

Attitudes toward Animals: Species Ratings

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A questionnaire was used to assess people's attitudes toward 33 species of animals on six dimensions (useful-useless, smart-stupid, responsive-unresponsive, lovable-unlovable, safe-dangerous, and important-unimportant). A cluster analysis resulted in five groups of animals with similar ratings on these dimensions. Respondents were also asked about their attitudes toward hunting, fishing, and medical, scientific and product-testing research using animals.

A large number of studies have examined people's attitudes toward various uses of animals, including research with animals (Bowd, 1984; Bowd & Bowd, 1989; Braithwaite & Braithwaite, 1982; Driscoll, 1992; Furnham & Gunter, 1989; Furnham & Heyes, 1993; Furnham & Pinder, 1990; Gallup & Beckstead, 1988; Millett & Lock, 1992; Sieber, 1986; Takooshian, 1988). Several of these have shown the importance of the species of animal named as a determinant of such attitudes. Activities involving companion animals or large, attractive mammals have often been found to be less acceptable than the same activities when they involve rodents or nonmammalian species (Driscoll, 1992; Furnham & Heyes, 1993; Kellert & Berry, 1981).

Clearly, if we are to accurately assess attitudes toward animal use, it is necessary to quantify and control the variable of species in assessment instruments. In addition, public support for conservation efforts often depends upon the attractiveness of the animal species involved. It may be easy to generate public approval of conservation efforts directed toward attractive mammals (e.g., sea otters) but more difficult when conservation is directed toward insects, reptiles or fish. Greater efforts to educate the public will be needed when less attractive species are involved. In addition, there is disagreement, even among advocates of animal rights, as to where to "draw the line" on the species that are deserving of our moral consideration (Warren, 1991). Although information on the attitudes of the American public toward different species of animals will not tell us where or

whether the line should be drawn, it can tell us more about where most people draw it.

The present study attempted to quantify people's opinions about different species of animals by asking them to rate 33 species on the following six dimensions: useful-useless; smart-stupid; responsive-unresponsive; lovable-unlovable; safe-dangerous; and important-unimportant. These dimensions were selected arbitrarily as representing major areas in which people would be able to indicate their views toward different species of animals. Data were also gathered on general attitudes toward selected animal issues to see if results were consistent with previous research. For comparative purposes, the same questionnaire was completed by ten animal shelter workers.

Method

The questionnaire consisted of a listing of 33 species of animals. Respondents were asked to rate each kind of animal on a scale of 1 to 6 on each of the six dimensions listed above. In the questionnaire, a rating of 1 indicated positive attributes (e.g., lovable) and a rating of 6 indicated negative attributes (e.g., unlovable). For purposes of presentation, ratings were reversed by subtracting each rating from 6. After this reversal, higher ratings indicated positive attributes and lower ratings negative ones.

One hundred and thirty-three adults completed the ratings and provided demographic information, including age, gender, occupation, and pet ownership. In addition, each respondent was asked about his/her attitude toward hunting, fishing, product-testing research, medical research, and scientific research using animals.

Questionnaires were administered by students who were studying the construction and administration of questionnaires and surveys in a research methods class. A convenience sampling technique was used, and the respondents were, for the most part, the co-workers, family, and friends of the students. Written instructions were provided with each questionnaire, and the students were told not to provide additional information or discuss the items with the respondents until the questionnaire was completed. Respondents were informed that their responses were confidential and anonymous.

A second sample of 10 workers at a local animal shelter was asked to complete the questionnaire. The procedure was similar to that used with the larger sample.

Results

The ages of the respondents ranged from 13 to 77 years with a median age of 31 years. Males made up 61.7% of the sample, females 38.3%. Persons with professional occupations (23.3%) and students (21.8%) made up more than 40% of the sample. Persons in sales (10.5%) and service (10.5%) occupations accounted for an additional 21% of the sample. The remaining respondents reported various occupations including education, retired, and skilled labor. Occupation was not reported by 6.8% of the sample. One or more companion animals were owned by 63.9% of the sample. Of those with companion animals, 55% had dogs, cats or both.

