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Obtaining a new pet dog: Effects on middle childhood children and their families

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Abstract

A prospective questionnaire survey was used to investigate the impact of obtaining a new pet dog on the lives of 27 middle childhood children and their families, during the first year of ownership. Changes in the social interactions, health, behaviour and well being of subject children were assessed using maternal questionnaires administered immediately before the pet dog was acquired, and at follow-ups 1, 6 and 12 months later. Similar questionnaires were administered over the same period to a comparable group of 29 non-dog-owning mothers. Dog-owning children were reported to have been visited more by their friends by the time of the 1 month follow-up, compared with their non-dog-owning counterparts ($U = 256.0$, $P < 0.05$). Dog-owning families also engaged in more leisure activities at home together over the same period ($U = 268.0$, $P < 0.05$). However, dog-owning children were also reported to have experienced increases in the number of ill health symptoms they suffered by the 12 month follow-up ($z = 2.6297$, $P < 0.01$). Higher levels of attachment to the dog were positively associated with changes in confidence by the 6 month follow-up ($T = 0.3971$, $P < 0.005$), and negatively associated with changes in tearfulness or weepiness by the 12 month follow-up ($T = -0.3118$, $P < 0.05$).

Keywords: Children; Pets; Dogs; Health

1. Introduction

Although there exist numerous descriptions of pet keeping occurring throughout antiquity (Clerke, 1883; Hopkins, 1894; Halliday, 1922; Davis and Valla, 1978; Bodson,

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1989), the companion animal has probably never occupied such a popular position in human society as it does today (Franti et al., 1980; Wise and Kushman, 1984; Marx et al., 1988). In particular, the pet seems to be especially valued for its role in family life; pets are most common in households with children (Godwin, 1975; Griffiths and Bremmer, 1977; Messent and Horsfield, 1985; Marx et al., 1988), and almost all children express the desire to have a pet at some time (Salomon, 1981; Kidd and Kidd, 1985). In addition, the few studies that have considered parents' opinions concerning pet keeping have found a broad consensus of belief that pets are, in general, good for children and beneficial for their development (Macdonald, 1981; Salomon, 1981; Paul, 1992). It is not surprising, therefore, that the last two decades have witnessed an unprecedented increase of research interest in the phenomenon of pet keeping and the role that animals might have in determining the social, physical and psychological well being of people, and especially children (Covert et al., 1985; Bergesen, 1989; Mader et al., 1989; Paul and Serpell, 1992).

The majority of studies that have attempted to investigate the effects of pet ownership on children have used cross-sectional comparisons between pet owning and non-owning families (Covert et al., 1985; Guttman et al., 1985; Beck et al., 1989). A few others have used correlational approaches in which pet ownership levels or pet attachment levels have been analysed in relation to measures of particular, hypothesised effects of childhood pet ownership (Poresky and Hendrix, 1990). The findings of such studies have offered suggestions that pet keeping in childhood may have important effects on children's self-esteem, social skills and empathy (Covert et al., 1985; Guttman et al., 1985; Poresky and Hendrix, 1990). However, none of these studies have demonstrated any firm causal relationships between childhood pet ownership and alterations in the social and psychological well-being of children, or the quality of their development. Prospective or longitudinal research designs are needed to assess the impact of pets on children's lives. The few studies that have used this approach have focused on institutional settings, children with special needs, or relatively short, 'experimental' exposures to a variety of animals (Kaye, 1984; Bailey, 1988; Bergesen, 1989; Mader et al., 1989). To date, no prospective or longitudinal investigations have been made of the impact that ordinary pets have on ordinary children within their own homes. However, adult cat and dog owners have been found to exhibit significant improvements in their self-reported physical and psychological health, compared with non-pet owning controls, during the first 10 months of owning their pet (Serpell, 1991).

