking of a number of pets for each participant across different situations, hence the focus is on 'within-participant' differences between relationships, minimising the influence of between-participant differences on the results.

3.2 Method

Established questionnaires on attachment are geared towards human-human relationships, and none were found suitable for application to this research. A new set of questions was therefore constructed, initially with 5 groups of 5 questions. Group 1 related to general affectional bonds, e.g. the dog you would miss most if separated from it. Group 2 was on matters of rationally appraised security, e.g. the dog you would want with you in a situation of real risk, where the dog could offer practical help. Group 3 was seeking to tap 'felt security', with questions on which dog you would want in a situation where you are anxious, but there is no real threat that the dog could practically counter. Group 4 looked at factors which may contribute to the avoidance of feelings of vulnerability from being alone, e.g. the dog which is most vocal, or needs most attention. The final group 5 related again to rationally appraised feelings of security, but the questions attempted to tap a more objective evaluation of which dog would actually provide most practical security, rather than asking 'Which dog would *you* want most in situation x?', the question was for e.g. 'Imagine you are a burglar. Which dog would most put you off burgling the house it was in?'. Participants were required to list their dogs in order of preference or suitability for

each question, and these rankings were compared across the different groups of questions. The ranking on questions generally related to affection (group 1), were predicted to correlate with those of group 3, if participants were attached to their pets, and liable to seek emotionally based 'felt security' from the attachment in anxious situations. Group 2 question responses would correlate with 5 strongly if group 2 questions were answered solely on the basis of a rational analysis of the practical assistance the dogs could provide. Should the group 2 answers be more in line with group 1, this may indicate the emotionally based security feelings influencing what could reasonably be expected to be a rational decision. Group 4 questions were included on an exploratory basis, to see whether evidence for a type of security from this different aspect of the relationship would be suggested. This was of interest in order to look for possible differentiation of security from a relationship where the other party is non-replaceable (attachment), and from a less 'individual-specific' relationship.

The results of a pilot study, (n=10), indicated that there were problems with the supposed groups of questions indicated above. A number of questions did not correlate positively with others in their group as expected, and cluster analysis showed questions from particular groups distributed amongst many different clusters.

Pilot study participants reported influences on their decisions other than those the questions were meant to tap, so further questions were added to the list to try to deal with this problem. For example, a question was added on which dog is best behaved or most obedient, as this factor seemed to influence answers to other questions intended to stimulate a choice based on the relative emotional or practical security provided by the dog. Other factors thought to influence the responses were the age, size and temperament of the dogs, although not always in the direction one may expect, for example, choosing a small dog in preference to a large one in a situation of risk of attack, as a small, terrier type dog may be

more fierce than a large one. There appeared distinct factors behind answers to the rationally appraised security questions: the dog that *looks* most impressive (in deterring an assailant); the dog that would bark loudest (and scare off an intruder or summon help); and the dog which would *actually* act (to fight off an attacker). These three aspects may be attributed to three different dogs in the same household. As the time available for this project did not allow major revision and re-piloting of the questionnaire, it was decided to proceed with some extra questions which were intended to provide clarification, and continue the investigation with a larger group of participants on an exploratory basis.

In addition to the ranking questions designed to look at aspects of security, questions were included on the following areas: why the person chose to have pets; ratings on reasons for keeping their favourite pet; what the relationship with their favourite pet is most like (compared to other specified relationships); and whether they would replace the pet if it died. These were included to seek evidence of the other aspects of affectional bonds (e.g. sorrow on separation, grief on loss, the non-replaceable nature of the relationship etc.).

3.2.1 Participants:

32 participants were interviewed, 4 males, 28 females. All were volunteers in response to requests for participants owning 2 or more pet dogs made at veterinary surgeries, dog training clubs, and Warwick University. It is not clear whether the imbalance in the male:female ratio reflects the relative willingness of men to volunteer, or if many more women than men choose to own more than one dog. The make up of the potential pool of participants from veterinary practices is not known, but there were many more female members, than males at the dog training clubs. With so few male participants it is difficult to assess possible differences between male and female responses with any confidence. As the attachment mechanism which is the prime focus of investigation is not associated with sex differences, the sex of participants was not considered as an important issue. The

average age of participants was 45 (range 24-71). All participants owned 2 or more dogs which were kept as pets, rather than strictly for breeding or working.

3.2.2 Task:

The participants were interviewed by the experimenter who completed the questionnaire in appendix 1. The ranking questions were asked in random order from the list, mixing the various groups of questions. This was done in order to avoid the participant having a run of similar questions to which they may simply repeat the previous response rather than considering each question in its own right. Participants were encouraged to offer additional comments on their views of the questions and motives for answers to provide input which may assist in resolving some of the difficulties found from the pilot results.

3.3 Results

Data from the questionnaire were collected from 32 participants. Table 3.1 shows how many participants own different numbers of dogs, for example, 20 participants owned 2 dogs.

The basic analysis on the participants' rankings of their dogs was carried out by computing within-participant correlations between all pairs of questions, and averaging these correlations across participants. It can be shown that these average rank correlations can be defined as Pearson Product Moment correlations computed over all the data (i.e. between and within participants) on a simple transformation of the original rules. (See appendix 2 for detailed justification.) This greatly simplifies the computations. It also means that it is legitimate to carry out a Principal Component Analysis on the matrix of average within-participant rank correlations. A further property of this procedure is that it gives equal weight to each participant, regardless of the number of dogs they owned.

Table 3.1. *Number of dogs owned by participants.*

Number of dogs	Number of participants
2	20
3	6
4	0
5	1
6	1
7	2
8	1
9	0
10	1

Total number of participants =32

Total number of dogs = 101

Focus is given to the results of the Principal Component Analysis rather than on the correlation matrix, as it is the pattern of the groups of questions which is of interest rather than results for particular pairs of questions.

A Principal Component Analysis was performed on the matrix of correlations. The scree plot (figure 3.1.) indicates 3 components worthy of consideration:

Figure 3.1 *Scree Plot.*

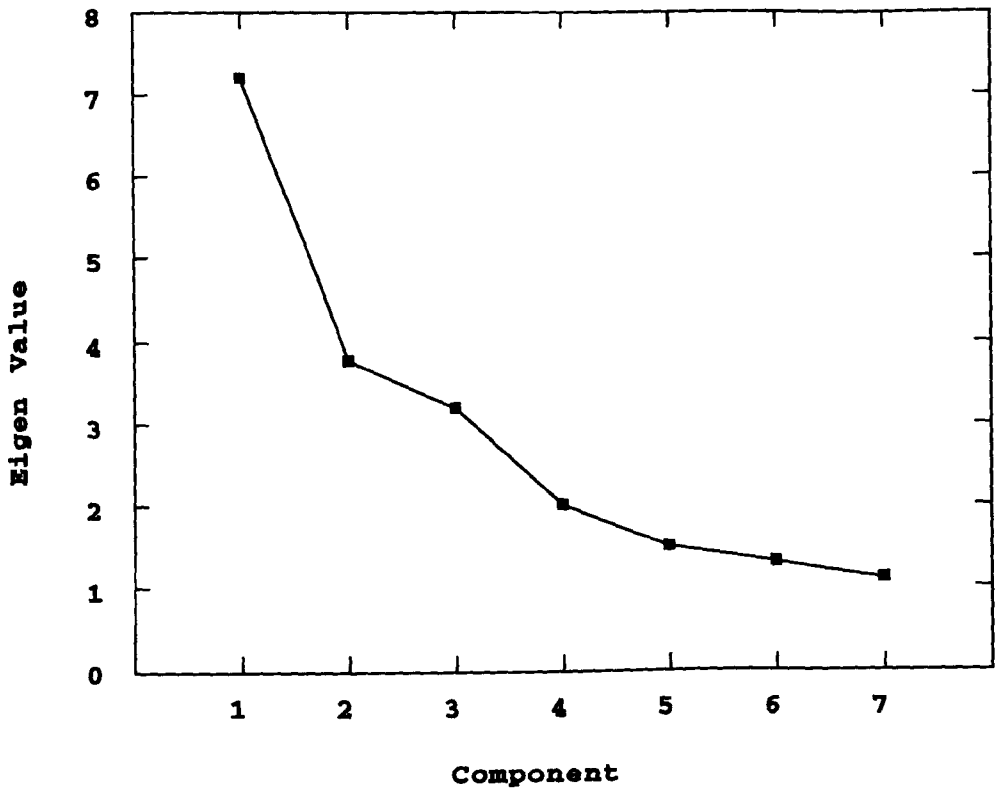


Table 3.2 shows the results of Principle Component Analysis performed on results of the ranking questions. Results of varimax rotation are shown in table 3.3.

Table 3.2 *Variable loadings for first three components from Principal Component Analysis.*

Group	Question	Component Number		
		1	2	3
1	1	0.467	0.333	**-0.634**
1	2	**0.614**	0.309	-0.389
1	3	0.007	0.326	0.041
1	4	**0.832**	0.021	-0.270
1	5	**0.649**	0.131	-0.299
2	6	**0.542**	-0.269	0.302
2	7	0.401	**0.601**	-0.009
2	8	0.380	0.216	0.150
2	9	**0.518**	0.294	0.187
2	10	**0.513**	-0.350	0.330
5	11	0.395	**-0.725**	-0.070
5	12	0.485	-0.389	0.186
5	13	**0.753**	-0.184	0.301
5	14	**0.753**	-0.116	0.321
5	15	**0.655**	**-0.543**	0.079
3	16	0.436	0.269	0.172
3	17	-0.291	0.318	0.473
3	18	**0.733**	0.151	0.171
3	19	0.283	0.475	0.171
3	20	0.134	**0.657**	-0.239
4	21	**-0.708**	-0.176	0.004
4	22	-0.360	-0.455	-0.319
4	23	-0.317	-0.358	-0.396
4	24	-0.006	**-0.668**	-0.173
4	25	-0.072	0.027	-0.365
Extra	26	0.376	-0.081	**0.732**
"	27	0.30	-0.128	**-0.627**
"	28	**0.533**	0.140	0.259
"	29	0.473	0.377	-0.254

Loadings > 0.5 in bold type

Table 3.3 *Variable loadings for first three components after Varimax Rotation.*

Group	Question number	Component 1	2	3
1	1	0.207	-0.157	**0.805**
1	2	0.297	-0.003	**0.678**
1	3	-0.019	-0.188	0.097
1	4	0.235	0.412	**0.687**
1	5	0.295	0.206	**0.631**
2	6	0.386	**0.570**	-0.001
2	7	-0.051	**0.723**	0.130
2	8	**0.521**	-0.012	0.040
2	9	**0.722**	0.031	0.139
2	10	**0.593**	**0.595**	-0.070
5	11	-0.130	**0.796**	0.140
5	12	0.134	**0.611**	0.022
5	13	0.385	**0.614**	0.106
5	14	0.399	**0.563**	0.101
5	15	0.199	**0.807**	0.178
3	16	**0.710**	-0.005	0.098
3	17	0.314	-0.333	-0.472
3	18	**0.641**	0.283	0.253
3	19	0.306	-0.170	0.122
3	20	0.289	**-0.505**	0.391
4	21	-0.285	-0.248	-0.396
4	22	-0.121	0.081	-0.009
4	23	-0.074	-0.004	0.075
4	24	-0.430	**0.540**	0.051
4	25	0.072	-0.193	0.211
Extra	26	0.013	0.125	**0.788**
"	27	-0.146	0.161	**0.714**
"	28	0.389	0.243	0.112
"	29	0.039	-0.044	**0.564**

Component 1:

This initially appeared to be a general factor, perhaps the 'overall preferred dog' in a variety of contexts, with 12 questions highlighted with loadings of >0.5, including all types of question (Q2, 4, 5, 6, 9, 10, 13, 14, 15, 18, 21, 28). However, after varimax rotation (see table 3.3), the following 5 questions remain with loadings of >0.5:

Q8. (Group 2) Imagine that there is a vicious dog in the street growling at you. If you could have one dog with you for protection, which would you choose?

Q9. (Group 2) Imagine you're selling your home and the estate agent is due to arrive with a viewer later in the day. The viewer arrives early, and without the agent, saying that he can't make the later appointment. You're anxious to sell, and agree to show him round yourself. He's afraid of dogs and asks if you'll put them outside. You compromise, agreeing to keep one dog with you on a lead and the rest outside. Which would you keep with you?

Q10. (Group 2) Imagine you are a Securicor guard responsible for collecting large amounts of cash. You can take one dog with you, which one would you choose?

Q16. (Group 3) If you were watching a scary film alone at night, which dog would you most want with you?

Q18. (Group 3) If you were alone at home at night, and there was a power cut, so all of the lights went out, which of the dogs would you most want with you?

These questions all relate to situations where one may feel anxious or afraid. Rationally appraised feelings of security, where the dog may provide practical help to reduce anxiety

may be relevant in Q9, 10, and possibly 18 (e.g. has a burglar cut the power supply?), but the situation in Q16. is one where there is no *real* threat to which the dog could respond, so perhaps the owner seeks the comfort of 'felt security' associated with attachment to the dog? There are, however, no questions from group 1 which refer to affection for the pet which would be expected if that were so.

Component 2:

5 questions have loadings of >0.5:

Q7. (Group 2) If the police issued a warning that there was a prowler in the neighbourhood, which dog would you most want with you in the house at night?

Q11. (Group 5) Imagine you are a burglar. Which of your dogs would most put you off burgling the house it was in?

Q15. (Group 5) Which dog would effectively give you the best overall security?

Q20. (Group 3) If you had to go into hospital for an operation, and could have one of the dogs with you in a private room, which would you take?

Q24. (Group 4) Which dog is most vocal - making any sounds to try and communicate with you?

After varimax rotation, in addition to the above, the following questions have loadings >0.5:

Q6. (Group 2) Which dog would you take with you if you had to walk through the town alone at night?

Q10 (Group 2) Imagine that you are a Securicor guard, responsible for collecting large amounts of cash. You can take one dog with you, which one would you choose?

Q12. (Group 5) Imagine you are a mugger. Which of your dogs would most put you off snatching a bag from the person it was with?

Q13. (Group 5) Which dog could fight most fiercely if provoked?

Q14. (Group 5) Which dog would actually do most to protect you?

Most of the questions again relate to situations where the dog may provide real, or rationally appraised feelings of security. They are situations which are less ambiguous with regard to the ability to provide rationally appraised security than in factor 1 concerning the likely contribution a dog could make in providing practical help to frighten off, or fight off some threat. All of the questions intended to tap a more objective assessment of the dogs security (group 5) are included in this component. The inclusion of the question of which dog is most vocal is not surprising, as one would expect to find a dog which is noisier to coincide with the one which may deter a prowler or burglar. It is, however, surprising to find Q20 in this group. As with Q16 in factor 1, above, there is no obvious real source of threat for a dog to provide a response to, unless people tend to find hospitals places where their personal security is threatened. An alternative account is that the best trained or most obedient dog would be wanted, both in a real physical security threat situation, and also for convenience as a well behaved companion in hospital. This option must however be rejected, as Q28, asking which dog is best behaved or most obedient, does not get a high loading in this section. Again, there is no question from group 1 to link 'felt security' from attachment as an explanation. The only question from group 4 picked up in these components is that concerning how vocal the dog is, and this could plausibly be

associated with an account of the factor for rationally appraised security as described above.

Component 3:

3 Questions have loadings >0.5:

Q1. (Group 1) If you were on holiday and the dogs were in kennels, or being cared for by a friend, which dog would you miss most?

Q26. Which dog gives you the best overall companionship?

Q27. Which dog loves you most?

After varimax rotation, in addition to the above, the following also have loadings >0.5:
Q2. (Group 1) If a law was brought out to say that people could only keep one dog, which dog would you most want to keep?

Q4. (Group 1) Which dog do you feel most attached to?

Q5. (Group 1) Which dog is the least replaceable - in the sense you have a unique or special relationship with it?

Q29. Which dog can you tell your problems to?

This factor seems to relate to affectional bonds, and companionship with the pet. The only question not featured from group 1 is Q3, which asks 'Which dog do you enjoy stroking or cuddling most?' Comments from participants suggested that their responses to Q3 selected

the younger, more playful dogs, not necessarily the one they were most attached to. None of the questions relating to anxious situations are highly loaded in this group. The inclusion of question 7 suggests reciprocity as a possible part of the factor. It is interesting that no questions relating to anxious situations, especially those from group 3, are included in this component as would be expected if the participant sought the 'felt security' of attachment to relieve their anxiety. What these components may represent is considered further in the discussion section.

Although there is a sound statistical basis for averaging within-subject correlations across participants some of whom have two dogs and others have more (table 3.1) it could be argued that the psychological process of ranking just two dogs is very different from the process of ranking several. Therefore, the analysis was also carried out using just the 20 participants who had two dogs. With two dogs, within-subject correlations can take values of either +1 (concordant ranking for the two questions) or -1 (discordant ranking) and, with random data, these two outcomes are equally likely. Averaged across participants, the resulting correlation is still a bona fide correlation coefficient. When these correlation coefficients were entered into a principal components analysis the results still failed to support the case for the attachment model.

Table 3.4 summarises the results for all participants' ratings on a 0-10 scale for reasons given for keeping their favourite dog (or if there was no clear favourite, the dog owned for the longest period). It is clear that pet dogs were held in great affection. Love, friendship and companionship are all perceived by participants as very important, with low standard deviations, as reasons for keeping the dogs. The relationship appears reciprocal, with similar high scores for belief that the dog returns love and need for the owner as for the owner loving and needing the dog. Practical security considerations, such as deterring and intruder, or protecting the owner score highly, while assessment of the increased

confidence due to the dog, or, reduced worrying are marked low. This does not necessarily mean that the pet is not providing 'felt security' and increased confidence, but it is not perceived to do so by the participants.

Table 3.4 *Rating of reasons for keeping a favourite dog (x):*

Reason because...	Mean rating	Std. deviation
I love x	9.5	1.2
I would miss x if I didn't have him or her	9.5	1.2
x is a special friend	9.3	1.9
x is good company	9.1	1.2
I don't feel alone if x is there	8.5	2.6
x loves me	8.2	2.6
x isn't critical of me	8.2	3.3
I need x	8.1	3.1
I like stroking x	7.8	2.7
x needs me	7.8	2.8
x may deter an intruder	7.4	3.5
x makes me feel safer	7.4	3.0
x looks wonderful	7.2	3.2
I like exercising x	7.0	2.9
x entertains me	6.6	2.7
x will protect me	6.5	3.4
x can sense my mood	6.4	3.0
x is a special breed I like	6.1	3.8
I can tell x my problems	5.8	3.9
I like training x	5.5	3.2
I'm not depressed when x there	5.5	3.9
I meet other people through x	5.4	4.1
I don't worry when x there	4.7	3.1
I enter competitions with x	3.4	4.1
x gives me confidence to do things I wouldn't do otherwise	3.4	3.3
for my children	1.2	2.8

N=32

NB: ratings are on a scale 0-10. A rating of 10 indicates the reason is extremely important to the participant, and a rating of 0 indicates it is not at all important.

The results in table 3.5 show the relationship with the pet is perceived as being most like a friend or family member. Some saw similarities to the relationship with a child or partner, but there is a much higher variance in these scores. Indeed, there is a large range of ratings for each of the comparisons.

Table 3.5 *Comparison of similarity of relationship with favourite dog to other relationships by participants.*

Relation	Mean rating	Minimum	Maximum	Std. deviation
Friend	9.3	0	10	1.9
Child	5.3	0	10	3.9
Partner	5.0	0	10	4.1
Sibling	2.0	0	10	3.4
Boss	1.4	0	10	2.6
Parent	0.8	0	9	2.2
Employee	0.8	0	8	1.9

N=32

NB: ratings are on a scale 0-10. A rating of 10 indicates the relationship with dog is viewed as extremely similar to the specified relationship, and a rating of 0 indicates it is not at all similar.

When asked why they keep pets, respondents giving the most popular response implied that they could not imagine not having pets. It would be interesting to pursue a comparison of pet owners and non pet owners to investigate how much exposure to pets as a child accounts for a decision to keep pets as an adult.

Table 3.6 *Reasons for keeping pets: Participants were asked to volunteer their own reasons for keeping pets. Some gave more than one reason.*

Reason:	No. of S's giving this reply:
I've always had pets -	19
I love animals -	4
I love dogs -	5
For companionship -	4
For my children -	3
Pet bought for me -	2
I like walking -	2
I like breeding dogs -	1
I like training dogs -	1
A solution to being lonely -	1
A husband substitute! -	1

Answers volunteered by participants. N=32

Replaceability of pets:

Participants were asked 'if your dog were to die, would you replace him/her?' The results were as follows: 23 said yes, but 12 of these specified that they meant getting another dog, not replacing the one that died. Three of these said they would make a point of getting a different breed, as they could not *replace* the present one, and one said she would feel guilty loving another collie. Of the others who said yes, 3 said the would delay getting the new dog to give time to get over the loss. One stated that it had taken 5 years before being able to face replacing a previous pet.

Eight participants said no, they would not replace their dog. Four of these said that they *could* not replace the dog, one saying they may get cats in that situation. One participant said they could not face the distress of losing another dog. Three gave reasons of old age, poor health, or worry about dying and leaving the dog as reasons for not replacing it. One said they found owning the dog a tie, and would not get another for this reason.

The responses to these questions show that most pet owners regard the relationship they have as special, and do not consider their dog 'replaceable', even if they would get another dog. There is anecdotal support for grief at the death of previous pets.

3.4 Discussion

No clear support has been found for the 'feelings of comfort and security' which were defined as the key marker for attachment, following Ainsworth (1989), in the relationship between participants and their pet dogs. The results from the second part of the questionnaire provide support for the requirements of affectional bonds generally between the owners and their dogs: their pets are held in great affection; they are missed when separation occurs, regarded as non-interchangeable, and owners seem to suffer grief when they die. The Principle Components Analysis, however, does not show a combination of the affectional bond questions with questions relating to security in any of the components discussed, as would be expected if attachment was an important source of security for pet owners.

The inclusion of questions from group 3 (designed to tap for 'felt security') with other questions linked to rationally appraised security in components 1 and 2 is difficult to account for. It does not provide support for the two types of security proposed ('felt security' and rationally appraised security) as being distinct. However, there are *two*

components, both with a mix of questions from the 'felt security' and rationally appraised security groups. Component 2 includes all of the questions from group 5, which were intended to get an objective assessment of real security that the dog could provide, and many spell out situations where the dog could help by acting, e.g. if a burglar or mugger was there. Component 1 features fewer questions which relate to overt threat, e.g. from group 2, the questions relate to showing a stranger around one's home, or being alone in a power cut. These situations are more ones of *potential* threat. These two components may represent factors concerning different aspects of dogs which can provide security - dogs which would *actually* act to protect one if called on, and dogs which (regardless of whether or not they would act) have an *appearance* which would deter an aggressor. The latter would be appropriate for component 1, if it represents a factor concerning deterrence of a potential threat, and the former is more appropriate for component 2 if it represents the choice of dog required to act in situations of imminent threat.

The inclusion of 'felt security' questions in these two components is difficult to mesh into the possible account of what they represent as given above. Watching a scary film is the situation in Q16 which features in component 1. Perhaps such a situation would increase anxiety and make one imagine all sorts of *potential* threats, and having an impressive looking dog there could provide reassurance. Q20 in component 2 relates to being in hospital for an operation - not a situation of imminent threat where the dog can do anything practical to help. The inclusion of this question where security may be being sought from the relationship with the dog, could offer support for attachment to pets if questions from group 1 also featured. The results, however, fail to find any association between the favoured pet with regard to general affection, and the one chosen in any sort of anxious situation. Some doubt over the status of Q20 in component 2 may be cast, as the loading given after varimax rotation was 0.505, only marginally above the nominal level >0.5 set

for denoting 'high' loading. It would be useful to test whether this result stands replication of the experiment.

Component 3 includes questions concerning affection or companionship, and none on security. Only Q3 from group 1 is not highlighted. This asks for ranking of dogs according to preference for stroking or cuddling, and, as noted in the results, responses may have been influenced by how playful the dog is, rather than how strong the affectional bonds with the dog are.

The lack of a component emerging which includes both affectional bond questions and 'felt security' questions could have a number of explanations: a) people are not attached to their pets; b) there are problems with the methodology - the questionnaire does not tap 'felt security' and rationally appraised security effectively; c) in forcing participants to choose rankings for a scientific enquiry, they make conscious decisions for which they may feel obliged to be 'rational', whereas, in an unforced anxious moment, behaving intuitively and without any thought for justification of behaviour, they may make different choices; d) Ainsworth is wrong and 'felt security' is not a component of adult attachments.

The comments made by participants during interviews suggest that there are many other influences motivating the choice of rankings for dogs apart from seeking security such as considerations of the dog's age, size, obedience and temperament. The potential problem of specific situations interacting with characteristics of particular dogs affecting the response was considered, and the inclusion of 5 questions in each group was intended to address this by spreading results over a range of situations. However, comments from participants suggest that this may not have been sufficient to avoid the problem; for example, a participant with one very old dog and one younger dog consistently reported choosing the young dog in risk situations as under no circumstances would they put the

old, and much loved dog at risk. In other cases, e.g. where a participant had a poodle and also a number of (fierce) Japanese Akitas, to choose the poodle in real risk scenarios would be appear ridiculous, hence the participant's realistic choices were restricted. Ranking of dogs that participants would most want when watching a scary film were influenced by size of dog, as some preferred the dog that would sit on their lap, or the temperament of dog, with the more sedentary, placid dog preferred as it would not interrupt viewing of the film. The Principle Component Analysis may point to factors within rationally appraised security such as the deterrence value against potential threat, and the ability to take action in case of actual threat as explanation of components rather than the 'felt security' and the single rationally appraised security factors which the questions were intended to tap. Given the difficulties outlined above, and the relatively small sample size, it is not possible to say with confidence whether these participants are attached to their pets or not, as these other motives may have had greater influence than seeking for security on their ranking of dogs. With a larger sample of participants these idiosyncratic (within-participant) factors would be less important.

Forcing people to make choices, as described in point c) also supports the decision not to draw any firm conclusions that the relationship is not an attachment. Participants may have been concerned that they could justify choices, especially as the responses were collected by an interviewer who invited them to comment on choices. The results in imply that participants are not conscious of feeling more confident or less anxious due to the presence of their favourite dog. This issue of whether they are *actually* less anxious could be explored using more objective measures of anxiety such as GSR, heart rate or blood pressure. It would also be interesting to use observation techniques to determine whether participants sought physical contact or close proximity to their favourite pet in anxious situations such as those in group 3, possibly with adaptation of some of the 'strange situation' reunion response measures (Ainsworth et al, 1978). This may reveal non-

rationally appraised motives which would not be evident from a self report technique. Running such experiments in parallel with more accepted adult attachments (for example romantic love partners), would provide a useful control group, and provide evidence for the premise that there is 'felt security' in adult attachment, questioned in point d).

Despite some concerns over the methodology and sample size of this study, the results do not provide any evidence to support the human-pet relationship as an attachment sufficient merit pursuing this line of investigation. A more general issue with attempts to conceptualise human-pet relationships as attachments, is that attachment theory is a rather narrow approach to relationships. As argued by Collis and McNicholas (1998), rather than asking whether human-pet relationships are like one type of human-human relationships (attachment) rather than a different type, it may be more productive to ask about the range of functions that are afforded by human-pet relationships, and the extent to which these functions resemble the functions afforded by human-human relationships. That is the approach which is followed in the rest of this thesis.

CHAPTER 4

Preliminary study on methodology

4.1 Introduction

The main area of research for this thesis is the relationships occurring in families with companion animals, including both human-human relationships and human-pet relationships. This research will entail the collection of data from each member of the families interviewed, including children. The majority of procedures used for this purpose aim to produce quantitative estimates of each participant's judgements about the extent to which a specified relationship characteristic or provision applies to individuals persons or pets. With adults, this is usually done using a rating scale to provide "how much" estimates directly. It is important to consider carefully whether good quality data can be obtained from children that is comparable to data from adults. It is also useful to consider a variety of methods to ascertain whether it is possible to improve on the standard methods, especially when used with children. This preliminary study aims to compare three alternate techniques for collecting responses to questions in order to determine which of the three techniques gives the most reliable data.

4.2 Method

Participants were recruited from local primary and secondary schools. The sample comprised a group of 103 primary school children aged 8-9 years, and a group of 115 secondary school students aged 14-15 year. Each of these two age groups was divided into three subgroups, one subgroup for each of the measurement techniques.

The participants were tested individually in a quiet area in their school. Participants were asked to list all the members of their household, including pets if they had any.

Then they were asked for quantitative responses to the following eleven types of question/ The precise wording of each question type varied between the three techniques.

1. Who is the tallest in the family?
2. Who most like pop music?
3. Who do people most often talk to if they have a problem?
4. Who decides what the family does most often?
5. Who gets involved in the most arguments?
6. If someone was feeling sad, or ill, who would they most like a cuddle from?
7. Who is the boss of the family?
8. Who annoys other people the most?
9. Who looks after everyone the most?
10. Who tells everyone what to do most often?
11. Who most gets on people's nerves?

Questions 1 and 2 were warm-up questions; questions 3, 6 and 9 were designed to measure support-like provisions of relationships; questions 4, 7 and 10 were designed to measure power characteristics, and questions 5, 8 and 11 were deigned to measure conflict. These three domains of relationship functions were designed to chosen to represent the likely measurement characteristics of a wider variety of possibilities, for example those included in Furman & Buhrmester's (1985) Network of Relationships Inventory..

Three different techniques were used for obtaining quantitative estimates from the participants:

1. Rating Scale: A fixed response scale was used. For each household member, participants were asked to select one response from five alternatives. The response

alternatives were: not much; a little bit; quite a lot; very much;more than anyone else. To illustrate, if a participant was asked "Does Sarah like chocolate?" the response may me "A little bit" or any of the other categories.

2. *Ranking Scale:* Participants were asked to place their family members in rank order for each question. The top rank going to the person whom the question most applied to. For example, a response to "Who likes chocolate most?", might be "Mum, then me, then Dad, then Sarah.

3. Staircase Scale: Participants were asked to position family members in rank order on a staircase with ten steps. The 8-9 year olds were given a three dimensional model staircase and placed name cards on the steps. The 14-15 year olds were given pictures of a staircase to write the names of family members on. Insofar as household members could be positioned with more than one on the same staircase, or with more than one step between successive members, in principle the scale of measurement had some of the properties of the rating scale, as well as rank order information.

Participants were given the same test on two separate occasions one week apart. The full question schedules are shown in appendix 3.

4.3 Results

4.3.1 test-retest reliability and internal consistency of scales.

A minimal requirement for reliable measurement (assuming that the characteristics being measured were stable over this time period) is a high test-retest correlation.

Table 4.1. *Test-retest correlations for primary school pupils (Aged 8-9yrs)*

	ranking	rating	staircase
Q3	0.760	0.691	0.514
Q4	0.865	0.748	0.651
Q5	0.740	0.558	0.500
Q6	0.852	0.660	0.589
Q7	0.887	0.756	0.650
Q8	0.635	0.712	0.496
Q9	0.724	0.830	0.758
Q10	0.731	0.817	0.578
Q11	0.739	0.581	0.660
mean corr for Q3 to Q11	0.770	0.629	0.600
corr for sum of support items	0.865	0.846	0.687
corr for sum of power items	0.889	0.883	0.720
corr for sum of conflict items	0.849	0.800	0.692
mean corr for summations	0.868	0.843	0.700

Table 4.1 indicates that, for the 8-9 year olds, test-retest correlations for individual items were lower than desirable, but the test-retest correlations for subscale scores based on summating three items, were satisfactory. Somewhat surprisingly, the staircase method gave the lowest correlation. Correlations for the ranking and rating methods were very similar to one another.

Table 4.2. *Test-retest correlations for secondary school pupils (Aged 14-15yrs)*

	ranking	rating	staircase
Q3	0.878	0.698	0.739
Q4	0.896	0.833	0.886
Q5	0.834	0.745	0.739
Q6	0.819	0.735	0.799
Q7	0.957	0.746	0.848
Q8	0.763	0.597	0.668
Q9	0.858	0.816	0.861
Q10	0.916	0.760	0.809
Q11	0.796	0.585	0.741
mean corr for Q3 to Q11	0.857	0.724	0.788
corr for sum of support items	0.942	0.838	0.868
corr for sum of power items	0.970	0.883	0.917
corr for sum of conflict items	0.928	0.889	0.899
mean corr for summations	0.947	0.870	0.895

Table 4.2 indicates that, for 14-15 year old secondary school pupils, test-retest correlations were generally higher than for the younger primary school children. Correlations for the subscale scores were very satisfactory. The highest correlations were obtained from the ranking methods and, in this age group, the rating and staircase methods were similar to one another.

The finding that test-retest correlations were higher for the summated subscale scores than for individual items indicates that there was a degree of consistency among the three items within the same subscale. The degree of internal consistency of each subscale was assessed for formally by using Cronbach's alpha coefficient. As can be seen from table 4.3, most of the alphas were satisfactory. For the both age groups, the

ranking method produced the highest alphas. For the 8-9 year olds, the rating method did a little better than the staircase method; the difference was small, but unexpected as the staircase method was devised primarily with the youngest participants in mind. For the 14-15 year olds, the staircase method did a little better than rating, but again the difference was very small.

Table 4.3 *Cronbach's alpha coefficients for the 3-item subscales*

		8-9 year olds			14-15 year olds		
		ranking	rating	staircase	ranking	rating	staircase
support	time 1	0.855	0.776	0.720	0.795	0.664	0.742
	time 2	0.891	0.867	0.831	0.889	0.777	0.804
power	time 1	0.944	0.873	0.877	0.928	0.859	0.904
	time 2	0.915	0.895	0.919	0.947	0.924	0.912
conflict	time 1	0.900	0.722	0.666	0.823	0.764	0.790
	time 2	0.822	0.770	0.724	0.858	0.796	0.766
mean		0.888	0.817	0.790	0.873	0.797	0.820

Overall, a clear impression was obtained that the staircase method was best able to maintain a high level of interest, especially among the younger children, but this impression about involvement in the task seemed not to be reflected in uniformly more reliable data. The method which required least time was the rating scale method. This was therefore least likely to loose the participants' interest merely because of the time factor. Among the primary school children, where rating scales should be most suspect, this method provided high test-retest correlations that were almost indistinguishable from the ranking method. Because of these considerations, it was decided to use the rating scale method in subsequent investigations. This has the added advantage of comparability with adult data collected using rating scales.

4.3.2 Differentiation among types of relationship

In addition to examining the stability of the estimates over time, and the internal consistency of the subscales, it is useful to examine the extent to which the different questions differentiate among different kinds of people in the families. Ten person types were found sufficiently frequently in the data to allow useful analysis. These were: Self, Mother, Father, Older sister, Younger sister, Older brother, Younger brother, Dog, Cat, Other pet. Mother's boyfriend, stepfather. etc. were coded as father as long as he lives in the household. Similarly, nephews and nieces in the household were coded as brother/ sister (older or younger according to age), and a sister-in-law in the household was coded as older sister.

For this analysis, subscale scores were averaged across time 1 and time 2. A series of two-factor ANOVAs were performed, relationship type x subscale. The main effect of relationship type reflects the degree to which different types of relationship received different ratings averaging across all three subscales. The magnitude of this main effect is estimated as an R^2 statistic - the proportion of the between-subjects sums of squares that are attributed to the effect. More importantly, the interaction reflects the degree to which the subscales differentiated among the relationship types. The magnitude of the interaction is also estimated as an R^2 statistic - the proportion of the within-subjects sums of squares that are attributable the interaction.. Significance tests for both R^2 statistics are the usual F tests from an ANOVA. The main effect of subscale is not usefully interpretable simply because they are expected to be measuring different attributes.

Table 4.4 *R^2 statistics for main effect of relationship type and subscale x relationship type interaction.*

age	measurement	main effect of relationship type	interaction: subscale x relationship type
8-9 yrs	ranking	0.691 **	0.576 **
	rating	0.663 **	0.590 **
	staircase	0.474 **	0.577 **
14-15 yrs	ranking	0.703 **	0.523 **
	rating	0.249 **	0.250 **
	staircase	0.566 **	0.387 **

** $p<0.001$

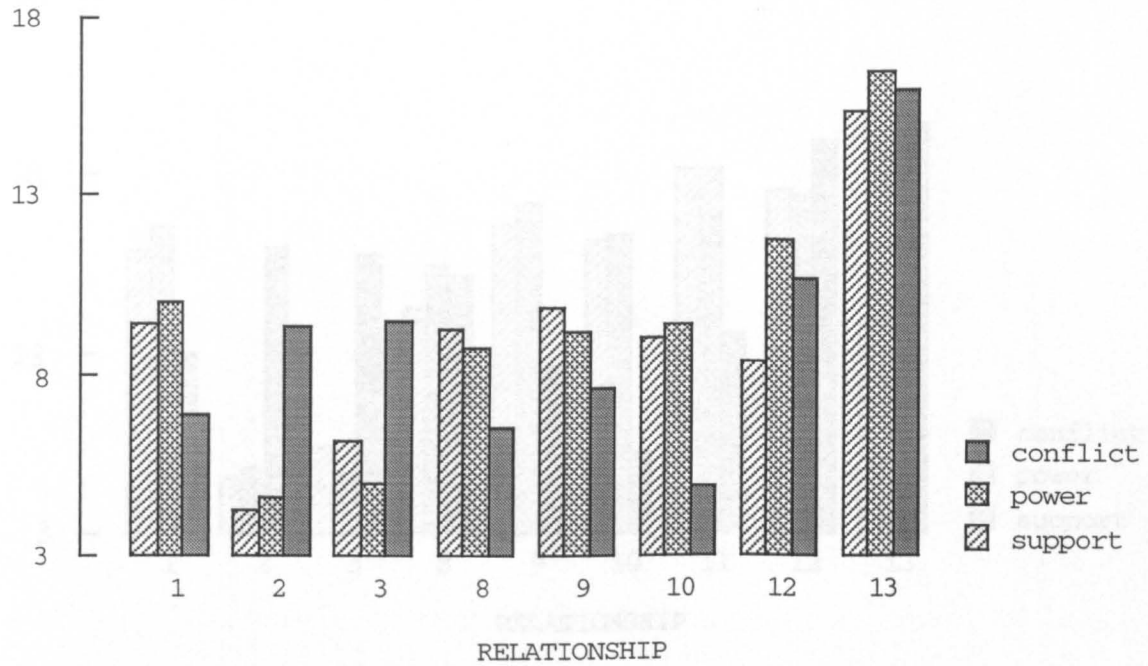
Unlike the test-retest correlations and the alpha coefficients, the R^2 statistics cannot be interpreted in a "bigger the better" manner . They are simply different estimates of the effects of relationship type and its interaction with subscale type. Among the younger age group, the staircase method seems to be the "odd one out for estimating the main effect, while all three methods give comparable estimates for the interaction. The picture is more mixed for the older age group. For both main effect and interaction, the estimates differ quite markedly among the three methods.