The attitude survey found hunting approved by 56.4% of the sample; 92.5% approved of fishing. Product-testing research using animals was approved by 44% of the sample; 74.4% approved of medical research using animals; and 67.7% approved of scientific research using animals.

Ages of the animal shelter workers ranged from 19 to 43 years. Two of the respondents were men and eight were women. All of these respondents lived with companion animals, mainly dogs and cats. The attitudes of the animal shelter workers toward hunting, fishing and the three kinds of research were quite different from those of the larger sample. Only two persons in the animal shelter sample (20%) approved of hunting; seven persons (70%) approved of fishing. Only one person (10%) approved of product-testing research using animals, and two people (20%) approved of medical research and scientific research using animals.

Demographic Variables

In the larger sample, age did not affect attitudes toward hunting, fishing, or the three kinds of research. Gender significantly affected attitudes toward medical and scientific research, with a smaller percentage of women approving. Medical research was approved by 62.7% of women but by 81.5% of male respondents ($\chi^2 = 4.8$, $p = 0.028$). Scientific research with animals was approved by 54.9% of women and 75.3% of men ($\chi^2 = 5.04$, $p = 0.025$). No significant differences were found between men and women in attitudes toward hunting, fishing, or product-testing research using animals. Neither occupation nor living with animals affected attitudes toward hunting, fishing or the three kinds of research with animals. The small sample size did not allow exploration of demographic variables with data from the animal shelter workers.

Animal Ratings

Table 1 shows the intercorrelations among the six dimensions on which animals were rated. All of the dimensions are significantly positively correlated except that the safe-dangerous dimension did not significantly correlate with either the smart-stupid dimension or the responsive-unresponsive dimension. The important-unimportant dimension correlated very highly with the useful-useless dimension. The smart-stupid dimension was highly correlated with the responsive-unresponsive dimension. The responsive-unresponsive dimension also correlated strongly with the lovable-unlovable dimension. Because of these strong relationships, the important-unimportant dimension and the responsive-unresponsive dimension were eliminated from the following cluster analysis.

Table 1. Intercorrelations among the Six Dimensions

	Smart	Respons.	Lovable	Safe	Import.
Useful	0.576**	0.624**	0.616**	0.461**	0.976**
Smart	----	0.970**	0.836**	0.122	0.593**
Respons.	----	----	0.884**	0.189	0.622**
Lovable	----	----	----	0.506**	0.636**
Safe	----	----	----	----	0.504**

** Indicates significance at $\alpha = 0.01$ (two-tailed test).

A cluster analysis was performed using the remaining four dimensions: useful-useless, smart-stupid, lovable-unlovable, and safe-dangerous. Four agglomeration methods including the average linkage between groups, the average linkage within groups, single linkage (nearest neighbor), and complete linkage (furthest neighbor) were used with generally similar results. The results of the cluster analysis using the average linkage between groups are shown in a dendrogram (Fig. 1).