The present study was similar to that of Serpell (1991), but with its focus on the effects of pet acquisition on children and their families, rather than on individual adults. The effects of pets on children may be very different according the species of pet and the age of child concerned, so this study involved an investigation of one kind of pet (the dog), and one age group of children (middle childhood: 8–12 years). Middle childhood children were chosen because previous studies have suggested that ownership of, and interest in, pets peaks at around this age (Salomon, 1981; Kidd and Kidd, 1985; Melson, 1988; Paul and Serpell, 1992). Dogs were chosen because their popularity, interactive nature and involvement in family life make them the kind of pet most likely to have an impact on the lives of children and their families (Bucke, 1903; Kidd and Kidd, 1985; Serpell, 1986; Poresky et al., 1988).

The study used questionnaires, completed by mothers, to monitor changes that went on in the lives of middle childhood children and their families, during the first year in which the household kept a new pet dog. For comparative purposes, mothers of families that did not own a dog completed similar questionnaires over the same period of time. Realms in which possible effects of dog ownership were sought included family social interactions, child social interactions, child health, and child well-being and behaviour.

2. Subjects, materials and methods

2.1. Subjects

Two different groups of families were recruited to take part in the study: dog owners ($n = 27$) and non-dog owners ($n = 29$). Dog-owning families were recruited through a local animal rescue and re-homing charity. People wanting to adopt a dog from this organisation generally had to reserve the chosen animal approximately 1 week prior to taking it home. During this week, potential dog adopting participants were telephoned. If they had at least one child in the 8–12 year age range, and had not owned a dog during the previous month, they were asked if they would be willing to participate in the study. Non-dog-owning families were recruited by one of two methods, both designed to obtain a sample as demographically similar as possible to that of the dog-owning group. First, all dog-owning recruits were asked to nominate friends or neighbours, who had at least one 8–12 year old child, but did not currently own a dog. Those nominated were sent a letter, asking if they would participate in the study. Second, leaflets describing the study and asking for appropriate volunteers were distributed to all households residing in the same streets as existing dog-owning recruits.

The family member who was most involved in the care of the children (and the dog, where applicable) was asked to complete the questionnaires and baseline interview of the study. In one case (a dog-owning family) this was the father; but in all other instances it was the mother who took this role. All further references to participating parents will refer to the 'mothers'. The initial, baseline interview was conducted by telephone, and took approximately 20 min to complete. The first (baseline) questionnaires were dispatched to the mothers on the same day as the baseline interview. Dog-owning participants were asked to complete this set of questionnaires 2 or 3 days before the dog was due to be collected. Non-dog-owning participants were asked to complete the questionnaires as soon as possible. The second set of questionnaires (1 month follow-up) were sent to dog-owning mothers 1 month after the dog had been obtained, and to non-dog-owning mothers 1 month after completion of the baseline questionnaires. Two further sets of questionnaires were sent to all participants 5 and 11 months after this (6 month follow-up and 12 month follow-up, respectively). As is common in longitudinal studies of this sort, a number of the recruited participants did not remain in the sample for the duration of the entire study. Of the 27 dog-owning and 29 non-dog-owning families who started the study (defined as those who completed the baseline and 1 month follow-up), 26 and 22, respectively, completed it to the 6 month follow-up and 22 and 21 completed the full 12 months.

Table 1

Summary of background variables describing family and subject child characteristics of dog-owning and non-dog-owning groups (collected at baseline interview)

Background family and child characteristics

Family composition (intact/single parent/stepparent)

Socio-economic status (professional/employers and managers/other non-manual/manual)

Mother's work status (at home/working part-time/working full-time)

Area of residence (urban/rural)

Number of children in household

Whether or not family has owned dog before during subject child's lifetime

Number of pets currently owned by family as a whole

Number of pets previously owned by family during subject child's lifetime

Age of subject child (8/9/10/11/12 years)

Gender of subject child (female/male)

Number of pets currently owned by subject child

Number of pets previously owned by subject child

2.2. Interview and questionnaires

The baseline interview was a structured interview made up of four main sections. It was used to gather background information about the family, the 8–12 year old, 'subject' child, and other pets owned currently and in the past (Table 1).

