

CHILDHOOD EXPERIENCES AND ATTITUDES TOWARDS ANIMAL ISSUES: A COMPARISON OF YOUNG ADULTS IN JAPAN AND THE UK

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Abstract

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Childhood experiences of animals and current attitudes towards animals were assessed using a questionnaire, which was completed by 227 Japanese students and 174 British students. Pet ownership in childhood, as well as contact with other animals and negative experiences of pets, were used as the independent variables; current attitudes towards pets and other animals were the dependent variables. There were some differences between Japan and the UK: in childhood, the British students had had significantly more pets and more animal-related experiences, such as visiting animal shelters and livestock farms, than had the Japanese students. Their current attitudes were also more positive, and they showed a greater interest in animal welfare issues than did the Japanese students. In both countries there was a positive association between childhood pet-keeping and current favourable attitudes to pets, as measured by the Pet Attitude Scale. Open-ended responses also suggested that the roles of pets for children are perceived in similar ways in Japan and the UK. Adult attitudes to pets and interest in animal welfare seem to be greatly influenced in both countries by childhood experiences of animals, including pets, and may therefore be a general phenomenon.

Keywords: *animal welfare, cross-cultural, humane attitudes, Pet Attitude Scale, pet keeping, questionnaire*

Introduction

Childhood experiences of pets may be a powerful factor in the development of humane behaviour in adulthood. For example, Paul (1995) found that both animal-rights campaigners and scientists agreed that experiences of animals during childhood had affected their current attitudes towards the use of animals. A considerable number of other studies suggest the importance of child-animal interaction in reducing fear of animals (Bowd 1984) and in the development of attitudes towards pets in adulthood and personality in general (Levinson 1978; Poresky & Hendrix 1988; Kidd & Kidd 1989, 1990a,b, 1996; Paul & Serpell 1993). Kidd and Kidd (1989) suggest that attitudes towards pets develop during childhood, and that pet ownership during that period has an extremely important influence on favourable adult attitudes towards pets. The age at which the first pet is actually owned is also likely to

influence adult attitudes towards pets: adults who had a first pet early in childhood showed more positive attitudes towards pets than those who had a first pet later in childhood (Poresky & Hendrix 1988). These effects appear to generalise into humane attitudes towards all animals, and also to some extent towards people (Paul & Serpell 1993).

All of these studies were conducted in Western countries on predominantly Caucasian samples. For example, Kidd and Kidd (1989, 1996) have pointed out that in their research, despite efforts to achieve ethnic balances in the samples, the majority of the subjects were Caucasian and some groups (eg Hispanic, Asian) were under-represented. However, it is widely considered that perceptions of, and attitudes towards, animals are also greatly influenced by culture and religion. Some people in Western countries have stated that the Japanese are rather unkind to animals (Anon 1989) or that Japanese attitudes towards animals are very different from those in other cultures (Fogle 1989; Takemae 1991). The Japanese are sometimes criticised by Westerners; for example, “although Japan is a fully industrialized nation, it is still an emerging nation in the field of animal welfare” (Fogle 1989). Stewart-Smith (1987) mentions that Japan is the world’s largest trader in endangered species, a major concern to conservationists.

The first attempt to establish an animal welfare movement in Japan, influenced by Western ideas, took place in 1902, but it was not very successful. The Japanese Humane Society (in 1914), the Japan Society for Prevention of Cruelty to Animals (in 1948) and the Japanese Animal Welfare Society (in 1956) were established and actively operated by British and American women who were residents in Japan at the time, many of whom were wives of embassy staff (Imagawa 1996)¹. The National Animal Protection and Control Law, which includes pets, farm animals, animals in exhibits and animals in research, was established in 1973, and regulations for keeping dogs and cats were established in 1975. Up to December 2000, there were no laws equivalent to those in the UK that prevented cruelty towards animals or protected their well-being. There was also no system for inspecting cases of animal cruelty.

Kellert, comparing Japanese attitudes towards nature and animals with those of Americans (Kellert 1991) and Germans (Kellert 1994), reported that pet ownership in Japan was much less widespread than in the USA. Since the primary interest of his study was people’s environmental concerns — attitudes, knowledge and behaviour towards wildlife and associated natural habitats — he did not examine the respondents’ attitudes to domestic or captive animals or their pet ownership experiences during childhood. Our study has therefore been conducted in order to examine whether the relationship between childhood experiences of pets and adult attitudes to animals and their welfare, established by Paul and Serpell (1993) for the UK, is similar in Japan, despite the cultural differences between these two countries.