In every case, the interaction terms was significant, indicating the profile across the three subscales did vary among the relationship types. The profiles are illustrated in figures 4.1 to 4.6. Focus was given to the most commonly cited relationships listed below:

Key to relationship types for figures 4.1 to 4.6:

1 - Self (participant)
2 - Mother
3 - Father
8 - Older sister
9 - Younger sister
10 - Older brother
11 - Younger brother
12 - Dog
13 - Cat

Figure 4.1 *Primary school children, ranks data by relationship type*



(Note, there was no "younger brother" data for the analysis in figure 4.1)

Figure 4.2 *Primary school children, rating data by relationship type*

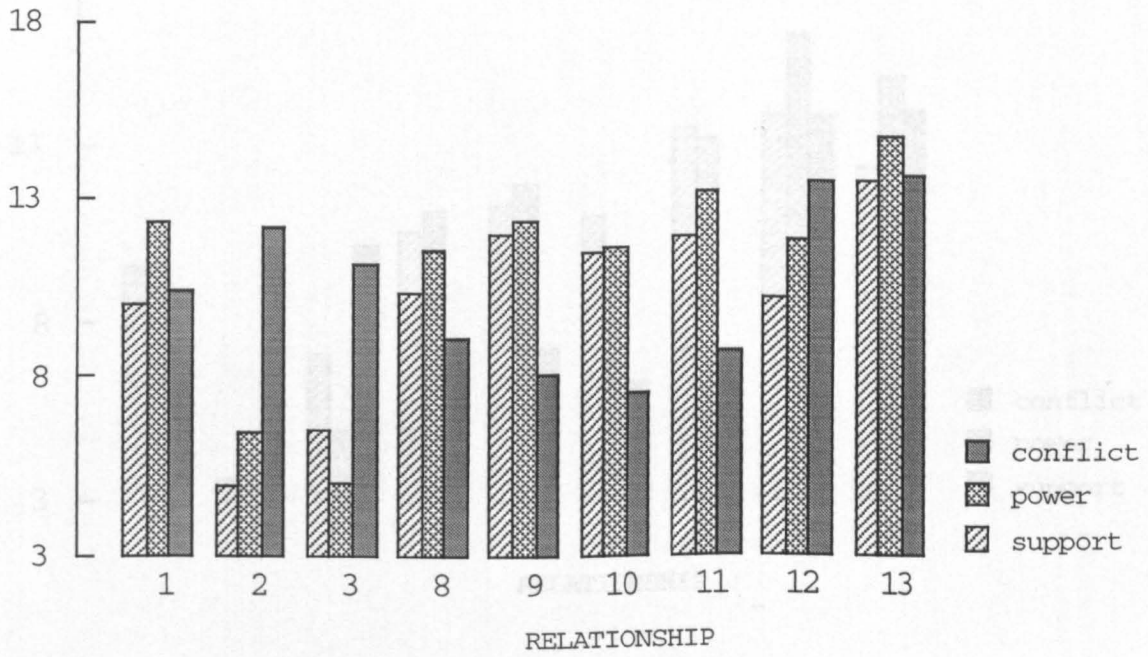


Figure 4.3 *Primary school children, Staircase data by relationship type*

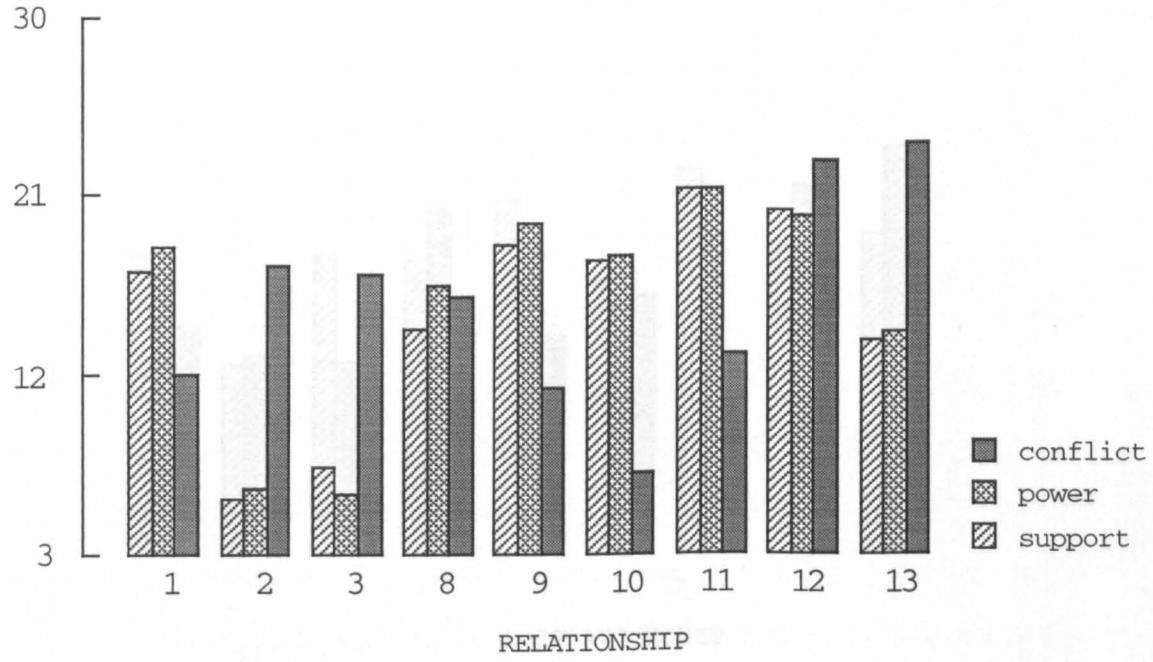


Figure 4.4 *Secondary school children, ranks data by relationship type*

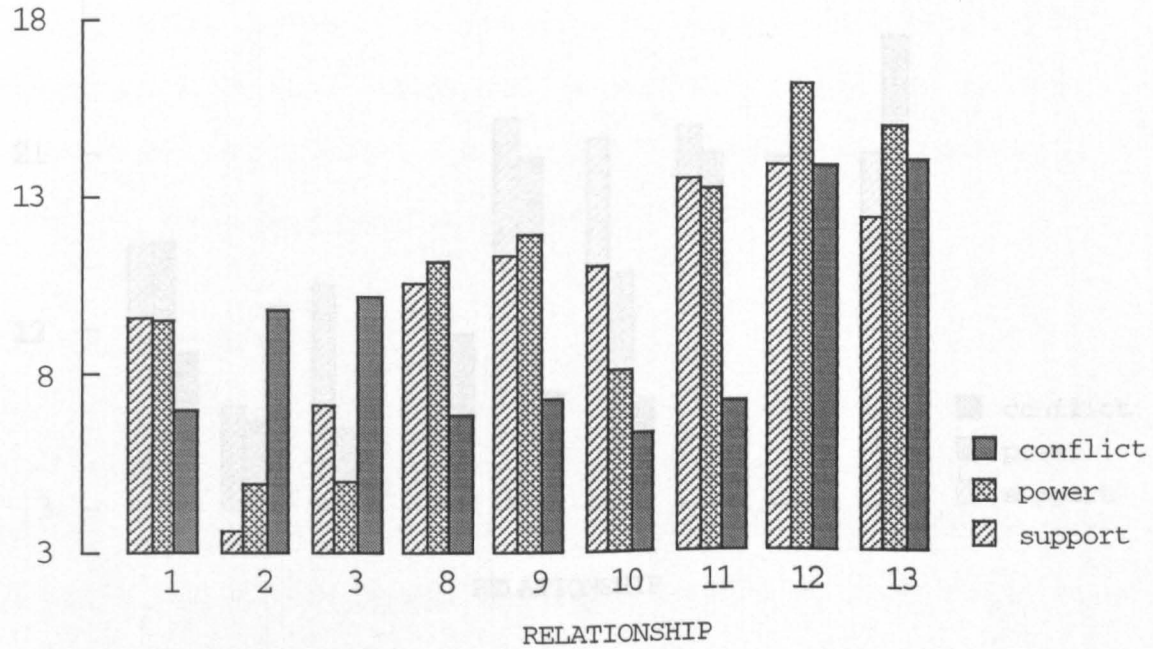


Figure 4.5 *Secondary school children, rating data by relationship type*

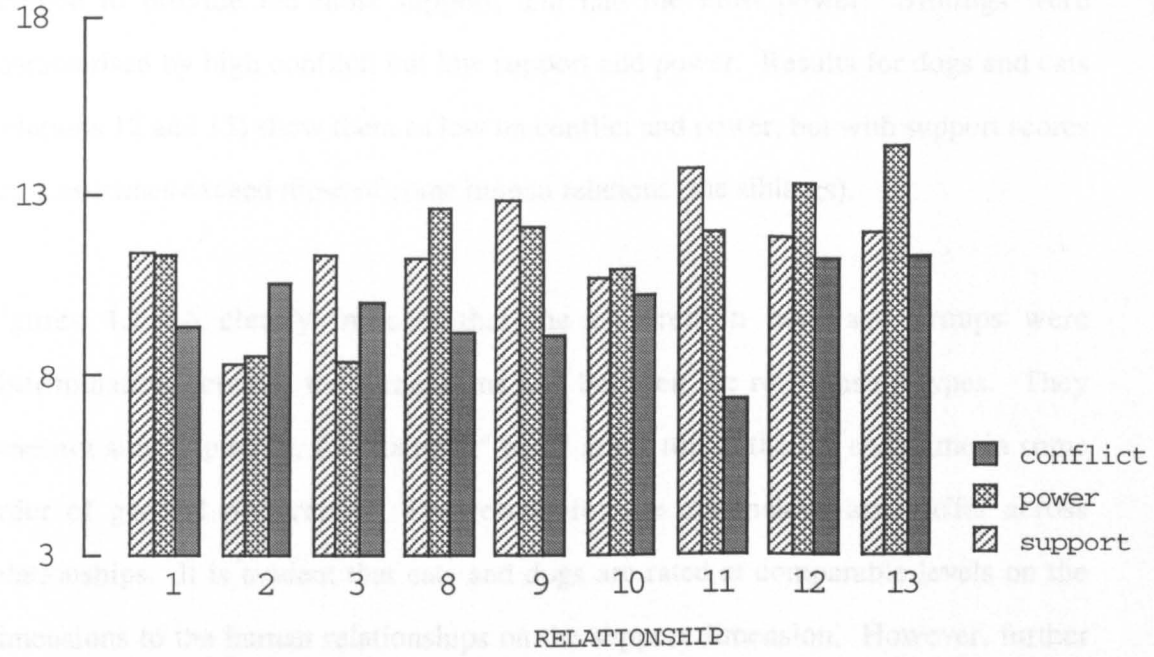
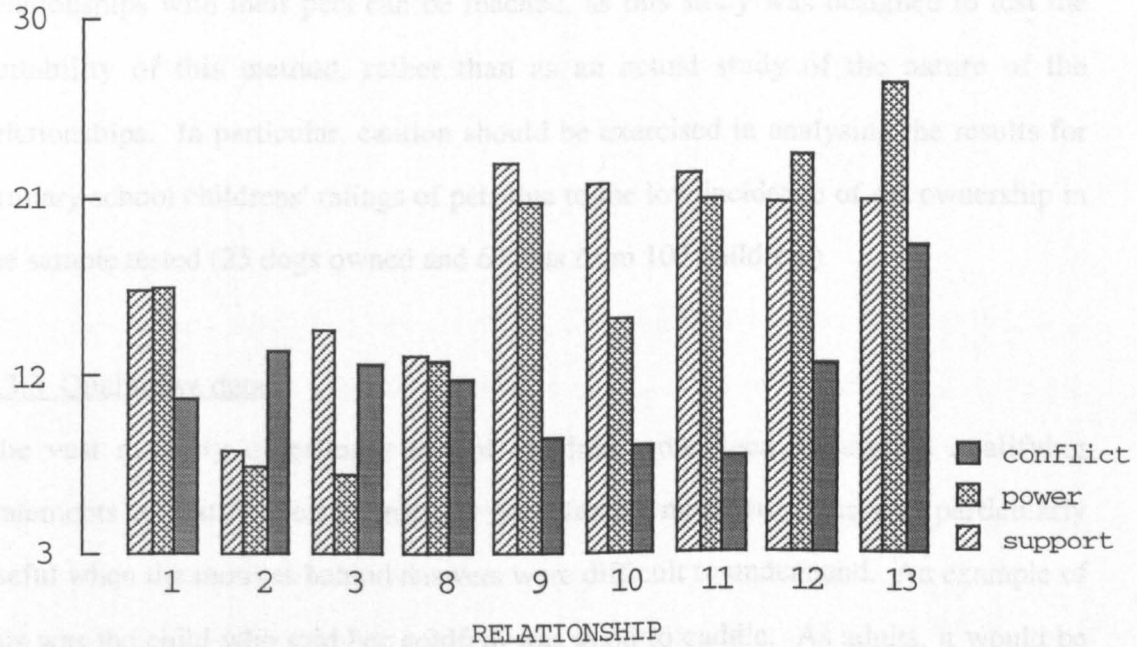


Figure 4.6 *Secondary school children, staircase data by relationship type*



The y axes in figures 4.1 to 4.6 give the sum of the ratings, rankings or staircase values across the three items for each of the three dimensions, broken down by relationship type. The higher the rating, ranking or position of the staircase, the lower the value on the y axis. Overall, scores for relations 2 and 3 (mother and father)

show that they were rated, ranked or positioned on the staircase such that they were deemed to provide the most support, and had the most power. Siblings were characterised by high conflict, but low support and power. Results for dogs and cats (relations 12 and 13) show them as low on conflict and power, but with support scores that sometimes exceed those of some human relations (the siblings).

Figures 4.1-4.6 clearly indicate that the children in both age groups were discriminating between the dimensions and between the relationship types. They were not simply putting, for example "mum" at the top of the list each time in some order of general preference. The results for the dimensions also differ across relationships. It is evident that cats and dogs are rated at comparable levels on the dimensions to the human relationships on the support dimension. However, further research is needed before any definite conclusions about the nature of children's relationships with their pets can be reached, as this study was designed to test the suitability of this method, rather than as an actual study of the nature of the relationships. In particular, caution should be exercised in analysing the results for primary school childrens' ratings of pets due to the low incidence of pet ownership in the sample tested (25 dogs owned and 63 cats from 103 children.)

4.3.3 Qualitative data

The vast majority of primary school children were keen to provide qualifying statements to justify their ratings for each family member. This was particularly useful when the motives behind answers were difficult to understand. An example of this was the child who said her goldfish was good to cuddle. As adults, it would be easy for the experimenters to impose their own prejudice with regard to the "cuddle-ability" of a goldfish, and assume that the child was giving any response, not taking the task seriously, or failing to understand the question. This however was not the case, as can be seen in the quote below. We feel that the following examples, from

each category of questions, illustrates that children do appear to ascribe relationship functions to animals in a similar manner to their human relationships.

Support

" When I get upset and I'm crying I go up to the bowl and pop my finger in and Goldie [goldfish] comes to the top and touches my finger. That makes me feel better."

Power:

"Buster [dog] tells us all what to do. He barks a lot if he wants us to take him out or give him some food. "

Conflict:

"Harry and Charlie [cats] annoy everyone cos they're always meowing really loudly and sometimes they scratch the settee."

4.4 Discussion

The test-retest results for the new staircase scale were good for the secondary school children, but not for the primary school group. As it would be desirable to use the same scale across all age groups, this would not be suitable. The reliability of both ranking and rating scales for the summated dimensions was acceptable, and it was decided to opt for the rating scale for future use. This gives richer data, with an indication of distance between relations, rather than just rank order, and is quick and easy to use. Speed and ease of use is important, as lengthy questionnaires deter potential participants in studies. Even those who do agree to take part may become disinterested or de-motivated is the questions take too long to complete. This is especially relevant when including children.

The participants were both able and willing to provide answers concerning their pets as well as other human family members. The results show that they were able to discriminate between the relations, and the dimensions of conflict, support and power.

This preliminary study provides confidence that this type of approach to the investigation of human-pet relationships may be fruitful. It is possible to include children, with confidence that they will be able to give reliable answers, and differentiate between dimensions and relationships. This methodological approach is used in the study reported next in chapter 5.

CHAPTER 5

Pets in the network of family relationships: an empirical study

5.1 Introduction

The high level of pet ownership reported in chapter 1 persists despite many potential costs. In addition to financial costs of food, veterinary care and other pet products, disadvantages of pet ownership can include: time spent caring for the pet; restrictions on lifestyle; daily hassles resulting from caring for and cleaning up after pets; worry due to destructive or anti-social behaviour of pets; emotional distress, e.g. on the death of a pet; and risks such as bites, allergic reactions and other zoonoses (Plaut, Zimmerman & Goldstein, 1996). Given this long list of potential costs, and that relatively few pets are working animals "earning their keep" in a practical way, owners presumably perceive substantial benefits from pets to persuade so many to keep them. Pets may have functional roles such as impression management (e.g. dogs as fashion accessories, or acquisition of a fierce dog to fit a macho image), avocation (the pet as a diversion or hobby, e.g. those kept for breeding, or competing in shows), however, as discussed in chapter 2, most accounts of positive aspects of pet ownership focus on pet ownership as a social relationship with advantages arising from relationship-based concepts such as support and attachment (Garrity, Stallones & Johnson, 1989), and protection against loneliness (Zasloff & Kidd, 1994). There may be other indirect benefits such as those which might result from the additional human contacts made as a result of pet ownership (Messent, 1983; McNicholas & Collis, 1998). Different types of benefit may combine within a single relationship, for example a pet that is kept for showing may also be valued for companionship, and because it fits the lifestyle image of a particular family. Within a family who share one pet, each human family member may receive different types and degrees of benefits from the presence of the animal and incur different costs of pet ownership.

Research into pet ownership rarely looks simultaneously at the balance of benefits and disadvantages of pet ownership together. Rather, journal articles often seek (and hence find) either positive *or* negative implications. Although there are exceptions, medical and veterinary publications tend to emphasise zoonoses, whereas journals in the social sciences tend to focus on positive aspects of human-pet relationships and benefits to health. However, Kidd & Kidd (1994) looked at benefits of pets to the homeless and also the serious problems faced by these people in keeping their animals. This special population can gain benefits of warmth, security and companionship from pet dogs, but the costs can be high if they continue to live on the streets rather than accept accommodation that does not allow pets. Bryant (1990) looked at childrens' relationships with pets. She identified a number of costs arising from child-pet relationships, such as sadness at pet death or illness, distress at not being allowed to care for the pet and worry for its safety. Many of these cost factors are arguably inevitable consequences of benefits. For example, because the children enjoy the companionship and enduring affection given by the animals, they are bound to feel distress at loss or separation from them. Glaser, Angoulo & Rooney (1994) considered the risk of zoonoses versus benefits from relationships with pets for HIV/AIDS sufferers.

There is another kind of evidence that pet ownership cannot simply be thought of in terms of advantages. The large number of pets in shelters run by animal welfare organisations is testimony that not all human-pet relationships are successful. In the UK in 1995, Wood Green animal shelters took in nearly 13,000 animals; the National Canine Defence League around 10,000. In the USA, Patronek & Rowan (1995) estimated that 7.7% of the dog population was in the care of animal shelters. This gives a population of 4 million dogs in the US that have been rejected by their owners for some reason. Not all animals taken in by shelters may be due to a failure in the pet relationship; owners may have died, moved into residential care, suffered a

marriage breakdown, unemployment, etc. However, for some reason the balance of costs and benefits seems to result in the rejection of pets in a significant minority of cases, with serious implications for animal welfare.

This study is primarily concerned with the hypothesis that pet ownership can usefully be conceptualised as a kind of social relationship. Although terms such as attachment, companionship and support have been frequently used in connection with pet ownership, this has mostly been done unsystematically and uncritically (Collis & McNicholas, 1998). In this study, various aspects of human pet relationships are measured using a system of measurement devised by W. Furman (Furman & Buhrmester, 1985) primarily on the basis of a particular theoretical model of human relationships conceived by Weiss (1974). The measurement system addresses both negative and positive aspects of relationships. The decision to use this system of measurement, and the models which underlie it, is a pragmatic one based on a judgement that it may reveal interesting and perhaps unexpected insights, rather than a conviction that it is the single best approach.

Many of the closest human relationships exist within families and it is within the family that pet ownership occurs most frequently. In particular, as seen in chapter 1 (table 1.1), pet ownership is most prevalent in households with children. In addition, pets are frequently described as family members, and considered particularly important to children (Levinson, 1972; Bryant, 1986, 1990; Furman, 1989). On the other hand, family-based pet ownership may lead people to be rather non-discriminating in their willingness to describe themselves as pet owners. To an outsider, a person may say he or she is a pet owner just because there is a pet in the household, irrespective of whether he/she feels like the primary owners of the animal, whether it is primarily owned by another member of the household, or whether it is seen as a genuinely shared family pet. Clearly, if empirical investigations of pet ownership or human-pet relationships were to be carried out like this, which

presumably could happen in survey-based studies, then the data would not reliably represent pet ownership as a one-to-one relationship between a particular person and a particular animal. However, conducting an investigation within the context of the family, and asking several different persons about their relationship with a particular animal in that family, should provide much more reliable data on one-to-one relationships. In addition, the family context provides an opportunity to compare human-pet and human-human relationships involving the same people, so as to examine the extent to which they co-vary between individuals, and to examine how human-pet relationships vary with the family role of the human.

The instrument used in this study to investigate the nature of the human-pet relationship is based on Furman's Network of Relationships Inventory (NRI). This has been previously used with children, and to gain information on human-pet relationships (Furman & Buhrmester, 1985; Furman, 1989). The NRI is based on Weiss's (1974) proposals concerning the relational provisions afforded by social relationships. Subscales within the NRI measure specific relational provisions described by Weiss as necessary for human well-being, such as nurturance, reassurance of worth, and a sense of reliable alliance. It also provides summary measures of overall satisfaction with the nominated relationships, and the negative relational provisions of conflict and antagonism. By gathering data from participants on relationships with all immediate family members, the analysis can examine both the role of pets in terms of relational provisions provided, and the issue of whether the human-pet relationship is used to plug gaps in provisions from the human relationships.

5.2 Method

Ninety participants from 40 pet owning households were recruited via pet stores, a veterinary surgery, and an RSPCA shelter. Adults were invited to take part in a study and asked if they would enlist their other household members aged 10 or above. The

address and telephone number of participants was noted in order to arrange interviews with children aged 10 to 16, or send questionnaires in the post to adults. Pilot testing of the questionnaire found that children below the age of 10 had difficulty in sustaining concentration to complete the questions, therefore this study included those aged 10 or over. Participants aged 17 or over completed the questionnaire themselves, and were provided with a Freepost envelope to return the form in. Children aged 10 to 16 were visited by the author, and asked the questions verbally. Steps were taken to avoid participants' answers being influenced by the presence of other household members: if possible, the questions were administered in a room away from others; if this was not possible, participants were able to point to the form to indicate answers, thus keeping their responses private.

There were two types of household: those with and those without children living at home. All family members in each household aged 10 and over were encouraged to participate in the study. This gave rise to 6 family role types: mothers, fathers, sons, daughters, husbands and wives. The latter two refer to couples in households without children living at home.

The relational provision subscales used in the study are summarised in table 5.1. Each subscale was based on three items. Furman's NRI contains 12 subscales, each with 3 items: companionship, conflict, instrumental aid, satisfaction, antagonism, intimacy, nurturance, affection, punishment, admiration, relative power, reliable alliance. The punishment scale was not used, in this study, and the wording of some items was slightly altered to make them appropriate for both human and pet relationships. Furman's affection subscale refers to affection directed toward the respondent. A new subscale was devised for this study to measure affection toward others from the respondent. Similarly, the original NRI includes only one set of questions on antagonism, where participants were asked, for example, "How much do you and this person hassle or nag one another?". It seemed best not to assume that the

degree of antagonism between family members would always be mutual, e.g., a younger sibling may get on an older siblings nerves, but not always vice versa. As a result, the items were duplicated to form two distinct subscales, with items in one subscale asking respondents how much they antagonised others and items in the other subscale asking how much others antagonised the respondent.

Table 5.1 *Relational provisions subscales used in the study, based on Furman's Network of relationships inventory (NRI).*

Subscale	Description
Companionship	spending time with others, doing enjoyable things together
Instrumental Aid	others providing help
Intimacy	confiding in, sharing private thoughts with others
Nurturance	taking care of, protecting others
Affection (for respondent)	others love for or care about respondent
Affection (for others)*	respondent loves or cares about others
Admiration	respect for respondent, approval of respondent's actions
Reliable Alliance	respondent's belief that the relationship will last
Satisfaction	respondent's satisfaction with the relationship
Relative Power	who makes decisions or is boss in the relationship
Conflict	how much respondent and others disagree, or clash
Antagonism (others antagonise)*	how much others nag or get on nerves of respondent
Antagonism (antagonise others)*	how much respondent nags or gets on nerves of others

* subscales added to the NRI or modified for this study (see text).

Typical items ask how much of a particular relational provision a specific human or pet provides using a 5 point scale, e.g. from 1 (not at all), to 5 (very much). For example, a question to determine intimacy or confiding is 'How much do you share your secrets and private feelings with each one?'. Thus each subscale had a range of

possible scores from 3 to 15. Participants gave responses for their relationships with each other household member (pets as well as people). An index of social support was derived by adding the standardised scores for the following subscales: companionship, instrumental aid, intimacy, nurturance, affection (directed to the participant by the other member of the household), admiration and reliable alliance. An index of negative interactions was derived from the standardised scores of conflict and both antagonism subscales. The complete questionnaire is included in appendix 4.

Participants were also asked to report how much they thought each family member (including themselves) shared in ownership of each household pet. This was measured on a 5 point scale: 1= has no share in owning pet; 2= has a small share in owning pet; 3= has a moderate share in owning pet; 4= has a big share in owning pet; 5= is the only person who owns pet.

5.3 Results

The 90 participants contributed data on 500 relationship dyads: 256 human-human relationships and 244 human-pet relationships. Of the human-pet relationships, 105 were with cats and 116 were with dogs. The remaining 23 comprised birds and various small mammals such as hamsters and guinea pigs. Four relationship types were used in the analysis: human-human; human-dog; human-cat; and human-other. The 'other' category refers to pets other than cats or dogs.

5.3.1 Inter-item reliability of the relational provisions subscales.

The reliability of the NRI subscales was good, with Cronbach's alpha coefficients for each subscale >0.75 (see table 5.2). This is also supported by the generally good coherence of the sets of subscale questions in the Principal Component Analysis discussed below.

Table 5.2 *Cronbach's alphas for subscales of relational provisions scale.*

Subscale	Cronbach's alpha
Companionship	0.84
Reliable Alliance	0.88
Instrumental Aid	0.86
Intimacy	0.85
Affection (for subject from others)	0.91
Nurturance	0.76
Admiration	0.79
Antagonism (towards subject by others)	0.76
Antagonism (by subject towards others)	0.82
Conflict	0.86
Satisfaction	0.82
Relative Power	0.82
Affection (of subject for others)	0.83

5.3.2 Relational provisions subscales scores by relationship types

Figures 5.1 to 5.13 show the mean scores on each social provision subscale by relationship types: human-human, human-dog, human-cat and human-other pet.

A one way analysis of variance showed that the difference in companionship score between relationship types is significant, $F(3,492)=40.7$, $p<0.0005$. Tukey pairwise comparisons (alpha=0.05) showed that there was no significant difference between scores for human-human and human-dog relationships. Both of these were rated significantly higher than scores for human-cat and human-other pet relationships. There was no significant difference in scores for human-cat and human-other pet relationships.

Figure 5.1 *Mean companionship score by relationship type.*

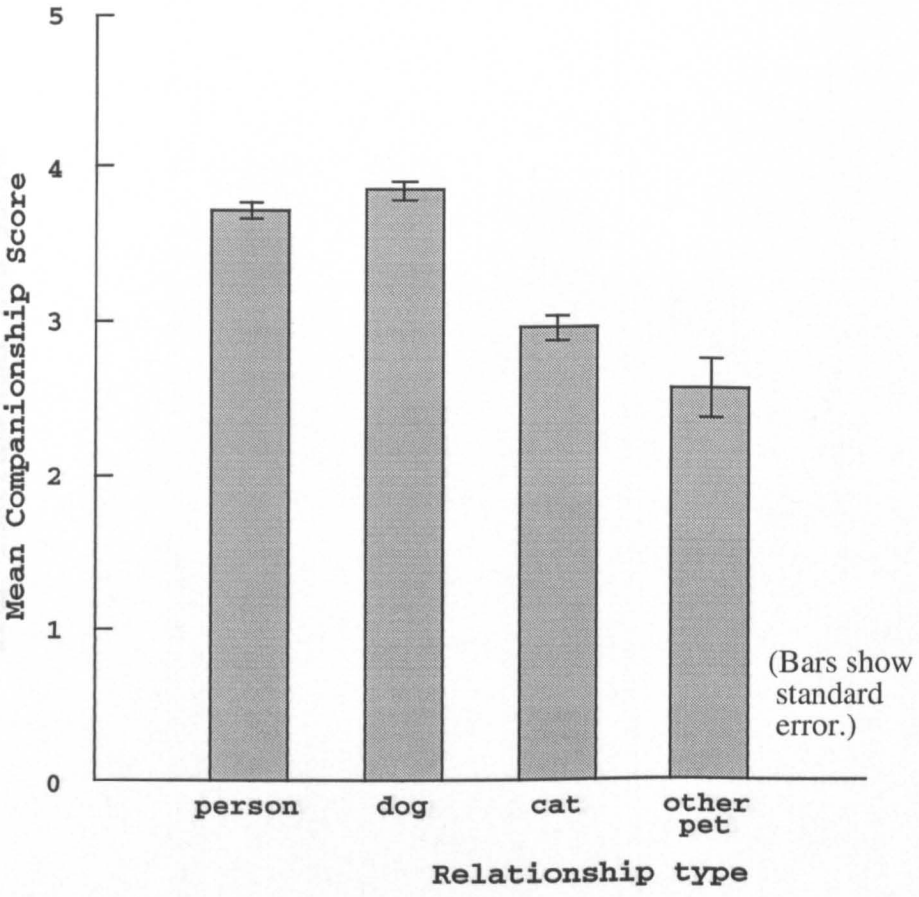
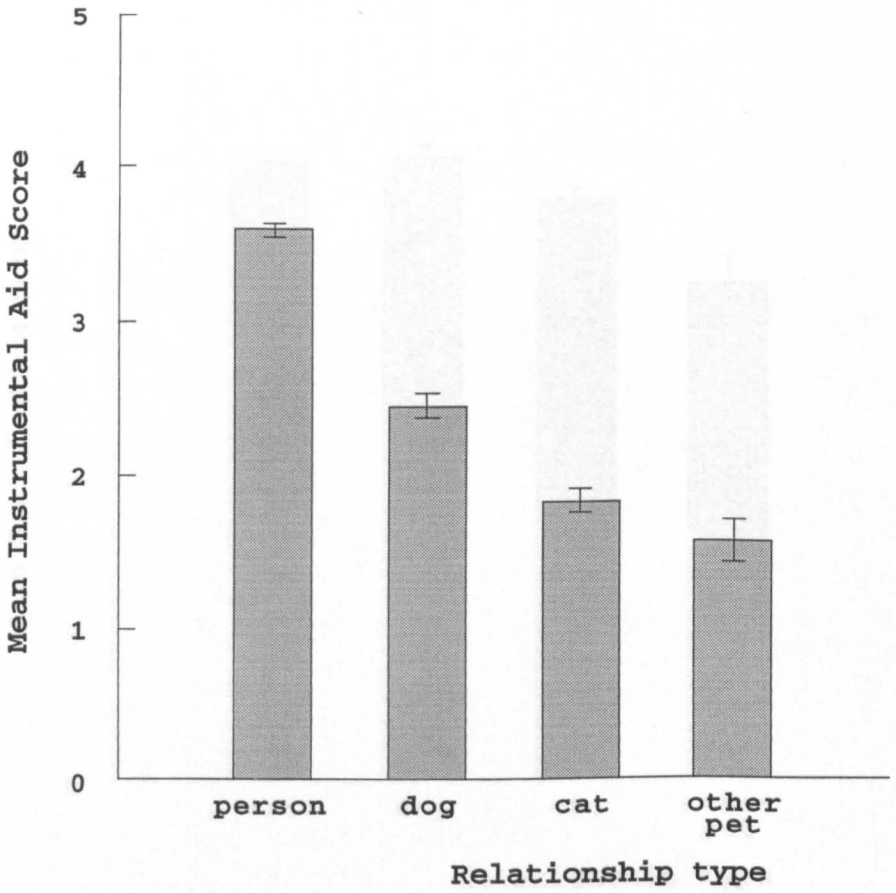
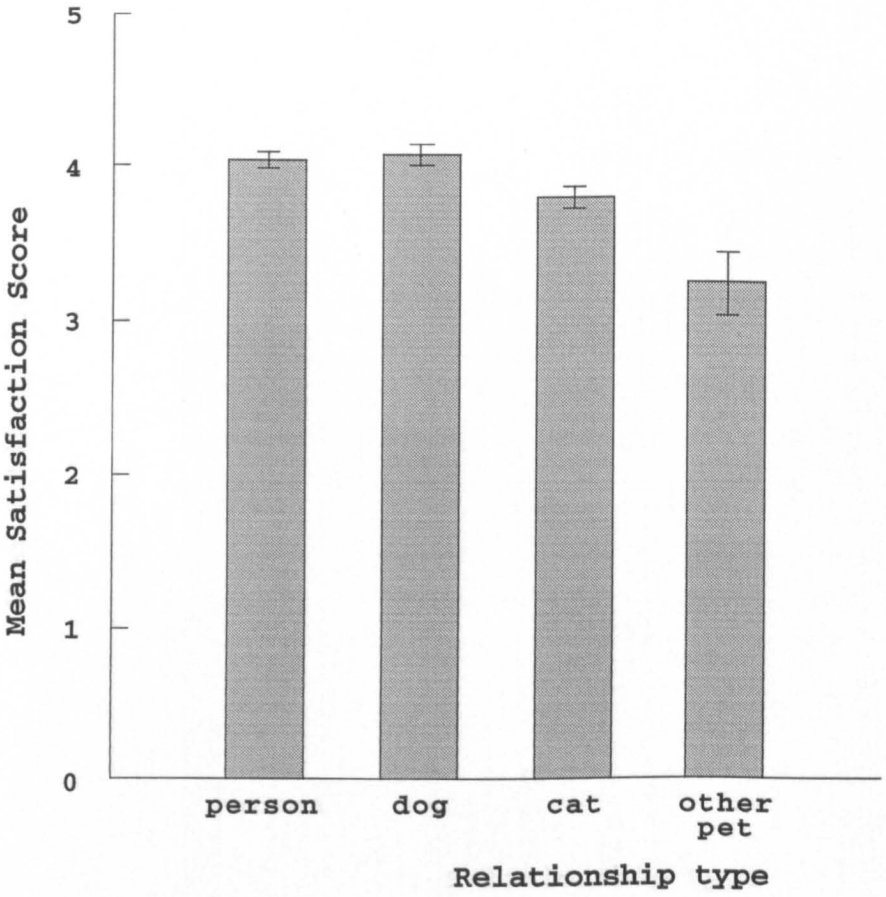


Figure 5.2 *Mean instrumental aid score by relationship type.*



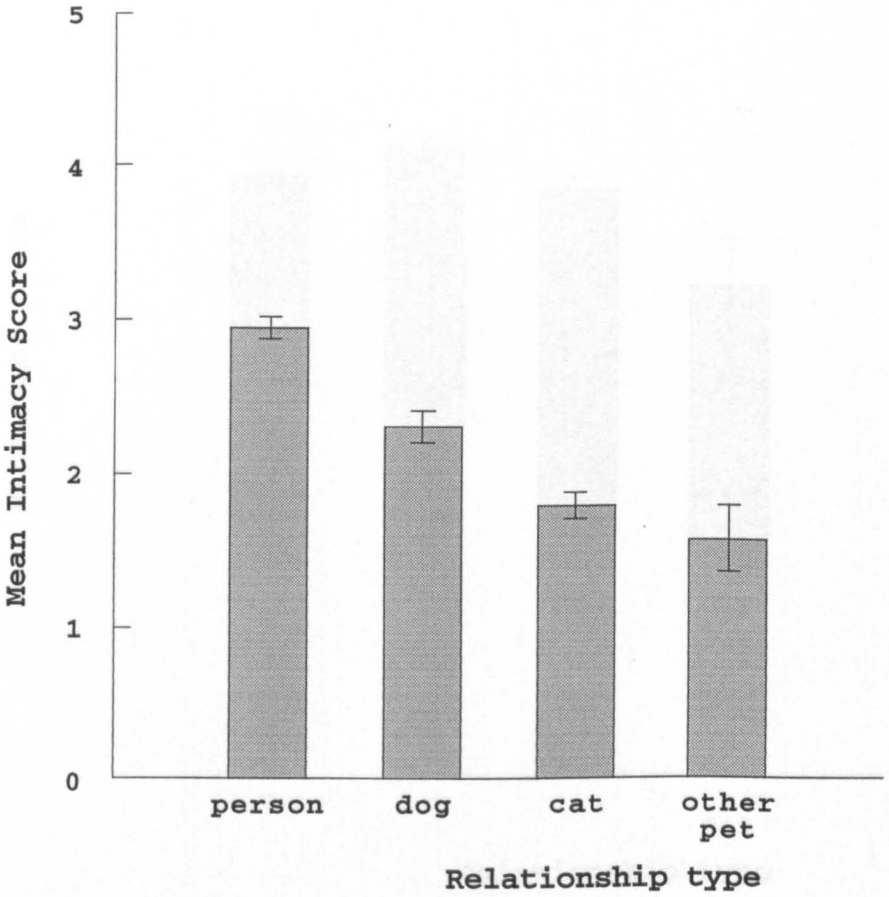
A one way analysis of variance on instrumental aid scores showed that the difference between relationship types is significant, $F(3,492)=147.2$, $p<0.0005$. Tukey pairwise comparisons showed that scores for human-human relationships were higher than any other relationship types. Scores for human-dog relationships were rated significantly higher than scores for human-cat and human-other pet relationships. There was no significant difference in scores for human-cat and human-other pet relationships.

Figure 5.3 *Mean satisfaction score by relationship type.*



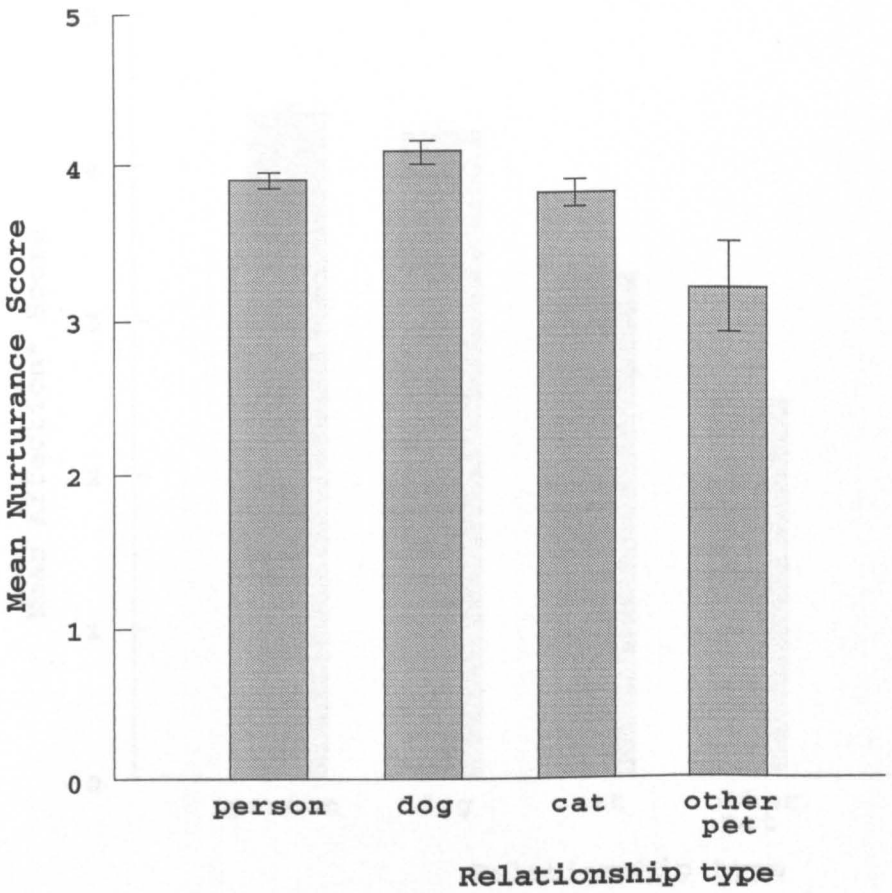
A one way analysis of variance showed that the difference in satisfaction scores between relationship types is significant, $F(3,492)=9.5$, $p<0.0005$. Tukey pairwise comparisons showed that there was no significant difference in scores between human-human and human-dog relationships. Both of these were rated significantly higher than scores for human-cat and human-other pet relationships. Scores for human-cat relationships were significantly higher than human-other pet relationships.

Figure 5.4 *Mean intimacy score by relationship type.*



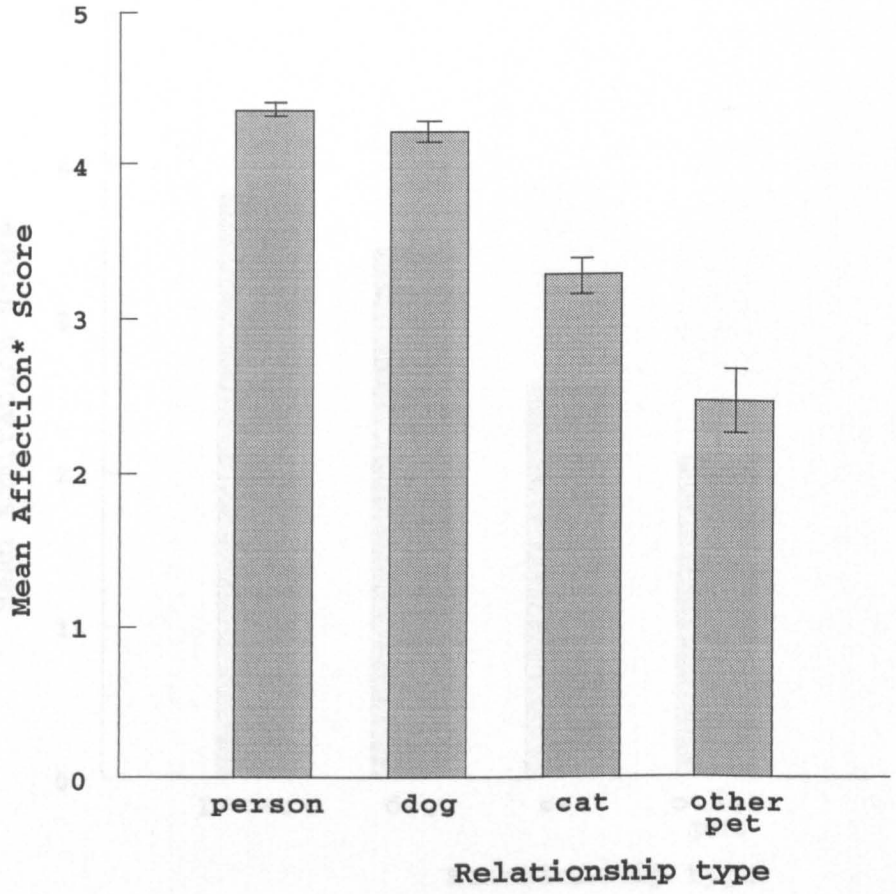
A one way analysis of variance showed that difference between intimacy scores for the four relationship types is significant, $F(3,492)=39.8$ $p<0.0005$. Tukey pairwise comparisons showed that human-human relationship scores were significantly higher than all other relationship types (significance at $p>0.05$). Human-dog relationship scores were significantly higher than those for human-cat and human-other pet relationships. There was no significant difference in scores for human-cat and human-other pet relationships.

Figure 5.5 *Mean nurturance score by relationship type.*



A one way analysis of variance showed that the difference in nurturance scores across the relationship types is significant, $F(3,492)=7.2$, $p<0.0005$. Tukey pairwise comparisons showed that there was no significant difference between scores for human-human, human-dog and human-cat relationships, however all of these were rated significantly higher than human-other pet relationships.