Each set of questionnaires was made up of a number of different components, the exact composition of a set depending on family type (dog-owning or non-dog-owning), the data collection point (i.e. baseline or 1, 6 or 12 month follow-up) and the number of 8–12 year old children in the household. Four questionnaires were given to all mothers at each data collection point. These concerned family social interactions, child social interactions, child health and child well-being and behaviour. The data obtained from these are summarised in Table 2. In addition, dog-owning mothers were questioned about the degree to which their 8–12 year old children were attached to the dog at the 1, 6 and 12 month follow-ups. Mothers rated this by marking a cross on a visual-analogue scale ranging from 'not attached at all' to 'very, very attached indeed' (score range 1–120, assessed to nearest millimetre on scale).

2.3. Analyses and presentation

Although mothers with more than one 8–12 year old child completed questionnaires concerning each of these children, the statistical analyses presented here consider only one, randomly selected, middle childhood child per family: the 'subject child'. This was done in order to avoid problems associated with the statistical non-independence of data concerning siblings within the same family (Abbey and Howard, 1973). The ages and sexes of subject children in each group are shown in Table 3.

Because all the data obtained in this study were ordinal or categorical in nature, non-parametric statistics were used throughout (Siegel and Castellan, 1988). χ^2 and Mann–Whitney *U* tests (two-tailed) were used to make comparisons between baseline

Table 2

Summary of variables used to monitor changes in subject children and their families over the 12 month follow-up period (collected in the baseline, 1, 6 and 12 month follow-up questionnaires)

Family social interactions (in the 2 weeks prior to completion of questionnaire)

Frequency of relatives visiting family ($\geq 4/2$ or $3/1/0$)

Frequency of friends visiting family (coded as above)

Frequency of family visiting friends (coded as above)

Frequency of family visiting relatives (coded as above)

Frequency of visits (sum of four variables above)

Frequency of family going out together ($\geq 4/2$ or $3/1/0$)

Frequency of family taking part in leisure activities at home together (coded as above)

Frequency of family discussions or conversations together (coded as above)

Frequency of family arguments or rows together (coded as above)

Time spent together (almost all free time / more than half / about half / less than half / almost none)

Child social interactions (in the 2 weeks prior to completion of questionnaire)

Frequency of friends visiting subject child ($\geq 4/2$ or $3/1/0$)

Frequency of subject child visiting friends (coded as above)

Frequency of subject child going out with family members (coded as above)

Frequency of subject child going out with friends (coded as above)

Frequency of social interactions (sum of four variables above)

Amount of time spent alone (almost all free time / more than half / about half / less than half / almost none)

Amount of time spent with members of family (coded as above)

Amount of time spent with friends (coded as above)

Amount of social interaction time (sum of three variables above)

Child health (in the 2 weeks prior to completion of questionnaire)

A cold or 'flu (yes/no)

A stomach upset (yes/no)

Headaches (yes/no)

A persistent cough (yes/no)

Ear ache (yes/no)

Tooth ache (yes/no)

Aching joints or muscles (yes/no)

Skin problems (yes/no)

Asthma (yes/no)

Allergies (yes/no)

Total illness score (sum of all yes responses recorded above)

Whether the subject child has visited the doctor (yes/no)

Whether the subject child has missed school through ill health (yes/no)

Child well-being and behaviour (in the 2 weeks prior to completion of questionnaire)

Amount of time mother thinks subject child has been feeling:

Bored (continuous scale allowing responses ranging from 'all the time' to 'none of the time')

Tearful or weepy (measured as above)

Worried or anxious (measured as above)

Quiet or withdrawn (measured as above)

Bad tempered (measured as above)

Amount of time mother would describe subject child as having been:

Helpful (continuous scale allowing responses ranging from 'all the time' to 'none of the time')

Naughty or mischievous (measured as above)