Methods

Participants and procedure

A questionnaire was distributed to undergraduate students attending animal behaviour lectures in Japan (Hiroshima University: 33 females, 27 males) and in the UK (University of Southampton: 45 females, 29 males), and to undergraduate or college students studying economics, management, business, or accounting in Japan (Tokyo Keizai University: 66 females, 101 males) and in the UK (University of Southampton, King Alfred University College: 40 females, 60 males).

¹ The Japanese Humane Society became defunct in 1958, but JSPCA and JAWS are still active.

Preliminary analyses conducted separately on responses from students studying animal-related courses and responses from students studying non-animal-related courses showed considerable similarities (Miura 2000). Therefore, for most analyses reported here, the samples have been combined in order to increase validity. Overall, the sample comprised 227 Japanese students aged 19–24 years (mean = 21) and 174 British students aged 18–28 years (mean = 20).

Questionnaire

The questionnaire was based on that of Paul and Serpell (1993). As this comprised five sections and was relatively long, many questions (including two attitude scales) were excluded or modified for this study to make it simpler; it has been recommended that questions should be as simple and clear as possible in cross-cultural studies (Brislin *et al* 1973; Brislin 1986). Some new questions were added to establish the background of the participants of each country in more detail.

The questionnaire, consisting of 47 questions², was written in English, translated into Japanese, and then back-translated to check for retention of meaning³. It was divided into three parts. In the first part, participants were asked to give information about the environment of their childhood home, such as the presence of a garden and any housing regulations which prevented the keeping of pets. Following this, they were asked about their experiences of pet ownership when they were children (up to and including 16 years of age). Pets were divided into seven categories: i) horses, ponies or donkeys; ii) dogs; iii) cats; iv) small mammals such as rabbits, mice, hamsters; v) birds; vi) fish, reptiles, amphibians, insects, spiders; and vii) others. Participants were also asked if they had had any pet which they had considered to be their friend, and if they had had any negative experiences with their pets or pets owned by other people. Data from these questions were used as the independent variables described below. In addition, the subjects were asked if they had had contact with other animals (eg animals in shelters, pet shops, zoo animals, livestock), and how many of their childhood friends had had pets at home, as categories; none, some, or most of them. The second part of the questionnaire asked about their current level of interest in animal welfare and about food-avoidance habits. In the last part, participants were asked to complete the 'Pet Attitude Scale' (Templer *et al* 1981).

The participants' state of pet ownership in childhood, and contact with other animals at that time, were used as the independent variables. These were:

Number of pets owned: the number of pets owned specifically by the participant during childhood. Participants were asked to choose a number in the range 1–6+, because it was expected that some might not remember the exact number and therefore leave a blank. The category of fish, reptiles, amphibians, insects, spiders was scored as equivalent to one pet, as these kinds of pets tend not to be treated as individuals by their owners and potentially can be owned in large numbers.

² Copies of the original questionnaire are available from the corresponding author upon request.

³ Back-translation is one of the recommended procedures to translate an instrument to another language for cross-cultural research (Brislin *et al* 1973; Brislin 1986). In this procedure, one bilingual translates from the source (original; in this study, in English) to the target language (Japanese), and another blindly translates it back to the source language (translated version; English). Then the original and translated versions are compared to make sure that both the source (English version) and target (Japanese version) actually mean the same thing. This procedure is repeated by revising the target until the original version matches the back-translated version.

Number of pets owned in the family: the total number of pets owned by the participant's family during childhood, scored as for the previous item (including pets owned by the participant and other members of the family or by the family as a whole).

Pets as friends: participants were asked whether they had had any pet which they had considered to be their friend when they were a child.

Negative experiences with pets: participants completed a checklist of negative experiences they had had with their own pets during childhood in a number of situations (being chased, attacked, bitten; suffering allergies; specified by participant). The total number of negative experiences was used in the analysis.

Negative experiences with others' pets: participants completed a checklist identical to that for the previous item for negative experiences they had had with pets owned by other people (including free-roaming pets such as strays) during childhood (scored as the previous item).

Participants' current attitudes towards pets and other animals were used as the dependent variables, as follows:

Interest in animal welfare organisations: participants were asked if they belonged to or were interested in any organisation concerned with the welfare of animals.