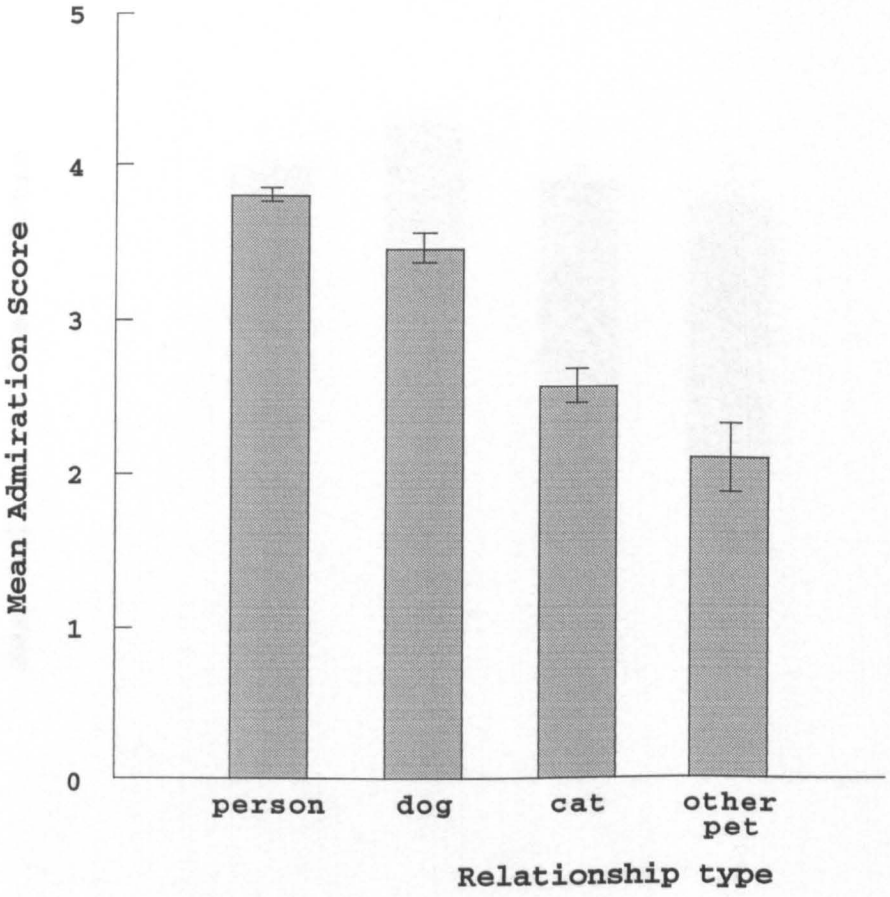
Figure 5.6 *Mean affection score (affection for the participant) by relationship type.*



*** Affection for participant from others**

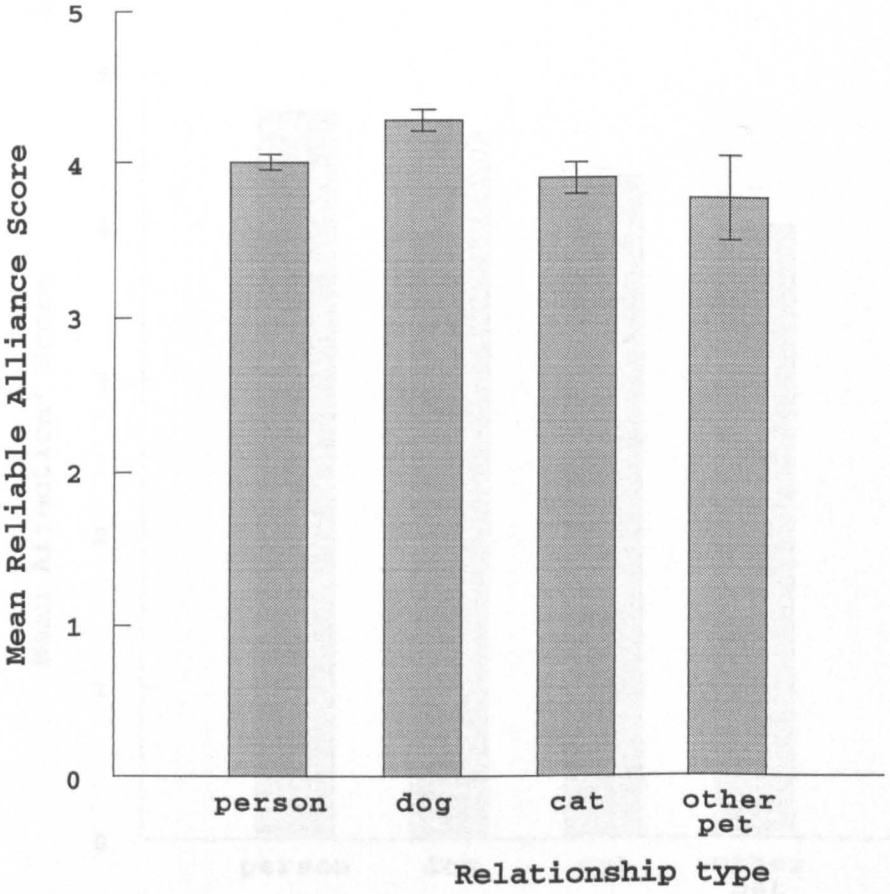
A one way analysis of variance showed that the difference in scores for affection between relationship types is significant, $F(3,492)=67.1$ $p<0.0005$. Tukey pairwise comparisons showed no significant difference between scores for human-human and human-dog relationships. Both of these were rated significantly higher than scores for human-cat and human-other pet relationships. Human-cat relationship scores were significantly higher than human-other pet relationships.

Figure 5.7 *Mean admiration score by relationship type.*



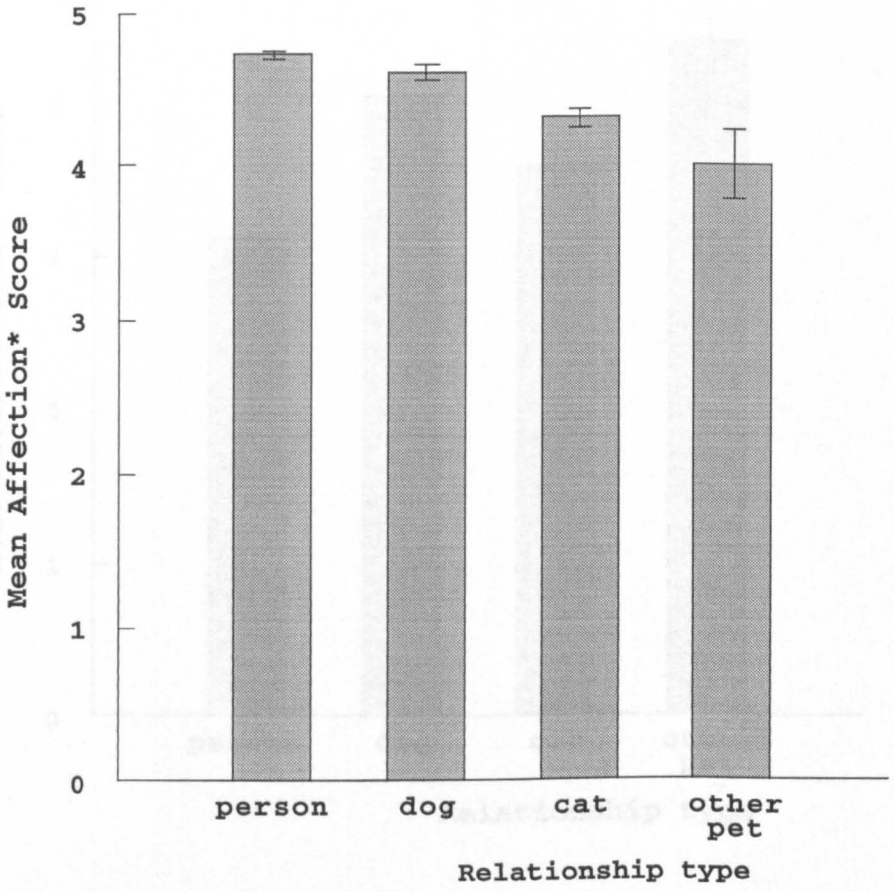
A one way analysis of variance showed that the difference in admiration scores between relationship types is significant, $F(3,492)=60.3$, $p<0.0005$. Tukey pairwise comparisons showed that scores for human-human relationships were significantly higher than those for all other relationship types. Human-dog relationships were rated significantly higher than human-cat and human-other pet relationships. There was no significant difference in scores for human-cat and human-other pet relationships.

Figure 5.8 *Mean reliable alliance score by relationship type.*



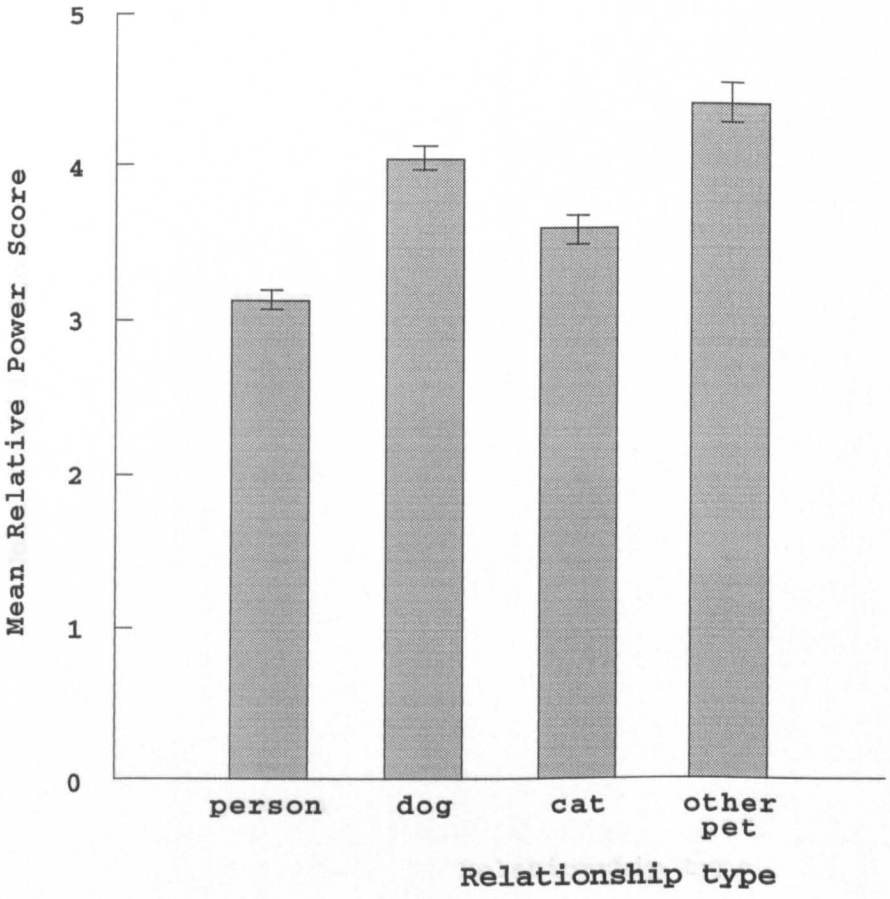
A one way analysis of variance showed that the difference between reliable alliance scores across relationship types is significant, $F(3,492)=4.5$, $p=0.004$. Tukey pairwise comparisons showed that scores for human-dog relationships were significantly higher than those for human-human or human-cat relationships. Both of these types were rated significantly higher than scores for human-cat and human-other pet relationships. There was no significant difference in scores for human-cat and human-other pet relationships.

Figure 5.9 *Mean affection score (participant's affection for others) by relationship type.*



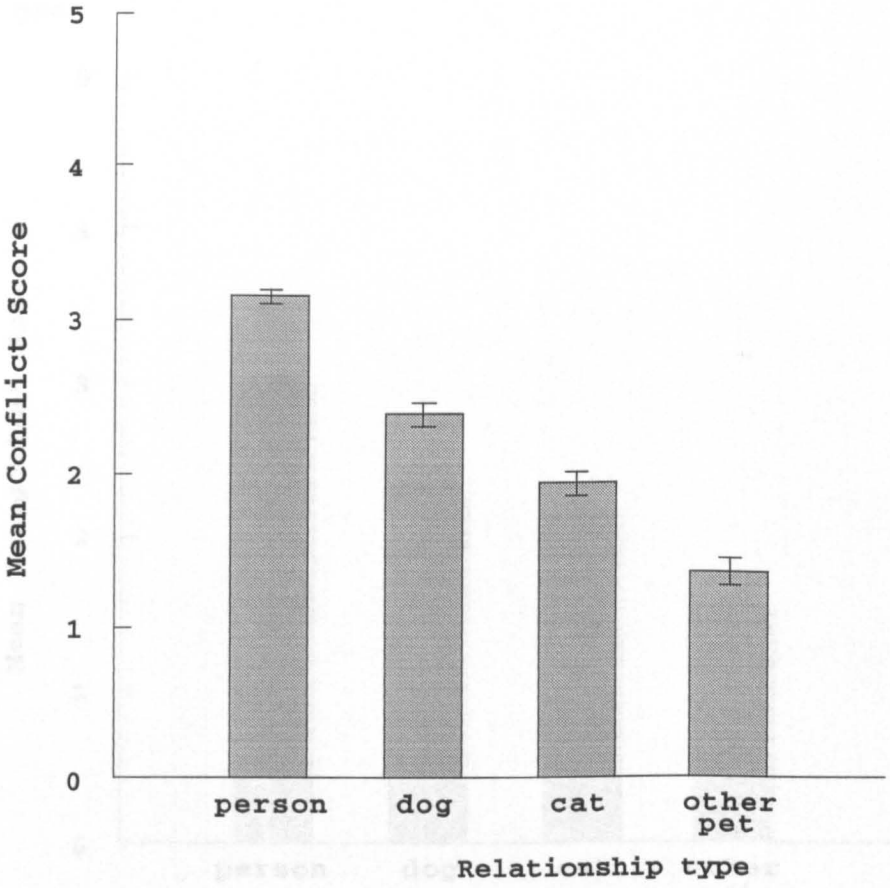
A one way analysis of variance showed that the difference in affection scores between relationship types is significant, $F(3,492)=19.5$, $p<0.0005$. Tukey pairwise comparisons showed that there was no significant difference between scores for human-human and human-dog relationships. Both of these types were rated significantly higher than scores for human-cat and human-other pet relationships. There was no significant difference in scores for human-cat and human-other pet relationships.

Figure 5.10 *Mean relative power score by relationship type.*



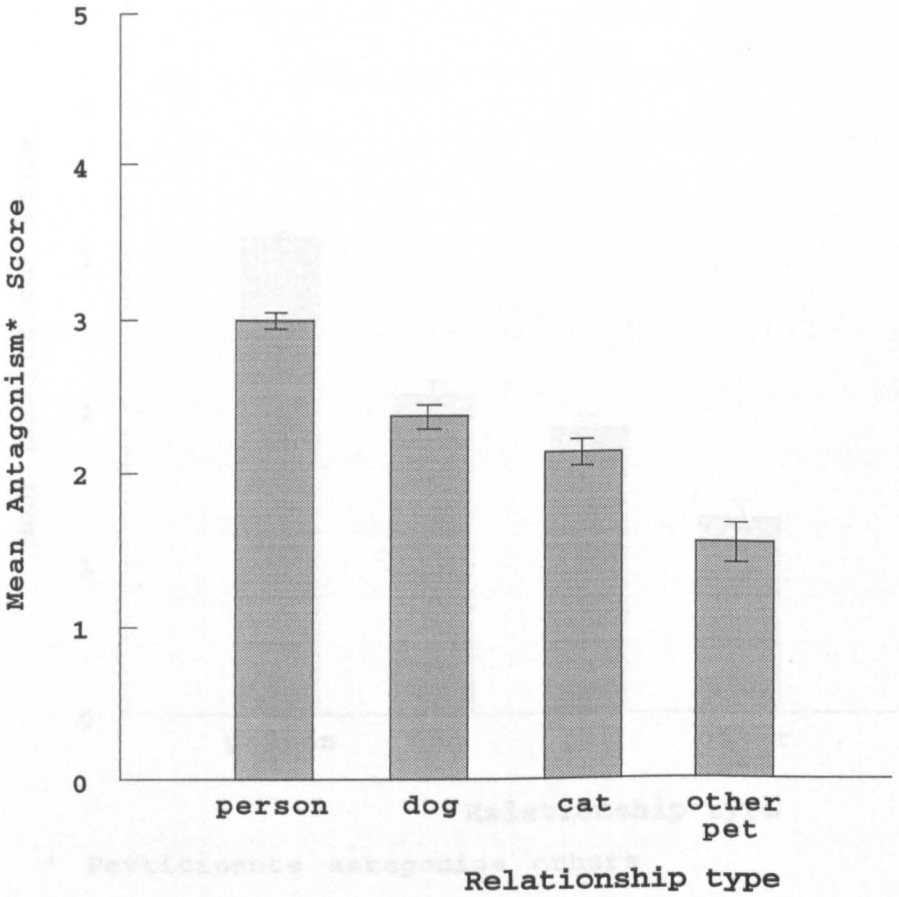
A one way analysis of variance showed that the difference in relative power scores between relationship types is significant, $F(3,492)=36.9$ $p<0.0005$. Tukey pairwise comparisons showed that there was no significant difference between scores for human-dog and human-other pet relationships. Both of these were rated significantly higher than scores for human-human and human-cat relationships (participants have more power over dogs and other pets than humans or cats). Scores for human-cat relationships were significantly higher than and human-human relationships.

Figure 5.11 *Mean conflict score by relationship type.*



A one way analysis of variance showed that the difference between conflict scores across the relationship types is significant, $F(3,492)=83.0$, $p<0.0005$. Tukey pairwise comparisons showed that all pairwise comparisons were significant.

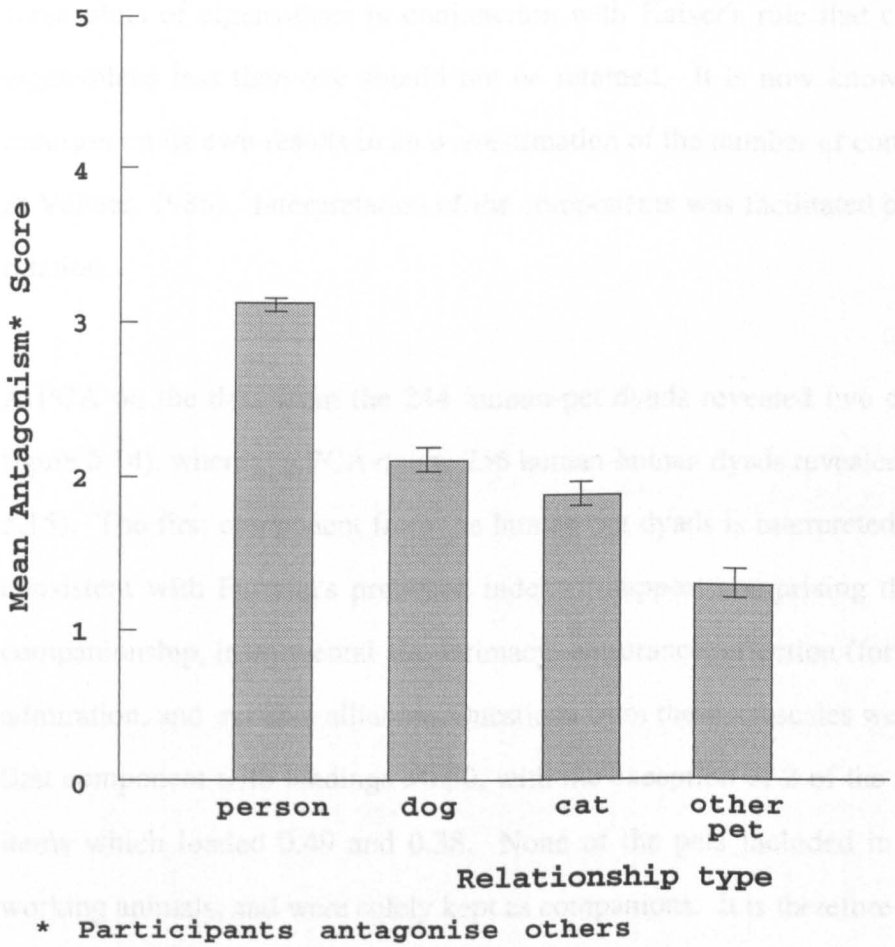
Figure 5.12 *Mean antagonism score (others antagonise participants) by relationship type.*



*Others antagonise participants

A one way analysis of variance showed that the difference between scores of how much participants antagonise others across relationship types is significant, $F(3,492)=45.6$, $p<0.0005$. Tukey pairwise comparisons showed that scores for human-human relationships significantly higher than all other relationship types. There was no significant difference between scores for human-dog and human-cat relationships. Both of these were rated significantly higher than human-other pet relationships.

Figure 5.13 *Mean antagonism score (participants antagonise others).*



A one way analysis of variance showed that the difference in how much participants report being antagonised by others is significant across the relationship types, $F(3,492)=112.5$, $p<0.0005$. Tukey pairwise comparisons showed that human-human relationships scores were significantly higher than all other relationship types. There was no significant difference between scores for human-dog and human-cat relationships. Both of these were rated significantly higher than human-other pet relationships.

5.3.3 Components of relationship provisions

Principal Component Analysis (PCA) was carried out on the correlation matrix of data from all 39 items in the relational provisions scale to determine whether they can be interpreted as reflecting a smaller number of underlying dimensions. Decisions on

the number of components to retain in PCA were based upon the visual inspection of scree plots of eigenvalues in conjunction with Kaiser's rule that components with eigenvalues less than one should not be retained. It is now known that the latter criterion on its own results in an overestimation of the number of components (Zwick & Velicer, 1986). Interpretation of the components was facilitated by using varimax rotation.

A PCA on the data from the 244 human-pet dyads revealed two components (see figure 5.14), whereas a PCA on the 256 human-human dyads revealed four (see figure 5.15). The first component from the human-pet dyads is interpreted as support; it is consistent with Furman's proposed index of support comprising the subscales for companionship, instrumental aid, intimacy, nurturance, affection (for the participant), admiration, and reliable alliance. Questions from these subscales were loaded on the first component with loadings >0.50, with the exception of 2 of the instrumental aid items which loaded 0.49 and 0.38. None of the pets included in the study were working animals, and were solely kept as companions. It is therefore notable that any of the instrumental aid items featured in the support component. The item which does load at >0.5 asks 'How much does the pet help you if you have a problem to sort out?'. It is not clear whether pets actually provide practical aid, however, participants reported that they perceive them to do so. The three satisfaction questions also load >0.5 on the support component. This is not surprising, given that it is reasonable to assume participants will be more satisfied with relationships offering high support.

Figure 5.14 *Scree plot of Eigenvalues for human-pet relationship data.*

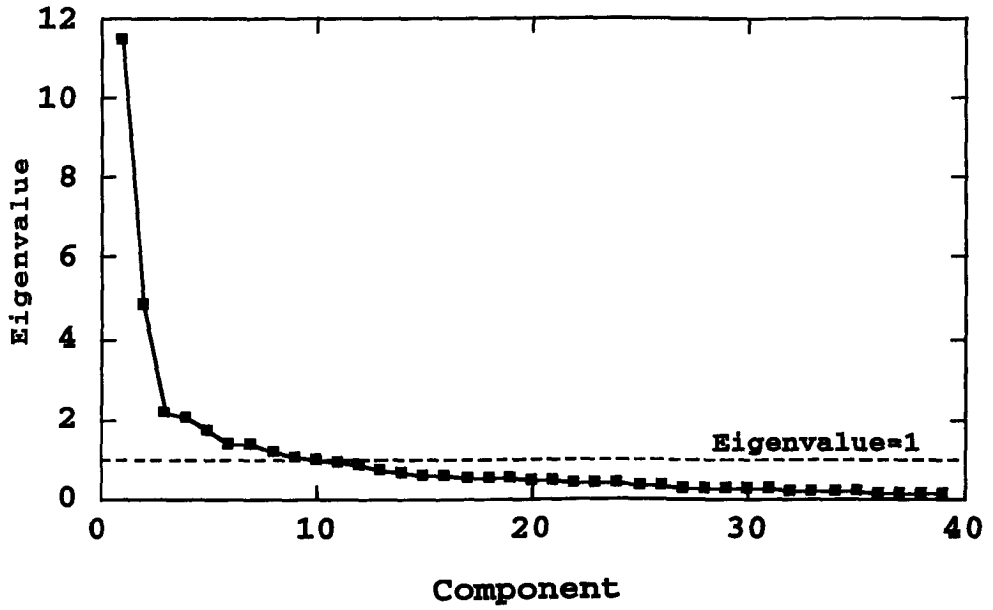
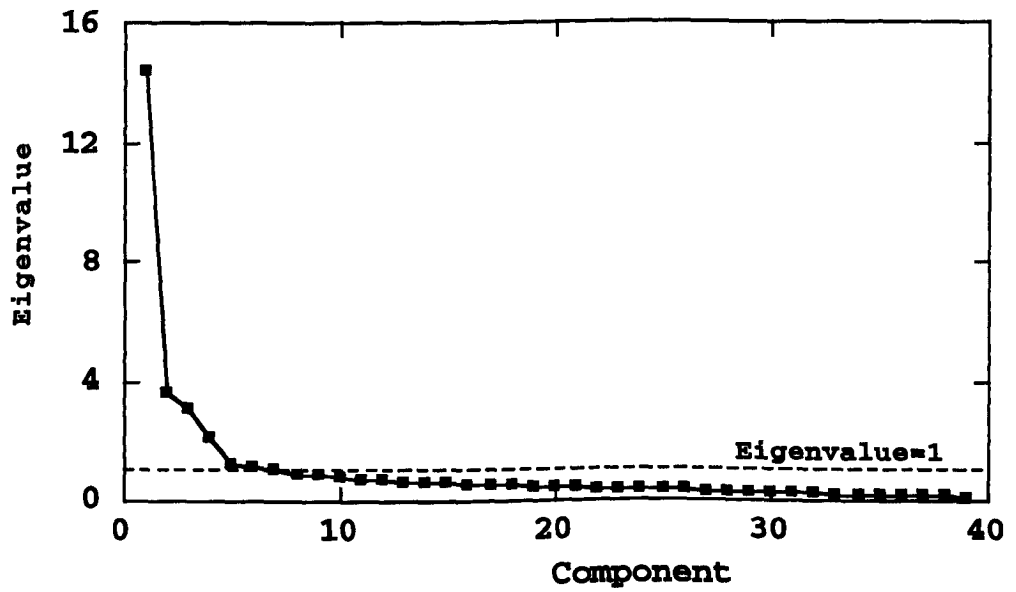


Figure 5.15 *Scree plot of Eigenvalues for human-human relationship data.*



The second component comprises all questions in the conflict and antagonism subscales, all loading >0.5 except one of the antagonism items, which is loaded at 0.46. Furman grouped these subscales (together with a punishment subscale which was not used in this study) to form an index of negative interactions. None of the relative power subscale questions loaded above 0.50 on either the support or conflict

component.

The four components from the human-human dyads were interpreted as: (i) support , (ii) conflict, (iii) relative power, and (iv) intimacy. The support component comprises a similar set of questions to those found from the human-pet relationships data, with the following exceptions: the intimacy subscale items comprise a separate component of their own; one companionship item loads most strongly on the intimacy component; one nurturance item loads on the relative power component. The conflict component comprises all of the items from the conflict and antagonism subscales.

Table 5.3 *Components from human-pet and human-human dyads. (Items with loadings >0.5 in bold type. Varimax rotation used)*

	Components from human-pet dyads		Components from human-human dyads			
Subscale item	Support	Conflict	Support	Conflict	Relative Power	Intimacy
Affection (i) 1	**0.79**	>0.01	**0.81**	0.27	0.06	0.01
Affection (i) 2	**0.82**	0.08	**0.85**	0.22	0.03	0.15
Affection (i) 3	**0.81**	0.08	**0.77**	0.18	0.06	0.10
Affection (ii)1	**0.69**	0.04	**0.74**	0.29	0.14	0.05
Affection (ii)2	**0.70**	0.02	**0.77**	0.13	0.16	0.08
Affection (ii)3	**0.71**	0.05	**0.59**	0.16	0.26	0.20
Companionship 1	**0.65**	0.23	0.40	0.11	0.21	0.48
Companionship 2	**0.76**	0.16	**0.61**	0.29	0.09	0.34
Companionship 3	**0.72**	-0.11	**0.54**	0.17	>0.01	0.36
Admiration 1	**0.73**	0.04	**0.57**	0.48	0.16	0.29
Admiration 2	**0.61**	0.05	**0.58**	0.19	0.19	0.09
Admiration 3	**0.69**	0.09	**0.53**	0.26	0.13	0.23
Reliable Alliance 1	**0.67**	0.21	**0.75**	0.17	-0.04	0.10
Reliable Alliance 2	**0.66**	0.34	**0.75**	0.18	0.03	0.13
Reliable Alliance 3	**0.63**	0.33	**0.69**	0.18	-0.08	0.20
Satisfaction 1	**0.62**	0.13	**0.65**	0.38	>0.01	0.22
Satisfaction 2	**0.63**	0.34	**0.71**	0.42	-0.15	0.06
Satisfaction 3	**0.74**	0.20	**0.77**	0.28	0.03	0.27
Nurturance 1	**0.53**	0.02	0.39	0.04	0.45	0.25
Nurturance 2	**0.67**	-0.07	0.36	0.05	**0.59**	0.19
Nurturance 3	**0.65**	-0.05	**0.52**	0.01	0.30	0.30

Table 5.3 *(continued)*

	Components from human-pet dyads		Components from human-human dyads			
Subscale item	Support	Conflict	Support	Conflict	Relative Power	Intimacy
Intimacy 1	**0.51**	-0.05	0.20	0.17	0.15	**0.77**
Intimacy 2	**0.63**	-0.06	0.16	0.20	0.07	**0.84**
Intimacy 3	**0.57**	0.13	0.13	0.12	-0.07	**0.86**
Instrumental Aid 1	0.49	-0.15	0.42	0.03	-0.11	0.47
Instrumental Aid 2	**0.60**	-0.08	**0.51**	0.11	-0.47	0.39
Instrumental Aid 3	0.38	0.03	**0.56**	0.02	-0.39	0.33
Conflict 1	-0.02	**-0.71**	-0.24	**-0.72**	0.12	-0.11
Conflict 2	>0.01	**-0.87**	-0.32	**-0.72**	0.02	-0.09
Conflict 3	-0.03	**-0.79**	-0.24	**-0.73**	0.13	-0.17
Antagonism (iii) 1	-0.08	**-0.81**	-0.40	**-0.70**	0.05	-0.05
Antagonism (iii) 2	-0.04	**-0.74**	-0.34	**-0.65**	0.16	-0.19
Antagonism (iii) 3	0.07	**-0.65**	-0.05	**-0.74**	-0.32	-0.11
Antagonism (iv) 1	-0.13	**-0.53**	-0.34	**-0.67**	-0.23	-0.05
Antagonism (iv) 2	0.16	-0.46	-0.04	**-0.75**	-0.26	0.06
Antagonism (iv) 3	0.23	**-0.54**	-0.16	**-0.64**	0.15	-0.19
Relative Power 1	0.06	0.03	0.17	-0.07	**0.85**	0.01
Relative Power 2	0.08	0.32	-0.04	0.04	**0.82**	-0.01
Relative Power 3	-0.07	0.08	-0.03	0.03	**0.84**	-0.01
Percentage of total variance explained	30.54	12.88	26.63	14.92	9.63	9.57

notes

(i) - Affection (for participant from others)

(ii) - Affection (of participant for others)

(iii) - Antagonism (others antagonise participant)

(iv) - Antagonism (participant antagonise others)

Two main differences may be seen between human and pet relationships: Firstly, relative power features as a component of human relationships, but not pet relationships. Within the human relationships two nurturance items load most strongly on the relative power component. This component may be due to the influence of parent-child dyads, where power and nurturance both feature strongly in the parent-child relationship. This interpretation deviates somewhat from the view that pets have a similar role to children. Secondly, intimacy is included in the general support component for human-pet relationships, but features as a separate dimension in human-human relationships. The intimacy items refer to confiding behaviours such as telling others private thoughts or feelings. These results could be due to participants confiding in human relationships such as close friends outside the family group, who were not included in the study. Alternatively, it might be that confiding is a more generalised feature of positive relationships with pets but a more specific feature of relationships with people.

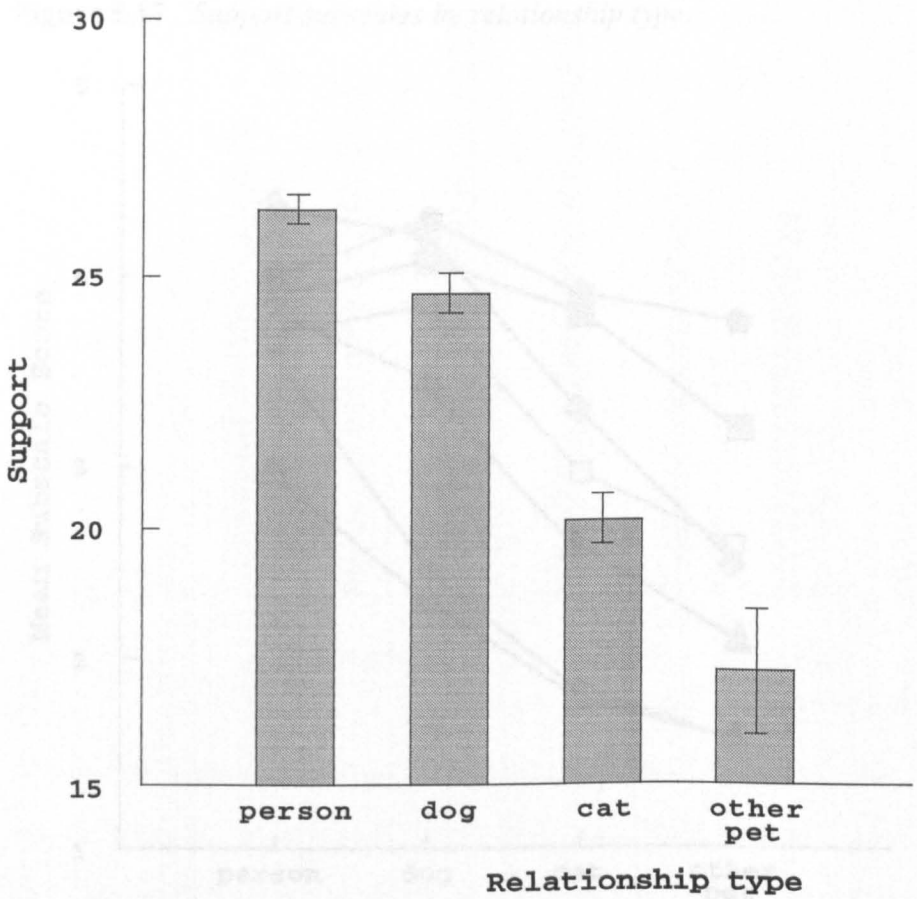
The apparent differences in the structure of human-human and human-pet relationships are intriguing and deserve further investigation. Despite the differences, however, the similarity between the two structures overall is also striking. This adds empirical weight to the view that human-pet relationships are similar in nature to human-human relationships and perhaps more specifically, that the supportive aspects of the two kinds of relationships are similar.

5.3.4 Differences between relationships - support.

Not withstanding the differences in the structure of human-human and human-pet relationships, to explore the difference between them, it still makes sense to use the concepts and summary scores devised by Furman. Furman suggested deriving an index of social support from the subscales: affection, admiration, reliable alliance, nurturance, intimacy, instrumental aid and companionship. For human-human relationships, this index of support was higher than for human-pet relationships, see

figure 5.16. A one-way analysis of variance showed that differences among the four relationship types were significant, $F(3,491)=63.1$, $p<0.0005$. Post hoc Tukey tests showed that all pairwise comparisons were significant, $p<0.05$.

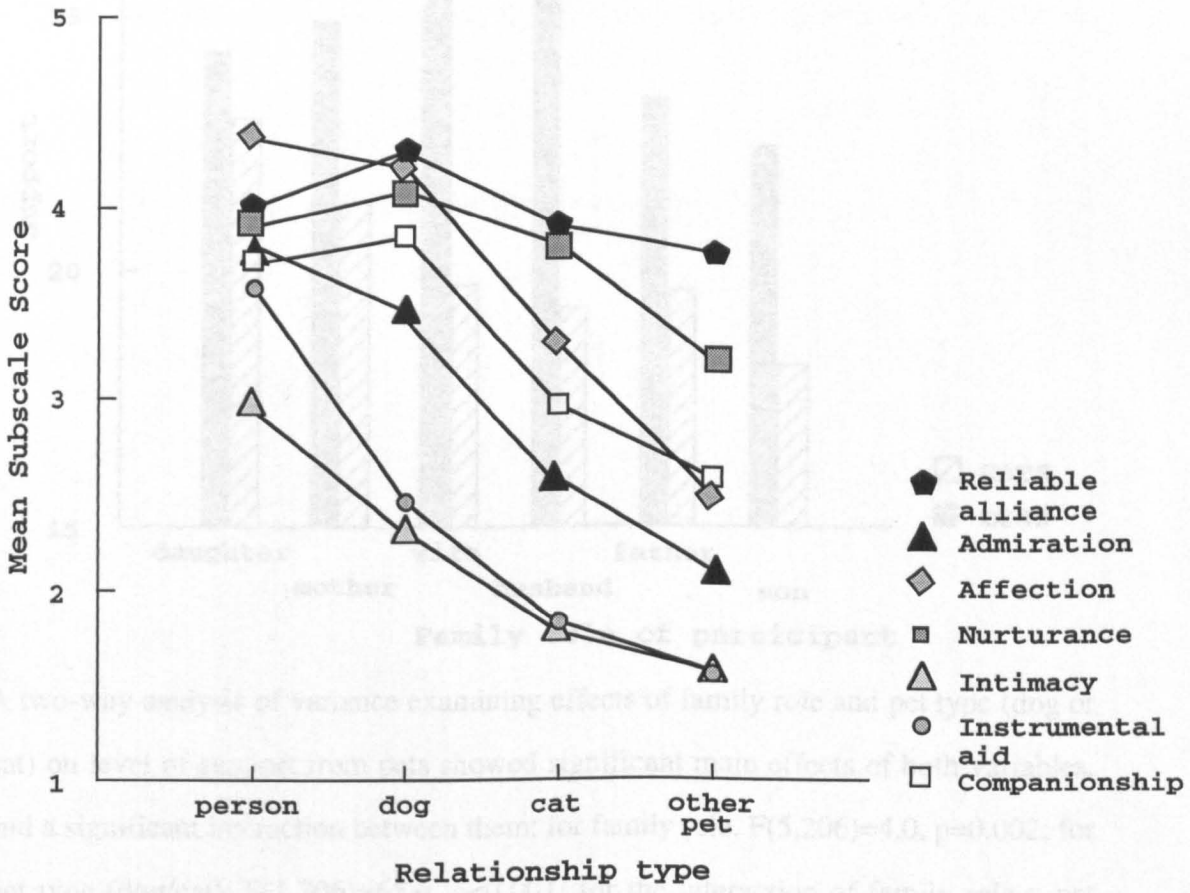
Figure 5.16 *Support by relationship type.*



To check whether the differences between relationship types were consistent across the subscales that contribute to the overall support index, a two-factor analysis of variance (relationship type x subscale) was carried out on mean scores. The interaction was significant ($F(18,2946)=34.7$, $p<0.001$) indicating that differences between relationship types were not entirely consistent across subscales. The main source of this inconsistency is in the comparison between human-human and human-dog relationships (figure 5.17). Scores for instrumental aid, affection, intimacy and admiration were higher for human-human relationships than for human-dog

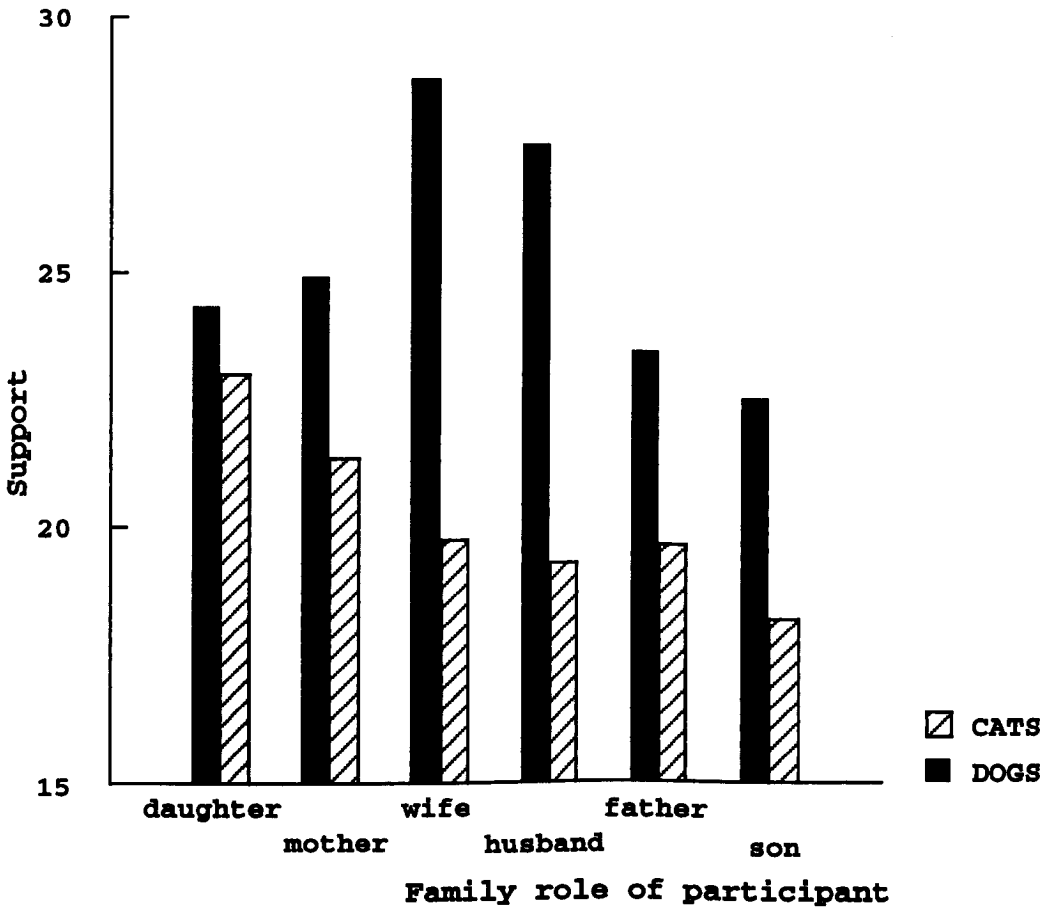
relationships, whereas scores for companionship, nurturance and reliable alliance were higher for human-dog than for human-human relationships. Support from human-dog relationships was higher than support from human-cat relationships, and the direction of this difference was the same for all seven subscales.