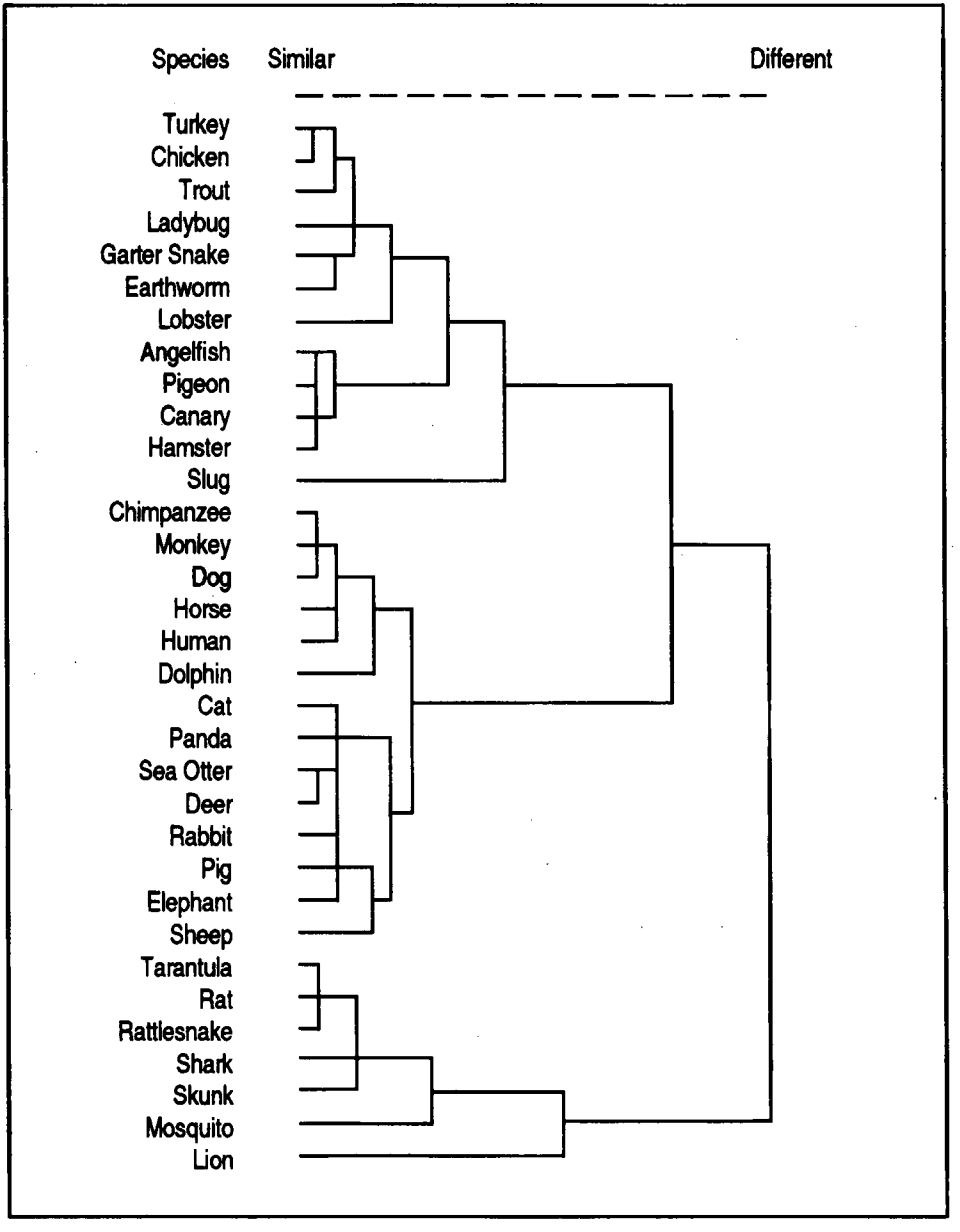

Figure 1. *Dendrogram of cluster analysis*

The closer to the left hand side of the dendrogram species are linked, the more similar the ratings of those species. The dendrogram clearly shows three major clusters of animals, two of which seem to have sub-clusters and the third of which is distinct. Starting at the top of the dendrogram (Fig. 1), the first cluster (Group A-1) to emerge included the turkey, chicken, trout, ladybug, garter snake, earthworm and lobster. A second sub-group within this group included the angelfish, pigeon, canary, hamster and slug (Group A-2).

Moving down the dendrogram, the next major cluster (Group B) also tended to split into two sub-clusters. The first of these (B-1) included the chimpanzee, monkey, dog, horse, human and dolphin. The second subgroup (B-2) included the cat, panda, sea otter, deer, rabbit, pig, elephant and sheep. Moving to the bottom of the dendrogram, the last major group in the cluster analysis (Group C) included the tarantula, rat, rattlesnake, shark, skunk, mosquito and lion.