Food avoidance: participants were asked whether there were any foods derived from animals that they did not eat for ethical or moral reasons (excluding religious or health reasons).

Effect of pet ownership: attitudes towards pet-keeping in childhood were scored on a scale of 1–4 (four if they definitely thought that keeping pets when they were a child had had some good effects on them, one if they definitely did not think so). They were also asked to describe in their own words the ways in which they thought pets had been good for them; these responses were categorised using thematic content analysis (Holsti 1969).

Pet Attitude Scale (Templer *et al* 1981): this questionnaire measures the favourableness of attitudes toward pets in general. It consists of seven-point Likert Scale items, on which respondents indicate their agreement or disagreement with 18 statements. Higher scores indicate more favourable attitudes towards pets.

Analysis

All statistical analyses (SPSS Version 8.0, SPSS Inc, Chicago, USA) were conducted using non-parametric two-tailed tests (Chi-square, Spearman's rank correlation and Mann-Whitney *U* test), except for measures which were found to be normally distributed and therefore for which ANOVA techniques could be used.

Results

Background of participants

Childhood home

The locations of childhood homes were fairly similar between the two countries (Figure 1). More than 70% in both countries had lived either in suburban areas with nearby open space, or in the countryside. 71% of Japanese and 97% of British students answered that their home had had a garden. However, in Japan, there were more housing regulations which prevented their family from keeping pets than in the UK. Of the British students, 94% had no recollection of any regulations in their childhood home, whereas, of the Japanese students, 23% had been allowed to keep only small animals and 5% had not been allowed to keep a pet at all.

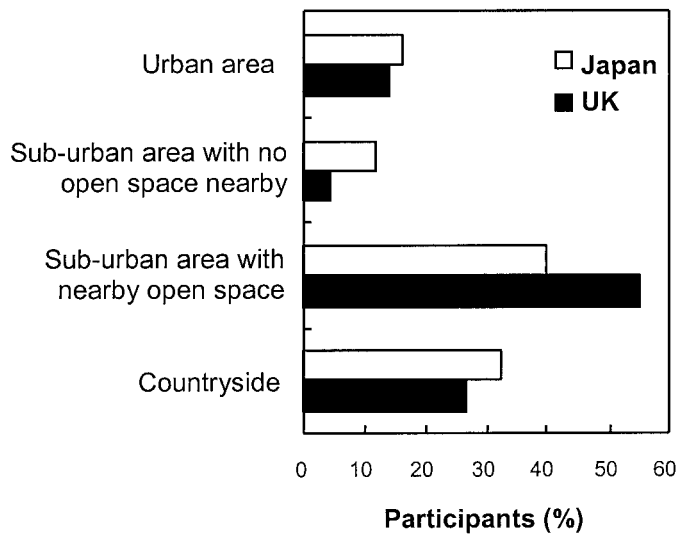


Figure 1 The location of participants' childhood homes.

Animal-related experiences in childhood

British students (UK) reported more animal-related experiences in their childhood than did Japanese students (JP). Significantly more British students had visited animal shelters (UK = 44%, JP = 8%; $\text{Chi}^2 = 73.4$, $n = 399$, $P < 0.001$), livestock farms (UK = 97%, JP = 75%; $\text{Chi}^2 = 34.4$, $n = 399$, $P < 0.001$) and pet shops (UK = 91%, JP = 73%; $\text{Chi}^2 = 19.4$, $n = 399$, $P < 0.001$), whereas there was no significant difference in their experiences of visiting zoos (UK = 98%, JP = 99%; $\text{Chi}^2 = 0.1$, $n = 399$, ns [not significant]).

When asked how many of their friends had had pets at home, only two British and one Japanese chose 'none', 52% of British and 89% of Japanese chose 'some of them', and 47% of British and 11% of Japanese chose 'most of them'. Because the 'none' category was too rare to include in a Chi-square test, this was excluded before analysis. There was a significant difference between the two countries ($\text{Chi}^2 = 67.8$, $n = 396$, $P < 0.001$), indicating that British students had had more friends who had owned pets in their childhood than Japanese students.

There was no significant difference between countries in the number of students who reported negative experiences with their own or others' pets. Approximately 35% of students in both countries reported that they had had negative experiences related to their own pets. There were slightly more students in both countries who had had negative experiences of others' pets, such as having been attacked or injured (UK = 54%, JP = 47%). The species most frequently mentioned in relation to negative experiences were dogs, followed by cats in both countries.