Figure 5.17 *Support subscales by relationship type.*



As the number of other pets was small, and heterogeneous in the species represented, further analysis of support focused on cats and dogs. Figure 5.18 shows how the support levels from cats and dogs differ by family role. Human-cat relationships broadly follow a trend whereby female family roles report higher levels of support than males. The pattern for human-dog relationships is markedly different, with wives and husbands (from households with no children) reporting the highest levels of support.

Figure 5.18 *Standardised index of support from pets by family role of participants and pet type (cat or dog).*

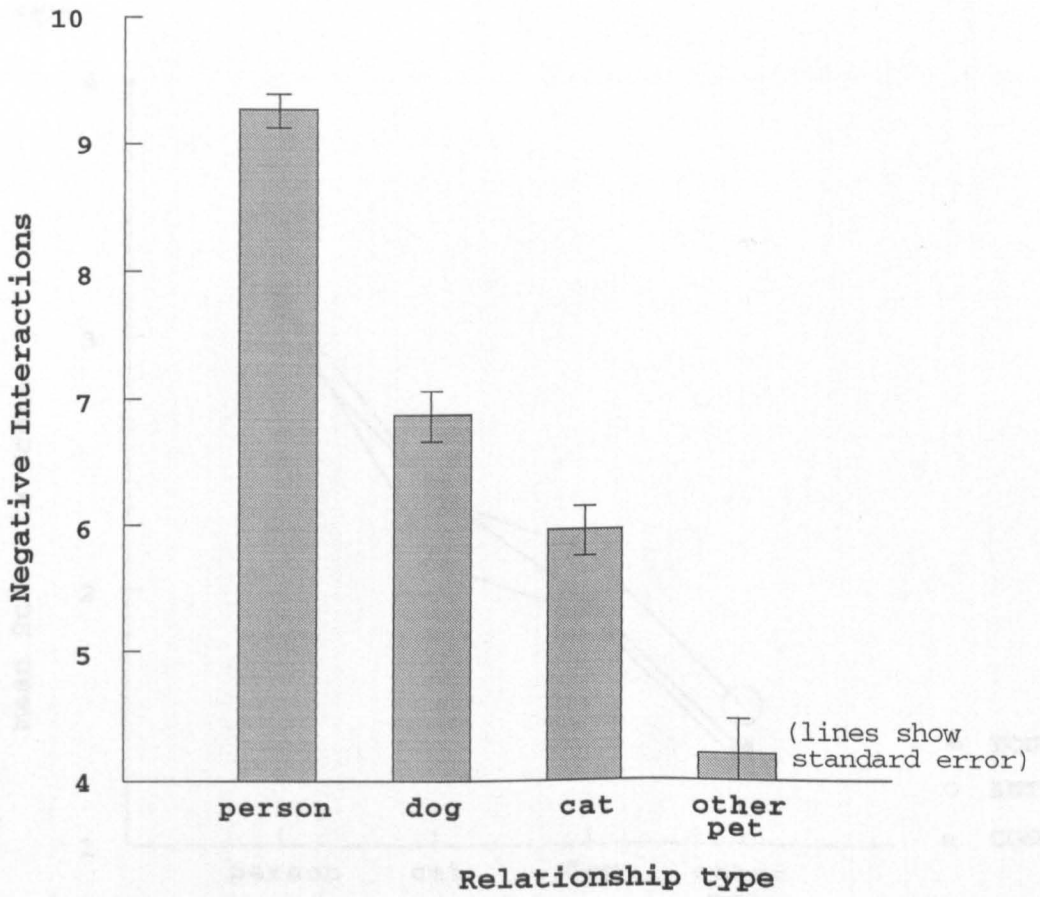


A two-way analysis of variance examining effects of family role and pet type (dog or cat) on level of support from pets showed significant main effects of both variables, and a significant interaction between them: for family role, $F(5,206)=4.0$, $p=0.002$; for pet type (dog/cat), $F(1,206)=65.6$, $p<0.001$; for the interaction of family role x pet type, $F(5,201)=3.3$, $p=0.006$. The mean support from dogs is higher than for cats. Post hoc pairwise comparisons on the main effect of family roles showed that the mean level of support reported by sons is significantly lower than for mothers, daughters and wives ($p<0.05$). Comparison of the family role x pet type combinations indicates family roles of husbands and wives report significantly higher levels of support from dogs compared with cats ($p<0.05$). For the other family roles, the mean support from dogs is higher than for cats, but the differences fail to reach statistical significance.

5.3.5 Differences between relationships - negative interactions

The index of negative interactions comprises the conflict and the two antagonism subscales. Negative interactions are higher for human-human relationships than human-pet relationship, see figure 5.19. A one-way analysis of variance showed that differences among the four relationship types were significant, $F(3,492)=98.4$, $p<0.001$. Post hoc Tukey tests showed that all pairwise comparisons were significant, $p<0.05$.

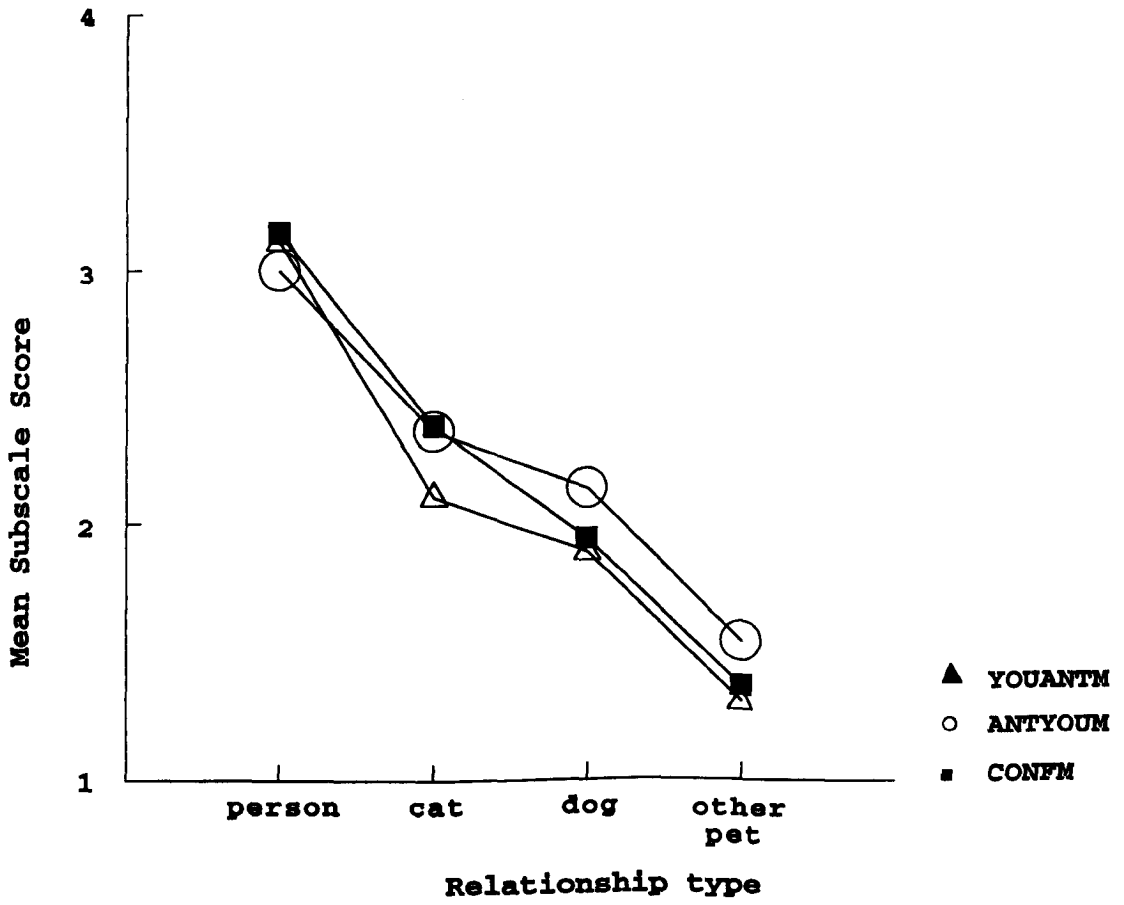
Figure 5.19 *Negative interactions by relationship type.*



The pattern of scores for each of the three subscales comprising the negative interaction index is very similar. Despite this, when a two-factor analysis of variance (relationship type x subscale) was carried out on standardised scores for the conflict

and both antagonism subscales, a significant interaction was found ($F(3,984)=8.8$, $p<0.001$). This indicates that differences between relationships types were not entirely consistent across subscales. There is a difference in the two antagonism subscales: in human-human relationships, participants antagonise others more than others antagonise them, whereas in human-pet relationships, pets are perceived to antagonise participants more than participants report antagonising pets. However, these effects are small relative to differences between relationship types which are similar across all three subscales (figure 5.20).

Figure 5.20 *Standardised scores for negative interaction subscales by relationship type.*

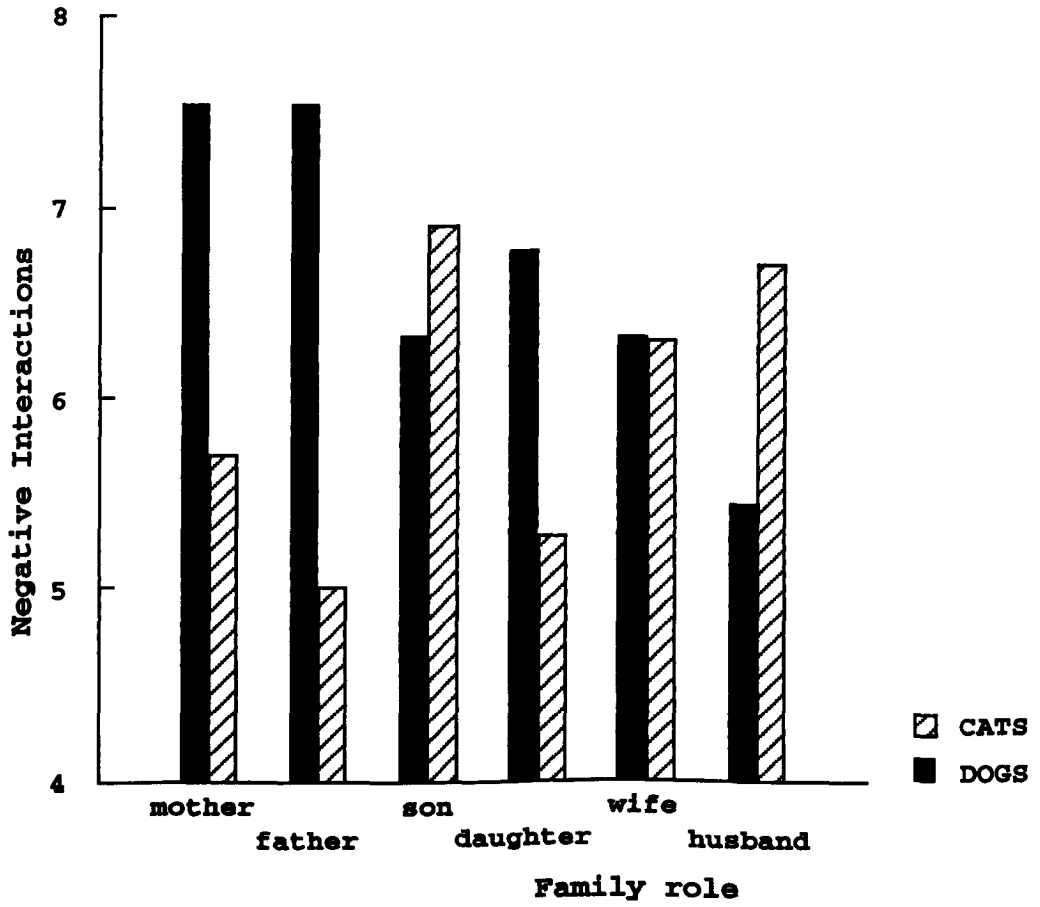


Differences between human-cat and human-dog scores were examined further. A two-way analysis of variance of family role and pet type on negative interactions

showed no significant main effect of family role, $F(5,207)=0.6$, $p=0.717$, which is unlike the findings for support. However, there was a significant effect of pet type, $F(1,207)=5.5$, $p=0.020$ with dogs rated higher than cats, and a significant interaction of family role x pet type $F(5,207)=4.8$, $p<0.001$.

Figure 5.21 shows the ratings of the 6 family roles for negative interactions with cats and dogs respectively. Post hoc pairwise comparisons were conducted, and found that fathers and mothers both rate dogs significantly higher on negative interactions than cats ($p<0.05$). Although husbands and sons rated cats higher than dogs, these differences were non-significant.

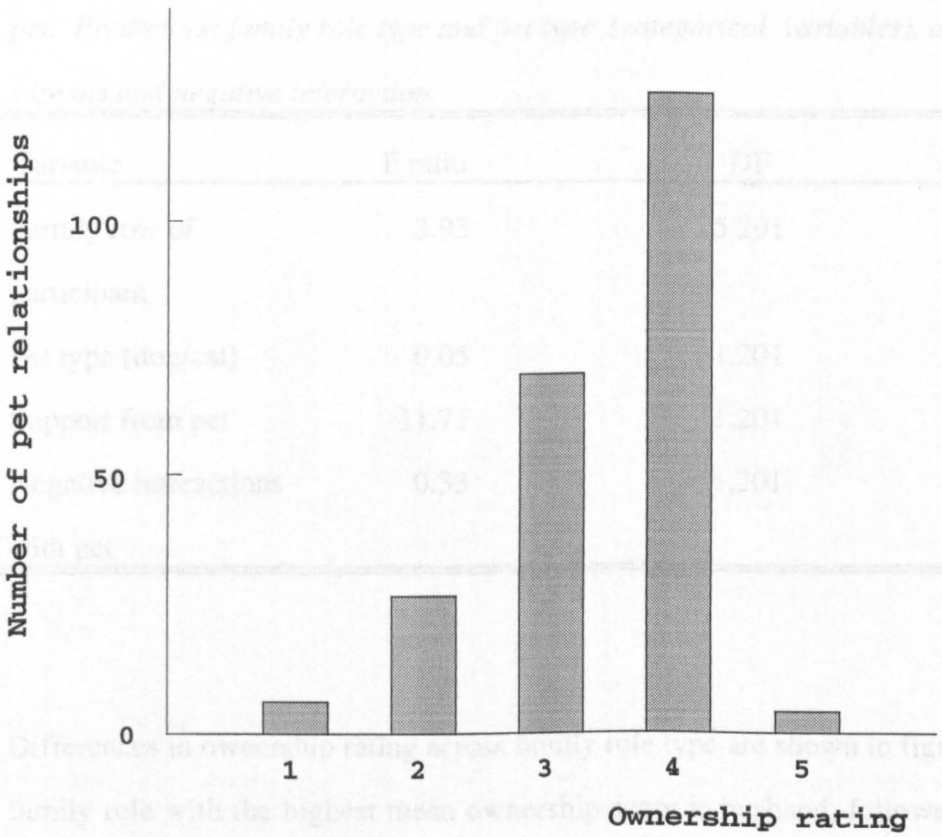
Figure 5.21 *Standardised index of negative interactions from pets by family role of participants and pet type (cat or dog).*



5.3.6 Judgements of ownership share.

The data from the ratings of ownership showed that most pets are considered as shared between human family members, see figure 5.22.

Figure 5.22 *Number of human-pet dyads reporting each ownership rating.*



Key: 1 = No share in owning pet 2 = Small share 3 = Moderate share
4 = Big share 5 = Only one owning pet

Only 10 of the 244 human-pet dyads were allocated to the ratings 1 (no share in owning pet) or 5 (the only human who owns pet). These 10 dyads with extreme ratings were not typical in that 8 of the 10 involved small rodents such as hamsters and rabbits rather than the predominant species of cats and dogs. Typical pet species, i.e. cats and dogs, are usually considered as shared between the human household members. To examine the variables influencing ownership ratings of cats and dogs, regression analysis was computed using family role of participant, pet type (cat/dog),

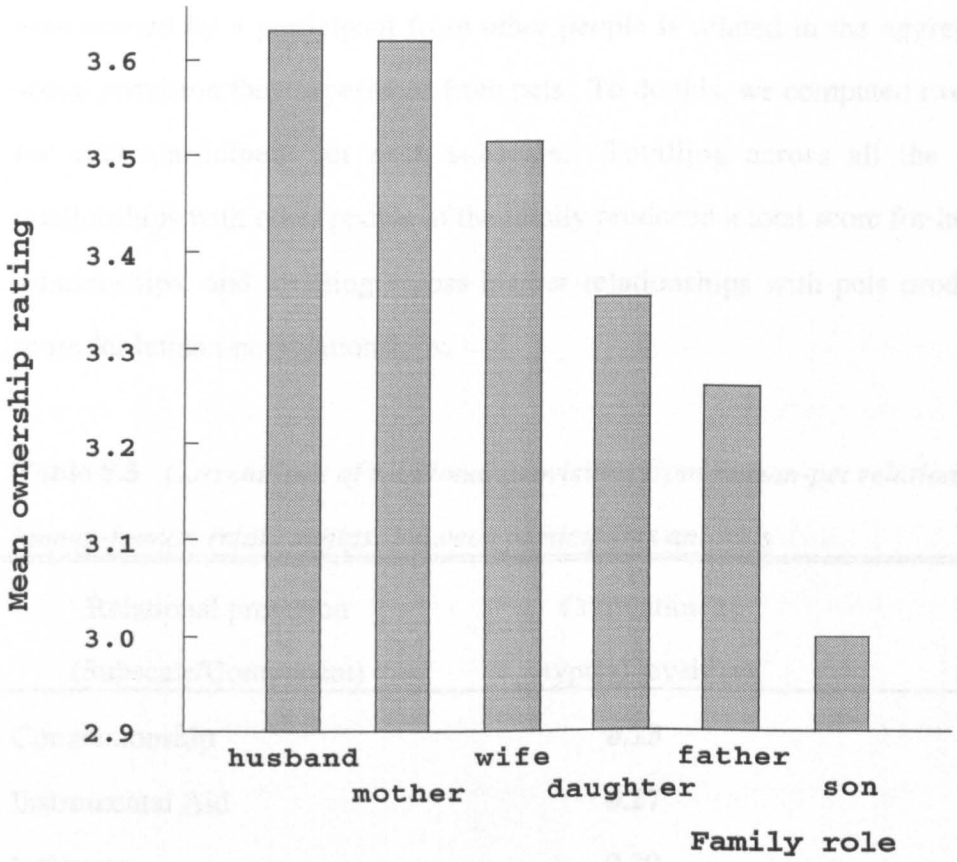
index of support from pet and index of negative interactions with pet as predictors (family role of participant and pet type as categorical variables). Results, detailed in table 5.4 show that family role and the support index from human-pet relationships had a significant main effect on ownership ratings.

Table 5.4 *Regression analysis on participant's self rating of ownership share of pet. Predictors: family role type and pet type (categorical variables), and indices of support and negative interaction.*

Variable	F ratio	DF	Probability
Family role of participant	3.93	5,201	0.002
Pet type (dog/cat)	0.05	1,201	0.827
Support from pet	11.71	1,201	<0.001
Negative interactions with pet	0.33	1,201	0.568

Differences in ownership rating across family role type are shown in figure 5.23. The family role with the highest mean ownership score is husband, followed by mother, wife, daughter, father and son. The level of support from pets increases with increased ownership rating. Neither pet type (dog/cat), or the index of negative interactions with pets (sum of standardised scores for conflict and antagonism subscales) had a significant effect on ownership rating.

Figure 5.23 *Mean ownership rating by family role.*



5.3.7 Do pets compensate for low provisions in human relationships?

If people use provisions from human-pet relationships to compensate for low levels from provisions from other human relationships, a negative correlation between provisions from people and provisions from pets would be expected as the less participants receive from people, the more they might seek from pets.

This general issue can be examined in two ways. First, we can ask whether support and other relational provisions experienced by a participant from a typical human relationship is related to what participants experience of relational provisions from a typical pet. To do this, we computed two mean scores for each participant for each subscale. Averaging across all of a participant's relationships with other people in the family produced a mean score for that participant's human-human relationships, and

averaging across his/her relationships with pets produced a mean score for the human-pet relationships. Second, we can ask whether the aggregate social provision experienced by a participant from other people is related to the aggregate level of social provision they experience from pets. To do this, we computed two total scores for each participant for each subscale. Totalling across all the participant's relationships with other people in the family produced a total score for human-human relationships, and totalling across his/her relationships with pets produced a total score for human-pet relationships.

Table 5.5 *Correlations of relational provisions from human-pet relationships versus human-human relationships: between participants analysis*

Relational provision (Subscale/Component)	Correlation of typical levels (r)	Correlation of aggregate levels (r)
Companionship	**0.23**	**-0.21**
Instrumental Aid	**0.27**	-0.08
Intimacy	0.20	-0.10
Nurturance	**0.24**	-0.20
Affection (1)	0.04	**0.22**
Affection(2)	0.10	**-0.21**
Admiration	0.08	**-0.22**
Reliable Alliance	**0.35**	**-0.22**
Satisfaction	**0.23**	-0.18
Conflict	0.13	-0.03
Antagonism (3)	0.20	-0.05
Antagonism (4)	0.18	-0.09
Relative Power	0.10	-0.16
Support Index	**0.35**	**-0.23**

notes: (1) Others love participant; (2) participant loves others; (3) Others antagonises participant; (4) Participant antagonises others; Correlations in bold type significant at $p<0.05$ ($df = 499$).

Table 5.5 presents the correlations between typical levels of social provision for human-human and human-pet relations, and between aggregate levels of the two sources of provision. The correlations for typical levels of provision are primarily positive, indicating that participants who perceive a higher level of provision from a typical human also tend to perceive higher levels of provision from a typical pet. This indicates that participants who experience lower than average levels of provision from a typical human in their network, also experience low levels of provision from a pet. This is not what one would expect from the compensation hypothesis. The correlations for aggregate provision are primarily negative, suggesting that, at a descriptive level, low aggregate levels of provision from people are associated with higher aggregate levels from pets. However it is important to note that this could be explained by a negative correlation found between the number of people in households and the number of pets ($r= -0.23$). It is inevitable that numbers of people and pets will influence aggregate levels of support from people and pets.

The correlations between subscale scores could be reflecting patterns of differences between individuals in the experience of relational provisions, or patterns of inter-family differences, i.e. whole families might well differ from one another in their style and levels of social provision. These issues can be examined by partitioning the overall correlations into within-family and between-family correlations. Within-family correlations have all inter-family differences partialled out so that they reflect individual differences uncontaminated by family effects. As all of the individuals within any family report on the same number of human-human and human-pet relationships, there is a constant linear relationship between typical (mean) and aggregate (total) scores, so these two types of variable are not distinguishable in within family correlational analyses. Between-family correlations reflect only inter-family differences, including the differences in the number of people and pets in different families. Within and between family correlations are shown in table 5.6.

Table 5.6 *Correlations between provisions from human-pet relationships versus human-human relationships: within and between families analysis*

Relational provision	Within families r (df=459)	Between families r (df=39)	
(Subscale/Component)	typical	typical	aggregate
Companionship	**0.22**	0.24	-0.25
Aid	**0.25**	0.29	-0.13
Intimacy	**0.22**	0.21	-0.24
Nurturance	**0.23**	0.25	-0.25
Affection (1)	-0.02	0.10	-0.25
Affection(2)	**0.21**	0.01	-0.23
Admiration	0.06	0.10	-0.27
Reliable Alliance	**0.33**	**0.37**	-0.30
Satisfaction	**0.26**	0.22	-0.21
Conflict	**0.25**	0.10	-0.06
Antagonism(3)	**0.33**	0.15	-0.10
Antagonism(4)	**0.43**	0.07	0.02
Relative Power	0.12	0.09	-0.16
Support	0.21	0.40	-0.26

notes: (1) Others love participant; (2) participant loves others; (3) Others antagonises participant; (4) Participant antagonises others; Correlations in bold type significant at $p<0.05$ (df = 499).

Within-family correlations of the typical levels of provisions from human-human relationships and human-pet relationships are generally positive and statistically significant at $p<0.05$. This further supports the earlier finding that subjects reporting low levels of provision from humans also report low levels of provision from pets. This analysis confirms that this pattern operates at the level of individuals rather than families. The level of provisions reported by individual family members are similar

for both human-human and human-pet relationships.

Between family correlations between typical provisions from pets and from people are also generally positive and several are of the same order of magnitude as the within family correlations, so there seem to be effects of family style as well as individual differences. Correlations for the aggregate scores are generally negative, which again is probably accounted for by the negative correlation between the number of people and the number of pets in these families. The between family correlations need to be treated with some care, as only one reaches conventional levels of statistical significance. This is because the between family degrees of freedom are quite small, (df=39), resulting in lower power for the statistical analysis than for the within family correlations, (df=459). Despite this lack of statistical support for the significance of the apparent trends in correlations, the fact that the supportive subscales all follow the same trend suggests that there are some consistent differences between families in the characteristics of their social provision.

The results for each of the subscales of companionship, aid, intimacy, nurturance, reliable alliance, and satisfaction fit the general trends well:

- Individual differences within families show a positive correlation indicating those participants reporting high provisions from people also report high provisions from pets. This may be attributed to the personal style of individuals.

- Correlations of mean scores between families are positive, indicating those families reporting high provisions from people also report high provisions from pets. This may be attributed to a family style.

- Between families correlations of aggregate scores are negative. As the typical scores of human and pet relationships are positively correlated, the negative

correlation of aggregate scores must reflect the negative correlation between the numbers of human and pet relationships in the families.

There are also exceptions to this general trend:

- There are no significant correlations between typical scores for human-human and human-pet relationships on subscales of affection (from others) and admiration. This suggests that there is no strong individual or family style influencing results. There is however a negative correlation of aggregate scores between families which is likely to be due to the negative correlation between the number of people and the number of pets in families.

- The three negative interaction subscales show positive correlations of $r > 0.25$ within families, but not between families (for typical or aggregate data). This suggests that some individual style is influencing results such that those with high conflict scores for human-human relationships will report high conflict scores for human-pet relationships. There is no corresponding family style influencing the results. Despite the negative correlation between the number of people and the number of pets in families, there is no significant negative correlation between families on the aggregate scores from human-human and human-pet relationships. This may be because the positive correlation at an individual level is so marked.

- The subscale of affection for others shows a positive correlation, $r = 0.21$ between typical scores for human-pet and human-human relationship scores within families, but only a trivially small correlation of $r = 0.01$ between families. This suggests that there is an individual style such that participants who report high scores for affection for typical human-human relationships in their family will also report high scores for typical pets, however there is no corresponding family style influencing the results.

- There are no strong correlations between provisions from human-human and human-pet relationships in any of the analyses of the relative power subscale.

- The correlations between provisions from human-human and human-pet relationships for the support index overall does not show a strong positive correlation within families.

5.4 Discussion

The principal component analysis of the relational provisions data on human-pet relationships revealed 2 components of the human-pet relationship: support and conflict. This is consistent with the proposed indices of support and negative interactions proposed by Furman. Human relationships between family members gave a more complex pattern, with relative power as an additional component, and intimacy as a separate dimension, independent of the main support component. Despite these differences, the overall componential structure of support in human-human and human-pet dyads was strikingly similar. This provides empirical support for the widespread belief that human-pet relationships have marked similarities to human-human relationships and that the concept of social support can usefully be applied to human-pet relationships, at least at a descriptive level. Although the concept of social support has its root in the belief that social relationships can protect against ill health, it does not automatically follow that support from pets conveys health advantages.

Overall, human relationships provide significantly more support than human-pet relationships. However, there is evidence that human-pet relationships, particularly those with dogs, provide a source of some elements of support comparable with levels from human relationships. Indeed, on reliable alliance, companionship and

nurturance, the mean level of provision from human-dog relationships is higher than human relationships. Relationships with dogs were rated significantly higher than those with cats, and the cats were in turn rated higher than other types of pet on nearly all measures, both on positive elements of support and negative elements of conflict. This suggests that people in families usually engage in more intense relationships with their pet dogs than cats, and with cats than other pet species. When the data were broken down by family role of participant, all family roles reported higher mean levels of support from dogs than from cats, although the difference was statistically significant only for adults without children. The results on negative interactions showed that mothers and fathers reported significantly higher conflict with dogs than cats. Differences in negative interactions with cats and dogs were non-significant for other family roles. These results suggest that cats and dogs may typically interact in different ways with different family role types.

The most frequently owned species, cats and dogs, are usually perceived as shared amongst the human family members, rather than belonging to any individual. The size of the share of ownership is correlated with the family role of the participant, and degree of support from the pet. This suggests that there may be a variety of human pet relationships within a family sharing a single pet. It therefore seems inappropriate to treat pet ownership as a simple categorical attribute based simply on the presence of a pet in a household.

This issue is particularly important for research investigating associations between pet ownership and advantages for health. There are a number of different models for the causal processes underlying such an association (McNicholas & Collis, 1998). Prominent among these is the hypothesis that human-pet relationships, especially the supportive functions of such relationships may influence health directly (Collis & McNicholas, 1998). Investigations of this hypothesis need to ensure that human-pet relationships are evaluated in an appropriate manner. If pet ownership is assessed in

terms of the presence or absence of a pet in a human's household, as it might well be if a question such as 'do you own a pet?' is posed outside the family context, then these data will not properly represent the nature and variety of human-pet relationships among respondents.

The idea that pet owners use provisions from pets to compensate for shortcomings in other human relationships receives no support from this study. The correlations between typical levels of provision reported from human-human and human-pet relationships are either non-significant or positive, and suggest that results are influenced by the personal style of the individual and/or the family style. In looking at pets in the family context, this did not include other relationships which may also be important to participants. Further research should allow participants to include all relationships which are important to them. The negative correlations between participants' ratings of aggregate provisions from pet relationships and aggregate provisions from human family members reflects the negative correlation between the number of people and the number of pets in families. The finding that families with fewer people have more pets and vice versa does not contradict the information presented in the introduction which shows that larger sized households are more likely to own pets (Pedigree Petfoods Ownership Survey, 1996). Households with more than 2 members are more likely to have *at least* one pet than those with just one or two people, but of the pet owning households investigated in this study, those with fewer people had more pets per household. The idea that pet ownership might be a compensatory strategy used by people with low levels of social provision from other humans has often been alluded to in the literature. It receives no support from the data in this study, but this still leaves open the question of why some people have a larger number of pets than others. The family context may well be important: it only needs one family member to decide to acquire several pets for the rest of the household to become multiple pet owners too.

This study has succeeded in measuring the provisions of social relationships from humans and from pets in comparable way, and provides some empirical substance for the hypothesis that what goes on between people and their pets has a lot in common with social relationships between people. The characterisation of social relationships in terms of a set of relational provisions (Weiss, 1974) is but one of many approaches to the study of human social relationships (Berscheid, 1994; Hinde, 1997), and other facets of relationship theory deserve exploration so that we can better understand the scope and limits of the relationship model of pet ownership.

CHAPTER 6

Human-pet relationships and human health.

6.1 Introduction

There is a growing body of research looking at health differences between pet owners and non-owners. Interpretations of this work, particularly the way in which it is presented in the popular media, have resulted in a widely held belief that pets are in some way 'good for us', which now seems to have entered the folk psychology of western culture. Headlines in popular publications such as *"The healing power of pets"* (Readers Digest, July, 1996) and *"Animal Magic: Recent scientific research has confirmed what pet owners have known all along - living with our furred and feathered friends can improve our physical and mental health"* (Sainsbury's The Magazine, February, 1996); *"Take two pets and call me in the morning"* (Science, Vol. 237, 1987) are examples of articles which associate the presence of pets with benefits to human health and psychological well-being. This chapter will review the literature on the association between pets and health advantages, and question whether or not there is convincing evidence to support the popular view. Following the findings reported in chapter 5 that human-pet relationships can be perceived as supportive, the proposed mechanism through which pets may bring about health benefits (if indeed they do) is that of social support derived from the relationship with the pet and the ways in which this may resemble that derived from human relationships. In addition, ways in which pets may provide support that is different from human support, but which might be of value, especially as an adjunct to human support is also considered.

The focus of this chapter is an examination of health status amongst pet owners and non-owners. Although there is considerable research investigating the role of animals

in therapeutic situations, this may be viewed quite differently in that this usually involves an animal not owned by the client undergoing therapy and is therefore unlikely to involve the same mechanisms implicated in long term relationships with an animal. Thus, whilst acknowledging the existence of this body of work, it is not pursued in this investigation of advantages that may accrue to pet owners.

6.2 Overview of literature investigating health benefits associated with pet ownership.

The claims for health benefits associated with pet ownership have emerged piecemeal over time. Earliest work tended to focus on pet animals as included in therapeutic settings but was extended to investigate health advantages for people in the community. One such study examined older people in the community who were given either a pet bird or a pot plant to care for as compared to a control group who received neither. Those people who were given the pet bird report higher increases in psychological well-being (as measured by the GHQ). This was explained by proposing that the pets acted as 'social lubricants' and provided an opportunity for interactions with others as well as a living creature with which to interact and care for (Mugford & M'Comisky, 1975).

Although the Mugford and M'Comisky study represents one of the first to make claims for some form of health advantage to associated with ownership of a pet animal, it was not until claims for *physical* health benefit were made that the popular lay belief that pet were good for their owners' health came about. Today, the following 'benefits' are widely believed to be associated with pet ownership: improved recovery from coronary heart disease; lowered risk factors for cardiovascular disease; better general health and psychological well-being; and moderation of the adverse effects of stress via reductions in blood pressure. These will be reviewed separately.

6.2.1 Pet ownership and cardiovascular health.

The first study which identified pet ownership as a relevant variable for recovery from coronary heart disease was conducted by Friedmann et al. (1980). They looked at a range of social factors contributing to survival of 92 patients one year after discharge from a coronary care unit. Pet ownership was reported to be a small, but significant factor in accounting for the variance in survival. As the extra exercise that dog owners are likely to take in walking their pets may account for this difference, Friedmann et al. examined the results after eliminating the data from dog owners. They reported that the owners of pets other than dogs had a better survival rate than non-pet owners, and concluded that the beneficial effect of pets is not just an effect of the extra physical activity needed to care for and exercise dogs. Friedmann et al. consider the possibility that the apparent effect of pets on survival may be due to differences of social condition or personality between pet owners and non-owners, and state that this merits further investigation. They go on, however, to paint an exclusively positive picture of the emotional comfort that pets can provide, and suggest that there could be a direct physiological effect of comfort and physical contact such as petting on heart rate and blood pressure. There is no consideration given to ways in which pet ownership may add to stress levels of their owners. This study was criticised by Wright & Moore (1982), who argued that the analysis of data was flawed, and that the effect of pet ownership on survival claimed by Friedmann et al. is a statistical artefact In particular they pointed out that when all the other social factors were examined along with physiological severity and pet ownership, the standardised discriminant function coefficient for pet ownership was 0.12, the least important of the eight variables analysed. Further, they were concerned over the way in which the "effect" of pet ownership was being referred to by others, and that both professionals and public should be made aware of what Wright and Moore considered to be the spurious nature of the claims. Friedmann and Katcher (1982) replied to Wright and Moore's criticism, and acknowledged an error in some of their analyses, but defended their hypothesis that social relationships with pets can positively

influence health. Whilst this is plausible, it remains difficult to uphold in the light of other omissions in the analyses. For example, although they reported that age was, as could be expected, significantly associated with higher incidence of mortality from cardiovascular disease, no analysis was presented for any association between age and pet ownership despite clearly defined trends in pet ownership which indicate that people are less likely to own pets as they grow older. Similarly, health status before the cardiovascular episode is not reported by Friedmann et al. Again, this is somewhat surprising since one would suppose the authors would feel it important to examine whether pet ownership was indicative of better health prior to the infarct (i.e. people with better health/fewer health concerns are more likely to own a pet than those with poorer health or more grounds for concern). Thus the evidence from this study, despite its popular appeal, cannot be seen as firm evidence that pet ownership itself brings about health benefits in terms of recovery from cardiovascular disease.

In 1995, Friedmann and Thomas reported another study which partly replicates the findings of Friedmann et al., 1980, and uses a much larger sample (N=424). From this study, Friedmann and Thomas conclude that pet ownership and high social support are significant predictors of survival after acute myocardial infarction, independent of other psychosocial or physiological factors. This is despite reporting the probabilities associated with these factors obtained from logistic regression higher than the normal level required for significance: $p<0.05$. The probability for pet ownership as a predictor of survival is reported as $p=0.085$, and high social support is given as $p<0.068$. Given that there may be differences in conventions regarding use of particular statistical tests, and levels of probability required for significance, I will consider the descriptive data further.

Table 6.1 *Percentage of subjects surviving one year*

	Percentage of subjects surviving one year	
Pet Type	Owners	Non-owners
Any pet	96.26	93.89
Dogs	98.85	93.26
Cats	93.18	94.77

Table 6.1 shows that at a descriptive level, that 2.37% more pet owners survived than non-owners, and 5.95% more dog owners survived than non-owners. The cat owners fared less well: 1.59%, more cat owners died than non-owners. The absence of a positive effect of cat ownership is contrary to the earlier study. Friedmann and Thomas speculated that higher mortality of cat owners may have been due to the more sedentary nature of cat owners than dog owners (Serpell, 1991). It is unfortunate that the exercise habits of subjects were not studied, however, a physiological profile of subjects was compiled. Friedmann and Thomas said that those taking higher levels of exercise are likely to benefit from a better physiological profile. As there was no significant difference in physiological profiles of dog owners compared to non-dog owners, extra exercise resulting from dog ownership is unlikely to be the reason for difference in mortality. If the move to use the physiological profile as an indicator of exercise levels is valid, the lack of difference in profiles between dog owners and non-owners may be used to suggest that health benefits from dogs are not simply due to increased exercise, and, as Friedmann and Thomas hypothesise, other factors such as social support from dogs may be exerting influence.

However, the problems associated with Friedmann's earlier study are also evident in this later one and continue to raise questions about the assertion that pet ownership is associated with health benefits. This later study also fails to include seemingly obvious analyses such as age and pet ownership, or previous health status/health history and pet ownership which would, should they be non-significantly associated,

eliminate the more plausible claims that age and/or health influences pet ownership. This is seen as particularly important since both studies are widely cited to support claims that the association between pet ownership and health is causal in nature, when in fact there is little or no empirical foundation for this contained within either of the two studies.

6.2.2 Pet ownership and risk factors for cardiovascular disease.

Friedmann et al.'s investigations focused on the recovery of people who had already suffered effects of heart disease. Another group of studies looked for reduction of risk factors for cardiovascular disease that would protect people from getting ill in the first place.

Anderson et al. (1992) conducted a study which drew on a large sample of participants attending a free, screening clinic in Australia (N=5741). Of these, 784 (13.6%) were pet owners. Across both sexes, pet owners were found to have significantly lower systolic blood pressure and plasma triglyceride levels. In men aged between 20 and 59 years systolic blood pressure, plasma cholesterol and plasma triglyceride levels were significantly lower for pet owners than for non-owners. Diastolic blood pressure did not differ significantly between male pet owners and non-owners in any of the age groups. For female subjects, there were no significant differences between pet owners and non-owners in any of the levels except systolic blood pressure in women aged over 40 years.

Pet owners reported themselves as significantly more active than did non-owners, which could be viewed as an obvious health promoting factor, but also reported themselves as drinking more alcohol, eating more 'take away' foods and more meat than non-owners. Cigarette smoking, salt and egg consumption were similar for both subject groups.

The study has done much to promote the belief that pets ownership is associated with reduced risks for cardiovascular disease. However, the study does not indicate whether the reductions recorded in the measured variables would be sufficient to reduce risks, which is somewhat surprising since the authors are routinely engaged in assessment of risk for cardiovascular disease. Also, it is puzzling that only 13.6% of subjects owned pets. This seems rather a small proportion when compared to ownership in similar age groups in the UK. Whether this indicates that pet owners are less likely than non-owners to voluntarily present themselves for risk screening is unclear, but it cannot be ruled out that there may be undetected factors influencing why some people choose to attend and others do not. One possible explanation could be that people who believe themselves to be at risk, perhaps due to high pressure jobs or lifestyles, are more likely to attend screening clinics but, because of their commitments or worries about their health, are less likely to own pets.

A further problem with the study is in its designation of pet ownership. No data are presented for whether those subjects who identified themselves as owning a pet did so on the basis of merely having an animal in the house in which they resided, and which they may have no real involvement with, or whether they regarded themselves as pet owners through having a particular animal which they regularly engaged in some activity or contact. Although the study did not attempt to offer any explanations for its findings, the absence of this information is likely to hinder later attempts to identify the mechanisms which may be operating to bring about the apparent benefits to cardiovascular health. As it stands, the explanation could lie through increased exercise, stress reduction via the physiological mechanisms proposed by Friedmann, increased recreational contact via social catalysis, or through the relationship with the pet itself.