Table 2 gives the ratings on all six dimensions for each species of animal. The two dimensions (important-unimportant and responsive-unresponsive) which were excluded from the cluster analysis because of their high correlations with other dimensions are shown in Table 2 for purposes of comparison.

Group A-1 included animals which are used by humans for food or which we have been taught are useful to humans (e.g., eats bugs, improves the soil). These animals were given high ratings on usefulness, importance and safety, but were seen as stupid and unlovable. Lobsters were rated as somewhat more dangerous than the rest of the group and ladybugs as more lovable. Group A-2 was distinguished from Group A-1 by lower ratings on usefulness and importance, and higher ratings on smartness and lovableness. The slug was quite atypical for this group, being rated as less useful, less smart and less lovable than the other animals. Slugs were probably placed in this group rather than Group C because of a low rating on smartness and a high rating on safety. In fact, two agglomeration methods for the cluster analysis (complete linkage and single linkage) placed the slug in Group C.

Group B is a group of mammals including the most popular animals in the study. As shown in Fig. 1, there was a tendency for this group to split into two sub-clusters. The pattern of ratings was similar for the two sub-groups (B-1 and B-2) with the animals in Group B-1 receiving higher ratings on usefulness, importance, smartness, lovableness, and responsiveness.

The animals in the third group to emerge from the cluster analysis (Group C) are all rated as very dangerous. They are rated as not very useful and not very

Table 2. Animal Ratings on the Six Dimensions

Group	Species	Use.	Imp.	Smt.	Rsp.	Lov.	Saf.
A-1	Turkey	3.8	3.5	1.2	1.9	1.6	3.7
	Chicken	4.0	3.9	1.3	2.2	1.7	3.8
	Trout	3.9	3.6	2.0	2.4	1.6	4.1
	Ladybug	3.3	3.4	1.8	1.9	2.2	4.5
	Garter Snake	3.0	2.8	1.8	2.4	1.0	3.5
	Earthworm	3.2	3.3	1.0	1.5	0.9	4.1
	Lobster	3.5	3.2	1.5	2.0	1.1	2.5
A-2	Angelfish	2.3	2.6	1.9	2.3	2.2	3.8
	Pigeon	2.5	2.6	2.3	2.7	2.0	3.7
	Canary	2.2	2.3	2.5	3.0	3.1	4.2
	Hamster	2.2	2.3	2.2	2.8	3.1	3.5
	Slug	1.5	2.1	0.8	1.2	0.6	3.3
B-1	Chimpanzee	4.1	4.0	4.5	4.5	4.2	3.6
	Monkey	3.9	3.8	4.2	4.2	3.9	3.4
	Dog	4.1	3.8	4.1	4.5	4.5	3.5
	Horse	4.3	3.8	3.5	4.1	3.7	3.1
	Human	4.4	4.3	4.3	4.4	3.9	2.7
	Dolphin	4.3	4.3	4.8	4.7	4.5	4.5
B-2	Cat	2.6	2.7	3.4	3.5	3.6	3.7
	Panda	3.1	3.4	3.3	3.4	4.0	3.4
	Sea Otter	3.4	3.3	3.6	3.5	3.5	3.8
	Deer	3.6	3.4	3.1	3.4	3.6	3.7
	Rabbit	3.4	3.1	2.6	3.3	4.0	3.9
	Pig	3.9	3.7	3.0	2.8	2.3	3.3
	Elephant	3.9	3.5	3.5	3.5	3.0	2.6
	Sheep	4.0	3.6	2.1	2.8	3.0	3.8
C	Tarantula	1.8	1.9	1.8	2.1	0.6	1.0
	Rat	2.0	1.9	2.0	2.3	0.7	1.4
	Rattlesnake	2.4	2.5	2.0	2.5	0.7	0.8
	Shark	2.8	2.8	2.8	2.7	1.0	1.0
	Skunk	2.0	2.1	2.3	2.5	1.4	2.0
	Mosquito	1.0	1.2	0.8	1.3	0.3	1.1
	Lion	3.2	3.2	3.7	3.5	2.5	1.1