Table 2 (continued)

Co-operative (measured as above)
Argumentative (measured as above)
How well mother believes the following words describe subject child:
Responsible (continuous scale allowing responses ranging from 'very well indeed' to 'not well at all')
Lonely (measured as above)
Caring (measured as above)
Popular (measured as above)
Confident (measured as above)
Shy (measured as above)

data from dog-owning and non-dog-owning families (Norusis, 1990). Possible changes occurring during the follow-up period were assessed in three different ways:

First, baseline data were compared with 1, 6 and 12 month follow-up data for both groups using the (two-tailed) Wilcoxon matched-pairs signed ranks test (Norusis, 1990). These tests were used to see if any changes occurred within the dependent variables (see Table 2) over the follow-up periods. Each group (dog owners and non-dog owners) was assessed separately.

Second, comparisons were made between dog-owning and non-dog-owning families on each variable at each data collection point, using χ^2 and Mann–Whitney *U* tests (Norusis, 1990). This offered the opportunity to pick out any changes in dependent variables (see Table 2) that caused divergence between the two groups, even if such changes were not apparent from the Wilcoxon tests alone.

Third, Kendall correlations were used to assess whether dog-owning, subject children's attachment to the dog (as reported by the mother) was related to the magnitude of any changes that occurred during the follow-up period. Mothers assessed their children's attachment to the dog at each follow-up data collection point on a visual analogue scale (from 'very, very attached indeed' to 'not attached at all'; 120 points on scale). Kendall correlations were used to assess the relationship between the subject children's attachment to their dog at each data collection point and any changes that took place within

Table 3
Age and sex distribution of subject children recruited to the dog owning and non-dog-owning groups

	Age (years)					Total
	8	9	10	11	12	
<i>Dog owners</i>						
Girls	4	2	4	3	1	14
Boys	3	3	2	4	1	13
Total	7	5	6	7	2	27
<i>Non-dog owners</i>						
Girls	5	1	2	4	1	13
Boys	6	2	2	2	4	16
Total	11	3	4	6	5	29

the dependent variables (Table 2) during the preceding follow-up period. Individual illness scores (i.e. whether or not the subject had a headache, cold, etc.; see Table 2) were excluded from this analysis because they did not occur frequently enough to allow comparisons within the relatively small sample of dog-owning subjects.

All statistically significant results obtained through these three different methods of analysis are reported below.

3. Results

Dog-owning and non-dog-owning families were first compared in terms of the background family and child characteristics listed in Table 1. The only variable that differed significantly between the two groups of families was whether or not they had owned a dog before: 48.1% of dog owners and only 17.2% of non-dog owners reported having previously kept a pet dog during their subject child's lifetime ($\chi^2 = 4.789$, d.f. = 1, $n = 56$, $P < 0.05$). The fact that there were no other significant differences suggests that the procedures employed in recruiting non-dog-owning families were successful in their aim of finding a sample well matched with that of the dog-owning families.

The two groups were also compared on their baseline scores for all the dependent variables listed in Table 2. Subject children in families about to obtain a dog were reported by their mothers as being significantly less naughty ($U = 231.5$, $n = 27$, $P < 0.05$; see Fig. 1) and more co-operative ($U = 260.5$, $n = 27$, $P < 0.05$) than their non-dog-owning counterparts. No other significant differences were found.