In addition to the popular folk belief that pets are good for health, there is a more specific belief that pets reduce stress and that stroking a pet is sufficiently relaxing to

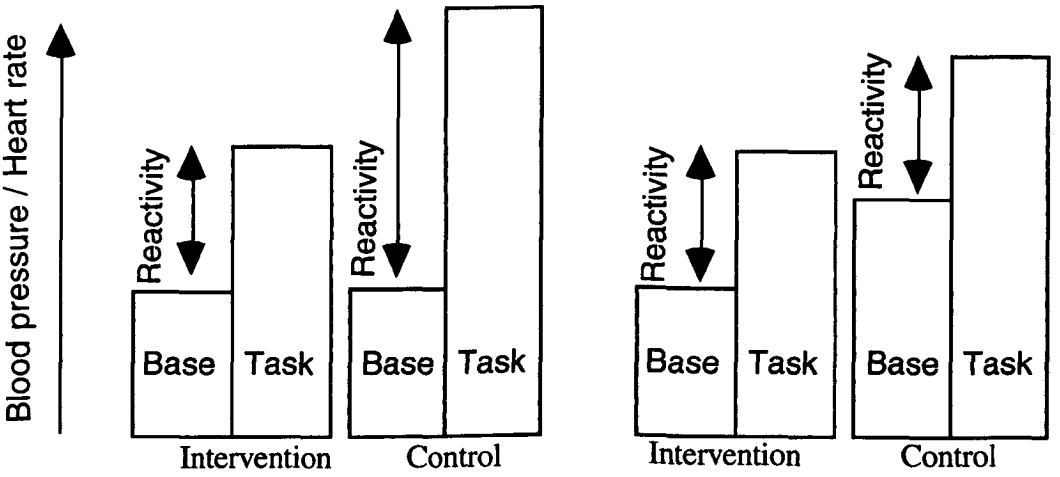
lower blood pressure (BP). In fact these beliefs are a fusion of two, distinct areas of research. The first had its origins in the work of Friedmann et al and the apparent enhanced survival amongst pet owners from myocardial infarct and focused on the potential of a pet to reduce cardiovascular reactivity to a stressor. The second strand of research examined the relaxation benefits of petting or stroking an animal in comparison to other activities. Although quite separate the two areas became confused, not just in lay beliefs but seemingly in the research itself.

Research into the reduction of cardiovascular reactivity to a stressor whilst in the company of a pet has had very mixed findings. The first study which claimed to demonstrate a reduction in cardiovascular responses to a stressor through the presence of a companion animal was that conducted by Friedmann, Katcher, Thomas and Lynch (1983). They investigated changes in the heart rate, blood pressure and mean arterial pressure of children (aged 9-15) when resting quietly and reading aloud. A friendly but unfamiliar dog was present either at the start of the experiment, being removed halfway through, or was introduced during the second half of the experiment. No interaction with the dog was permitted and all trials took place in a home setting. Using a Dinamap oscillometric monitor, blood pressure, heart rate and mean arterial pressure were recorded at one minute intervals during the experiment.

The results showed that the experimental task produced significant increases in all cardiovascular measures, as could be expected. The presence of the dog produced significant reductions only in blood pressure, but this was confined to a main effect, that is, it derived from both resting and task periods. There was no significant interaction between the rest/task factor and the dog present/absent factor to suggest that the presence of a dog reduced the level of stress or arousal in subjects' *in response* to the task. The cardiovascular response to a stress task, or *reactivity*, is the extent to which cardiovascular variables change from baseline to task . Thus the results of the experiment did *not* support the hypothesis that pets could reduce cardiovascular

responses to a stressor. However, in spite of these non-significant findings, the reported discussion referred to lowered blood pressure and heart rate and interpreted the results as if a reduced reactivity response had been found. This was erroneous and is likely to have influenced both popular reporting and subsequent research in the area.

Figure 6.1 *Schematic diagram showing an intervention reducing cardiovascular reactivity to a stress task (left). The diagram on the right shows a main effect of the intervention in the absence of effect on reactivity.*



Effect of intervention on reactivity to task, with no difference between baselines

Main effect of task with no effect of intervention on reactivity.

Later studies have produced inconsistent results (e.g. Locker, 1985; Grossberg, Alf and Vormbrook, 1988) which must raise questions as to the reliability of findings. To date, only one published study has found evidence to support the hypothesis that pets may reduce cardiovascular reactivity to a stressor, and even then the effect was confined to pet owners in their own homes (Allen et al, 1991). The findings have not been replicated.

In the light of such inconsistent findings it is surprising that the belief that pets can

reduce stress has persisted. Even if found to be supported, there are important issues that would need to be addressed for the hypothesis that this a potential mechanism whereby pets can influence human health. For example, it would need to be shown that stress tasks such as those used in such studies (commonly reading aloud, mental arithmetic, cold pressor etc.) produce sufficiently similar responses to real life stressors such as traffic jams, quarrels or work problems. Similarly, it would need some explanation of whether these would be moderated only if the pet were present at the time, which is unlikely for the majority of stressful events. Alternatively, it would require an explanation of how pets may provide post-hoc alleviation of stress.

In some ways this may be addressed by the second strand of research in the field of pets and stress reduction; the purported relaxation benefits from stroking pets. However the claims of studies in this area frequently exceed that which can be supported by the results. A major difficulty in the early studies was an inappropriate comparison between a stress task and quietly petting a dog. Unsurprisingly, petting a dog was found less stressful! However, more adequately designed studies have also failed to produce evidence that petting a dog is any more beneficial than sitting quietly or sitting reading to oneself. In an examination of four studies which made comparisons between petting a dog and a similar restful activities, Dunn et al. (1998) reported that there was either no difference between blood pressure levels or heart rate levels, or that petting a dog may significantly raise blood pressure and heart rate levels in comparison to resting or reading quietly. In the absence of any short-term demonstrable benefits, it is difficult to uphold the belief that pets can have long term beneficial effects on physiological responses to stress or as an aid to relaxation.

6.2.3 Pet ownership, general health and psychological well-being.

Serpell (1991) conducted a prospective study, recruiting participants as they acquired a pet cat or dog (N=24 and N=47 respectively), and following up to record their general health at well-being after 3, 6 and 10 months. Participants were screened to

ensure that they had not owned a pet cat or dog for 12 months prior to the start of the study. A control group of 26 non pet owners who were not acquiring a pet were also tested. Serpell measured general health using a count of the number of minor health symptoms experienced in the previous month from a list of 20 options; psychological health using the 30 item version of the GHQ; and the number and duration of recreational walks taken. These questionnaires were completed at the start of the study (within 2 days of acquiring the pet), and repeated after 1 month, 6 months and 10 months. (Note that GHQ measures were not taken at the 1 month test.) Serpell compared baseline results for participants with those taken at the later date. The findings are summarised in table 6.2.

Table 6.2 *Summary of findings comparing results at 1, 6 and 10 months with baseline data within each group of subjects: non-pet owners, dog owners and cat owners. (Significance level, $p<0.05$)*

	Baseline compared to 1 month results.	Baseline compared to 6 month results.	Baseline compared to 10 month results.
No Pets			
Health Symptoms	No significant change	No significant change	No significant change
GHQ	No data	No significant change	No significant change
Walks	No significant change	No significant change	Significantly more
Dog owners			
Health Symptoms	Significantly better	Significantly better	Significantly better
GHQ	No data	Significantly better	Significantly better
Walks	Significantly more	Significantly more	Significantly more
Cat owners			
Health Symptoms	Significantly better	No significant change	No significant change
GHQ	No data	Significantly better *	No significant change
Walks	No significant change	No significant change	No significant change

*Using one tail test. Result non significant if two tail test used.

The health improvements seen for dog owners were sustained over 10 months, while those for cats were only seen at the 1 month test for general health, and 6 months on psychological health. Serpell notes that the GHQ result at 6 months only reached significance if a one tail test was used (two tail tests were used in all of the other cases). The evidence for health benefits from cats is therefore slim, with only short lived differences on minor health symptoms, and borderline significance on psychological health at 6 months. The benefits associated with acquisition of a dog, are also associated with an increase in exercise levels. To investigate whether the benefits to dog owners were primarily a result of increased exercise, Serpell looked for an association between walking levels and health in the dog owning group. He found no significant association between walking levels and self reported improvements in health between baseline and one month, baseline and 6 months, or baseline and 10 months. Improvements in the GHQ scores at 6 months were positively associated, but this association did not persist to 10 months. Overall, the within groups analysis offers some evidence that acquiring a dog is associated with improvements in general health and psychological well-being that are sustained over 10 months. The improvements in psychological well-being, at least at the 6 month period, may be an effect of increases in recreational walking that are also associated with acquiring a dog.

Serpell went on to analyse differences between the three groups of participants. He found that the improvements on minor health symptoms one month from baseline were significantly better for cat owners than non-owners, and for dog owners than non-owners. Non of the other comparisons between the three groups for minor health symptoms, or for the GHQ results were significant. Serpell speculates that the failure to find a significant effect in the later comparisons was due to an improvement in the health of the non pet owners that can be seen at a descriptive level, but the differences fail to reach significance. He notes that the non-owners were tested later in the year

than the pet owners, with testing completed during July-September, and that this may account for some improvements in health, and for the increase in recreational walks noted earlier. This failure to test the three groups concurrently is unfortunate, especially as symptoms include health problems that are influenced by the time of year, e.g., hay fever, persistent coughs, colds and flu. Serpell, however defends the validity of the health improvements of the pet owning groups, pointing out that differences in results were general across the symptoms, and not just a result of improvements in ailments likely to be affected by the time of year. Serpell points out that there is no clear mechanism for the differences in health that he found. Increased walks do not explain all the health benefits to dog owners, however, he says that this may bring longer term benefits such as reduced hip fractures for elderly people, and reductions in cholesterol levels. Serpell calls for further research to explore possible mechanisms linking pet ownership and health. It should also be pointed out that there is a need in studies of this kind to investigate why some people were motivated to acquire a pet and other were not. It is plausible that existing health problems, social or financial problems, or the occurrence of other life events which may bring about some form of disruption to lifestyle could be a factor in both the decision **not** to acquire a pet and result in an overall picture of minor ailments or reduced psychological well-being. It would therefore be desirable to examine whether people electing to own pets are experiencing a relative period of calm or settled lifestyle or an absence of life stressors. Indeed, this may be a crucial factor since Serpell (personal communication) has found that subsequent analyses of the same data with life events as a covariate reduces the apparent health benefits to non-significant levels.

In a similar study to that conducted by Serpell, McHarg et al (1994) carried out the National People and Pets Survey. They found that both cat and dog owners reported fewer GP visits than non-pet owners based on a sample of N=1011. They report that the health benefits accrue to all sections of the community regardless of age, sex, income, educational background or occupational status. The Centre for Public Policy

at the Baker Medical Research Institute, University of Melbourne, Australia have used these data to estimate that the reduced GP visits, prescriptions and hospitalisation that pet owners enjoy compared to non-pet owners bring savings to the Health Service of over two hundred and sixty million Australian dollars (Headey & Anderson, 1995). In spite of any evaluation of the possibility that pet ownership may be more prevalent in people without health problems, the assumption is that the lower GP utilisation is a direct effect of pet ownership, and that in an Australia without pets, the health bill would be increased by *$260 million dollars or more.* Headey and Anderson state that *"longitudinal and prospective studies are required to confirm that there really is a causal (and not just a correlational) link between pet ownership and better health, and also to estimate the medium, long term and even lifetime benefits."*, however, they conclude that, *" What is clear is that there is a link between pet ownership and better health and that this link may have profound implications for health policy and practice."* The second sentence seems at odds with the one that precedes it: it does assume a link between pet ownership and health *benefits*; and their calculations to estimate differences in health budget assume a causal link. They say that more accurate estimates are needed to evaluate how much a campaign to encourage even more Australians to keep pets would save on the budget (currently approximately 60% of households have pets). The costs of *adverse* effects of pet ownership, allergies, zoonoses, bites, injuries etc., are not estimated or included in the calculation. This is a clear example of how empirical data from studies reporting an association between pet ownership and health benefits can be over-interpreted.

6.2.4 Pet ownership and moderation of stress effects.

There are a number of studies which look at ownership as a potential moderator of stressful life events. Siegel (1990) studied 938 participants aged 65 or more over a one year period. She measured the level of stressful life events at baseline, 6 months and 12 months, and included events during the 6 months prior to asking. After controlling for demographic characteristics such as age, sex, income, marital status

etc., and chronic health conditions, Siegel found that individuals owning pets had significantly fewer doctor contacts (both those initiated by respondent and by doctor) than those who did not own pets ($p<0.05$). Using regression analysis, she found that health status, income and pet ownership were the major demographic predictors of doctor contacts over a one year period. Siegel went on to examine the relationship between stressful life events, pet ownership and health. The results indicated a significant effect of stressful life events increasing doctor contacts; and a significant interaction between pet ownership and stressful life events ($p<0.05$). The pattern of means supported a buffering role for pet ownership on the effects of stress such that doctor contacts increased as life events accumulated for non-pet owners, but not for pet owners. Siegel went on to see if these patterns were consistent for different species of pets. She examined results for dog, cat and bird owners (there were too few of other species for separate analysis). The interaction between life events and pet ownership only reached significance for dogs. Siegel asked participants about their relationships with pets. When comparing dog owners with those owning other pets, she found that dog owners reported that they spent more time with their pets, talked to them more, and were more attached to them than other pet owners. The number of negative and positive aspects of the pet relationship cited by participants were counted. The net score after subtracting the number of negative comments from positive comments was significantly higher for dog owners then other pet owners, suggesting that on balance, dog owners regard their relationship with dogs more positively than other pet owners regard their relationships with their pets. Dog owners were more likely to report that their pets made them feel secure, that the pet loved them, and that their pet provided cheer or entertainment.

Another study which looks at pet ownership and physical and psychological health has examined how pet ownership may influence recovery from the effects of an extreme stressor: the death of a spouse. Bolin (1987) compared dog owners and people with no pets and found a beneficial effect of dog ownership (N=89, note, all of

those tested were female). She compared participants who were in good health prior to bereavement, and found that the non-pet owners reported a deterioration in health, while dog owners did not. Overall, the data in empirical studies provide some evidence consistent with dog ownership providing a buffer against stress, but there is little evidence for benefits from other pet species. Akiyama et al. (1986) found that bereaved participants (N=108 widowed women) who owned pets reported lower frequencies of physical and psychological symptoms than non-owners. Although apparently providing further evidence for the association between pet ownership and health benefits, the studies are perhaps too quick to ascribe the benefits to pet ownership. As commented on regarding the earlier studies, no consideration was given to why some people owned pets and others did not. Were people who owned pets different from people who did not in ways that may explain the apparent differences between them? Obvious candidate differences would include pre-bereavement health status; age; income; circumstances of the death; level of help and support from friends and family; and personality differences such as hardiness (dispositional resilience to stress), dispositional optimism or a sense of coherence. Many of these factors may also inhibit or enhance the chances of a person being a pet owner. The studies do not address these factors which could just as easily explain health differences between owners and non-owners. Thus the evidence is suggestive but probably not reliable. Nor are they consistent and evidence from studies needs to be considered in the context of other studies which have not found positive associations between pet ownership and health.

6.2.5 Studies with non-significant or negative effects of pet ownership.

Not all of the research into health benefits associated with pet ownership has found positive results, even at a descriptive level. Tucker et al. (1995) found that experience of playing with pets in life had no effect on longevity or mortality risk for a sample of older people, even when analysis was performed on a subset of people who were not satisfied with their human relationships, or those living alone. Watson & Weinstein

(1993) found no relationship between pet ownership and emotional distress (depression, anxiety and anger) for working women. Stallones et al. (1990) found no significant effect of pet ownership or pet attachment on depression levels, physical health measure (including doctor visits) or self perceived health in a large sample, N=1,300. Garrity et al. (1989), found that neither pet ownership or pet attachment were related to physical health in a sample of 1,232 people aged over 65, and they found no evidence for a buffering effect of pet ownership. The study found some association between pet attachment and psychological health, with pet owners reporting lower depression than non owners. Conversely, Miller and Lago (1990) found no association between pet attachment and feelings of depression in another elderly sample, however the sample size was small, N=53. In another study on an elderly population by Goldmeier (1986), results were mixed: pet owners living alone were less lonely, more optimistic an less agitated, and less depressed than those without pets; however this effect was not found in a comparison of pet owners and non-owners who lived with other people. Fritz et al. (1996) looked at pet ownership among people who were caregivers to patients with Alzheimer's disease. They found mixed results: male participants with dogs had better psychological health than those without, females under 40 years with cats had better psychological health than non owners, however, women aged 40-59 with dogs reported lower satisfaction with life and higher depression than non owners.

6.3 Interpretation of data and methodological issues.

Despite many studies which report that pet owners have health advantages over non-owners, the research done to date is inconclusive. Many of the frequently cited studies have not been replicated, and others can be countered with studies that report non-significant or mixed results. In addition, there are concerns about the interpretation of data, and other methodological issues. These will be reviewed next.

6.3.1 Interpretation of data

Authors of studies often clearly state that their data do not *prove* a direct causal relationship between pet ownership and health, e.g. Anderson et al., (1992), p.301: *"The limitations of studies such as this is that they only describe correlations, which may be merely fortuitous"*, and call for further research to investigate explanations for the associations that they have found. Despite the care of some authors not to over-interpret data, and assume a causal link rooted in the human-pet relationship, other writers reviewing their work, or referring to studies sometimes make stronger claims, assuming a causal link, and referring to pets generally without noting differences in results for different species. For example, reviews of companion animals and health by Beck & Meyers (1996), and Edney (1995), in the *The Annual Review of Public Health* and *Journal of the Royal Society of Medicine* respectively, review Anderson et al. without noting that the health benefits were mainly enjoyed by male participants, and limited benefits were found only in older female participants, with none for younger ones; Serpell's positive results for dog owners are mentioned, but not the negative ones for cat owners. Strong claims for benefits of pet ownership make better headlines for the popular media than more carefully considered conclusions that carry several caveats. This may explain the popular belief that pets are good for health (many participants in studies told me as a matter of 'fact' that pets lower one's blood pressure etc.). They imply a causal relationship, and refer effects to pets generally, when the good empirical evidence is, in the main, linked only to dogs. Without knowing the mechanism for any causal relationship, it is not possible to predict *who* might benefit from ownership. Thus, extolling benefits of pet ownership may motivate people to acquire a pet because they believe that it will improve their health outlook. If they are people who would otherwise not choose to take on this responsibility, then they may not form the appropriate 'bond' with the animal, and may not be motivated to take adequate care of it. The potential problems are illustrated in comments such as Rowan (1994, p85-86), *" The strong indications of benefits to individuals provided by Friedmann et al. (1980) and Anderson et al. (1992) could*

have been patented and sold as a drug. Perhaps we should suggest a few simple "improvements" in the basic pet (that would be patentable since animals can now be patented!) might lead to an animal that could be prescribed by doctors to ameliorate cardiovascular disease." Such comments clearly demonstrate the dangers of uncritical acceptance of the studies and the dangers of misinterpretation. They may raise unrealistic expectations from pet ownership and have serious animal welfare implications if seen to encourage pet ownership for reasons other than wanting to own, care for and live with a pet. Perhaps the critical element that is missed from such comments is that *only* pet ownership has been examined. What about other lifestyles or choices? Some people have absorbing hobbies or past-times, others have satisfying jobs and so forth? Would they also show demonstrable benefits for participants when compared to people who did not engage in similar activities. To date there has been no comparison condition other than non-pet owners. Maybe for some people pet ownership is a highly desirable aspect of a chosen lifestyle that could enhance quality of life and may even contribute to health benefits. However, as yet it is largely unknown whether other activities can contribute similar or perhaps greater benefits. Preliminary research suggests that the benefits of pet ownership are no greater than the participation in a regular hobby or recreation pursuit (McNicholas, Collis & Harker, 1998). Thus interpretations of studies which lead recommendations for pet ownership as a means of enhancing health may be wrongly implying that pets are *special* in their ability to confer benefits.

6.3.2 Methodological Issues

Certainly, this area of research faces many difficulties. Ethical considerations prevent the random allocation of pets to households. Some people may simply not like animals, and be unwilling or unable to care for them adequately, while other people may have allergies or other health conditions that make pet ownership undesirable. Therefore, it is not possible to achieve the gold standard of blind, randomised control studies on pet ownership. Given that participants in the studies take part on a

voluntary basis, it is probable that those with difficult pet relationships would be more likely to decline to take part, as it may not be seen as socially desirable to have difficulties in living harmoniously with a pet. This may result in a bias in reporting positive aspects of pet ownership. Prospective studies where changes are measured within subjects acquiring a pet are the most likely designs to succeed in providing evidence of a causal link between pet ownership and health, such as that by Serpell (1991), and Serpell and Paul (1996). These two studies however have produced mixed results from relatively small samples. Several of the cross-sectional designs have found positive correlations between pet ownership and health, however these correlations cannot prove a causal link. Despite the mixed results, there are enough correlational data to suggest that it is worth pursuing investigations into possible health benefits of pet ownership, however neither prospective or correlational studies will explain *how* pet ownership may influence health. Hypotheses for likely mechanisms need to be put forward and investigated, otherwise it would be difficult to determine *who* might benefit. For example, if benefits arise from the nature of the human-pet relationship, these benefits may not apply to *all* householders in a pet owning household. This would make advocating pet ownership to all individuals as a means of improving health, as by Anderson & Headey (1995), misleading. If mechanisms for health differences are proposed, and tested, more appropriate advice may be offered. Some of the studies, such as those by Siegel suggest a stress buffering role for pets. There is considerable literature on (human) social support a the mechanism for protection against stressful life events which may make this a good candidate to test in the context of human-pet relationships. This literature is overviewed below.

The theory that links social support and human health is now well established. In an important seminal paper which gave rise to the huge area of research into the role of human relationships and their influence on physical and psychological health, Cobb (1976) defined social support as the process whereby interpersonal transactions afford

'information leading the subject to believe he is cared for and loved, esteemed, and a member of a network of mutual obligations.' Thus social support was seen the provision of goods, services and emotional resources at times of need, and regarded as an important coping resource which can alleviate the adverse effects of stressful events.

Cobb proposed four components of social support:

1) Emotional support - the expression of caring and concern for a person, giving provision of comfort, reassurance and a sense of belongingness;
2) Esteem support - the expression of positive regard to the person, reaffirming self-worth, confidence and competence in the face of a threat to self-esteem;
3) Tangible/instrumental/ practical support- the direct assistance to cope with a problem or task;
4) Informational support - advice, feedback, information, to help in the person's assessment of appropriate action.

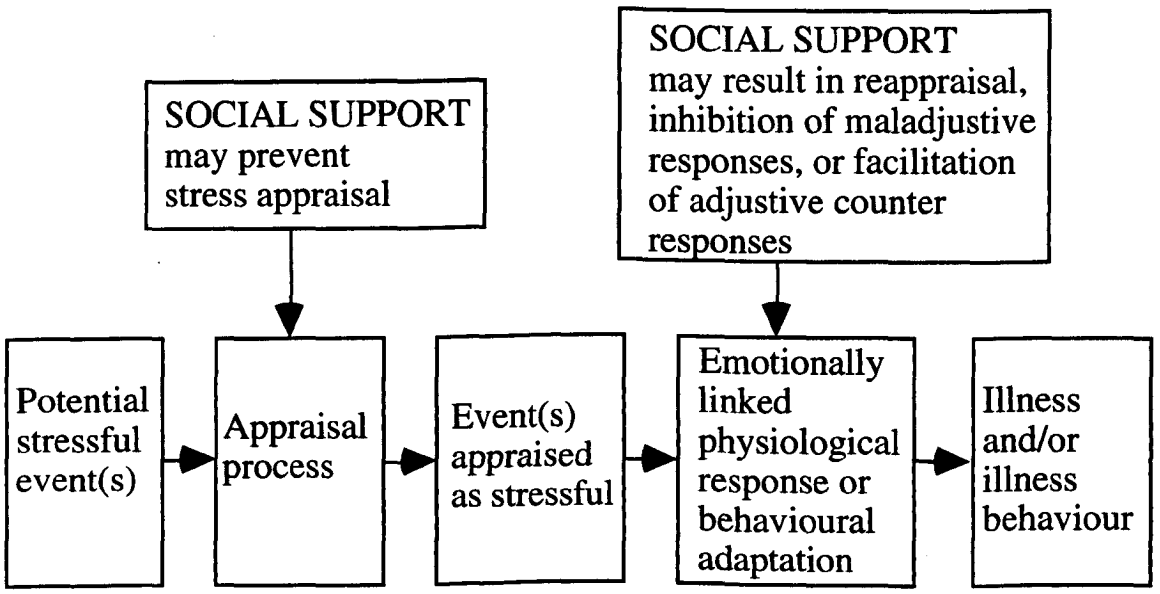
Cobb believed that social support derived from social relationships can provide protection from anxiety and depression and related illness, and could accelerate recovery from illness through fostering positive regard and practical help. This support can be provided by a variety of sources: spouses, friends, family, colleagues, professionals such as doctors, groups or organisations, although as a general rule functions of trust, intimacy and emotional needs are fulfilled by close personal relationships.

Cobb's original assertions have been widely shown to hold good and numerous review articles (e.g. Sarason, Sarason & Garung, 1997) point to the considerable positive influence of good social relationships on physical and psychological health, especially in coping with, and adjusting to, major life stresses. These include recovery from major illness such as stroke (Glass, 1993); or the psycho-social effect of surgery

(Kulik & Mahler, 1989) as well as coping with social stressors such as involuntary unemployment (Warr, 1987) and bereavement (Littlewood, 1992).

Cohen and Wills (1985) did much to articulate the potential mechanisms through which the provisions derived from social relationships could alleviate adverse responses to stressful life events. They put forward two hypotheses; the main effects hypothesis and the buffering hypothesis. The support from social relationships is regarded as intervening in the hypothesised causal link between stressful events and illness. This is schematically represented in Figure 6.2 below:

Figure 6.2 *The points at which social support may interfere with the hypothesised causal link between stressful events and illness (from Cohen & Wills, 1985).*



Social support may be seen to influence perception of stress very early on in the link between stressor and adverse outcome for health. Knowledge and belief that support is available and reliable and can be mobilised quickly in times of need may dramatically reduce appraisal of some events as a stressor in the first place. This function of social support is known as the main effects model which essentially takes

the view that social relationships provide ongoing support which elevates psychological well-being. This sense of well-being and knowledge of the availability of support can lead to some events not being perceived as a stressor or of only minor consequence and thus have little impact on health and well-being.

The second mechanism, and perhaps the most widely endorsed, is that of the buffering hypothesis. This hypothesis proposes that the supportive functions provided from social relationships (emotional support, esteem support; instrumental support and informational support) intervene after the perception of an event as stressful and exert their effect by reducing the severity and chronicity of the stress responses, thus avoiding or moderating risks to health.

Further research into supportive functions derived from relationships has led to a proposal that for support to be most effective in alleviating stress or responses to stress, there should be 'optimal matching' of support type (i.e. esteem support, emotional support etc.) to need. Thus events which threaten self esteem are best alleviated by support that repairs esteem and reaffirms worth and competence. Forwarded by Cutrona and Russell (1990) this matching hypothesis has intuitive appeal and at least some empirical support for its proposals. Although not universally accepted, it could explain why some support appears ineffective or even damaging such as when emotional support is craved for but only impersonal informational or practical support is offered. In addition, long term stresses do appear to require some matching of support as the needs required to cope with adjustment change over time. Littlewood (1992) notes that there is an overwhelming need for adequate emotional support early in the process of adjustment to spousal bereavement. Later this may be gradually replaced by a need for practical help and advice in constructing a life.

The role of emotional support, in particular, appears to of major importance in coping with long term, chronic or major stressors. Thus a question arises of what sort of

relationships can provide this. Clearly close human relationships are obvious candidates, but do relationships have to be human? Many of the descriptions pet owners give of their relationships with their pets mirror elements present in human support, especially in emotional and esteem support provisions.

6.4 Pet ownership as a supportive relationship.

Although the study in chapter 3 indicated that the person-pet relationship was not satisfactorily describable as an attachment relationship, it was clear from the descriptions given by participants to the study that, for many, the relationship with a pet is regarded as a significant relationship and on a par with friends and members of their families. The study in chapter 5 further suggests that pets appear to fulfil some functions of relationships in similar ways as human relationships. For example, pets are described as affectionate; someone/something with to share feelings or to confide in; to be trusted with personal information or feelings; and a sense of being cared for. Whilst person-pet relationships are clearly not the same as human relationships they do seem to have a great deal in common, particularly as a potential resource for psychological support as demonstrated by the ratings for pets on the relational provisions scale. These aspects of pet ownership mirror elements of human relationships that are believed to have important implications for health, elements which collectively fall within the concept of "social support".

There would appear to be a *prima facie* case for the investigation of pets as relationships which could provide some supportive functions. However, to conduct an adequate investigation into pets as providers of social support it is necessary to consider not only whether pets do so or not, but also how this may be viewed in the context of existing (human) relationships. Equally, it is necessary to attempt to envisage support from pets not only in ways that it may resemble support from humans but ways in which it may be dissimilar but offer advantages nonetheless.

Recent research conducted at the University of Warwick has put forward the following proposals for the ways in which support from the pet-person relationship may contribute to well-being and it may be viewed alongside human support. Firstly, it is proposed that pets may provide some emotional support and esteem support, similar to that received in close human-human relationships. It may be a constant source of *additional* support that may be relatively low level on its own but which nevertheless may significantly 'top up' existing human social support. This may alleviate mismatches and 'cushion' against the effects of fluctuations in human support or mismatches in support type desired and support type received, as in the matching hypothesis. No social skills are required to elicit pet's attention, thus removing the potential problem of assessing how to mobilise support, as exist in human-human transactions. Individual abilities in social competence in negotiating or regulating social support are not applicable, avoiding mismatches in required or received support or perceived shortfalls in received support within this particular relationship.

Finally, pets may provide a 'refuge' from the strains of human interactions. There may be perceived cost to mobilising support from human relationships in terms of threats to esteem and risks to the relationship which is absent from person-pet relationships (McNicholas, Collis & Morley, 1995).

In summary, studies which claim health benefits arising from pet ownership present a mixed picture both in the design and the quality of the studies. Nor are they easily replicable. However, in part this may be due to the studies having no common theme or no potential mechanism on which to focus. Whilst attachment studies appear to take the research area little further, the functions derived from the person-pet relationship may be a more fruitful area of research. Indeed, the person-pet relationship would certainly appear to offer much as a potential source of support. The question arises of whether levels of support from pet relationships are sufficient to make any impact on health and well-being. This is examined in the next chapter.

CHAPTER 7

Pets as a source of social support: implications for human health.

7.1 Introduction

The study presented in this chapter had two main groups of objectives. The first was to test the robustness of findings in chapter 5 by replicating parts of this study, and by testing a larger and more representative sample. One concern over the population recruited for this earlier study was that participants who agreed to take part did so knowing that the study was focused on pet ownership, and in particular, on the relationships that people have with their pets. It is plausible that this may have resulted in people who were less sympathetic to pets being more likely to opt out of taking part. Correspondingly, more people who had a particular liking for pets would have opted in. This would have resulted in a disproportionately "pet-friendly" sample. In the study presented here, a comparison of pet owning and non-pet owning participants was required. As a result, recruitment of participants was done without the necessity of checking on pet owning status of volunteers at recruitment time. Therefore, no specific reference was made to pets during recruitment, and the study was described as an investigation into relationships, support and health. The participants who volunteered were therefore unaware that human-pet relationships would be considered along with human-human relationships. Using this recruitment strategy, it was intended that a more representative group of pet owners would be achieved. The study re-examines functional aspects of the human-pet relationships with a larger and more typical sample of pet owners. It was also intended to include larger numbers of people from each household taking part in order to produce a better sample to replicate the within-family and between-family comparisons investigated in chapter 5.

The second group of objectives are concerned with potential mechanisms to explain the health differences that have been found between pet owners and non-pet owners, at least at a descriptive level, in several studies. As discussed in chapter 6, there are three types of explanation which may account for the association between pet ownership and health (McNicholas & Collis, 1998): direct causal link, indirect causal link, and non-causal explanation. The main hypothesis investigated is that there is a direct causal effect of social support from pets on human health, by either the main effect or buffering model. Relational provisions from pets were measured to investigate whether the level of perceived support from pets themselves predicts health of participants. The same relational provision scale based on the NRI scale was used again to provide a measure of support. In chapter 5, social provision ratings were recorded for all household members (both humans and pets). This excluded other relationships which may also be a source of social support to participants, for example from close friends or extended family members. In this study other important relationships were identified so that they can also be included in the measurement. This enabled data to be collected from participants on all of their important relationships which are likely sources of support.

If there is a main effect of support from pets on health of participants, then the level of pet support will predict the level of symptoms such that higher levels of support will be associated with lower levels of symptoms. The number of stressful life events experienced by participants in the previous 6 months was also recorded. If support from pets is buffering owners from stress, an interaction would be expected between support and stressful life events. Other demographic variables likely to have an influence on health were also measured such as age, sex, and income.

Indirect effects of pets were also considered. If pets increase owners social networks, owners may benefit from an increased feeling of social embeddedness. In addition, they may enjoy an increase in the potential sources of human support. This human

support may result in indirect health benefits from pet ownership. The data on network size for pet owners and non-owners was compared. If pets do enhance social networks, pet owners, and especially dog owners (Messent, 1983), would be expected to have larger networks. Even if pet owners do benefit from larger networks, the additional contacts may be casual acquaintances rather than important sources of support, (Collis & McNicholas, 1998). Therefore, the total support from human relationships was also compared for pet owners and non-owners.

The final type of explanation which could explain an association between pet ownership and health is a non-causal account. It may be that there is some aspect of individuals who are likely to choose to own a pet that could result in both the choice of owning a pet, and relatively good health. As discussed in chapter 6, some personality traits, such as the 'type A' personality, and hardiness have been investigated as potential non-causal explanations for health differences, however, the evidence to date does not support any specific non-causal explanations. The study presented in this chapter looked at possible health differences between those who would personally choose to keep a pet, and those who would not without restricting the investigation to any particular personality variable. As discussed previously, people who live in pet owning households are often described as pet owners although they may not be the individual in the household who would choose to keep a pet. Conversely, there may be many "would be" pet owners in non-owning households who are unable to actually have a pet because of objections from other household members, or other practical difficulties such as insufficient time, space or money. All participants in the study were asked if they would choose to keep a pet if it were just up to them to decide, and there were no practical difficulties. The health measures for those who would choose to keep and those who would not choose to keep a pet (regardless of whether or not there was actually a pet in their household) were compared. If there is some aspect of the personality of people who choose to keep pets that positively influences health, then this group should report fewer symptoms

than those who choose not to keep a pet.

7.2 Method

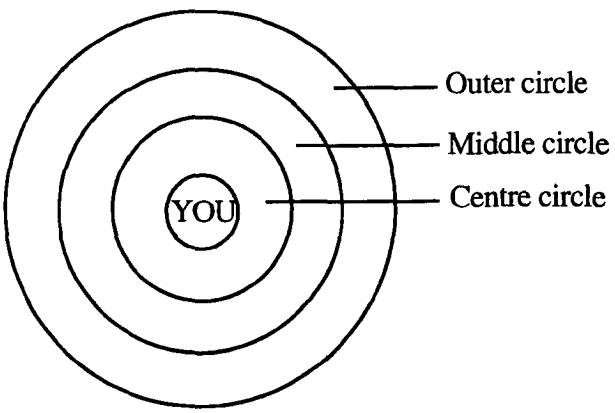
7.2.1 Questionnaire Scales.

The full questionnaire used is shown in appendix 5. Antonucci's (1986) social network diagram was used in order to measure size of social network; to investigate where pets are place in social networks (if at all); and to identify all of each participants' relationships that were likely to be important sources of support. The diagram uses a hierarchical mapping procedure, see figure 7.1. The diagram has 3 concentric circles, with the participant placed in the centre. Participants are asked to place all important relationships on the diagram: *"in the centre circle, nearest to you, put the names of those to whom you feel so close that it is hard to imagine life without them. In the middle circle, put the names of those that you may not feel quite that close to, but are still important to you. In the outer circle, put the names of those that you haven't already mentioned, but who are close enough and important enough in your life that they should be placed in your personal network."* Antonucci reports that the scale is easily understood by people, efficient and simple to use. Participants may choose to include or omit pets in the diagram as they wish, however they are prompted that pets are acceptable as relationship partners *if* applicable to their circumstances. Any relationship partners placed in the centre circle are added to the participant's household members (human and pets) to be considered in the network of relationships inventory. The relational provisions scale was completed for each of these people and any household pets as detailed in chapter 5.

Participants were asked to indicate whether they have experienced stressful life events in the last 6 months. Different versions of the checklist were compiled for children (aged up to 16 years) and adults, with age relevant items: for example, the children are asked about changing school, exams etc. Both age groups were able to choose from a list of prompts which have been found to be important stressors (Holmes and Rahe,

1967; Coddington, 1972; Hurwicz et al., 1992; Clements and Turpin, 1996). As the same events may be stressful for some individuals but not others, it is difficult to provide a list of events which includes all likely major stressors without producing an over-long list. Therefore, in addition to selecting from the prompts, participants were able to note any other events which they considered stressful, and add the appropriate descriptions themselves.

Figure 7.1 *The Antonnuci (1986) Social Network Diagram*



To measure health, symptom checklists were used to ask for the frequency at which a range of symptoms occurred. Symptoms included a set of 30 physical, and 30 psychological items. Items were chosen to reflect the general health and well-being of people, and to be applicable to both children and adults. The same symptoms were included for both children and adults, however, the children's version was phrased in simpler language. The adult version of the symptom checklists was developed by McNicholas & Collis in 1995 for use in a study of adjustment to spousal bereavement, and has been modified and used successfully for a variety of populations under stress such as road traffic police; accident and emergency nurses; students undertaking finalist examinations and new teachers. Reliability has been consistently high, being in excess of 0.85 Test re-test reliability was conducted to see whether the checklist was suitable for use with children. Forty children aged 9-10 years old years old, 22

were girls and 18 boys took part. The children answered the questions verbally, and repeated the test 7 days later. The intra-class correlations between the results from the two sessions were as follows: for physical symptoms, ICC (2,2) = 0.87; for psychological symptoms, ICC (2,2) = 0.92. This indicates that the children were highly consistent in their replies over the two tests, suggesting that children aged 10 or more would be able to answer the symptom questions reliably.

Other questions were included on demographic variables which were likely to be associated with health, such as age, sex, income, and how much exercise they undertake with the pet. Participants were also asked if they would choose to own a pet if it were just up to them to decide.

7.2.2 Participants.

Participants were recruited from supermarket foyers, shopping centres, markets and a football ground. The participants were from 4 family types: type 1 has no children living at home, and no pets; type 2 had children at home and no pets; type 3 has no children living at home but does have pets; and type 4 has children living at home and pets. Data were collected from 284 participants from 219 households. The types of participant were: mother, father, son, daughter, husband and wife. Husbands and wives were people living with a partner or spouse, with no children living at home. Children were included aged 10 and over. It was considered that children aged less than 10 would not have been able to give reliable answers to so many questions. In total, 115 participants from non-pet owning households took part, and 169 from pet owning households. Where possible, data were collected from as many members of each participating household as possible, however, this was often not possible. To recruit sufficient numbers of participants in total, it was necessary to include 219 families. This means that there were insufficient numbers of participants per family to perform the within-family and between family analyses. It proved difficult to recruit sons and daughters from non-pet owning households. This is unsurprising, as

households with children are likely to also keep pets (see Table 1.2, Ch. 1). It was also difficult to recruit male participants. This was addressed by recruiting from the entrance to a local football stadium. The number of participants of different types is shown in table 7.1.

Table 7.1 *Family roles of participants.*

Family type	Family role	N
1	husband	23
	wife	23
2	mother	22
	father	21
	son	13
	daughter	13
3	husband	13
	wife	20
4	mother	55
	father	22
	son	28
	daughter	31

7.2.3 Procedure.

Adult participants (aged 18 or over) were given the questionnaire and asked to return it in a Freepost envelope. Participants under 18 were guided through the questions verbally according to their ability. The youngest participants were asked all of the questions verbally.

7.3 Results

The 284 participants produced data on 1,975 relationships. The relationship types are listed in table 7.2. The relationships in the miscellaneous group included priests, ex-

husbands, lodgers, God, and some others who were people that the participants felt a continuing relationship with even though they were dead. These were interesting cases, but the frequencies were too small for individual analysis.

Table 7.2 *Relationship types reported.*

Relationship type	N
spouse or partner	186
children	290
parents	320
siblings	257
other family members	325
friends	167
dogs	119
cats	126
other pets	168
miscellaneous	17

7.3.1 Social networks: the place of pets.

Participants included a range of other individuals in the centre of the diagram, in addition to human household members: boy friends, girlfriends, other friends, extended family members, and pets. Figure 7.1 shows that 61% of pets were included on the diagram, with over 27% of them in the centre circle.

The results for pets show differences between species. Table 7.3 shows that although nearly 80% of cats and dogs are included somewhere on the social network diagram, and around 10% of both species are in the outer circle, dogs are much more likely to be included in the centre of the network diagram than cats. A comparison of results for cats and dogs gives Pearson chi square = 10.1 (df=3), p=0.018, showing that the difference between these two primary pet species was significant.