Pet ownership in childhood

Most of the participants had had pets in their childhood (UK = 94%, JP = 80%). However, the British students had had more pets than the Japanese students. Among those who had owned pets, significantly more British students had owned horses ($\text{Chi}^2 = 37.6$, $n = 400$, $P < 0.001$), cats ($\text{Chi}^2 = 48.9$, $n = 400$, $P < 0.001$), small mammals ($\text{Chi}^2 = 81.0$, $n = 400$, $P < 0.001$) and fish, reptiles etc ($\text{Chi}^2 = 7.2$, $n = 400$, $P < 0.01$) than had Japanese students (Figure 2). Significantly more Japanese students had owned birds than had British students

($\text{Chi}^2 = 11.2$, $n = 400$, $P < 0.01$). The number of pets owned personally ($U = 14110$, $n = 400$, $P < 0.001$) as well as by the family as a whole ($U = 11459$, $n = 399$, $P < 0.001$) was greater among British students than among Japanese students. On average, the British students also owned a greater variety of pets ($U = 12116$, $n = 400$, $P < 0.001$) than did Japanese students. There was a significant difference ($\text{Chi}^2 = 6.4$, $n = 335$, $P < 0.05$) in the number of students who had considered pets as close friends (UK = 60%, JP = 46%). The species most frequently mentioned as friends were dogs (60% of Japanese students), followed by cats (21%) and budgerigars (9%) in Japan, and dogs (60% of British students), cats (29%) and rabbits (13%) in the UK.

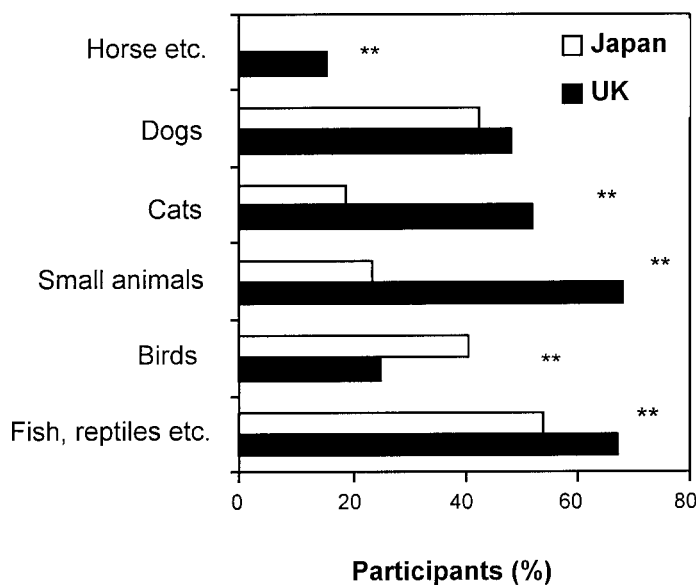


Figure 2 Pets owned by participants in childhood. **Significant difference ($P < 0.01$) between the two countries in the number of students who had owned a particular pet.

Interest in animal welfare organisations

The British students expressed more interest ($U = 14238$, $n = 396$, $P < 0.001$) in organisations concerned with the welfare of animals than did the Japanese students. In fact, none of the Japanese students belonged to any organisation of this kind, even though such organisations do exist in Japan, whereas 11% of the British students did.

Accordingly, involvement and interest in animal welfare organisations were examined separately for the two countries, on a three-point scale for UK respondents (membership, interest, no interest) and as presence/absence of interest for Japanese respondents. The participants who were interested in animal welfare organisations had had more family pets during their childhood (UK: $r_s = 0.17$, $P < 0.05$; JP: $U = 941$, $n = 220$, $P < 0.001$), and were more likely to have considered pets to be friends (UK: $U = 2338$, $n = 157$, $P < 0.01$; JP: $\text{Chi}^2 = 11.1$, $n = 175$, $P < 0.01$). Japanese participants who were interested in animal welfare organisations had owned significantly more personal pets ($U = 1332$, $n = 221$, $P < 0.05$). In

addition, more female students expressed interest in these organisations than did male students (UK: $U = 3021$, $n = 174$, $P < 0.01$; JP: $\text{Chi}^2 = 7.4$, $n = 222$, $P < 0.01$).