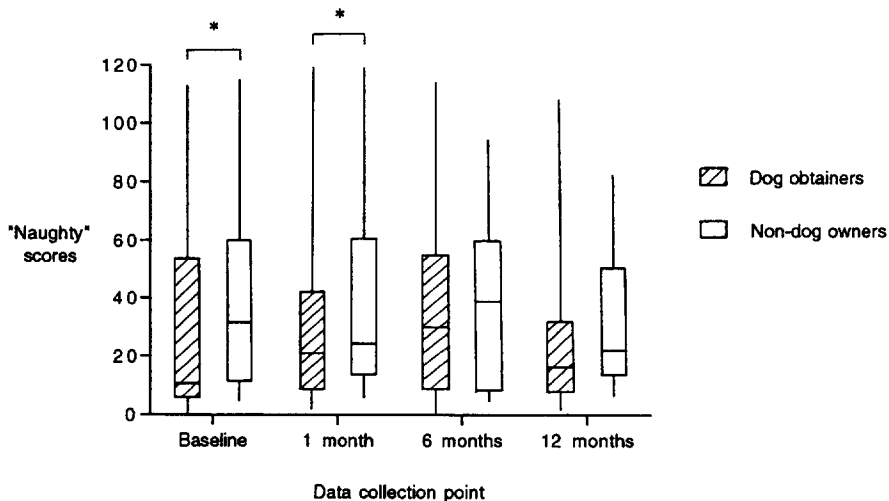


Fig. 1. 'Naughty' scores of both groups of children at all four data collection points (showing medians, 25th and 75th percentiles and maximum and minimum points).

Dog-owning families showed no significant changes in the frequency with which they engaged in social interactions over the 1, 6 or 12 month follow-up periods. However, non-dog-owning families reported a significant decrease in the frequency of family discussions or conversations between baseline and the 1 month follow-up ($z = 2.2749$, $n = 29$, $P < 0.05$), so when the two groups were compared directly, dog-owning families were found to have taken part in more leisure activities at home together by the 1 month data collection point ($U = 268.0$, $n = 56$, $P < 0.05$). No differences were found between dog-owning and non-dog-owning families at the 6 or 12 month data points. Despite the lack of any clear changes in the levels of social interactions in dog-owning families, therefore, there was the suggestion of an association between dog ownership and slightly higher levels of family social interactions. This association was short lived, however, as it disappeared at some stage within the first 6 months of ownership.

No significant changes were found in the frequency of dog-owning children's social interactions over the course of the study. Non-dog-owning children, however, showed a decrease in the frequency with which they were visited by friends between baseline and the 1 month follow-up ($z = 2.2713$, $n = 29$, $P < 0.05$). The frequency of these children's total social interaction scores also decreased significantly across the same period ($z = 2.0159$, $n = 29$, $P < 0.05$). When the two groups were compared using Mann-Whitney U tests, dog-owning children were found to have been visited more by their friends than were non-dog-owning children at the 1 month follow-up ($U = 256.0$, $n = 56$, $P < 0.05$). There were no differences between the groups, however, at the 6 and 12 month data collection points.

Children's attachment to the dog at 12 months was associated with increases in the amount of time spent alone between baseline and 12 months ($T = 0.3422$, $n = 22$, $P < 0.05$) and decreases in time spent with family members and friends ($T = -0.3455$, $n = 22$, $P < 0.05$ and $T = -0.3588$, $n = 22$, $P < 0.05$, respectively).

Non-dog-owning children showed no significant changes in their total illness scores over the entire 12 month period. Dog-owning children, on the other hand, showed a significant increase in the total number of ailments they were reported to have suffered from, between baseline and the 12 month follow-up ($z = 2.6297$, $n = 22$, $P < 0.01$; see Fig. 2). The only significant finding relating to individual illness scores, however, was a decrease in the number of dog-owning children reported as having a cold or 'flu between baseline and the 6 month follow-up ($z = 2.5025$, $n = 26$, $P < 0.05$). At the 1 month data collection point, increases in dog-owning children's total illness scores were positively associated with their attachment to the dog ($T = 0.2984$, $n = 27$, $P < 0.05$), but no significant associations between pet attachment and illness were found at the 6 and 12 month data collection points.