Figure 7.2 *Pets on the social network diagram.*

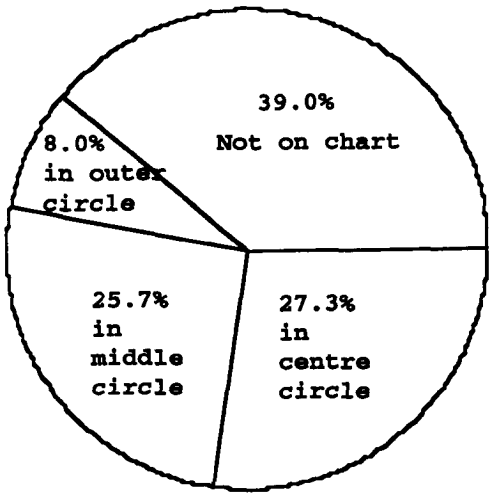


Table 7.3 *Place in the network diagram by pet type.*

Place in network diagram	Cats N=126	Dogs N=119	Small mammals* N=77	Birds N=36	Fish N=40	Horse or pony N=11
Not on diagram	23.0	21.8	53.2	75.0	80.0	27.3
Outer circle	10.3	10.9	2.6	5.6	2.5	18.2
Middle circle	38.1	21.8	26.0	13.8	15.0	9.1
Centre circle	28.6	45.4	18.2	5.6	2.5	45.4

* The small mammals include chipmunks, chinchillas, gerbils, guinea pigs, hamsters, rabbits and rats. Four pets were excluded from the analysis as there were only single cases of their species, and they did not fit into any of the groups. These were a snake, a tortoise, a snail and a frog.

Birds and fish are most likely to be excluded from the social network diagram, altogether, and least likely to be near the centre. Over half of the small mammals group are excluded from the diagram, however 44.2% are in the middle or centre circle. The pattern for horses and ponies is similar to that of dogs, with 45.4% on the centre circle; however the number of horses and ponies reported on is small (N=11).

7.3.2 Social network size and pet ownership

The number of relationships reported by pet owners and non-owners are shown in table 7.4. Results for dog owners and non-dog owners are also given, as dogs are the most likely pet species to influence network size.

Table 7.4 *Differences in mean total network size, number of close human relationships, and total support from human relationships by pet ownership status.*

	Pet owners N=170	Non-pet owners N=114	Dog owners N=84	Non-dog owners N=200
Mean total network size*	23.0	18.7	19.8	21.9
Mean number of close human relationships**	5.5	6.1	5.6	5.8
Mean total human support***	145.4	147.4	142.7	147.7

* Total number of relationships on the network diagram.

** Relationships in the centre circle of the social networks diagram.

*** Sum of support ratings for all close human relationships. Index of support

derived from the relational provisions scale.

The mean number of relationships included on the network diagram by pet owners is greater than that of non-owners. It does not, however, seem that this is due to the influence of dog owners meeting more people when they walk their dogs, as the mean network size of dog owners is smaller than that of non-dog owners. These differences are small, and non-significant: differences between pet owners and non-pet owners $F(1,265)=3.5$, $p=0.064$; differences between dog owners and non-dog owners $F(1,265)=0.8$, $p=0.377$.

The differences between pet owners and non-pet owners on the mean number of close human relationships reported is small, with non-owners having slightly more. Similarly, non-dog owners reported slightly higher numbers of close human relationships than non-dog owners. Again, these differences are non-significant: differences between pet owners and non-pet owners $F(1,279)=2.5$, $p=0.118$; differences between dog owners and non-dog owners $F(1,279)=0.2$, $p=0.629$.

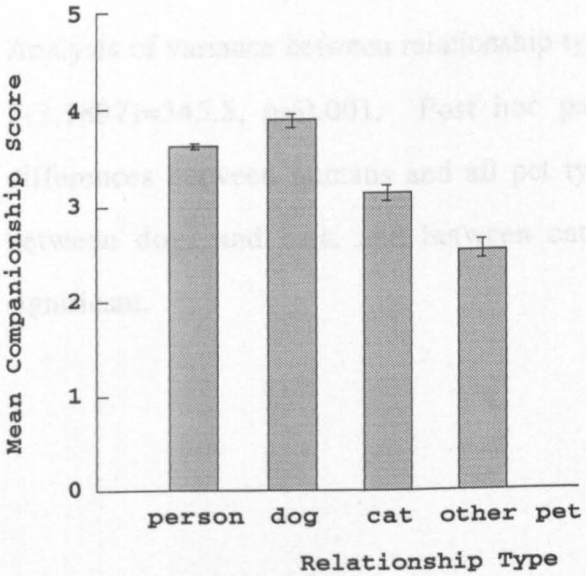
The differences between pet owners and non-pet owners on the mean level of support reported from all of their important human relationships is small, with non-owners having a slightly higher mean. Non-dog owners reported higher levels of support from human relationships than non-dog owners. Again, these differences are non-significant: differences between pet owners and non-pet owners $F(1,271)=0.1$, $p=0.814$; differences between dog owners and non-dog owners $F(1,271)=0.2$, $p=0.654$.

These results do not support the theory that pets, or more especially dogs, enhance human social networks, and hence increase support available from human relationships.

7.3.3 Results from the relational provisions subscales

The mean results for the relational provisions subscales were compared for human-human, human-dog, human-cat and human-other pet relationships. The descriptive data are in line with the results in chapter 5, however the post hoc tests for significance vary slightly. The broad trend is the same: mean scores for human relationships are greater than those for human-dog relationships, which are in turn greater than those for human-cat relationships, and again, these in turn are greater than those for human-other pet relationships. This trend holds for both positive subscales such as affection and negative ones like conflict and antagonism. The figures 7.3 to 7.14 show details of the results:

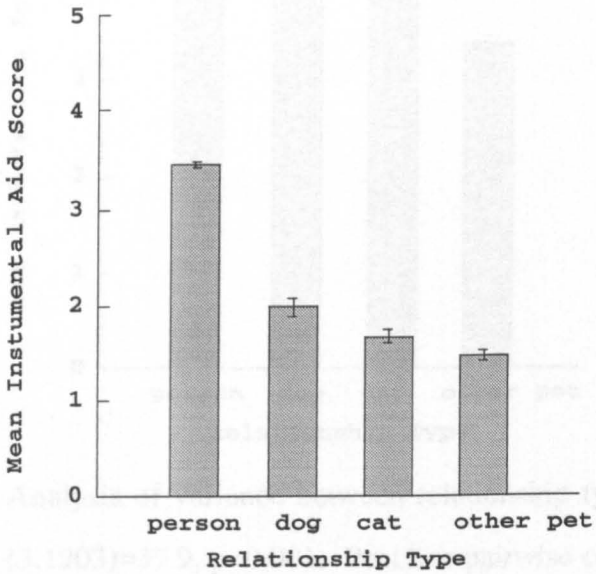
Figure 7.3 *Mean companionship score by relationship type*



Analysis of variance between relationship types for companionship was significant, $F(3,1897)=70.9$, $p<0.001$. Post hoc pairwise comparisons showed that all differences were significant (level of significance used in all tests was $p<0.05$). This indicates that the mean companionship reported from dogs was higher than that from human relationships. This is in line with the descriptive data in chapter 5; however the

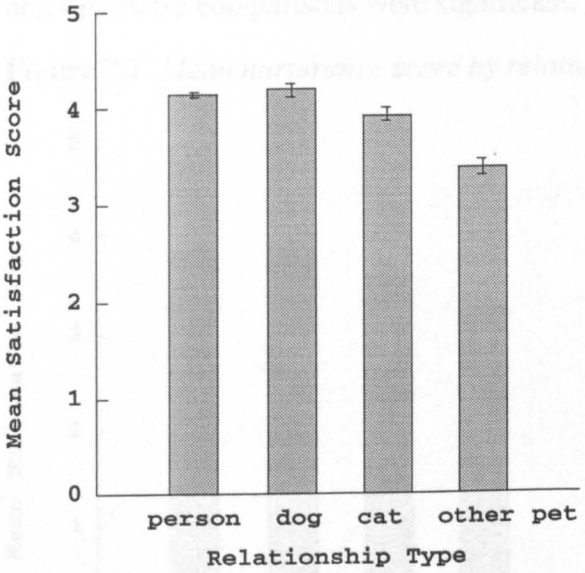
difference in the previous study did not reach statistical significance.

Figure 7.4 *Mean instrumental aid score by relationship type*



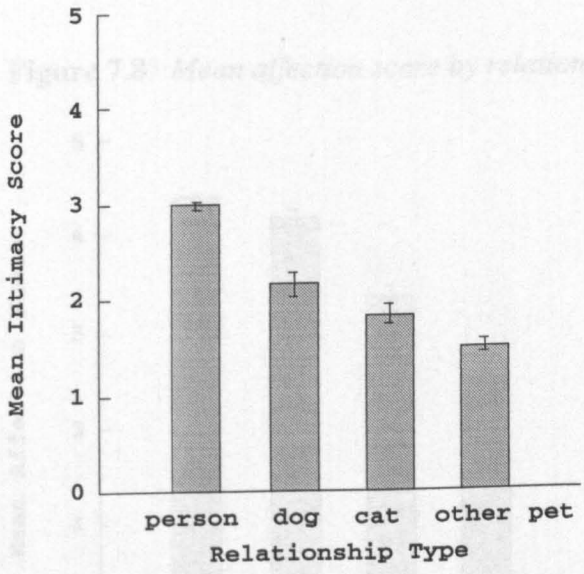
Analysis of variance between relationship types for instrumental aid was significant, $F(3,1897)=345.5$, $p<0.001$. Post hoc pairwise comparisons showed that the differences between humans and all pet types were significant. The differences between dogs and cats, and between cats and other pets, however were non significant.

Figure 7.5 *Mean satisfaction score by relationship type*



Analysis of variance between relationship types for satisfaction was significant, $F(3,1903)=37.9$, $p<0.001$. Post hoc pairwise comparisons showed that the differences between human-human and human-dog relationships were non-significant, as were differences in results between dogs and cats. All other pairwise comparisons were significant.

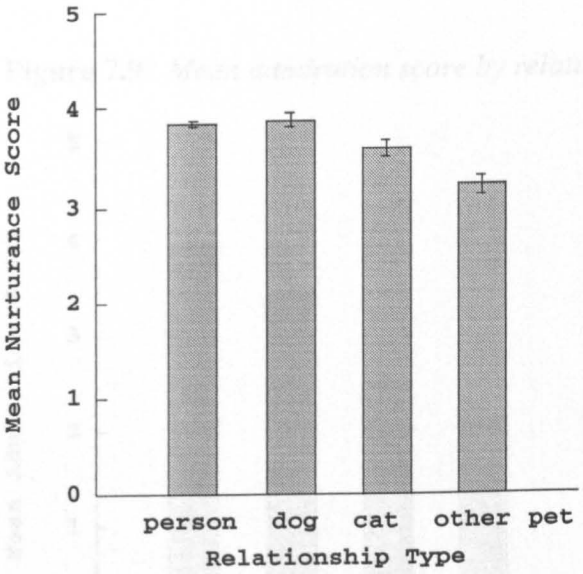
Figure 7.6 *Mean intimacy score by relationship type*



Analysis of variance between relationship types for intimacy was significant, $F(3,1857)=98.7$, $p<0.001$. Post hoc pairwise comparisons showed that the differences

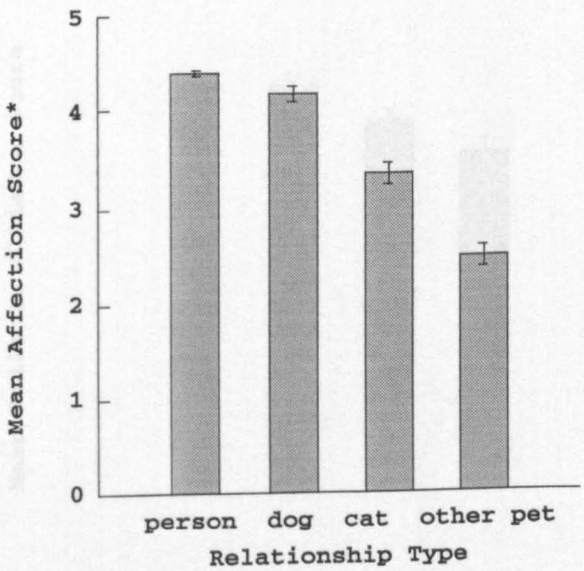
between dogs and cats, and between cats and other pets were non significant. All other pairwise comparisons were significant.

Figure 7.7 *Mean nurturance score by relationship type*



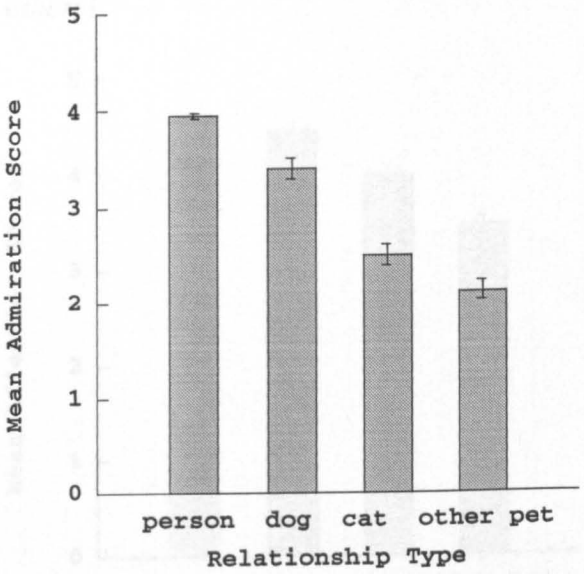
Analysis of variance between relationship types for nurturance was significant, $F(3,1882)=19.3$ $p<0.001$. Post hoc pairwise comparisons showed that the differences between humans and dogs, and between dogs and cats were non significant. All other pairwise comparisons were significant.

Figure 7.8 *Mean affection score by relationship type (*affection for the participant)*



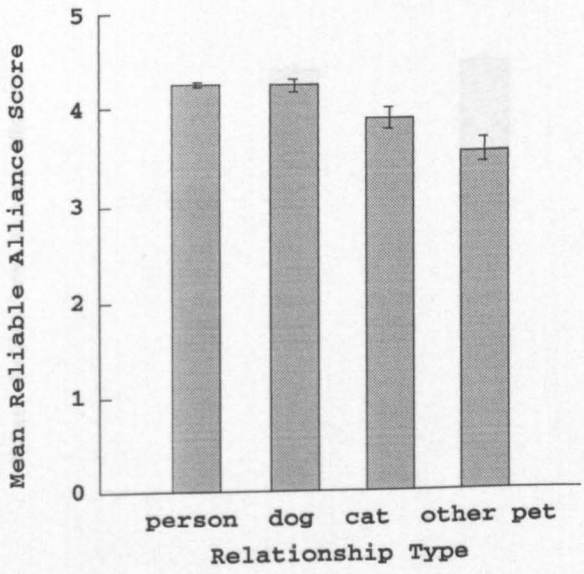
Analysis of variance between relationship types on affection for the participant was significant, $F(3,1899)=257.9$, $p<0.001$. Post hoc pairwise comparisons were all significant.

Figure 7.9 *Mean admiration score by relationship type*



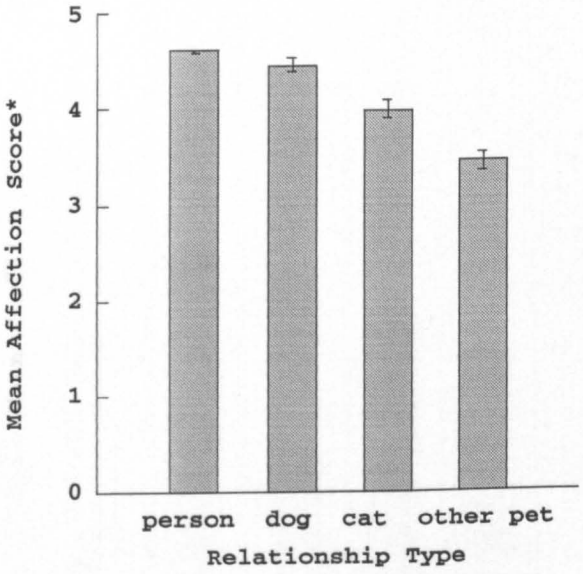
Analysis of variance between relationship types on admiration was significant, $F(3,1901)=276.6$, $p<0.001$. Post hoc pairwise comparisons were all significant.

Figure 7.10 *Mean reliable alliance score by relationship type*



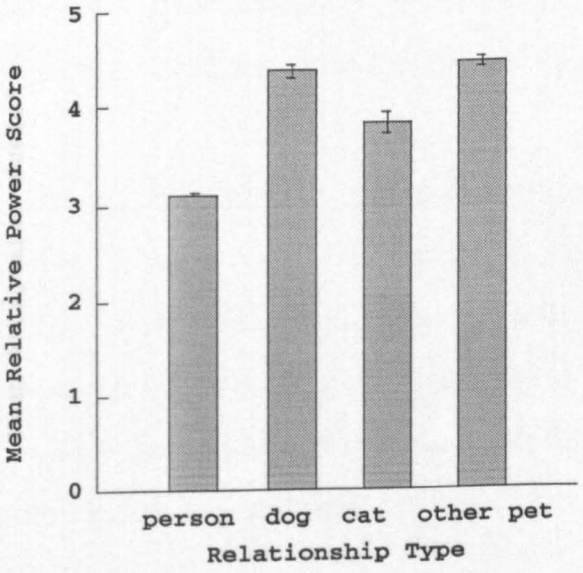
Analysis of variance between relationship types on reliable alliance was significant, $F(3,1898)=25.4$, $p<0.001$. Post hoc pairwise comparisons showed that the differences between humans and dogs were non significant. All other pairwise comparisons were significant.

Figure 7.11 *Mean affection score by relationship type (*participant's affection for others)*



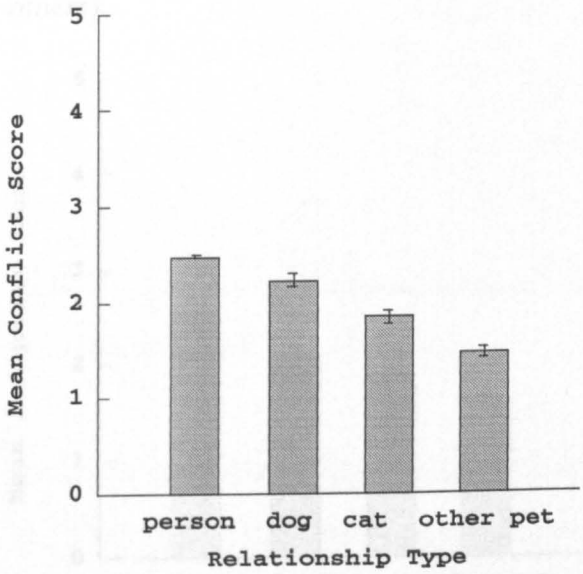
Analysis of variance between relationship types on participants' affection for others was significant, $F(3,1899)=257.8$, $p<0.001$. Post hoc pairwise comparisons were all significant.

Figure 7.12 *Mean relative power score by relationship type*



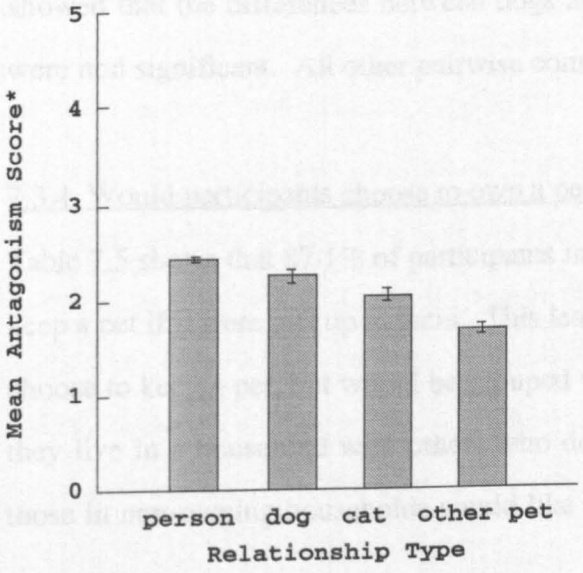
Analysis of variance between relationship types on relative power was significant, $F(3,1885)=185.3$, $p<0.001$. Post hoc pairwise comparisons showed that the differences between dogs and other pets were non significant. All other pairwise comparisons were significant.

Figure 7.13 *Mean conflict score by relationship type*



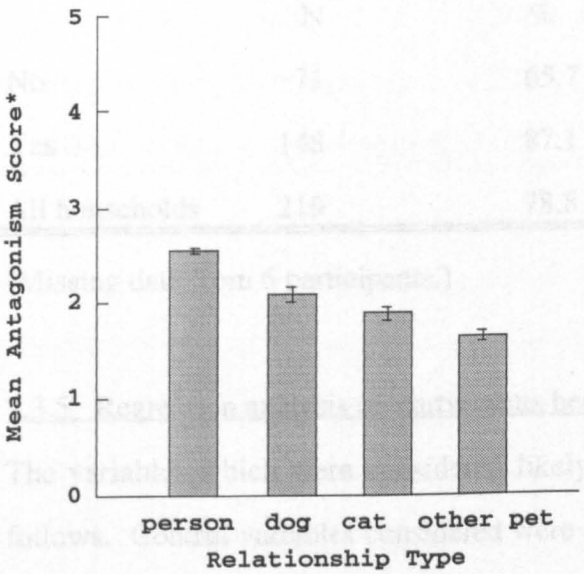
Analysis of variance between relationship types on conflict was significant, $F(3,1879)=57.3$, $p<0.001$. Post hoc pairwise comparisons were all significant.

Figure 7.14 *Mean antagonism score by relationship type (*others antagonise participant)*



Analysis of variance between relationship types on how much others antagonise the participant was significant, $F(3,1901)=32.5$, $p<0.001$. Post hoc pairwise comparisons showed that the differences between humans and dogs, and between dogs and cats were non significant. All other pairwise comparisons were significant.

Figure 7.15 *Mean antagonism score by relationship type (*participant antagonises others)*



Analysis of variance between relationship types on how much participants antagonise others was significant, $F(3,1879)=61.9$, $p<0.001$. Post hoc pairwise comparisons showed that the differences between dogs and cats, and between cats and other pets were non significant. All other pairwise comparisons were significant.

7.3.4 Would participants choose to own a pet?

Table 7.5 shows that 87.1% of participants in pet owning households would choose to keep a pet if it were just up to them. This leaves 12.9% of participants who would not choose to keep a pet, but would be grouped with pet owners in many studies because they live in a household with others who do want pets. It is notable that 65.7% of those in non-owning households would like to keep a pet, and that overall, 78.8% of

all participants would like to keep a pet. The distributions are significantly different between the two groups, $\chi^2(1) = 17.95$, $p < 0.001$.

Table 7.5 Would participants choose to be a pet owner?

Pets in household?	Would you choose to keep a pet?			
	Yes		No	
	N	%	N	%
No	71	65.7	37	34.3
Yes	148	87.1	22	12.9
All households	219	78.8	59	21.2

(Missing data from 6 participants.)

7.3.5 Regression analysis on participants health symptoms.

The variables which were considered likely to influence health symptoms were as follows. Control variables considered were age, sex, number of stressful life events, and income of participant. Other variables which may have had a main effect on health were support from human relationships, support from pet relationships, whether participants would choose to be a pet owner, and the hours spent exercising with a pet. Inclusion of exercise with pet, and whether participants would choose to own a pet themselves was non-significant in all models tested ($p>0.05$). Interactions between support from pets and support from human relationships with the number of stressful life events were considered. The measure of support was derived from the relational provisions scale as described in chapter 5. These support scores were assigned to one of four levels of support described as low, medium, high and very high. These four levels gave an even spread of cases at each level, with the lower two below the means and the higher two above the means. Table 7.6 shows the result for regression analysis with physical symptoms as the dependent variable.

Table 7.6 *Effects on physical symptoms*

Variable	DF	F Ratio	P
Age	1,205	0.294	0.588
Sex	1,205	3.600	0.059
Income	1,205	7.905	0.005
Number of life events	1,205	0.826	0.365
Support (from pets)	4,205	1.643	0.165
Support (from humans)	3,205	0.761	0.517
Life events*support (from pet)	4,205	1.837	0.123
Life events*support (from humans)	3,205	2.807	0.041*

There was no significant effect of age on physical symptoms. Women reported higher frequencies of symptoms than men; however this did not reach significance, with $p>0.05$. There was a significant effect of income such that those in higher income bands reported lower frequencies of symptoms. The interaction between support from pet relationships and life events was non-significant; however the interaction between support from human relationships and health was. The relationship between support, life events and health is explored further in figures 7.16 and 7.17.

Figure 7.16 *Physical symptoms versus life events for different levels of pet support.*

Figure 7.17 *Physical symptoms versus life events for different levels of human support.*

Figure 7.16 shows that for all levels of support from pets, the level of physical symptoms rises as the number of life events increases. There is no evidence for any buffering effect of support from pets.

Figure 7.17 shows that for participants with low, medium or high support, symptoms increase as the number of life events increase; however the physical symptoms do not increase for those with very high human support. This interaction is significant, and is consistent with the buffering effect.

On psychological symptoms, women reported significantly higher levels than men. There was also a significant effect of life events such that those with more life events reported more symptoms. Those with lower incomes reported higher levels of symptoms, however the effect did not reach significance. There was a significant main effect of support from pets, and a significant interaction between support from pets and the number of stressful life events. The interaction between support from people and life events is non significant, but is not far from the accepted level for

significance of $p<0.05$.

Table 7.7 *Effects on psychological symptoms.*

Variable	DF	F Ratio	P
Age	1,205	0.173	0.678
Sex	1,205	5.861	0.016*
Income	1,205	2.845	0.093
Number of life events	1,205	5.538	0.020*
Support (from pets)	4,205	3.263	0.013
Support (from humans)	3,205	1.054	0.370
Life events*support (from pet)	4,205	2.590	0.038*
Life events*support (from humans)	3,205	2.426	0.067

Figure 7.19 shows that the level of psychological symptoms increases as the number of life events increases, even for high and very levels of support. There is no significant interaction to support a buffering effect. When there are no stressful life events reported, those with very high support start at a lower level of symptoms than those with lower levels of support. This main effect of support is significant.

Figure 7.18 shows that participants with no pets, or those with low, medium or high support show an increase in psychological symptoms as life events increase. However, there is no corresponding increase in symptoms for those with very high support from pets. This is consistent with a buffering effect of support from pets. It is also noticeable that when there are no stressful life events, those with very high support from pets have higher symptoms than those with lower support. This is counter to what is expected from a main effect of support, where higher support would result in lower symptoms. A possible explanation is that those with higher levels of symptoms seek out more support from pets, however it is not possible to conclude what the reason for this result is from this study.

Figure 7.18 *Psychological symptoms versus life events for different levels of pet support.*

Figure 7.19 *Psychological symptoms versus life events for different levels of human support.*

7.4 Discussion

The results indicate that participants were able and willing to assess provisions from human-pet relationships alongside important human-human relationships. The relational provisions results are largely consistent with those reported in chapter 5. This replication is with a larger sample, and one that was recruited without indicating that the focus of the study was human-pet relationships. This was done to avoid attracting an untypical sample of "pet-friendly' participants. The same general trend was found with participant's human relationships generally rated significantly higher than human-pet relationships. This trend applied to both positive and negative provisions. While provisions from human-pet relationships are generally rated lower than human-human relationships, provisions from dogs are rated significantly higher on companionship, and there is no significant difference in levels of nurturance and reliable alliance from humans compared to dogs. This suggests that relationships with pets, and dogs in particular, can fulfill *some* functions in similar ways to human relationships. It is also the case that the level of other provisions from pets is *not* comparable to that from human relationships, such as on intimacy and reassurance of worth.

It is notable that the majority of pet relationships were included on participants' social network diagrams. It should also be noted that some of the participants living in pet owning households did *not* consider that they had social relationships with their pets. Therefore, it is not appropriate to assume that all members of a pet owning household enjoy a social relationship with the animal. Indeed, the data on pet choice indicate that approximately 13% of people in pet owning households would not choose to keep a pet if it were just up to them to decide.

It is clear from the social network diagram data, and the relational provisions scale data, that there are important differences between relationships with different pet species. Dogs and cats are more likely to be considered part of the social network

compared to other small mammals, birds or fish. Further, dogs are more likely to be considered as party to very important relationships than cats or other species. More data on equine relationships are needed to determine whether they too are frequently considered very important. These findings may seem intuitively unsurprising, however the literature on human-animal interactions, and human-pet relationships often generalises across all pet species. Generally, the level of social provision from dogs is higher than from cats, and from cats than other small mammals. The same pattern applies to negative provisions of conflict and antagonism. These are general trends, and it should be noted that there are exceptions to the trends for all species. For example, some people, albeit a minority, placed fish and birds in the centre of their network diagram, while some cats and dogs were not included on the chart at all. It is therefore not appropriate to make assumptions on individual cases based on pet species.

This study used one approach to examine human-pet relationships: looking at functional aspects. Participants were willing to consider their pets alongside their human relationships, and the results show that pets are often considered as important social relationships. It may therefore be useful to draw on other models from human psychology to investigate human-pet relationships. Other methods may also give new insights. A questionnaire design restricts the type of participants to those old enough to respond. Observational studies would allow data on the behaviour of the pet in initiating interactions and responding to situations to be included in the analysis.

No evidence was found to support the theory that pets enhance social networks and provide an indirect benefit in that way.

The influence of level of support from pets and from human relationships was investigated with regard to possible influence on physical health and psychological well-being. There was evidence to support a buffering effect of human support on

physical symptoms. There was no corresponding effect of human support on psychological symptoms, however there was both a main effect of pet support, and an interaction between pet support and life events. Figure 7.18 shows that the results for participants with have not reported any stressful life events are counter to those expected. Participants with very high pet support report higher levels of symptoms than those with lower support. It is not obvious why this should occur. Perhaps those experiencing higher levels of psychological symptoms seek out their pets for more support, and therefore report receiving more support. Further research would be required to ascertain this. As the number of stressful life events increased, participants with very high support from pets did not have the increase in symptoms that those with lower support suffered. This is consistent with a buffering effect from pet support.

This study suggests that support from pets differs from human support, but should be considered as a variable in relationships between stress and health, particularly in buffering against the deleterious effects if stress on psychological well-being.

CHAPTER 8

Conclusions and future directions.

8.1 Pet ownership as a social relationship

This thesis set out to examine relationships between people and their pets. The first issue addressed was whether or not it is appropriate to use the term relationship in sense of a social or personal relationship such as that engaged in between people and other people. In chapter 1, it was claimed that it is intuitively reasonable to do this, as what goes on between people and their pets is frequently described in relational terms such as friendship and companionship, characterised by love and affection. There are however alternatives to the model of social relationship. These alternatives were discussed in chapter 2, for example, pet ownership may be viewed as a lifestyle choice, where pets fit into an impression management strategy, or they may be instruments acquired to fulfil a hobby or pastime (Hirschman, 1994). Many of these alternatives do not preclude the coexistence of a social relationship. For example, a pet that is kept to fulfil an interest in breeding or showing may also be valued for companionship. Social relationships were therefore considered to be a reasonable framework to use for further examination of pet ownership, but not the *only* useful model to explore pet ownership. Pet ownership was not assumed to be equated with human-type social relationships, but a relationship model provides a useful framework for an examination of the nature of human-pet relationships, shedding light on ways in which they may be similar to human relationships, and ways in which they may be different.

Given the acceptance of the relationships model as a framework, the next question to be addressed was which particular models would be useful to use in order to establish empirical evidence concerning the nature of human-pet relationships. Research into

human-human relationships has originated from many different perspectives and generated diverse models. No particular model dominates the relationships field, and there is no unifying theory to link the discrete models. An examination of the literature on human-pet relationships in chapter 2 showed attachment has been the theory most frequently referred to in studies of pet ownership. Despite frequent use of the term attachment, in many studies, it is not possible to look at the findings of this body of work, and seek a convergence of evidence as there is considerable inconsistency between studies in the constructs of attachment used. The use of attachment in human psychology is usually with reference to Bowlby's (1969) theory of attachment, and developments of it that are applied to adult human relationships such as by Ainsworth (1989). The criteria used to distinguish attachment relationships from other affectional bonds are feelings of comfort and security derived from the proximity of the attachment figure. The study in chapter 3 sought to find evidence of this in the relationships between people and their pet dogs, by seeking evidence for a coincidence of elements common to all affectional bonds (affection, distress on separation or loss, etc.) with the particular criteria for attachment, feelings of comfort and security. A distinction was made between rationally appraised security (e.g. a belief that the presence of a dog would deter an attacker), and security derived from the nature of the relationship. No evidence was found to support classifying human-dog relationships as attachments. However, there were some problems in the methodology which may account for the failure to find such evidence.

Given that the research into pet ownership as an attachment relationship has done little to take the understanding of human-pet relationships very far, and its failure to provide a plausible model to account for health differentials between owners and non-owners, it was decided that in the remainder of the thesis a functional approach to human-pet relationships would be taken, rather than attempting to classify them as any particular type of relationship. This facilitated an investigation into supportive functions of human-pet relationships. This was of particular interest given: a.) the

evidence linking social support and health (e.g. Sarason, Sarason & Garung, 1997); b.) reported health benefits that have been associated with pet ownership (e.g. Siegel, 1990); and c.) that descriptions of human-pet relationships are often characterised as containing supportive behaviours and functions which suggest support. However, even if human-pet relationships are found to be a source of support, it would not necessarily follow that the support is of the appropriate type, or sufficient to have a influence of human health. The empirical study reported in chapter 7 sought to measure perceived support from pets, and evaluate whether or not it had a measurable influence of human health. The scales used to measure the provisions of relationships were evaluated with young children and teenagers in chapter 4. This pilot work was undertaken to ascertain whether children would be able to answer questions of the functions of their relationships with pets and with their immediate family members reliably. The results indicated that the children were willing and able to evaluate the provisions from human-pet relationships in the same way as their relationships with human family members. The test-retest calculations on results from the questions was good, indicating that the children were giving reliable answers. This pilot study provided a sound basis to go forward with a functional approach, with confidence that if children were included as participants in further research, it would be possible to obtain reliable data. Further, these preliminary results suggested that pets may be important sources of some social provisions, as children ranked pets higher than some of their human family members.

The use of the social network diagram in chapter 7 also supported the use of a social network framework for the examination of pet ownership. Sixty one percent of pets were included by participants in their social network.

8.2 Who owns the family pet?

Chapter 5 looked at pet ownership in the context of the family. The family context was used for several reasons. First, pets are most frequently found in family

households with children, so it is desirable to investigate pet ownership in its typical circumstances. Secondly, pets are often described as being like family members, therefore it was of interest to directly compare the human-pet relationship with other family relationships. Finally, it allowed an analysis of *who* is a pet owner. Most research has equated the presence of a pet in the household with pet ownership however different people within a pet owning household may each interact quite differently with the animal, or even avoid interacting with it at all. The question of who owns a family pet was posed, and an analysis of the characteristics of pet ownership undertaken. The results found that pets, especially the canonical species of dogs and cats are seen as being of shared ownership between family members. Other small mammals such as hamsters and guinea pigs were more likely to have a single owner in the household. Factors that predicted the size of share of ownership that participants said they had in the pet were the family role of the participant, and the level of support reported from the pet. The level of negative interactions, and whether the pet was a dog or cat did not influence size of share. Husbands reported the largest mean ownership rating followed by mothers, wives, daughters, fathers and sons. It is not clear why this pattern has emerged. The three female roles report bigger shares than the male roles with the notable exception of husbands. Further qualitative investigations would be required to investigate this further. Those with higher support ratings for pets also reported a bigger share of ownership.

The finding that 61% of pet owners included household pets in their social network diagram has a corollary: 39% of pets were excluded, therefore not *all* of those who have a pet in their household consider that they have a social relationships with the animal.

These results can provide some answers to the question of who owns a family pet. Often ownership is most frequently seen as shared between family members. The size of share is associated with the family role of the person, and the degree to which the

pet is seen as supportive. Pets, particularly dogs, are important sources of some relational provisions, however not all of those who have household pets consider that they have a social relationship with them. It therefore seems inappropriate to attribute a simple categorical verdict of pet owner or non-owner on the basis of the presence or absence of a pet in the household. A functional approach that describes the level of social provision (if any) provides a richer picture of the nature of pet ownership.

8.3 Provisions from human-pet relationships.

The studies presented in chapter 5 and chapter 7 seek to establish what human-pet relationships can provide using the relational provisions scale. Human-pet relationships were examined along side the participants' human-human relationships in terms of the social provisions they are perceived to afford. This allowed a direct comparison of human-human and human-pet relationships. The results showed that there is evidence for pets, especially dogs as a source of some elements of support. The overall trend was that provisions from human-human relationships were higher than from dogs; dogs were rated higher than cats, and cats higher than other pets. This was the case for both positive and negative elements of relationships. The mean level of provisions from human-dog relationships were, however, comparable to those from human-human relationships on provisions of companionship, nurturance, affection, and reliable alliance. Levels of overall satisfaction with human-pet relationships were comparable to those with human-human relationships.

The study presented in chapter 5 looked at a comparison of the level of provisions from human compared to pet relationships to investigate whether provisions from pets were used to compensate for low levels of provision from human relationships. Correlations between provisions from human and pet relationships were generally positive for the mean level of provision from a typical relationship. This means that individuals who report high support from human relationships also report high support from pets. The correlations for total support (from all of the relationships

each individual has in their family) were generally negative, indicating that those with low total support from all of their human relationships have high total support from all of their pet relationships. This is consistent with the model of pets being used to compensate for low levels of provision from human relationships. This effect, however, is likely to be due to a negative correlation between the number of people and the number of pets in the households. The question remains as to why those in households with fewer humans choose to keep more pets. Acquiring more pets may be a useful strategy for compensating for small human networks however further research would be required to establish this. Further analysis partialled out the correlation into within family and between family effects. The results indicated strong individual and family styles: individuals who reported high mean levels of support from pets also reported high mean levels of support from human relationships and vice versa. Also, families who have high mean levels of support from human relationships tend to have high mean levels of support from pet relationships, and vice versa. The correlations between families on *total* support from all human relationships and total support from all pet relationships were negative. Again this is due to the negative correlation between the number of people and the number of pets in households.

The study in chapter 5 included only household members in the analysis comparing the provisions from human and pet relationships . It is possible that participants had other important relationships outside the family that should be included in order to determine whether provisions from pet relationships are used to compensate for low levels of provision from pets. The study presented in chapter 7 sought to address this by including all important relationships identified on the social network diagram in the relational provisions scale. It was unfortunate that it was not possible to recruit sufficient individual members of the households taking part in order to pursue an analysis of within family, and between family effects.

8. 4 Social support from pets and human health.

The study presented in chapter 5 found evidence that some supportive provisions from pets are reported at comparable levels to those derived from human relationships. Given the established links between social support and health, support from pets provided a plausible mechanism to account for health differences between pet owners and non-owners. The study presented in chapter 7 provided some limited evidence which is consistent with support from pets buffering owners from the effects of stressful life events with regard to psychological symptoms, but not physical symptoms. There was no significant main effect of support from pets on physical or psychological health symptoms.

8.5 Differences between pet species.

The studies in chapter 5 and chapter 7 both indicate that there are important differences between pet species. Dogs and cats are more likely to considered as included in a social network than other pet species, and dogs are more likely to be included in the category of very important relationships than cats. Generally, the levels of provisions, both positive and negative, were higher for dogs than cats, and for cats than other small mammals.

8.6 Further research.

Future research into associations between pet ownership and health may be better served by not treating pet ownership as a simple categorical variable based on the presence of a pet in the household. Studies which seek to investigate a particular mechanisms that may plausibly explain health outcomes will need to measure the aspect of pet owning which is implicated in the hypothesis. For example, social support, exercise levels , interactions that may be relaxing, and so on. This is likely to be more fruitful than designs which are merely correlational.

The studies reported in this thesis relies upon self-report methods for collecting data.

Pets were not treated simply as independent variables, and useful information was gathered on differences between pet-species, but this information was the subjective view of the human party in the relationships. A more dynamic view of the human-pet dyad may be obtained by using observational techniques of the interactions that take place, observing the behaviour of both human and pet.

It is clear from the research presented in this thesis that there are important differences between pet species. Despite this, much of the literature on pet ownership does not differentiate between species, or generalises findings regarding one species (typically dogs) to all pets. Future research would benefit from distinguishing between species.

Social relationships have proved to be a useful framework for an examination of pet ownership. The particular functional model used was chosen for pragmatic reasons, as the relational provisions scale offered a wide range of social provisions including both positive and negative aspects of relationships. Other models from the field of social relationships may be useful to provide insights into different aspects of human-pet relationships.

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APPENDICES

Appendix 1: Attachment study questionnaire (used in Chapter 3)

Dog owners questionnaire

List of dogs:

Name	Type	Age	How long with owner?
1.....			
2.....			
3.....			
4.....			
5.....			
6.....			

On average, how long do you spend with your dogs each day? _____

What other pets do you own? _____

Owner information:

Sex M / F

Age _____

Marital status _____

Occupation _____

Number of others in house _____

Why did you decide to have your pets?

Ranking questions

The following questions will describe different imaginary or real situations. I would like you to put your dogs in order:

1. If you were on holiday, and the dogs were in kennels, or being cared for by a friend, which dog would you miss most.

2. If a law was brought out to say people could only keep one dog, which dog would you most want to keep?

3. Which dog do you enjoy stroking or cuddling most?

4. Which dog do you feel most attached to?

5. Which dog is the least replaceable - in the sense that you have a unique, or special relationship with it?

6. Which dog would you take with you if you had to walk through the town alone at night?

7. If the police issued a warning that there was a prowler in the neighbourhood, which dog would you want with you in the house at night?

8. Imagine that there is a vicious dog in the street growling at you. If you could have one dog with you for protection, which would you choose?

9. Imagine you're selling your home and the estate agent is due to arrive with a viewer later in the day. The viewer arrives early, and without the agent, saying that he can't make the later appointment. You're anxious to sell, and agree to show him round yourself. He's afraid of dogs, and asks if you'll put them outside. You compromise, agreeing to keep one with you on a lead, and the rest outside. Which would you keep with you?