Food avoidance

There were more ($\text{Chi}^2 = 37.2$, $n = 398$, $P < 0.001$) British students (20%) than Japanese students (2%) who avoided eating some foods derived from animals for ethical or moral reasons. Female British participants were more likely ($\text{Chi}^2 = 17.0$, $n = 174$, $P < 0.001$) to avoid some foods because of ethical or moral reasons than male British participants.

Effect of pet ownership

When participants were asked whether they thought that keeping pets in their childhood had had any positive effect on them, the majority of them answered either 'yes definitely' (UK = 53%, JP = 35%) or 'yes' (UK = 36%, JP = 54%). On average, British students showed significantly more positive attitudes than Japanese students did ($U = 9618$, $n = 303$, $P < 0.01$).

Thematic content analysis suggested that the effects mentioned were quite similar in both countries (Table 1). For example, the participants described gaining caring attitudes to other animals, and receiving friendship, companionship and comfort from their pets. British students were significantly more likely to mention that they had learnt responsibility ($\text{Chi}^2 = 45.7$, $P < 0.001$), respect for animals ($\text{Chi}^2 = 15.0$, $P < 0.001$) and how to look after animals ($\text{Chi}^2 = 10.0$, $P < 0.01$). A higher proportion of the Japanese students described learning about life and death from pet ownership ($\text{Chi}^2 = 13.0$, $P < 0.001$), and gaining comfort ($\text{Chi}^2 = 5.8$, $P < 0.05$).

Table 1 The ways in which the Japanese and British students thought that pets had been good for them. All themes which were mentioned by two or more participants in either country are listed.

	% Japanese students reporting each idea (n = 122)	% British students reporting each idea (n = 130)	Level of significant difference between groups (Chi^2 test)
Learnt responsibility	6.6	43.8	$P < 0.001$
Learnt about life and death	20.5	5.4	$P < 0.001$
Learnt to respect animals	0	11.5	$P < 0.001$
Learnt to be patient	0	1.5	ns
Learnt how to look after animals	12.3	28.5	$P < 0.01$
Gained interest in animals	0.8	3.8	ns
Gained caring attitudes	26.2	25.4	ns
Made me more affectionate	6.6	3.8	ns
Gained friendship and companionship	12.3	22.3	$P < 0.05$
Gained comfort	23.0	11.5	$P < 0.05$
Gained fun and enjoyment	1.6	7.7	$P < 0.05$
Gained an opportunity for exercise	2.5	1.5	ns

ns, not significant

Students who answered that childhood pet ownership had been beneficial to them also considered childhood pets more as friends than participants who did not, in both Britain ($U = 1573$, $n = 146$, $P < 0.001$) and Japan ($U = 1948$, $n = 149$, $P < 0.01$). Japanese female

students were more likely to mention that pets had had positive effects on them than Japanese male students ($U = 2309$, $n = 151$, $P < 0.05$).

Pet Attitude Scale

According to their scores on the Pet Attitude Scale, British students had significantly more ($U = 13452$, $n = 396$, $P < 0.001$) favourable attitudes towards pets than did Japanese students.

Both British ($r_s = 0.36$, $P < 0.01$) and Japanese ($r_s = 0.36$, $P < 0.01$) students who had higher scores in the Pet Attitude Scale had had more pets in their childhood home. The scores of the participants who had considered childhood pets as friends in both Britain ($U = 1478$, $n = 154$, $P < 0.001$) and Japan ($U = 2001$, $n = 177$, $P < 0.001$) were significantly higher than those who had not. In addition, the scores of female students were, on average, higher than those of male students (UK: $U = 3067$, $n = 172$, $P = 0.054$; JP: $U = 4810$, $n = 226$, $P < 0.01$).

Factors which influence attitudes towards animals

In order to investigate whether the difference between the British and Japanese students could be accounted for by the smaller number of family pets in the Japanese households, the latter was included as a covariate in an analysis of variance with country as the main factor. The number of pets in the childhood household was first scaled to produce an approximately normal distribution: 0 = no pet; 1 = 1 pet; 2 = 2 or 3; 3 = 4 or 5; 4 = 6 or 7; 5 = 8 or 9; 6 = 10 or 11; 7 = 12–15; 8 = 16+. This measure had a highly significant effect on the Pet Attitude score ($F_{1,391} = 56.44$, $P = 0.000$), while the effect of nationality decreased ($F_{1,391} = 4.68$, $P = 0.03$), indicating that the difference between the countries in current attitudes to pets might be largely explained by the smaller average number of pets in the Japanese households.