Subject children of dog-owning families were reported by their mothers to become less co-operative between baseline and the 1 month and 12 month follow-ups ($z = 2.5906$, $n = 27$, $P < 0.01$ and $z = 2.6297$, $n = 22$, $P < 0.01$, respectively). These children were also viewed as becoming less caring between baseline and the 6 month follow-up ($z = 2.7982$, $n = 26$, $P < 0.01$). When the two groups were compared, non-dog-owning children were found to be perceived by their mothers as more naughty ($U = 244.5$, $n = 56$, $P < 0.05$; see Fig. 1) and more argumentative ($U = 252.5$, $n = 56$, $P < 0.05$) than dog-owning children at the 1 month data collection point. However, the

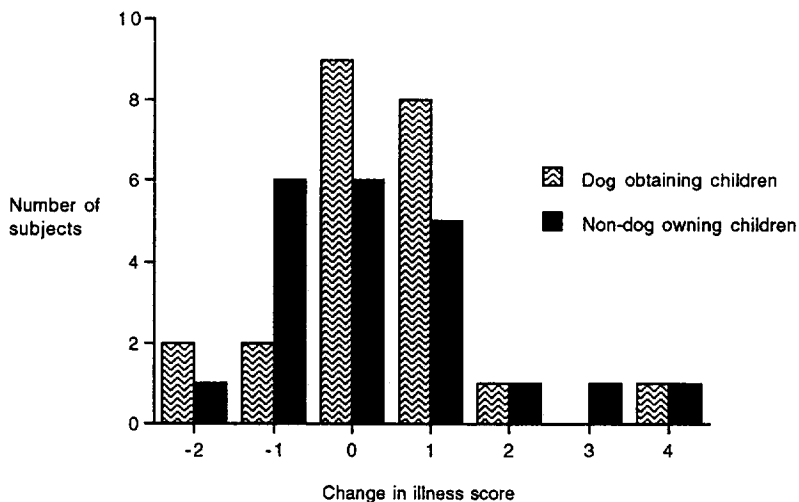


Fig. 2. Change in total illness scores in both groups of children between baseline and the 12 month follow-up data collection point.

fact that no such differences were found at 6 and 12 months suggests that this difference in behaviour was relatively short lived.

Finally, children's reported attachment to the dog was positively associated with changes in confidence by 6 months ($T = 0.3971$, $n = 26$, $P < 0.005$) and negatively associated with changes in tearfulness or weepiness by 12 months ($T = -0.3118$, $n = 22$, $P < 0.05$).

4. Discussion

Although research comparing pet owning and non-owning subjects (Guttman et al., 1985; Bekker, 1986; Beck et al., 1989) has shed some valuable light on the possible effects of pet ownership on children's lives, such work has not demonstrated that any differences found are actually the result of pet ownership itself. Children who choose to keep pets might simply be different from non-pet owners from the start. Prospective or longitudinal studies, on the other hand, are able to distinguish between existing (baseline) differences between owners and non-owners, and changes that occur within the lives of these people subsequent to a pet being obtained. There are problems with this type of study, as dog-owning families are self-selected in that they themselves have chosen to obtain a pet. Furthermore, the practical limitations of the design of the present study meant that such families were not a randomly selected and representative sample of the dog-owning community: they were obtaining their pet from an animal shelter, and had volunteered to take part in a lengthy and time consuming piece of research. Another concern is the use of multiple analyses. Because of the large number of dependent variables measured (see Table 2) the probability of achieving apparently 'significant' results by chance alone is relatively high and caution must be used in interpreting the

findings of this research; replications will be needed before final conclusions can be drawn.