lovable. There was considerable variability in these animals' ratings on smartness. They are rated as quite responsive. Two animals in this cluster differed substantially in their ratings from the rest of the group. Lions were seen as smarter, more lovable and more responsive than the rest of the group. In fact, the method of average linkage within groups placed the lion in Group B-2. Mosquitoes were perceived as less useful, less important, less smart, less responsive, and less lovable than any other species in the study. Figure 2 shows the average ratings for each group and sub-group of animals with atypical animals (lion, mosquito and slug) removed.

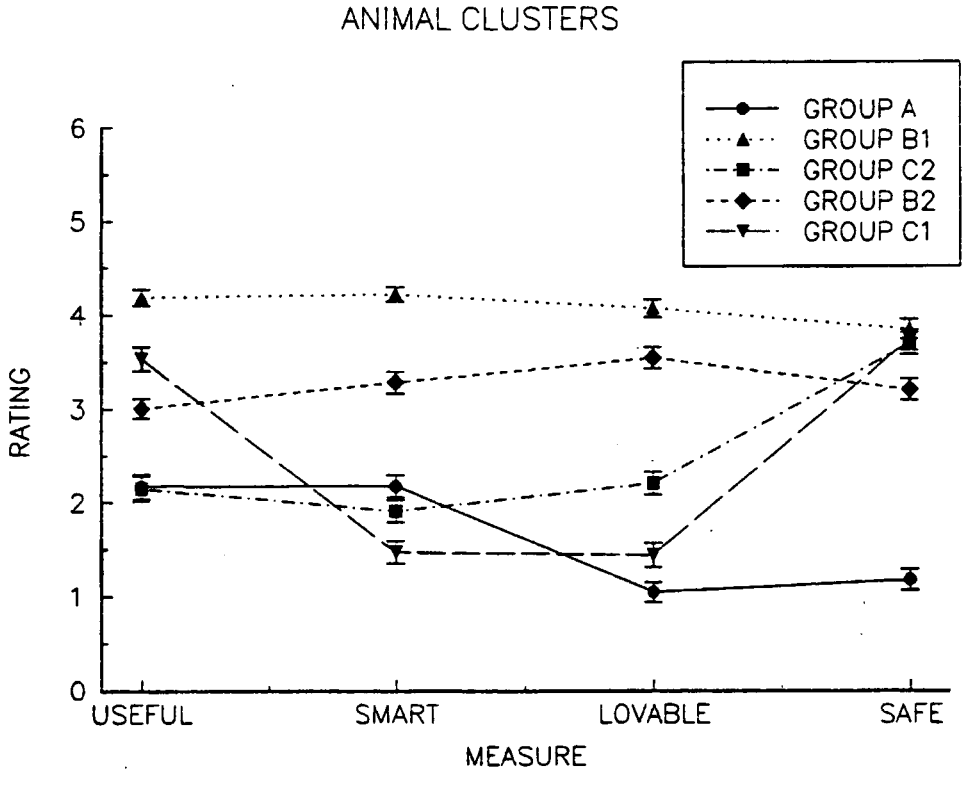

Figure 2. Average ratings for five groups with atypical animals removed (X ± SEM)

Some differences occurred in the ratings of animal shelter workers as compared to the larger sample. It is difficult to statistically compare ratings for these groups because of the discrepancy in sample size (133 versus 10). In addition, heterogeneity of variance was a problem in about one-third of the ratings. Because of these complications, the following procedure was used to compare the average ratings of animal shelter workers to those of the larger sample. The mean of the larger sample on each rating was assumed to be μ and the mean of the animal shelter sample was tested against it using a single sample *t* test with 9 df. The standard error of the mean of the animal shelter sample was used as the error term. This rather conservative procedure resulted in 62 significant differences out of 198 comparisons. In all significant comparisons, animal shelter workers rated animals more favorably than did the larger sample. This was especially true for some of the less popular animals (tarantula, lion, rat) and for cats.