Two-way analysis of variance was performed in order to examine the relationship between nationality, course of study and number of family pets owned in childhood. The number of family pets in the childhood household was first log-transformed to improve normality. The results showed that both nationality ($F_{1,395} = 41.73$, $P < 0.001$) and course ($F_{1,395} = 16.03$, $P < 0.001$) were significantly related to the number of family pets owned in childhood. There was no interaction between these two variables ($F_{1,395} = 0.10$). In both countries, students taking animal-related courses had had more pets in their childhood home than students taking courses unrelated to animals (Figure 3). However, Japanese students tended to have had fewer pets than British students; in fact, British students studying courses unrelated to animals had had slightly more pets than Japanese students studying animal-related courses.

The same model was used to investigate the effect of nationality and course upon participants' current attitudes towards pets (their scores on the Pet Attitude Scale). As the distribution of the scores was almost normal, they were analysed without transformation. Both nationality ($F_{1,392} = 14.31$, $P < 0.001$) and course ($F_{1,392} = 4.71$, $P < 0.05$) significantly affected the score on the Pet Attitude Scale. There was no interaction between these two variables ($F_{1,392} = 0.70$). In both countries, students taking animal-related courses had slightly more favourable attitudes towards pets than students taking courses unrelated to animals (Figure 4). However, the Japanese students had substantially lower scores than the British students, such that British students studying courses unrelated to animals showed more positive attitudes towards pets than Japanese students studying animal-related courses.

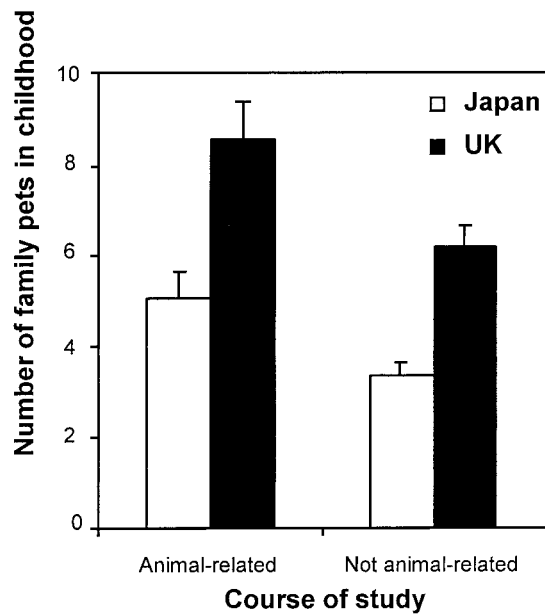


Figure 3 Mean number of family pets in the childhood household of Japanese and British students taking both animal-related and non-animal-related courses.

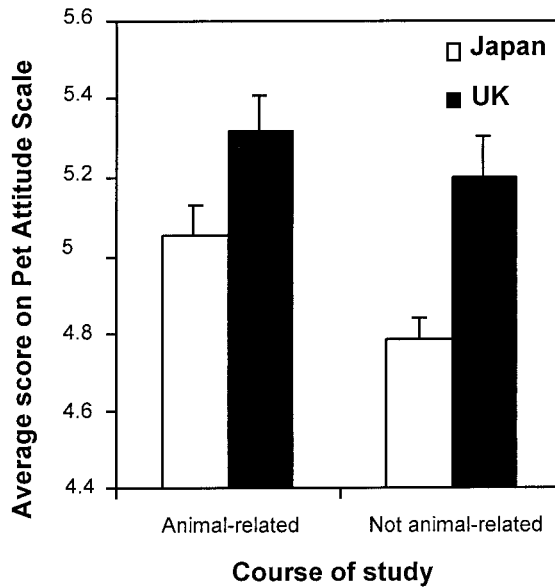


Figure 4 Mean Pet Attitude Scale scores of Japanese and British students taking both animal-related and non-animal-related courses.

Discussion

The results of the present study support the idea that pet-keeping experiences during childhood help to develop favourable attitudes towards all animals in adulthood, both in the UK and in Japan. Some similar trends were found in the results from both countries. For example, participants' current attitudes towards pets were significantly influenced by the number of pets kept during their childhood. This result parallels the finding by Paul and Serpell (1993) that higher levels of childhood pet-keeping were related to more positive attitudes towards animals in their British university student subjects. In addition, students who had had a pet which they had considered as a friend during their childhood showed higher scores on the Pet Attitude Scale and also considered pet ownership during childhood as having been beneficial.