It was expected that in the present study, levels of family social interactions might show modest increases after acquisition of the pet dog, given the findings of Cain (1985) that over half the subjects she interviewed reported an increase in the amount of time their families spent together after they obtained a new pet. In fact, no such changes took place. Nevertheless, because social interactions initially decreased in the non-dog-owning families, keeping a dog was found to be significantly associated with higher levels of family interaction, albeit only at the 1 month data collection point. A very similar picture emerged for child social interactions, in which a significant difference was found between the two groups one month after pet acquisition, despite no measurable increases in the level of social interactions of the dog-owning group. Any effect that the dog might have in these families (such as acting as an attractive and interesting focus of attention for social activity; Salomon et al., 1989), appears to have been relatively slight and short lived. Indeed, the additional finding that pet attachment by the 12 month follow-up was inversely related to changes in the subject child's time spent with family and friends, suggests that keeping a pet might actually reduce levels of social interaction in some children. Perhaps youngsters who had a close relationship with their dog found that they needed progressively less interaction with others, inside and outside the family, to satisfy their emotional needs. An alternative is that children who had fewer friends, or fewer opportunities to spend time with them, may have become increasingly more attached to the dog as a consequence of their relative isolation (Paul and Serpell, 1992).

The behavioural and emotional effects that dog ownership was reported to have on subject children appears to be somewhat equivocal. They were less naughty and more co-operative than non-dog owners at baseline, and less naughty and less argumentative at the 1 month follow-up. But there were no differences between the two groups thereafter. Two possible interpretations could be made of these findings. First, dog-owning children may have simply been a better behaved group of youngsters from the outset, whose nicer qualities deserted them after a few months of dog ownership. Alternatively, and perhaps more probably, simply knowing that they were soon to be given a new pet (for all children in this study knew of the imminent arrival of the dog) engendered a significant, if relatively short lived improvement in behaviour. However, even if this latter interpretation is correct, more normal (and less commendable) behaviour soon returned.

The finding that caring behaviour was reported to decrease in dog-owning children was particularly striking, given the fact that many parents seem to believe that owning a pet helps to make children more caring (Paul, 1992). However, the positive association between dog attachment and subject children's confidence (at the 6 month follow-up) and its negative association with tearfulness (at the 12 month follow-up) were more consistent with the findings of previous studies which suggest that pet keeping can be associated with higher levels of self-esteem in some children (Covert et al., 1985; Bergesen, 1989). As Poresky and Hendrix (1990) noted, it seems likely that it is not only pet ownership per se, but also the nature of the relationship that the child has with the animal, which may be important in conferring psychological benefits.

Perhaps the most surprising findings of this research concerned mother's reports of

their children's illness symptoms. Although previous studies have associated health benefits and improvements with dog ownership (Serpell, 1991; Anderson et al., 1992), the dog-owning children in this study were reported to be suffering more ill health than non-dog owners at the 12 month follow-up (although there were no differences between the groups at the 1 and 6 months follow-ups). In addition, dog-owning children who were more attached to their new pet were more likely to have had an increase in illness symptoms than those who were less attached to it, at the 1 month follow-up. There were no particular types of illness that were especially associated with these increases; it was a generalised rise in a wide variety of miscellaneous symptoms. These findings highlight the possibility that for children, if not for adults, a variety of minor zoonoses and/or allergies may be significant consequences of keeping a dog, at least in the first year or so of ownership (Elliot et al., 1985; Salfield and Pugh, 1987). A number of questions are raised by this finding. The first is whether or not such results could be replicated in a future study, and the second is whether, with larger sample sizes and more detailed questions about the precise symptoms suffered, particular types of ill health can be found to be associated with pet ownership in children. Yet other questions, concerning the relative effects of dogs, cats and other species of pet, or the effects of puppies and kittens, versus adult animals, also deserve investigation.

5. Conclusions

The acquisition of a new pet dog appears to be something of a mixed blessing for families with children, with some slight and relatively short lived social and psychological benefits. There was also an indication that dog ownership might be associated with poorer health in some children. Final conclusions concerning the effects of pet ownership for children will only be able to be drawn once replications have been made using larger sample sizes and more detailed data collection. Another important consideration concerns the wide variation between different children in terms of their attachment to and involvement with the dog. It was clear from this study that some of the apparent effects of the dog were associated with the child's level of attachment to the animal. The nature of the child–pet relationship, and the role that the pet fulfils in the lives of individual children, seems likely to be the most powerful predictor of psychological and physical effects of pet ownership.

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