Discussion

The general findings of this study on attitudes toward various uses of animals are consistent with the literature (Furnham & Gunter, 1989; Furnham & Pinder, 1990; Gallup & Beckstead, 1988). Although majority opinion continued to support medical and scientific research using animals, substantial opposition was reported. Product-testing research was even less acceptable to the public. Women indicated greater opposition to medical and scientific research with animals than did men, a finding which has been common in the literature (e.g., Driscoll, 1992). Although it was not determined if the animal shelter workers supported the activities of animal rights groups or were members of such groups, the differences between their responses and those of the larger sample are consistent with the findings of Plous (1991) that there are differences between the views of animal activists and those of the general public.

A number of generalizations can be made from the animal ratings. There are clearly popular and unpopular animals. Consistent with Kellert and Berry (1981), the most popular animals were large mammals, especially primates and companion animals, and the most unpopular animals were biting invertebrates (mosquitoes). Among the popular animals (Group B-1), it is interesting that dolphins received a higher rating on smartness and responsiveness than humans. Dolphins were judged to be the safest of this group and humans the most dangerous. It is also interesting that this group received high ratings on usefulness, although it would be difficult

to specify from a human perspective just what the uses of chimpanzees, dolphins or monkeys might be. One possibility is that people give these animals high ratings simply because of a general positive attitude toward them. Group B-2 also had some surprises. Several species (cat, panda, sea otter) might well have been expected to be in the popular B-1 group, but were not. The rating profiles of groups B-1 and B-2 are similar, with group B-1 consistently higher on all four dimensions, especially usefulness and smartness.

Group A-1 is extremely interesting. This group included those animals that are eaten by humans (turkey, chicken, trout, lobster) or are useful to humans in other ways (e.g., eats bugs, improves the soil). These animals received the lowest ratings on intelligence (smartness) and responsiveness, and the next-to-lowest ratings on lovableness. It is possible that people tend to devalue these animals because of the uses we make of them. On the other hand, mammals used for food (sheep and pigs) were rated higher on both of these dimensions. The canary was the only non-mammalian species in the study which achieved ratings of 3.0 or above on lovableness or responsiveness. No non-mammal received a rating of 3.0 or above on smartness. Non-mammalian species are clearly devalued when compared to mammals on the dimensions of smartness, responsiveness and lovableness.

One very interesting finding was that ratings of species on the usefulness dimension and the importance dimension correlated almost perfectly ($r = 0.98$). No definitions of the dimensions were given in the questionnaire, and respondents did not seem to differentiate between a species' importance on its own merits and its usefulness to humans. Such a distinction is of interest because some animal rights advocates have advanced the view that nonhuman animals should be valued for themselves as entities deserving of not just kindness but respect, fairness and rights (Finsen & Finsen, 1994). The public may accept this idea for large attractive mammals, but do not use it in evaluating non-mammals or less attractive mammalian species.

Fox (1990) proposed that the American public's evaluation of animals is based on (1) how a species has historically been regarded, (2) its utility to humans, and (3) our emotional reaction to the species. This study supports Fox's view and especially illustrates the importance of a species' emotional appeal. It appears that although as a culture, we might claim to accept evolution and reject dualism, the attitudes of the American public toward nonhuman animals, especially non-mammalian species, have a long way to go to be consistent with this claim. This finding makes it even more significant that we begin to understand how people form

their attitudes toward animals. Most investigators have found that attitudes toward animals are a unitary rather than a multi-dimensional trait (Bowd, 1984; Driscoll, 1992; Furnham & Heyes, 1993; Furnham & Pinder, 1990). By examining current attitudes toward animals, we may be better able to understand how experience and education affect perceptions of different kinds of animals, and gain better insight into how attitudes toward animals can be changed.

Note

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