Participants' current attitudes were also likely to have been influenced by their parents' attitudes towards pets, as suggested by Paul and Serpell (1993) and Enderburg and Baarda (1995), but because the presence of pets in the household is in itself a reflection of parental attitudes which we could not measure directly, we have chosen to concentrate on the former. A third possible explanation for the association between childhood pet-keeping and positive attitudes to animals — genetically based variation between families in tendencies towards biophilia (Ulrich 1993) — also cannot be ruled out by our data.

An interesting finding is that the benefits of owning pets that the subjects mentioned were similar in both countries, regardless of the cultural differences; that is, the roles of pets, particularly for children, were similar in Japan and the UK during the 1970s and early 1980s (the period when the participants were children). In a study using high-school students in the USA (Kidd & Kidd 1990a), 88% of students reported beneficial effects of pet ownership. 90% of them claimed psychological benefits such as friendship, companionship, emotional support and unconditional love, and only 9% mentioned responsibility, in contrast to the present study in which more participants mentioned that they had gained caring attitudes and had learnt responsibility and how to look after animals. More of the participants in the present study tended to describe concern for other living creatures rather than their own selfish benefits, such as friendship and emotional support given by pets. This might be because they are more mature than high-school students, or possibly because of cultural differences. In fact, in the present study, significantly more British students than Japanese students mentioned learning about responsibility.

By comparing students taking animal-related courses with students taking courses unrelated to animals, we have found in both countries that the former had more pets during their childhood, and showed more favourable attitudes towards pets. Bowd and Boylan (1986), examining attitudes towards the treatment of animals in laboratories, found that high-school students in the USA who studied biology, and those who did not, had fairly positive attitudes. However, attitudes of students who had not studied biology were somewhat more favourable than attitudes of those who had. This is inconsistent with the result of the present study, possibly because of differences in the objectives of the two studies and the attitude scales used. Our data suggest that childhood pet-keeping may be linked to choice of courses in tertiary education.

Some differences were also found between Japan and the UK. The British participants seemed to have had closer relationships with animals in childhood than the Japanese. They reported significantly more pets in their childhood and more animal-related experiences such as visiting animal shelters, pet shops and farms. Their scores on the Pet Attitude Scale suggested that their current attitudes were also more positive than those of the Japanese

students, which might simply be the result of their having been exposed to more pets during childhood. This tendency supports the idea that adult attitudes to pets or interest in animals are strongly influenced by previous social contact with pets and attitudes towards pets developed during childhood (Serpell 1981; Kidd & Kidd 1989).

More of the British students than the Japanese students were either involved in animal welfare organisations or avoided some foods because of some ethical or moral reason. As the idea of animal welfare originated in England (Maehle 1994), the British might simply be more familiar with these concepts than the Japanese. Japan has been described as “a fully industrialized nation but it is still an emerging nation in the field of animal welfare” (Fogle 1989). However, Fogle (1989) also mentioned that the animal shelter which he visited in Japan was the best he had ever seen, an opinion supported by a chief inspector of the RSPCA in the UK. Fogle also reported that a director of the Canadian Council on Animal Care commented that “the teaching program, the leaflets, booklets, comics, posters, and one-day events, constituted the best use of government funds for humane education that he had seen”. Thus, there is a potential nucleus on which improvement of animal welfare in Japan could be based. It should also be noted that an amendment of the Animal Protection and Control Law was put into effect in December 2000⁴.

Animal welfare implications

The welfare of animals is increasingly becoming an international issue, made complex by national and cultural differences in attitudes towards animals. Very little is known about the factors that affect differences in these attitudes between cultures or variation between individuals within cultures. Here we have shown, by comparing attitudes in individuals from two very different cultures, that childhood experience of pets may produce a universal positive effect on attitudes to animal welfare issues in young adulthood. We therefore predict that animal welfare in Japan will improve in the future if education programs on responsible pet-keeping and respect for animals are targeted at children.