10. Imagine that you're a Securicor guard, responsible for collecting large amounts of cash. You can take one dog with you, which one would you choose?

11. Imagine that you are a burglar. Which of your dogs would most put you off burgling the house it was in?

12. Imagine you're a mugger. Which dog would most put you off snatching a bag from the person it was with?

13. Which dog could fight most fiercely if provoked?

14. Which dog would actually do most to protect you?

15. Which dog would effectively give you the best overall security?

16. If you were watching a scary film alone at night, which dog would you most want with you?

17. If you were persuaded to do a charity parachute jump or bungee jump, and one of your dogs could go with you to the event location, which would you want?

18. If you were alone at home at night, and there was a power cut, so all of the lights went out, which of the dogs would you most want with you?

19. Imagine that you have witnessed a serious crime, and were called on to give evidence at the trial. You can take one dog with you to court as far as the waiting area (a friend would stay with it while you gave evidence). Which dog would you choose?

20. If you had to go into hospital for an operation, and could have one dog with you in a private room, which would you take?

21. Which dog is most entertaining or playful?

22. Which dog is most demanding of your attention?

23. Which dog wants to be nearest to you physically?

24. Which dog is most vocal - making any sounds, to try to communicate with you?

25. Which dog take most time on grooming, exercising, keeping happy etc.?

26. Which dog gives you best overall companionship?

27. Which dog loves you most?

28. Which dog is best behaved or most obedient?

29. Which dog can you tell your problems to?

Questions on favourite dog:

Which is favourite dog? (If can't choose, which have they had longest?)

I'm going to read some statements. I'd like you to give each one a mark out of ten for how much it applies to you. For example, if it's not at all relevant to you, give it zero. If it's slightly relevant, you might give it 2 or 3 or 4. If it's very appropriate to you, you might give it 9 or 10. OK?

I keep (favourite dog) because...

1. x is good company.

2. I love x.

3. I bought x for my children.

4. x is a particular breed that I like.

5. x would protect me.

6. x loves me.

7. I like training x.

8. x needs me.

9. I like exercising x.

10. I'd miss x if I didn't have him/her.

11. I enter competitions with x.

12. I can tell x my problems.

13. x makes me feel safer.

14. I like stroking/cuddling x.

15. x is never critical of me.

16. x looks wonderful.

17. x might deter an intruder.

18. x entertains me.

19. x stops me from worrying.

20. x senses my mood.

21. I don't feel alone if x is there.

22. I meet other people through x.

23. x gives me confidence to do things I wouldn't do otherwise.

24. x is a special friend.

25. I need x.

26. x stops me being depressed.

In the final section now, like the last, please give each statement a mark out of 10 for how much it's relevant to you. It's asking how much your relationship with x is like other sorts of relationship. You can give each one as high or low a mark as you like out of 10.

1. x is like a child to me.

2. x is like a parent to me.

3. x is like a brother/sister to me.

4. x is like a spouse to me.

5. x is like an employee to me.

6. x is like a boss to me.

7. x is like a family member to me.

Last question - if anything were to happen to x, and they were to die, would you replace him/her?
When?
Why?

Appendix 2: Justification for computing correlation coefficients on rank data combined across subjects (used in Chapter 3)

JUSTIFICATION FOR COMPUTING CORRELATION COEFFICIENTS ON RANK DATA COMBINED ACROSS SUBJECTS.

Glyn M. Collis, 1993

1. General considerations

Since the data are rankings assigned by each subject to his/her dogs according to various criteria (the *questions*), it is natural to think in terms of a rank correlation coefficient such as Spearman's rho. As is well known, Spearman's rho is numerically identical to Pearson's product moment correlation applied to ranks. For example, the following data comprise two sets of ranks, 1 ... 8.

X	Y
1	4
2	3
3	2
4	1
5	5
6	7
7	8
8	6

Spearman's rho (ρ) and Pearson's r are identical, $\rho = 0.6905$, $r = 0.6905$.

The identity remains even when one or both sets of ranks is subject to linear transformation. For example, if we doubled each rank in one set, and added 5.5 to each rank in the other (both linear transformations), we have:

X*2	Y+5.5	
2	9.5	
4	8.5	
6	7.5	
8	6.5	
10	10.5	
12	12.7	
14	13.5	
16	11.5	still, r = 0.6905.

In summary, a Pearson correlation coefficient computed on two sets of ranks, or on linear transformations of ranks, is identical to a Spearman rank correlation.

2. Combining data across subjects: avoiding bias

It is intuitively reasonable to think in terms of calculating separate correlation coefficients for each subject, and then averaging these in some way. Also, it would be computationally convenient if we could compute an average or pooled coefficient directly. However, there is an important source of bias to be overcome. The following hypothetical data from two subjects illustrates the problem.

	X	Y	
subject 1	1	2	
	2	5	
	3	3	
	4	1	
	5	4	for subject 1, r=0
subject 2	1	3	
	2	1	
	3	4	
	4	2	for subject 2, r=0
			overall correlation r = 0.036

In this case, since each within-subject correlation is zero, we would want and expect a pooled (overall) correlation also to give us r=0. However, what we actually get for an overall

correlation (computed using the algorithm for Pearson's Product Moment on all the X and Y data) is r=0.036. This is because the mean of subject 1's ranks is 3 (since he/she has 5 dogs) and the mean of subject 2's ranks is 2.5 (since she/he has 4 dogs). This is responsible for an inbuilt between-subject correlation between the X and Y scores, which becomes apparent when we combine the data across subjects.

The solution is simple. We calculate a mean rank for each subject and subtract this mean from that subjects' raw ranks. This gives us 'centred' ranks. Since subtracting a constant is a linear transformation, and the mean rank is constant for all ranks *for the same subject,* within-subject correlations are unchanged by centering the ranks. The mean rank is not constant across different subjects (unless all subjects have the same number of dogs) therefore the transformation is not linear across different subjects and the overall correlation is likely to be changed.

The calculation is particularly simple because the mean of ranks 1,2...k is $\frac{k+1}{2}$.

To illustrate:

raw ranks		mean	centred ranks		
X	Y	rank	X'	Y'	
1	2	3.0	-2.0	-1.0	
2	5	3.0	-1.0	2.0	
3	3	3.0	0.0	0.0	
4	1	3.0	1.0	-2.0	
5	4	3.0	2.0	1.0	for subject 1, r=0
1	3	2.5	-1.5	0.5	
2	1	2.5	-0.5	-1.5	
3	4	2.5	0.5	1.5	
4	2	2.5	1.5	-0.5	for subject 2, r=0
					overall correlation r = 0

Since the means of the centered ranks are identical for all subjects (all means = 0), there can be no between-subject influence on the overall correlation. The overall correlation is now zero, consistent with the fact that both within-subject correlations are zero.

3. An overall correlation that is the mean of the within-subject rank correlations.

Using centred ranks ensures consistency with respect to zero within-subject correlations. However, except in special cases, it does not ensure that the overall correlation is identical to the mean of the within-subject correlations.

This is because the overall correlation is a weighted average of the within-subject correlations, the weights being related to the number of dogs owned by each subject. Since the unit of analysis is a person rather than a dog (it is persons who are responding to questions, not dogs), we might reasonably prefer the overall correlation to be an *un*weighted average.

We can solve this second problem by dividing each centred rank by the appropriate 'weighting' factor. This turns out to be the quantity,

$$\sqrt{\Sigma \left(r - \frac{k+1}{2}\right)^2} \quad ,$$

the square root of the sum of the squared deviations of the (uncentred) ranks r=1,2,...k from each subject's mean rank. If there are no tied ranks, calculations are simplified because this sum of squared deviations is proportional to $\sqrt{k(k^2-1)}$ (note 1) .

We divide each of the centred ranks $\left(r - \frac{k+1}{2}\right)$ by the weighting factor $\sqrt{k(k^2-1)}$ to give a

new transformed score. The equation for the transformation from the original ranks (r) is thus:

$$u = \frac{r - \frac{k+1}{2}}{\sqrt{k(k^2-1)}} \quad .$$

Within one subject's data, k is constant, so this is a linear transformation and within-subject correlations are unchanged.. However, the overall correlation will changed by the transformation if k is not constant across subjects. *The overall correlation on the transformed ranks will now be identical to the average of the within-subject correlations.*

We will illustrate this with some real data: ratings from Sheila's first 7 subjects on questions 2 & 6.

subj	K (dogs)	Q2	Q6	mean $\frac{k+1}{2}$	cent'd Q2	cent'd Q6	weight $\sqrt{k(k^2-1)}$	unwted UQ2	unwted UQ6	within-subj ρ
1	3	3	1	2	1	-1	4.899	0.204	-0.204	
1	3	1	3	2	-1	1	4.899	-0.204	0.204	
1	3	2	2	2	0	0	4.899	0	0	-1.0
2	2	2	1	1.5	0.5	-0.5	2.449	0.204	-0.204	
2	2	1	2	1.5	-0.5	0.5	2.449	-0.204	0.204	-1.0
3	2	2	2	1.5	0.5	0.5	2.449	0.204	0.204	
3	2	1	1	1.5	-0.5	-0.5	2.449	-0.204	-0.204	1.0
4	3	1	2	2	-1	0	4.899	-0.204	0	
4	3	2	1	2	0	-1	4.899	0	-0.204	
4	3	3	3	2	1	1	4.899	0.204	0.204	0.5
5	2	2	2	1.5	0.5	0.5	2.449	0.204	0.204	
5	2	1	1	1.5	-0.5	-0.5	2.449	-0.204	-0.204	1.0
6	5	5	1	3	2	-2	10.954	0.183	-0.183	
6	5	1	3	3	-2	0	10.954	-0.183	0	
6	5	3	4	3	0	1	10.954	0	0.091	
6	5	4	2	3	1	-1	10.954	0.091	-0.091	
6	5	2	5	3	-1	2	10.954	-0.091	0.183	-0.7
7	4	2	2	2.5	-0.5	-0.5	7.746	-0.065	-0.065	
7	4	3	3	2.5	0.5	0.5	7.746	0.065	0.065	
7	4	4	1	2.5	1.5	-1.5	7.746	0.194	-0.194	
7	4	1	4	2.5	-1.5	1.5	7.746	-0.194	0.194	-0.8

The overall correlation between UQ2 and UQ6 is -0.1429, the same as the average of the within-subject rank correlations.

In summary, the overall correlation based on the u scores has two nice properties: it is the average of within-subject rank correlations, which is consistent with the ranking nature of the data and with treating subjects (persons) as the basic unit of analysis; since this average correlation is demonstrably a special case of Pearson's product moment correlation, a correlation matrix should be positive semi-definite and suitable for a principle components analysis. (Of course, using pairwise deletion to circumvent problems caused by missing data may introduce problems into any correlation matrix).

In testing the overall correlation for significance, we would probably want to focus on the number of subjects, (ie not let N be inflated by the number of dogs). Not simply because of this, may be that the z approximation for testing rho is more satisfactory in the present context than the F approximation which now tends to be favoured for both rho and r .

A suitable command in SYSTAT for converting a set of original ranks (eg a column called Q2) to a set of U scores (called UQ2), assuming there is a column K indicating the number of dogs ranked by each subject) would look like this)

```
LET UQ2=(Q2-((K+1)/2))/SQR(K*((K*K)-1))
```

	SUBJECT	K	Q2	Q6	UQ2	U
1	1.000	3.000	3.000	1.000	0.204	
2	1.000	3.000	1.000	3.000	-0.204	
3	1.000	3.000	2.000	2.000	0.000	
4	2.000	2.000	2.000	1.000	0.204	
5	2.000	2.000	1.000	2.000	-0.204	
6	3.000	2.000	2.000	2.000	0.204	
7	3.000	2.000	1.000	1.000	-0.204	
8	4.000	3.000	1.000	2.000	-0.204	
9	4.000	3.000	2.000	1.000	0.000	
10	4.000	3.000	3.000	3.000	0.204	
11	5.000	2.000	2.000	2.000	0.204	
12	5.000	2.000	1.000	1.000	-0.204	
13	6.000	5.000	5.000	1.000	0.183	
14	6.000	5.000	1.000	3.000	-0.183	
15	6.000	5.000	3.000	4.000	0.000	
16	6.000	5.000	4.000	2.000	0.091	
17	6.000	5.000	2.000	5.000	-0.091	
18	7.000	4.000	2.000	2.000	-0.065	
19	7.000	4.000	3.000	3.000	0.065	
20	7.000	4.000	4.000	1.000	0.194	
21	7.000	4.000	1.000	4.000	-0.194	

In practical terms, it is recommended that all the correlations should be computed using the algorithm for Pearson's Product Moment correlation coefficient. Where the data are ranks or linear transformations of the original ranks, the result is will be identical to a Spearman rank correlation, so the re-ranking carried out by an algorithm for Spearman's correlation is unnecessary. Where the data are not linear transformations of ranks, as in the "overall" correlations discussed above, we do not want the data to be re-ranked as this will not lead to the desired average correlation.

(note 1)

The identity, when there are no ties, is $\sqrt{\Sigma \left(r - \frac{k+1}{2}\right)^2} = \sqrt{\frac{k(k^2 - 1)}{12}}$. The 12 is clearly constant across all scores and can therefore be dropped. If there are ties between dogs' ranking on any one question, the expression on the left hand side of the equation can be used, or a more complex formula that takes account of ranks can be found in various books on rank statistics.

Appendix 3: Question schedules from preliminary study

(used in Chapter 4)

Rank Order Questionnaire

The following questionnaire includes a number of simple questions about **everyone** who lives in your house: This includes yourself, other family members, any other people who live in your house, and even pets if you have any.

Please write a list in the spaces below of all the members of your household, and state what their relationship is to yourself, e.g. mother,father, sister, cat etc.
Please remember to include yourself in this list and in the answers to the questionnaire items.

Once you have filled in your list of household members, please turn over and complete the question sheets. To do this write in the name of each person next to the number rank you would like to give them. 1 is the highest, 10 is the lowest rank.

We have given enough space on the question sheets for you to include up to 10 household members. If however, for example, you only live with 4 others, please use only the appropriate amount of ranks - numbers 1 to 4.

Household Member's Name & Age	**Relationship to you**
e.g. Joseph (8 years old)	**Brother**

p.t.o.

1. Who likes pop music most?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

2. Who do people most often talk to when they have problems?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

3. Who decides what the family do?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

4. Who gets involved in the most arguments?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

p.t.o.

5. If someone was ill or sad who would they most want a cuddle from?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

6. Who is the boss in your family?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

7. Who do people most get annoyed with?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

8. Who is best at looking after everyone?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

p.t.o.

9.Who tells people what to do most often?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

10. Who most gets on people's nerves?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Thankyou very much for completing this questionnaire.

Pilot Likert Questionnaire

The following questionnaire includes a number of simple questions about **everyone** who lives in your house: This includes yourself, other family members, any other people who live in your house, and even pets if you have any.

Please write a list in the spaces below of all the members of your household, and state what their relationship is to yourself, e.g. mother,father, sister, cat etc.
Please remember to include yourself in this list and in the answers to the questionnaire items.

Once you have filled in your list of household members, please turn over and complete the question sheets. To do this write in the name of each person on a doTted line, and then proceed to answer that question by circling 1 of the 5 responses below. Please make sure you fill in a separate question for each household member.

We have given enough space on the question sheets for you to include up to 10 household members. If however, for example, you only live with 4 others, please use only the appropriate number of questions.

Household Member's Name & Age	**Relationship to you**
e.g. Joseph (8 years old)	**Brother**

p.t.o.

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... likes pop music

Not Very Much **A Little Bit** **Quite A Lot** **Very Much** **More Than Anything Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is good to talk to if you have a problem

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... decides what the family does

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... argues with the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

If someone felt ill they would like .... to cuddle them

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

If someone felt ill they would like .... to cuddle them

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

If someone felt ill they would like .... to cuddle them

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

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If someone felt ill they would like .... to cuddle them

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If someone felt ill they would like .... to cuddle them

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

If someone felt ill they would like .... to cuddle them

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

If someone felt ill they would like .... to cuddle them

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is the boss of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is the boss of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is the boss of the family

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.... is the boss of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is the boss of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... is the boss of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... annoys the rest of the family

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... looks after everyone

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... looks after everyone

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... looks after everyone

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

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.... looks after everyone

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... looks after everyone

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... tells the rest of the family what to do

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... tells the rest of the family what to do

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

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Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... tells the rest of the family what to do

Not Very Often **Sometimes** **Quite A Lot** **Very Often** **More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

.... gets on people's nerves

Not Very Often	**Sometimes**	**Quite A Lot**	**Very Often**	**More Than Anyone Else**

Pilot Combined Questionnaire

Please complete this questionnaire one week after you completed the first one. Return it in the envelope provided as soon as possible after that via the internal mail system.

The following questionnaire includes a number of simple questions about **everyone** who lives in your house: This includes yourself, other family members, any other people who live in your house, and even pets if you have any. All information given by participants will be held in confidence, and no individuals will be identified in any reports on the study.

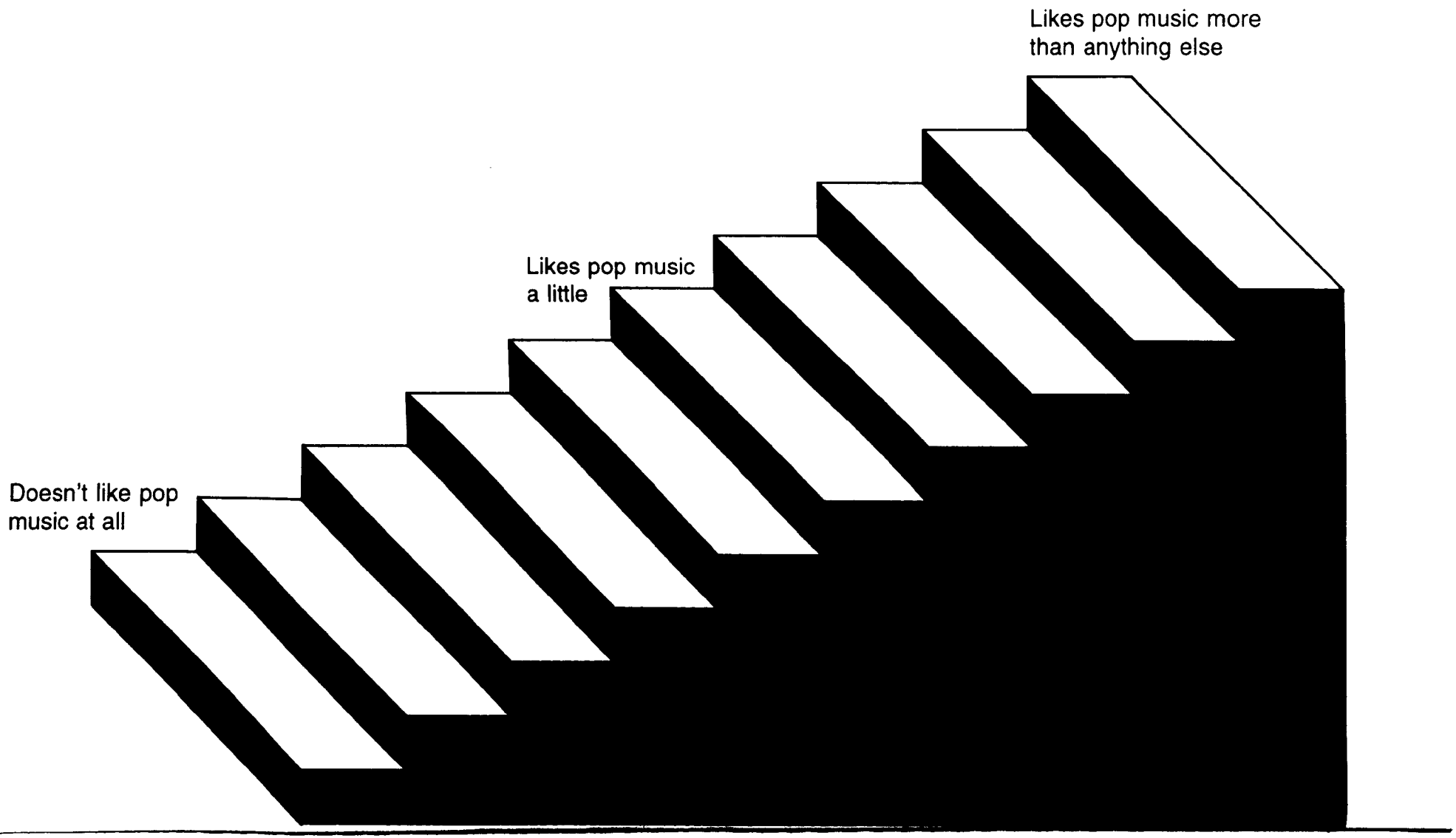
Please write a list in the spaces below of all the members of your household, and state what their relationship is to yourself, e.g. mother, father, sister, cat etc.

Please remember to include yourself in this list and in the answers to the questionnaire items.

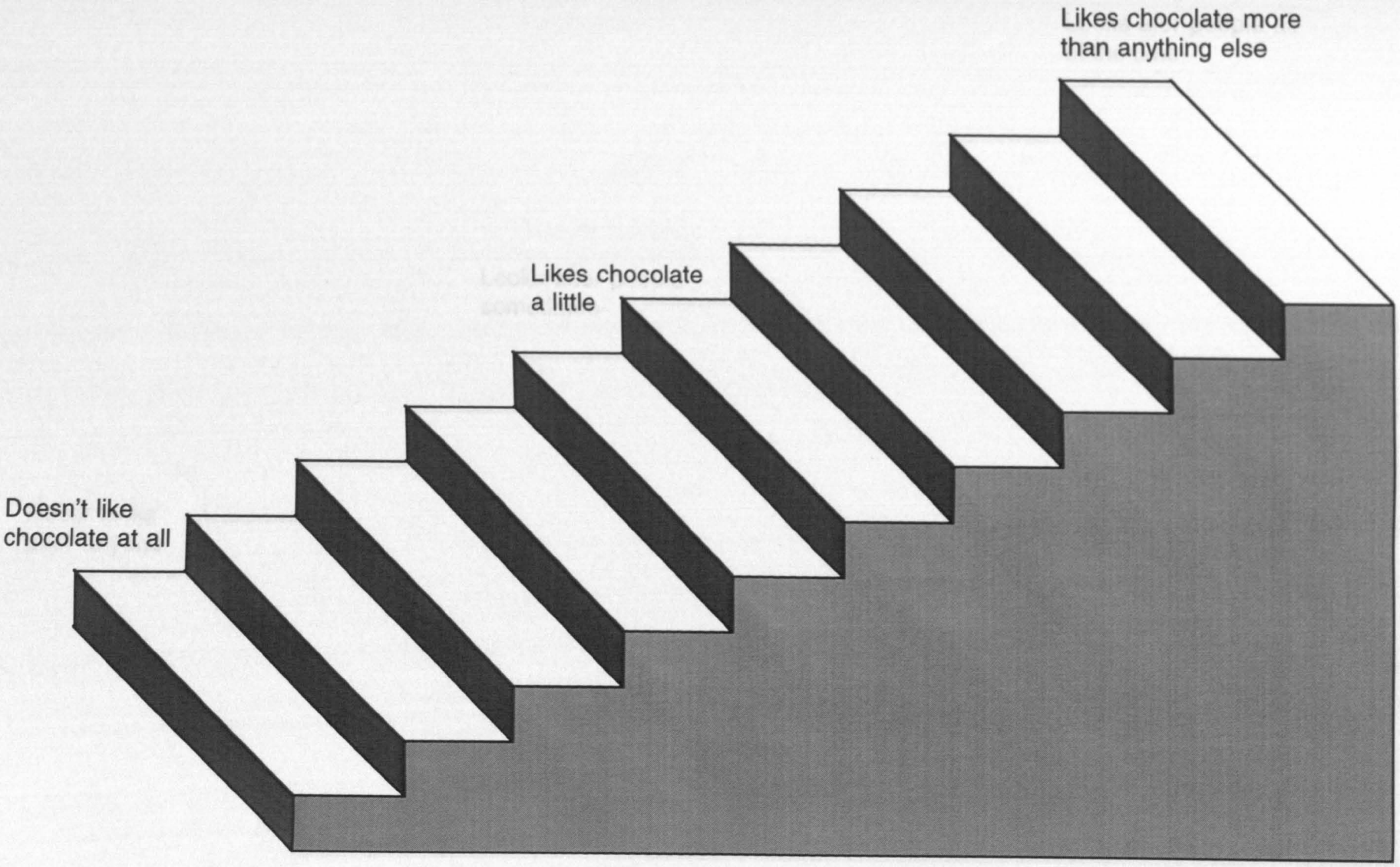
Once you have filled in your list of household members, please turn over and complete the question sheets by writing the name of each of the 'stairs' as appropriate for the question.

Household Member's Name & Age	**Relationship to you**
e.g. Joseph (8 years old)	**Brother**

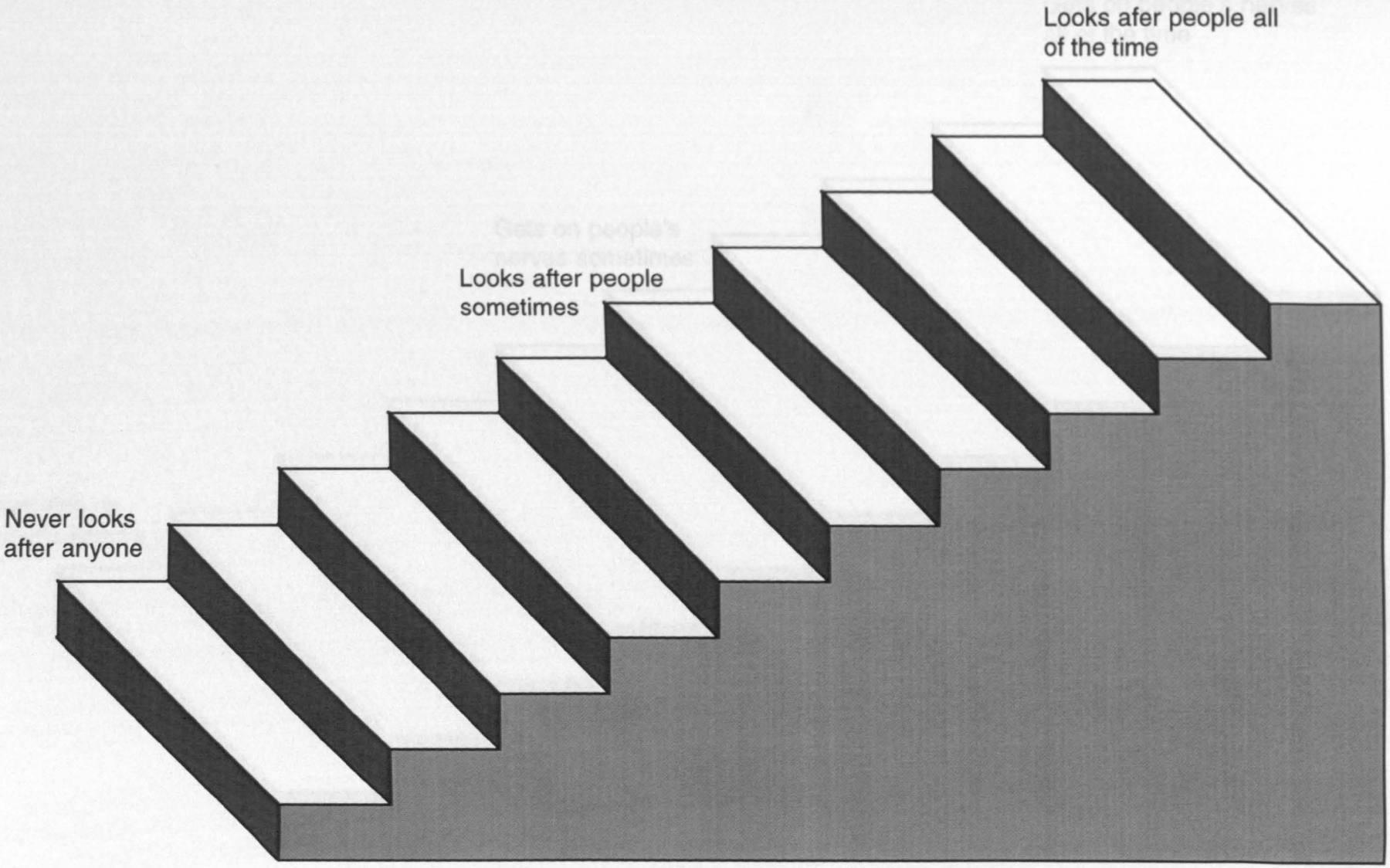
Who likes pop music?



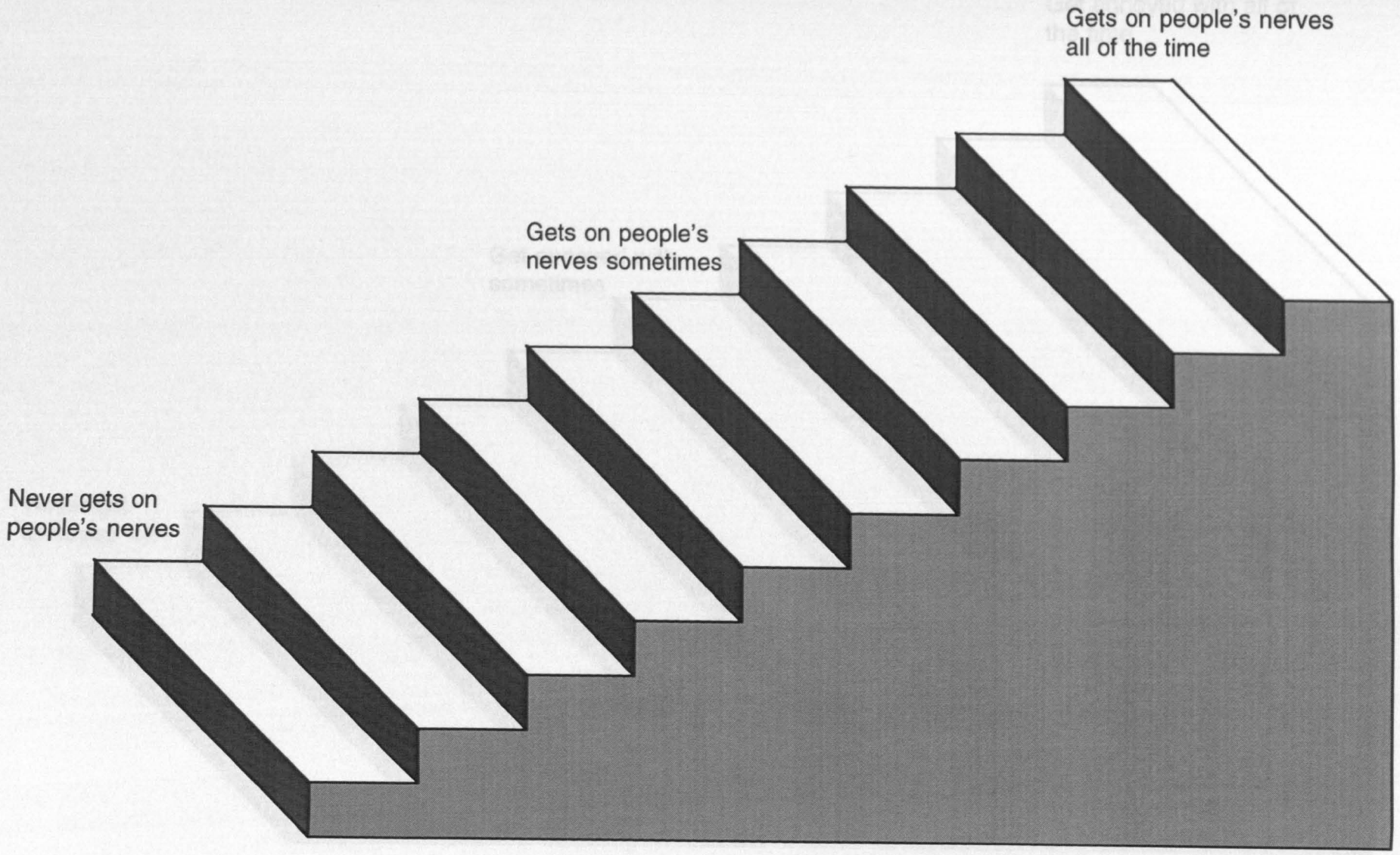
Who likes chocolate?



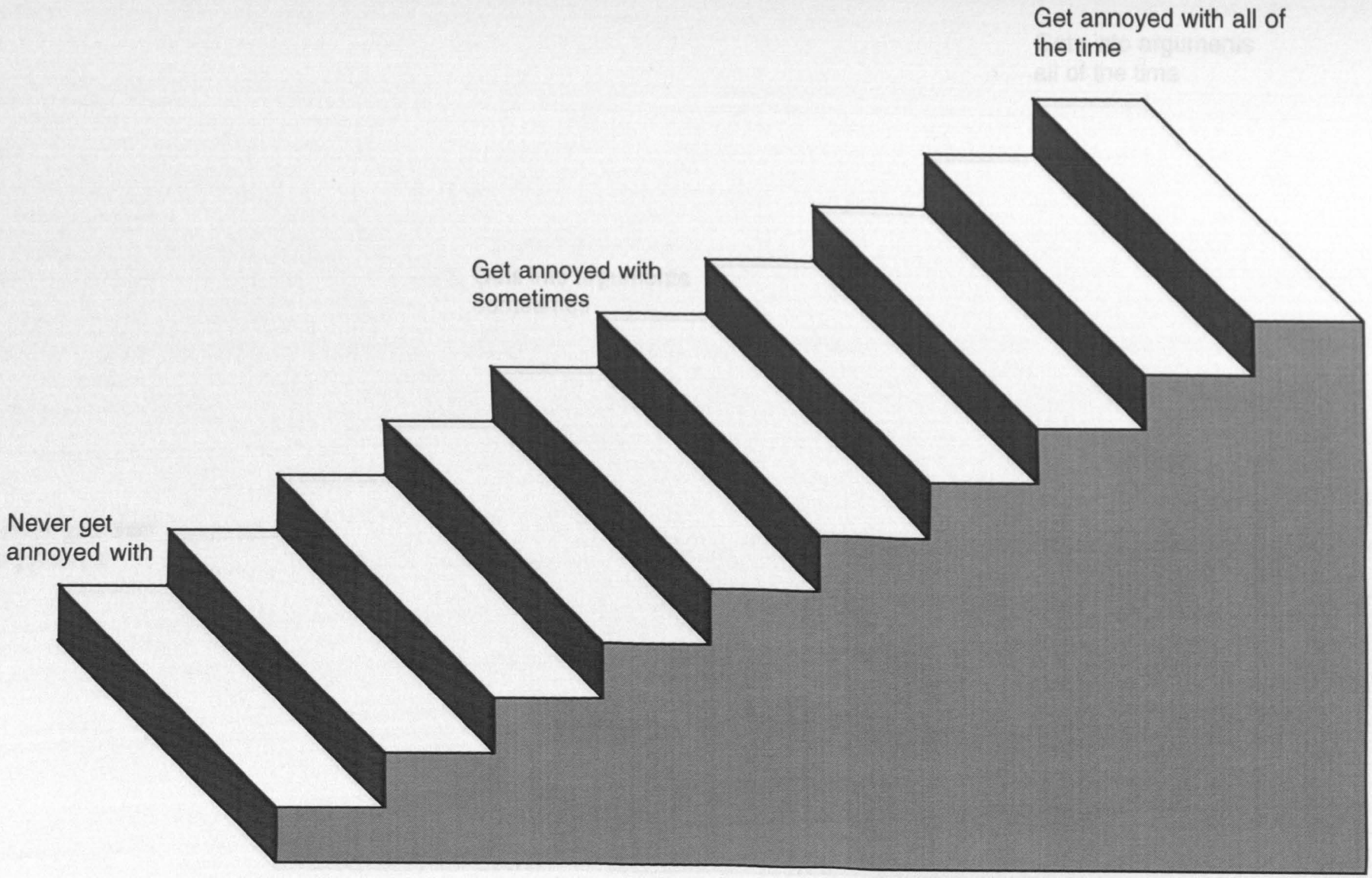
Who looks after everyone?



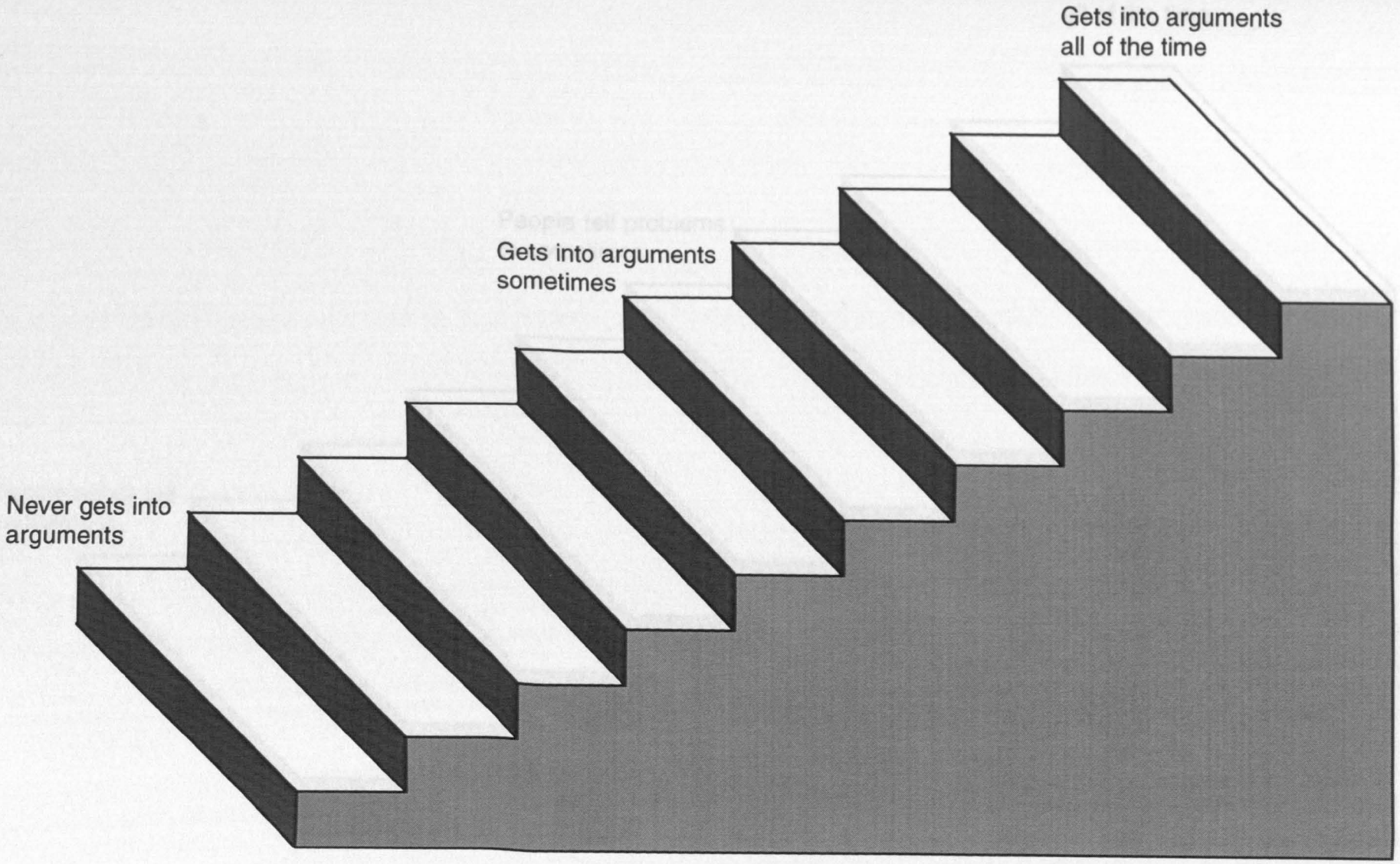
Who gets on people's nerves?



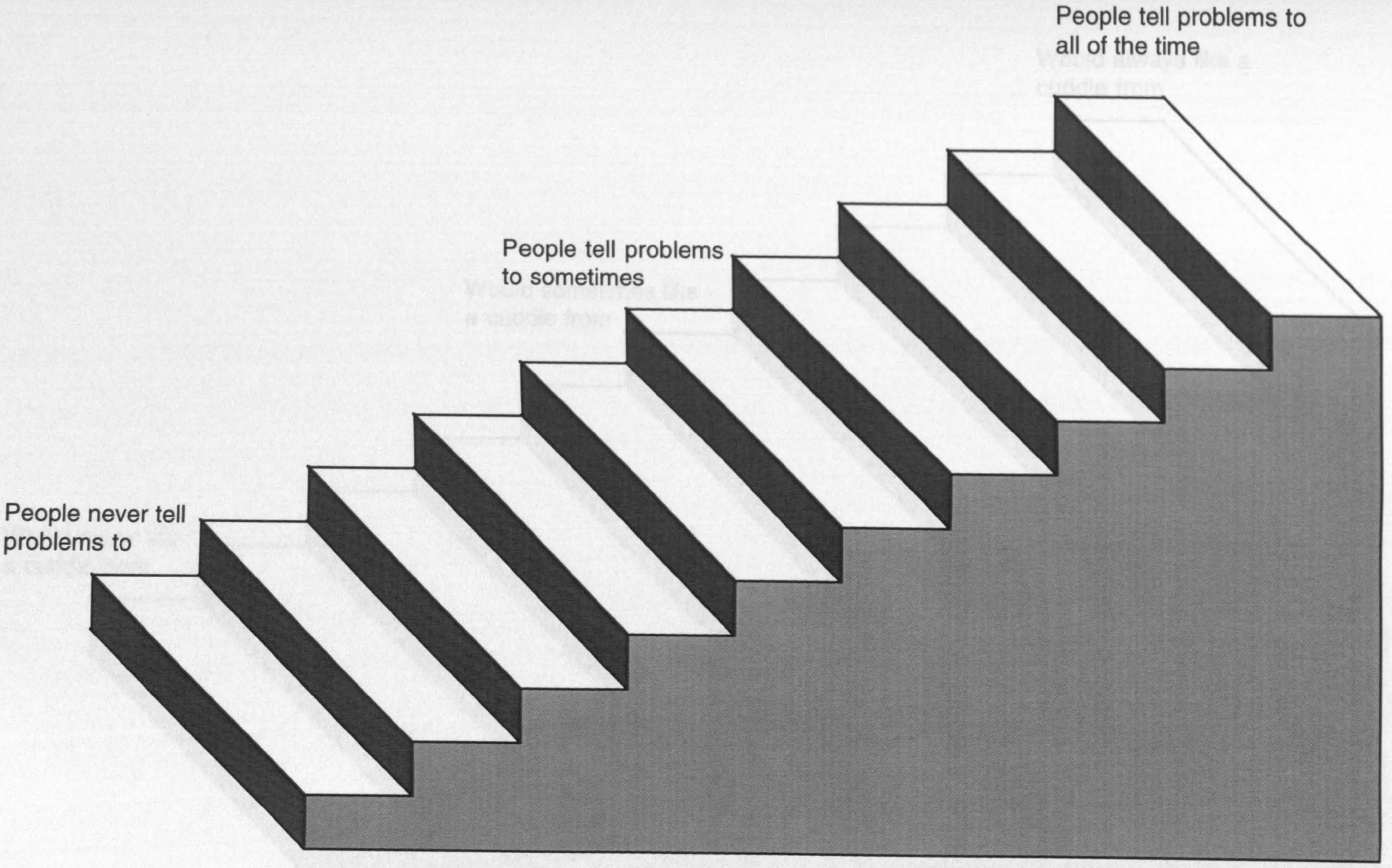
Who do people get annoyed with?



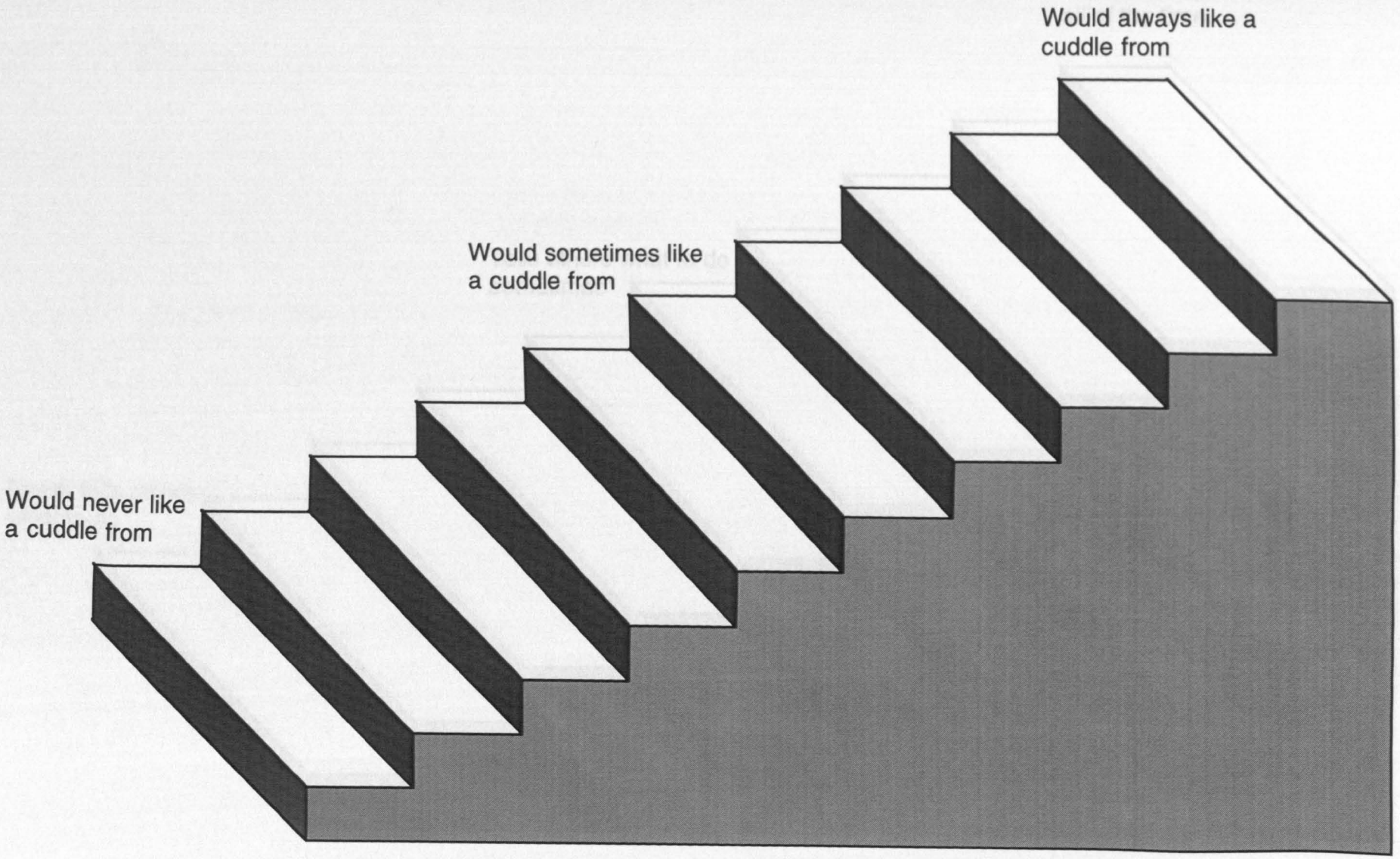
Who gets involved in arguments?



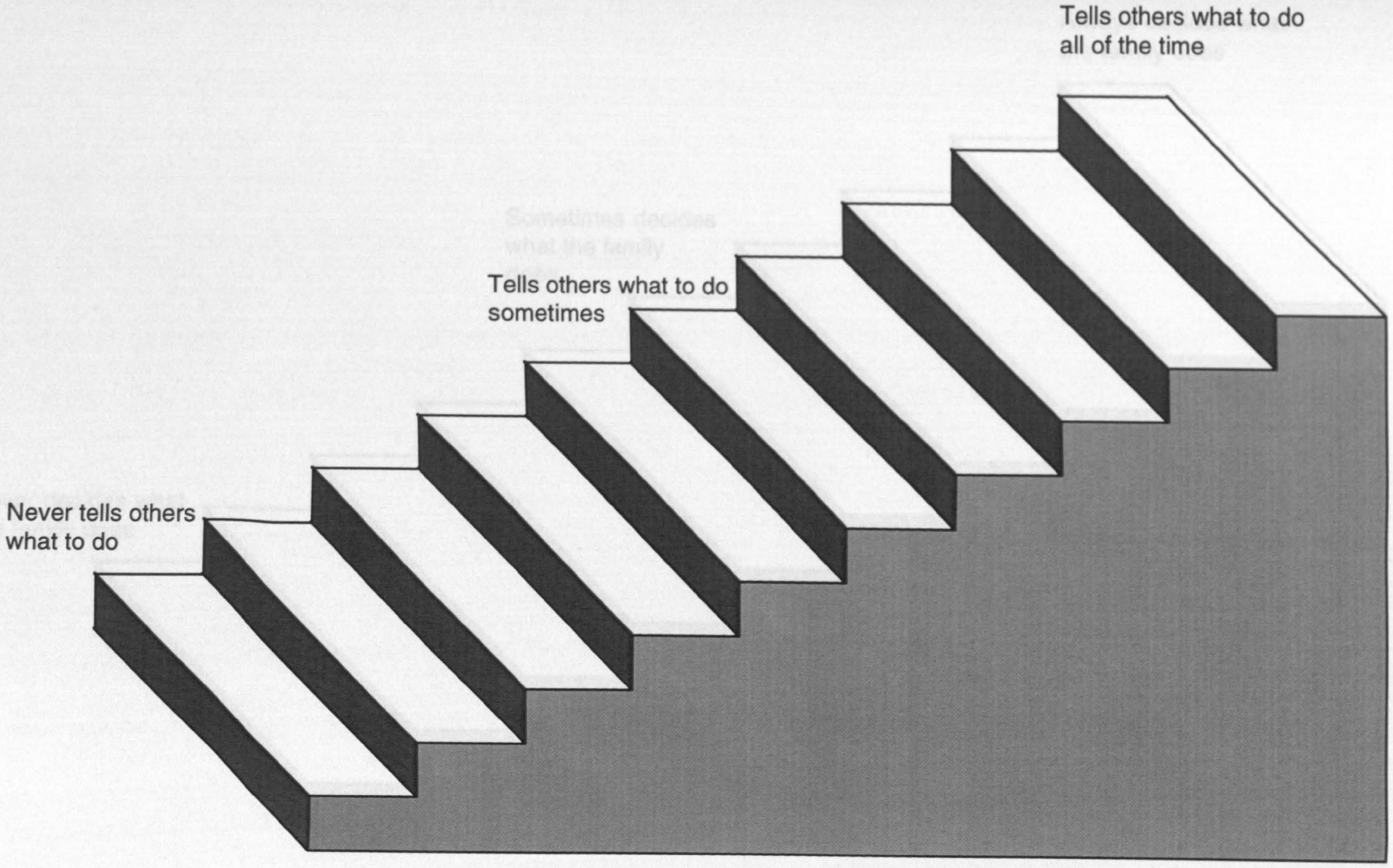
Who do people tell their problems or worries to?



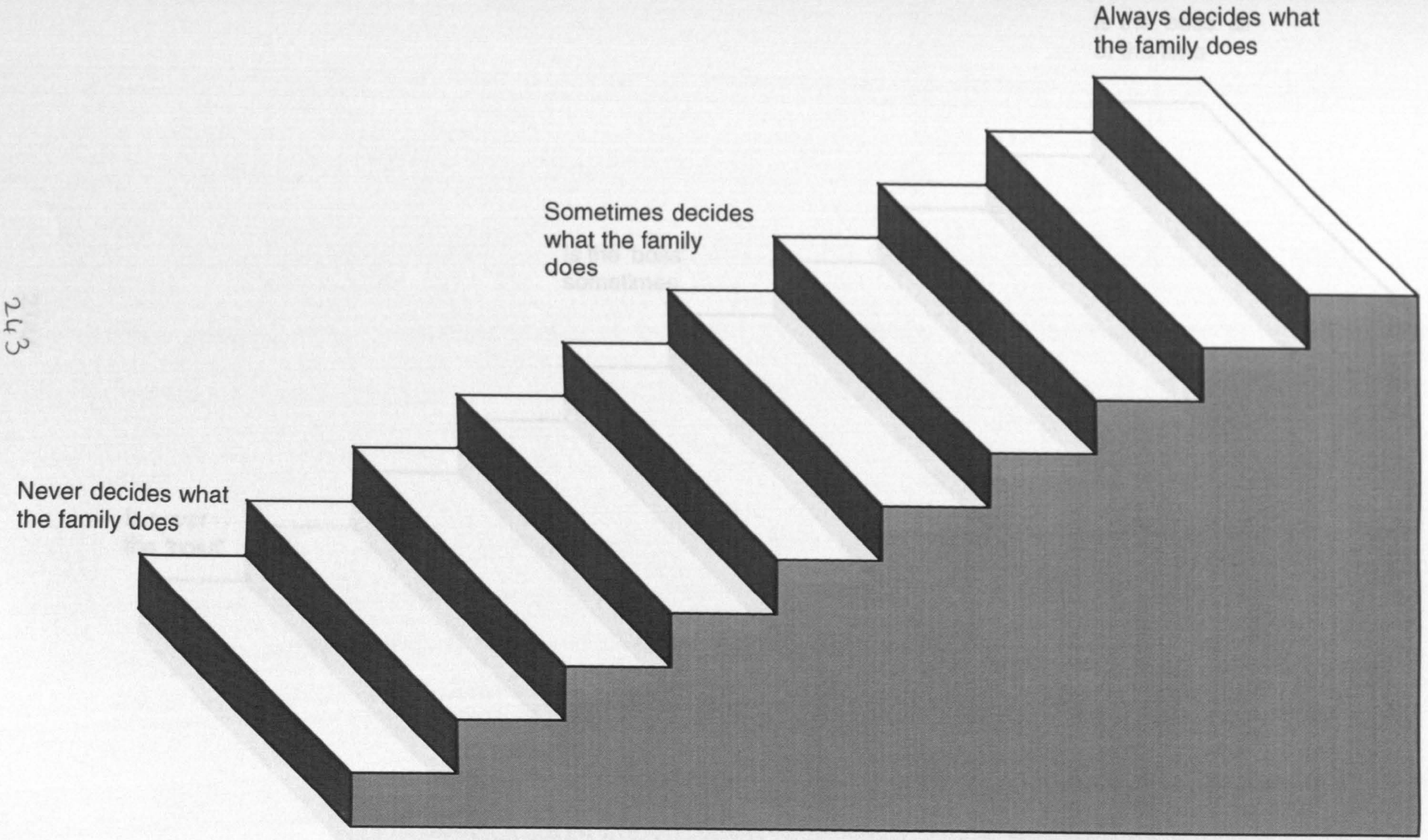
If someone was sad, or feeling ill, who would they most like a cuddle from?



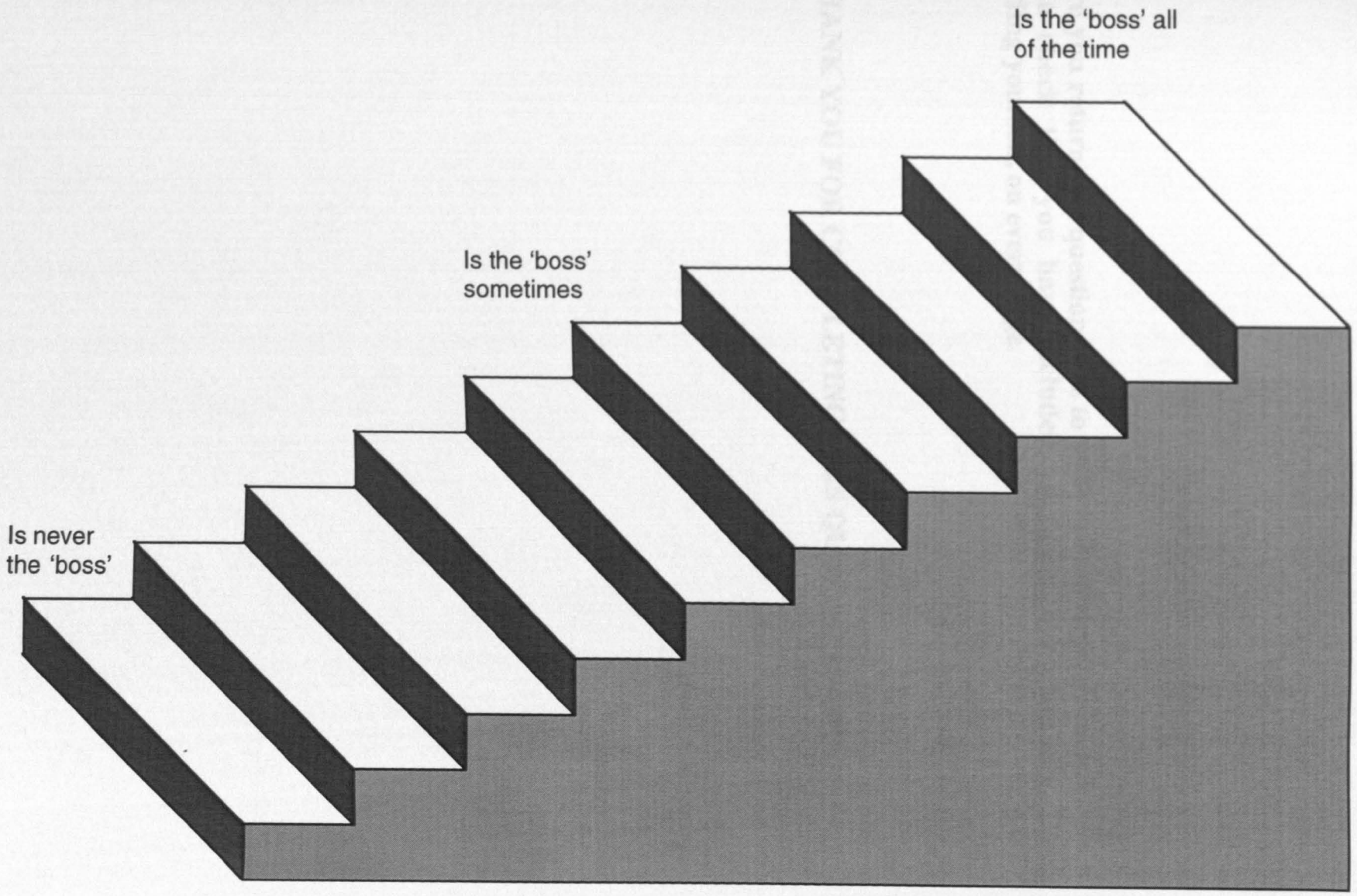
Who tells other people what to do?



Who decides what the family does?



Who is the 'boss' in the family?



Before you return this questionnaire to us in the envelope provided, please check that you have included all household members, including yourself, on every page.

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

Appendix 4: Family relationships survey (used in Chapter 5)

Family Relationships Survey: Families with Pets

Thank you for taking part in this survey. Any information that you give will be treated in confidence, and no one who participates will be identified personally in the results.

There are different sections in the questionnaire which ask for different types of response. Please read the instructions on how to complete the questions for each section carefully. Any additional comments that you wish to make will be welcomed, please write them on the paper next to the appropriate question, or in the space below.

Please write your name here: .....

N	SN	FN

The pet(s) in your household may belong to one particular person, or they may be shared by some of you, or all of you. You will be asked to show how much you would say that each person in your household has a share in owning each pet. **Here's an example:**

Pet: *Tabby*

Doesn't have any share in owning pet	**Has a small share in owning the pet**	**Has a moderate share in owning the pet**	**Has a big share in owning the pet**	**Is the only person that owns the pet**
Tom		*Sophie* *Dad*	*Mum*	

In this example, Mum is seen to be the main owner of Tabby. Sophie and Dad also have a moderate share in owning her, while Tom isn't seen as owning her at all. Notice that in this example Mum's name is not in the box on the far right, as she is not the only person with a share in owning the pet. Sophie and Dad also have a share.

Please complete the boxes below to show who owns the pet(s) in your house. Make sure you place every person in your house in the appropriate box for each pet. Repeat the task for each pet in your household.

Pet name (A) .....

Doesn't have any share in owning pet	**Has a small share in owning the pet**	**Has a moderate share in owning the pet**	**Has a big share in owning the pet**	**Is the only person that owns the pet**

Pet name (B) .....

Doesn't have any share in owning pet	**Has a small share in owning the pet**	**Has a moderate share in owning the pet**	**Has a big share in owning the pet**	**Is the only person that owns the pet**

Pet name (C) .....

Doesn't have any share in owning pet	**Has a small share in owning the pet**	**Has a moderate share in owning the pet**	**Has a big share in owning the pet**	**Is the only person that owns the pet**

Pet name (D) .....

Doesn't have any share in owning pet	Has a small share in owning the pet	Has a moderate share in owning the pet	Has a big share in owning the pet	Is the only person that owns the pet

Pet name (E) .....

Doesn't have any share in owning pet	Has a small share in owning the pet	Has a moderate share in owning the pet	Has a big share in owning the pet	Is the only person that owns the pet

Pet name (F) .....

Doesn't have any share in owning pet	Has a small share in owning the pet	Has a moderate share in owning the pet	Has a big share in owning the pet	Is the only person that owns the pet

Pet name (G) .....

Doesn't have any share in owning pet	Has a small share in owning the pet	Has a moderate share in owning the pet	Has a big share in owning the pet	Is the only person that owns the pet

There is often a mixture of good things and bad or inconvenient things about having a pet in the household. Think about the hassles of having your household pet(s) as well as the pleasant or good things.

First, consider the hassles and benefits of having each pet for the whole family. Do you think that each pet is ever more trouble than it is worth to the family as a whole?

How often is pet more trouble that it's worth to the family as a whole?

Pet's name:	(tick box to show how often) Never	Rarely	Sometimes	Often	Always
A.....	☐	☐	☐	☐	☐
B.....	☐	☐	☐	☐	☐
C.....	☐	☐	☐	☐	☐
D.....	☐	☐	☐	☐	☐
E.....	☐	☐	☐	☐	☐
F.....	☐	☐	☐	☐	☐
G.....	☐	☐	☐	☐	☐

Now just think about yourself, and the hassles and benefits of having pet(s). Is each pet ever more trouble than it's worth to you personally?

How often is pet more trouble that it's worth to me personally?

Pet's name	(tick box to show how often) Never	Rarely	Sometimes	Often	Always
A.....	☐	☐	☐	☐	☐
B.....	☐	☐	☐	☐	☐
C.....	☐	☐	☐	☐	☐
D.....	☐	☐	☐	☐	☐
E.....	☐	☐	☐	☐	☐
F.....	☐	☐	☐	☐	☐
G.....	☐	☐	☐	☐	☐

The questions that follow ask you about your relationship with everyone in your household. Write their names in the appropriate box for each question. Please make sure that you answer for each person or pet in your house in every question. Here is an example to show you how to do it.

Example: If I list all the others in my house, there are:

Mum, Dad, Linda, John, David, plus Jess, the dog,

I have 6 household members to give answers for. I would answer the question below as follows:

Q. How much do you argue with each one?

Never	Rarely	Sometimes	Quite a lot	All of the time
David	*Jess*	*Dad* *John*	*Mum*	*Linda*

This shows that I think I argue with my sister, Linda all of the time, my Mum quite a lot, Dad and John sometimes, rarely with Jess, and never with David.

List the names of every other person or pet in your house below:

.....

Give answers for in every member of your household to every question.

1. How much free time do you spend with each one?

None	Very little	A little	Quite a lot	Very much

2. Answer for each one: How much do you get cross with, or mad at each other?

Not at all	Very little	A little	Quite a lot	Very much

3. How much do you learn from being with each one?

Not at all	Very little	A little	Quite a lot	Very much

4. How satisfied are you with your relationship with each one?

Not at all	Very little	A little	Quite a lot	Very satisfied

5. How much does each one get on your nerves?

Not at all	Very little	A little	Quite a lot	Very much

6. How much do you tell everything you feel or think to each one?

Not at all	Very little	A little	Quite a lot	Very much

7. How much do you help each one with things that they can't do by themselves?

Not at all	Very little	A little	Quite a lot	Very much

8. How much does each one love you?

Not at all	Very little	A little	Quite a lot	Very much

9. How much does each one treat you as if they admire or respect you?

Not at all	Very little	A little	Quite a lot	Very much

10. Think about yourself and each one. Do you tell them what to do most of the time, or, do they tell you?

They almost always tell me	They tell me more	We are about the same	I tell them more	I almost always tell them

11. How sure are you that your relationship with each one will last no matter what?

Not at all sure	A little sure	Quite sure	Very sure	Extremely sure

12. How much do you get on the nerves of each one?

Not at all	Very little	A little	Quite a lot	Very much

13. How much do you love each one?

Not at all	Very little	A little	Quite a lot	Very much

14. How much do you have fun with each one?

Not at all	Very little	A little	Quite a lot	Very much

15. How much do you disagree with, quarrel or clash with each one?

Not at all	Very little	A little	Quite a lot	Very much

16. How much does each one help you if you have a problem to sort out?

Not at all	Very little	A little	Quite a lot	Very much

17. How happy are you with the way things are between you and each one?

Not at all happy	A little happy	Quite happy	Very happy	Extremely happy

18. How much do you get annoyed with the behaviour of each one?

Not at all	Very little	A little	Quite a lot	Very much

19. How much do you share your secrets and private feelings with each one?

Not at all	Very little	A little	Quite a lot	Very much

20. How much do you protect and look out for each one?

Not at all	Very little	A little	Quite a lot	Very much

21. How much does each one really care about you?

Not at all	Very little	A little	Quite a lot	Very much

22. How much does each of these treat you as if you are good at many things?

Not at all	Very little	A little	Quite a lot	Very much

23. Between you and each of these, who tends to be the "boss" in the relationship?

They almost always do	They usually do	We are about the same	I usually do	I am almost always boss

24. How sure are you that your relationship with each one will last in spite of any fights or disagreements you may have?

Not at all sure	A little sure	Quite sure	Very sure	Extremely sure

25. How much does each one get annoyed with your behaviour?

Not at all	Very little	A little	Quite a lot	Very much

26. How much do you really care about each one?

Not at all	Very little	A little	Quite a lot	Very much

27. How often do you do enjoyable things with each one?

Never	Sometimes	Quite often	Very often	Extremely often

28. How often do you argue with, or have a battle of wills with each one?

Not at all	Very little	A little	Quite a lot	Very much

29. How often does each one help you when you need to get something done?

Not at all	Very little	A little	Quite a lot	Very much

30. How good is your relationship with each one?

Not at all	A little	Quite good	Very good	Extremely good

31. How much does each one hassle or nag you?

Not at all	Very Little	A little	Quite a lot	Very much

32. Think of each one - How much do you tell them about things you don't want others to know?

Not at all	Very Little	A little	Quite a lot	Very much

33. How much do you take care of each one?

Not at all	Very Little	A little	Quite a lot	Very much

34. How much does each one have a strong feeling of affection toward you?

Not at all	Very Little	A little	Quite a lot	Very much

35. How much does each one like or approve of the things you do?

Not at all	Very Little	A little	Quite a lot	Very much

36. In your relationship with each one, who tends to take charge and decide what should be done?

They always decide	They decide more than me	We decide about the same	I decide more than them	I always decide

37. How sure are you that **your relationship with each one will not change for the worse?**

Not at all sure	A little sure	Quite sure	Very sure	Extremely sure

38. How much do you hassle or nag each of these?

Not at all	Very Little	A little	Quite a lot	Very much

39. How much do you have a strong feeling of affection toward each one?

Not at all	Very Little	A little	Quite a lot	Very much

Appendix 5: Relationships and well-being questionnaire

(used in Chapter 7)

Relationships and well-being questionnaire

Sheila Bonas
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University of Warwick
FREEPOST
Coventry
CV4 7BR

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If you would like to know about the results of this study, or are willing to consider taking part in other studies in the future, please complete your details below:

Name _____

Address _____

_____

_____

Phone number _____ (Daytime/Evening?)

Please send me a summary of your results
when they are available ☐

Yes, I would consider taking part in future studies ☐

(tick boxes)

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Background information
Many different things in the general social background of people may have an influence on health. It will be very helpful if you would provide the following information:

Please list all of the people in your household, starting with yourself:

Name (First names only)	Sex (M/F?)	Age	Relationship to you (e.g. mother, son etc.)
1			Me!
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

What is the occupation of the chief income earner in the household?
Please give job title plus grade or rank if appropriate:
occupation_____
title/rank_____
If chief income earner is a manager, please state:
Number of employees managed:_____
Approximate number of people in the company_____

Please tick your approximate household income range per year?

below £10,000	☐	£25,000-£30,000	☐
£10,000-£15,000	☐	£30,000-£35,000	☐
£15,000-£20,000	☐	£35,000-£40,000	☐
£20,000-£25,000	☐	Over £40,000	☐

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What type of accommodation do you live in?

Detached house	☐	Bungalow	☐
Semi-detached house	☐	Apartment / Flat	☐
Terraced	☐	Other_____	

Housing status. Please tick the box that applies to you:

Owner occupier	☐	Rented (Council)	☐
Rented (privately)	☐	Other_____	

Do you have a garden? Yes ☐ No ☐

Are there pets in household? Yes ☐ No ☐

If no, move on to page 6, if yes, give details below:

Name of pet	Type of pet (cat, dog, bird etc.)	How long have you had the pet?

Do you take any additional exercise because of pets?

Yes ☐ No ☐

If yes, say what type of exercise

_____

Approximately how many hours per week do you spend doing this? _____

Do you engage in any special activities with the pet, e.g. breed shows, training clubs etc? If yes, give details:

_____

How often? _____

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How much do you share in ownership of each pet?
(Tick the appropriate column)

Name of Pet	I have no share	I have a small share	I have a moderate share	I have a big share	I am the only one who owns pet
e.g. Fido				✔	

Having a pet in the household can have good points and bad ones. Do the things you like about having each pet outweigh the things you dislike?
(Tick the appropriate column).

Name of Pet	things I like always outweigh things I dislike	things I like usually outweigh things I dislike	things I like sometimes outweigh things I dislike	things I like rarely outweigh things I dislike	things I like never outweigh the things I dislike
e.g. Fido			✔		

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Whether or not you have a pet now, would you choose to keep any pets if it was just up to you to decide, and there were no practical problems (e.g. assume that you have enough time, space, money , no allergies etc.) ?

Yes ☐ No ☐

Have you lived in a household with pets in the past?

Yes ☐ No ☐

If yes,

what type?_____

when?_____

Life events inventory:

If any of these events have happened to you in the last 6 months, tick the box.

Moved house (or made plans to move)	☐
Death of a family member	☐
Retiring or changing work	☐
New baby in the household	☐
Got engaged or married	☐
Illness in the family	☐
Financial difficulties (more than usual)	☐
Someone come to live with you (or left home)	☐
Legal problems	☐
Death of a friend	☐
Death of a pet	☐
Personal injury or illness	☐
Problems with neighbours	☐
Family arguments that have left bad feelings	☐
Changed daily routines	☐
Anything else that has been worrying or stressful (may be good or bad events) Please specify:	☐

_____

Health and well-being:

Do you have any health condition that causes you to visit your doctor regularly?

Yes ☐ No ☐

If yes, please give brief details _____

During the last year, roughly how many times have you visited your doctor?_____

SYMPTOM CHECKLIST

Do you experience any of these symptoms?

(Please tick one column per line to show how often.)

Symptom	Never	Rarely	Some times	Often	All of the time
Headaches					
Sore throat					
Feeling faint/dizzy					
Pains in the chest					
Trembling/shakiness/ feeling 'jittery'					
Poor appetite					
Crying or feeling tearful					
Back pain					
Heart pounding or racing					
Nausea or upset stomach					
Indigestion or heartburn					
Achiness in your muscles					
Trouble getting to sleep					
Shortage of breath/feeling breathless					
Hot or cold spell					
A lump in your throat					
Numbness/tingling in your body					
Waking up too early					
Overeating					
Feeling of body weakness					

Symptom	Never	Rarely	Some times	Often	All of the time
Heavy feeling in arms or legs					
Restless/disturbed sleep					
Bowel problems (such as constipation, diarrhoea)					
Skin rashes					
Dental problems (such as toothache, gum pain)					
Feeling run down					
Colds, coughs, flu					
Ear problems (ear ache, temporary hearing loss)					
Eye problems (sore / irritated / watery, blurred vision)					
Hands sweat and feel damp and clammy					
Repeated unpleasant thoughts that won't leave your mind					
Trouble remembering things					
Feeling easily annoyed or irritated					
Feeling scared for no reason					
Experiencing mood swings					
Blaming yourself for things					
Feeling alone/isolated					
Feeling miserable/unhappy or downhearted					
Feeling panicky about the future					
Feelings of impatience or intolerance					
Worrying too much about things					

Symptom	Never	Rarely	Some times	Often	All of the time
Feeling you have no interest in anything					
Your feelings being easily hurt					
Feeling that other people do not understand you or are unsympathetic					
Your mind going blank					
Feeling hopeless about the future					
Having trouble concentrating					
Feeling tense/keyed up					
Feelings of anger, resentment or bitterness					
Feeling everything is an effort					
Feeling lonely even if you are with other people					
Feeling you are worthless					
Wanting to shout or throw, smash or hit things					
Feelings of guilt					
Feeling you do not want to be bothered with people					
Wanting to be alone					
Having disturbing dreams					
Feeling it is just not worth doing anything around the home					
Being very easily startled					
Finding it very difficult to relax					

Support Network

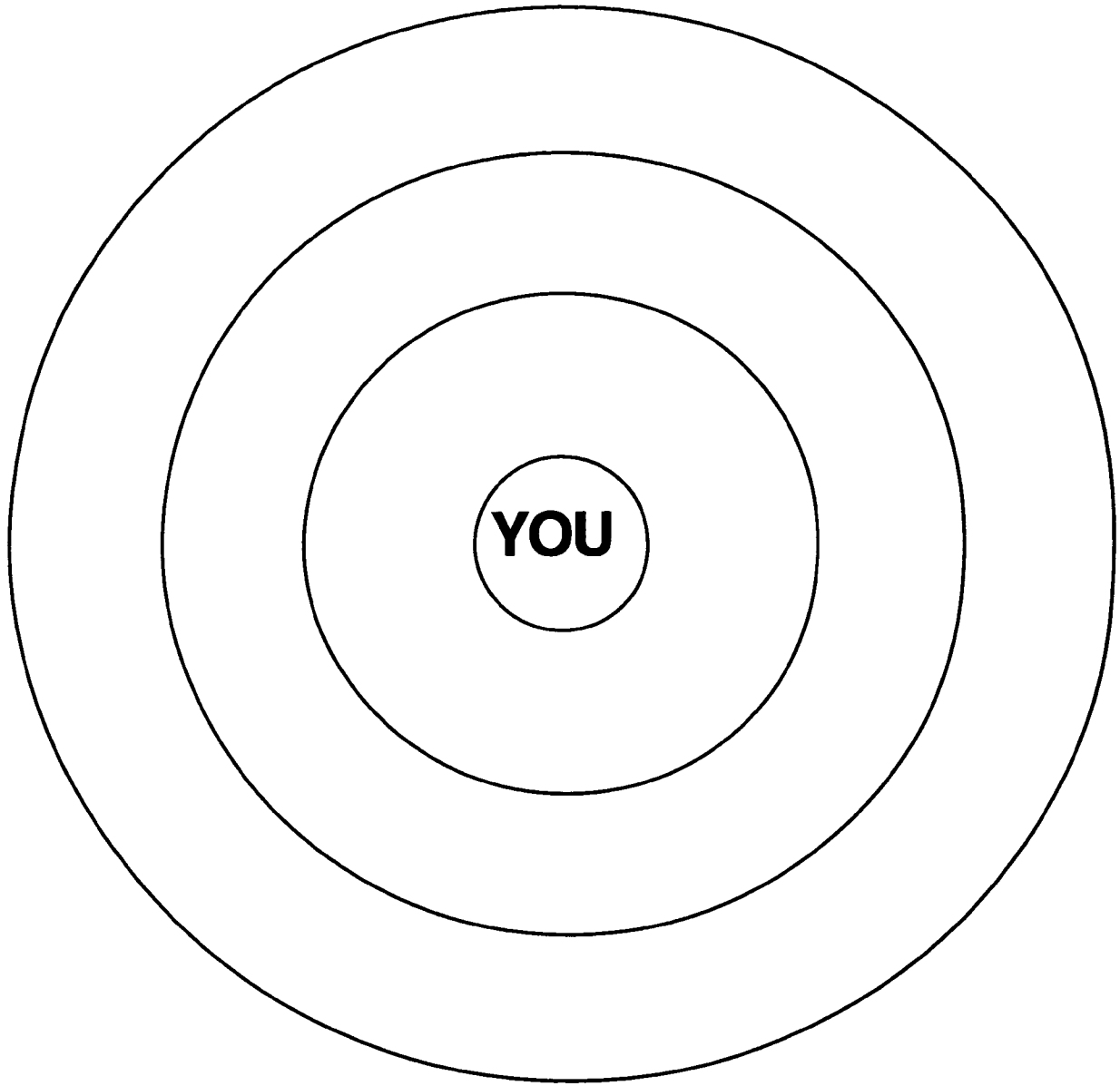
Think about all of the relationships that are important in your life right now, not just family members. You may want to include friends, people you work with, pets, or neighbours etc. While the other parties are all important to you, you may not be equally close to each one. The 3 circles on the diagram represent levels of how close you are to each one in the relationships .

In the centre circle, nearest to you, write the names of others to whom you feel so close that it is hard to imagine life without them.

In the middle circle, put those that you may not feel quite that close to, but are still important to you.

In the outer circle, put the names of those that you have not already included, but who are close enough and important enough to you that they should be placed in your personal network.

IMPORTANT!
Please add the <u>type</u> of relationship after each name, e.g. "Mary (sister)", "MR (Boyfriend)", "Ben (pet dog)", JN (friend)" etc.
You may note the relationships using just first names or initials if you wish.
Don't spend too long over this - the relationships that are important to you will be the ones that come to mind fairly quickly! Allow around 10 minutes.



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Remember to add the type of relationship after each name (e.g. friend, brother, etc).

On the slip of paper enclosed please write the names of all of the other people in your household. If there are any pets in the household add their names to the list.

Now, look at the support network that you filled in the last section. If there are any names of others in the centre circle of the diagram next to you that are not already on your list, add them on.

The list is on a loose slip of paper so that it is convenient for you to refer to it in the next section.

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List of names

List names of all of your household members (people and pets if you have any) .

If there are any other names in the centre circle nearest to you on the diagram, please add them to the list. (Use as many or as few lines as you need) :

1_____

2_____

3_____

4_____

5_____

6_____

7_____

8_____

9_____

10_____

11_____

12_____

13_____

14_____

15_____

16_____

17_____

18_____

19_____

20_____

Network of Relationships Inventory

In this section there is a series of questions about your relationship with each one that you have written on your list of names. There are boxes below the questions for you to record your answers in. Here's an example :

Example: How much do you confide in each one?

Not at all	Very little	A little	Quite a lot	Very much
3	2 4		1	

The question is asking how much you confide in each one on your list of names. If the person at number one on your list is someone that you confide in quite a lot, place a 1 in the box under "Quite a lot" as above. If you confide very little with those named at number 2 and 4 on your list, you would put a 2 and a 4 under "Very little". If you don't confide at all with number 3 on your list, put a 3 under "Not at all". Carry on until you have answered the question for each name on the list.

Now, get your list ready to refer to, and put numbers for everyone on your list (including pets if you have them) into one of the boxes provided for each question:

How much free time do you spend with each one?

None	Very little	A little	Quite a lot	Very much

Answer for each one: How much do you get cross with, or mad at each other?

Not at all	Very little	A little	Quite a lot	Very much

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How much do you learn from being with each one?

Not at all	Very little	A little	Quite a lot	Very much

How satisfied are you with your relationship with each one?

Not at all	Very little	A little	Quite a lot	Very satisfied

How much does each one get on your nerves?

Not at all	Very little	A little	Quite a lot	Very much

How much do you tell everything you feel or think to each one?

Not at all	Very little	A little	Quite a lot	Very much

How much do you help each one with things that they can't do by themselves?

Not at all	Very little	A little	Quite a lot	Very much

How much does each one love you?

Not at all	Very little	A little	Quite a lot	Very much

How much does each one treat you as if they admire or respect you?

Not at all	Very little	A little	Quite a lot	Very much

Think about yourself and each one. Do you tell them what to do most of the time, or, do they tell you?

They almost always tell me	They tell me more	We are about the same	I tell them more	I almost always tell them

How sure are you that your relationship with each one will last no matter what?

Not at all sure	A little sure	Quite sure	Very sure	Extremely sure

How much do you get on the nerves of each one?

Not at all	Very little	A little	Quite a lot	Very much

How much do you love each one?

Not at all	Very little	A little	Quite a lot	Very much

How much do you have fun with each one?

Not at all	Very little	A little	Quite a lot	Very much

How much do you disagree with, quarrel or clash with each one?

Not at all	Very little	A little	Quite a lot	Very much

How much does each one help you if you have a problem to sort out?

Not at all	Very little	A little	Quite a lot	Very much

How happy are you with the way things are between you and each one?

Not at all happy	A little happy	Quite happy	Very happy	Extremely happy

How much do you get annoyed with the behaviour of each one?

Not at all	Very little	A little	Quite a lot	Very much

How much do you share your secrets and private feelings with each one?

Not at all	Very little	A little	Quite a lot	Very much

How much do you protect and look out for each one?

Not at all	Very little	A little	Quite a lot	Very much

How much does each one really care about you?

Not at all	Very little	A little	Quite a lot	Very much

How much does each of these treat you as if you are good at many things?

Not at all	Very little	A little	Quite a lot	Very much

Between you and each of these, who tends to be the "boss" in the relationship?

They almost always do	They usually do	We are about the same	I usually do	I am almost always boss

How sure are you that your relationship with each one will last in spite of any fights or disagreements you may have?

Not at all sure	A little sure	Quite sure	Very sure	Extremely sure

How much does each one get annoyed with your behaviour?

Not at all	Very little	A little	Quite a lot	Very much

How much do you really care about each one?

Not at all	Very little	A little	Quite a lot	Very much

How often do you do enjoyable things with each one?

Never	Sometimes	Quite often	Very often	Extremely often

How often do you argue with, or have a battle of wills with each one?

Not at all	Very little	A little	Quite a lot	Very much

How often does each one help you when you need to get something done?

Not at all	Very little	A little	Quite a lot	Very much

How good is your relationship with each one?

Not at all	A little	Quite good	Very good	Extremely good

How much does each one hassle or nag you?

Not at all	Very Little	A little	Quite a lot	Very much

Think of each one - How much do you tell them about things you don't want others to know?

Not at all	Very Little	A little	Quite a lot	Very much

How much do you take care of each one?

Not at all	Very Little	A little	Quite a lot	Very much

How much does each one have a strong feeling of affection toward you?

Not at all	Very Little	A little	Quite a lot	Very much

How much does each one like or approve of the things you do?

Not at all	Very Little	A little	Quite a lot	Very much

In your relationship with each one, who tends to take charge and decide what should be done?

They always decide	They decide more than me	We decide about the same	I decide more than them	I always decide

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