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References

- Anon 1989 Animals in advertising. *Anthrozoos* 2: 203-204
- Bowd A D 1984 Fears and understanding of animals in middle childhood. *Journal of Genetic Psychology* 145: 143-144
- Bowd A D and Boylan C R 1986 High school biology and attitudes toward treatment of animals. *Psychological Reports* 58: 890
- Brislin R W 1986 The wording and translation of research instruments. In: Lonner W J and Berry J W (eds) *Field Methods in Cross-Cultural Research* pp 137-164. SAGE Publications: London, UK

⁴ The previous law had no definition of cruelty and the handful of very severe cases that had been prosecuted in nearly 30 years had been fined no more than 30,000 yen (£150). No licencing, no laws and no inspection applied to pet shops (<http://www.wspa.org.uk>). The new law requires pet shop owners to register, to permit inspection and to improve the environment in which animals are kept if required. The maximum penalty for animal cruelty is now 1,000,000 yen.

- Brislin R W, Lonner W J and Thorndike R M** 1973 *Cross-Cultural Research Methods*. John Wiley & Sons: New York, USA
- Endenburg N and Baarda B** 1995 The role of pets in enhancing human well-being: effects on child development. In: Robinson I (ed) *The Waltham Book of Human-Animal Interaction: Benefits and Responsibilities of Pet Ownership* pp 7-17. Elsevier Science Ltd: Oxford, UK
- Fogle B** 1989 Companion-animal welfare in Japan. *Anthrozoos* 3: 54-55
- Holsti O R** 1969 *Content Analysis for the Social Sciences and Humanities*. Addison-Wesley: Reading, MA, USA
- Imagawa I** 1996 *Inuno Gendaishi*. Gendai shokan: Tokyo, Japan [Title translation: Modern history of dogs]
- Kellert S** 1991 Japanese perceptions of wildlife. *Conservation Biology* 5: 297-308
- Kellert S** 1994 Attitudes, knowledge and behaviour toward wildlife among the industrial superpowers: The United States, Japan and Germany. In: Manning A and Serpell J (eds) *Animals & Human Society: Changing Perspectives* pp 166-187. Routledge: London, UK
- Kidd A H and Kidd R M** 1989 Factors in adults' attitudes toward pets. *Psychological Reports* 65: 903-910
- Kidd R M and Kidd A H** 1990a High school students and their pets. *Psychological Reports* 66: 1391-1394
- Kidd A H and Kidd R M** 1990b Social and environmental influences on children's attitudes toward pets. *Psychological Reports* 67: 807-818
- Kidd A H and Kidd R M** 1996 Developmental factors leading to positive attitudes toward wildlife conservation. *Applied Animal Behaviour Science* 47: 119-125
- Levinson B M** 1978 Pets and personality development. *Psychological Reports* 42: 1031-1038
- Maehle A** 1994 Cruelty and kindness to the 'Brute creation': stability and change in the ethics of the man-animal relationship, 1600-1850. In: Manning A and Serpell J (eds) *Animals & Human Society: Changing Perspectives* pp 81-105. Routledge: London, UK
- Miura A** 2000 *Cultural influences on the acceptability of assistance dogs in Japan and the UK*. PhD thesis, University of Southampton, UK
- Paul E** 1995 Us and Them: scientists' and animal rights campaigners' views of the animal experimentation debate. *Society and Animals* 3: 1-21
- Paul E S and Serpell J A** 1993 Childhood pet keeping and humane attitudes in young adulthood. *Animal Welfare* 2: 321-337
- Poresky R H and Hendrix C** 1988 Young children's companion animal bonding and adults' pet attitudes: a retrospective study. *Psychological Reports* 62: 419-425
- Serpell J** 1981 Childhood pets and their influence on adults' attitudes. *Psychological Reports* 49: 651-654
- Stewart-Smith J** 1987 *In the Shadow of Fujisan: Japan and its Wildlife*. The Rainbird Publishing Group Ltd: London, UK
- Takemae E** 1991 Igirisu ni okeru modoken no genjyo. *Tokyo Keizai Daigakukaishi* 175: 61-68 [Title translation: The present condition of guide dogs in England]
- Templer D I, Salter C A, Dickey S, Baldwin R and Veleber D M** 1981 The construction of a pet attitude scale. *The Psychological Record* 31: 343-348
- Ulrich R S** 1993 Biophilia, biophobia, and natural landscapes. In: Kellert S R and Wilson E O (eds) *The Biophilia Hypothesis* pp 73-137. Island Press: Washington DC, USA