

Cat Behavior and Cat–Human Interactions: Brief Introduction

Subjects: [Zoology](#)

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This entry summarised what is known about domestic cat behaviour and cat-human relations and what still needs to be examined, listing unanswered questions and hypotheses. Below is a selection of the topics covered in the original review. An English version of reference "50" (in French) may be requested and e-mailed legally (by contract) from the author by individuals as long as the original reference will be cited in French.

cats behavior

human–cat interactions

1. Differences between Cat Breeds and Relevance for Animal-Assisted Interventions

Hart and Hart ^[1] surveyed some 80 feline veterinarians who were considered to be unbiased authorities on breed differences in cats, randomly selected from across the USA. Each ranked a random selection of seven (five breeds plus domestic short- and long-haired cats) out of 15 cat breeds under consideration along 12 behavioral traits. The authors found that three of the traits had high predictive value to distinguish the breeds, seven had moderate, and two had low predictive value. Wilhelmy et al. ^[2] used a well-established questionnaire (the Fe-BARQ) to generate “standardized behavior profiles” of 12 breeds (also of interest, various coat color variants and eye color effects). Salonen et al. ^[3] used another health and behavior questionnaire completed by owners and determined behavioral differences between 19 cat breeds and breed groups along 10 different behavioral traits. A moderate level of heritability in three breeds and seven traits was found, but the authors reported that substantial genetic variation still existed within the breed populations. The three breeds were Ragdoll, Maine Coon, and Turkish Van, while the seven traits were activity level; contact to people; aggression to strangers; aggression to family members; shyness toward novel objects; and shyness toward strangers. Most of the aforementioned studies have used subjective ratings of behavioral traits, albeit one by cat experts or with large samples of cat owners and standardized, properly analyzed questionnaires; but to date, with the exception of Turner’s ^{[4][5]} studies, none has looked at observed behavioral differences to validate these subjective findings. This is indeed a wide-open research field with practical consequences for animal-assisted interventions involving cats. Practitioners who work with cats in AAI, e.g., Frick and Tanner-Frick ^[6], either tend to work with Siamese cats (known as “the dog” among cat breeds) or quiet, less boisterous breeds such as the relatively large Ragdoll or Norwegian Forest cats. Often, the author has been asked which cat (or dog, for that matter) breed is best for which client/patient group or ailment category. The answer is simply that we do not know (yet!).

2. The Effect of Later Experiences with Unfamiliar Humans on Well- and Non-Socialized Adult Cats

Based on the results of several studies, Turner ^{[5][7]} proposed a model predicting differential outcomes of later positive and negative experiences with people depending on the quality of original socialization to humans as a kitten (see **Figure 1**).

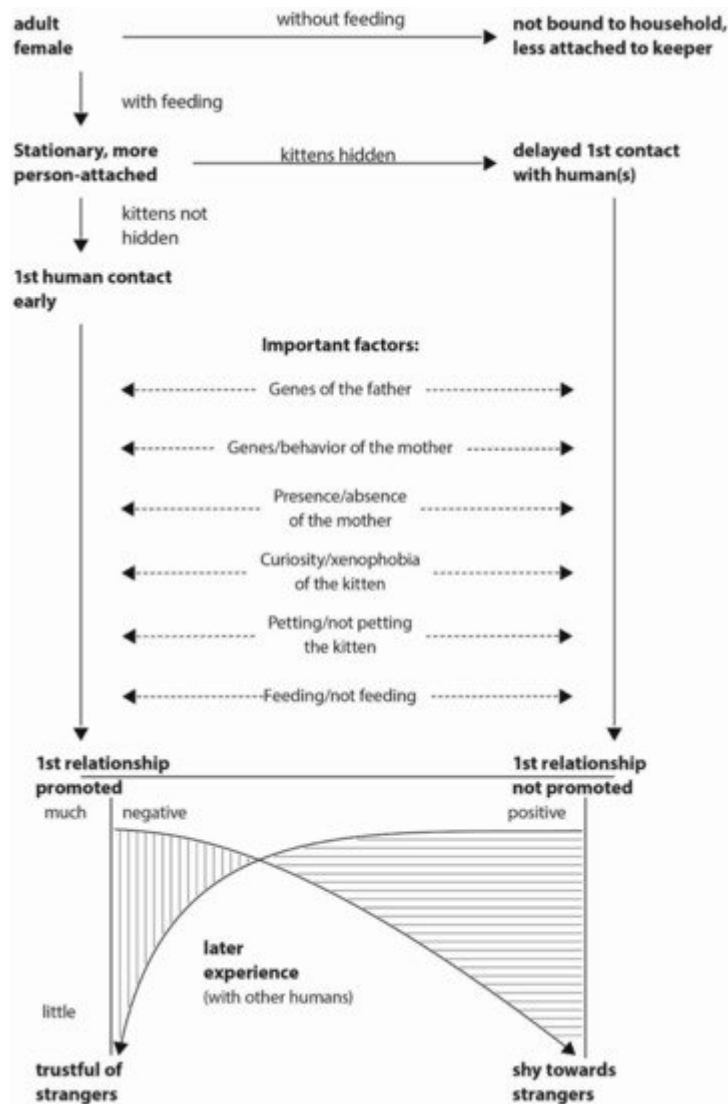


Figure 1. A model of the factors, which influence a kitten's first relationship with a human, and of how later experience with other humans affects the cat. After Turner ^[7].

Those factors that have been shown to influence the establishment of a first relationship (see Turner ^[8]) appear in the middle of the figure, including stroking the kitten during the sensitive period of socialization ^[9]. It has been hypothesized that a well-socialized cat can withstand many negative experiences with other people before becoming wary of such contacts and requires very few positive experiences with a new guardian to become friendly and trusting of that particular person (Turner ^[10]). On the other hand, a cat poorly socialized to people as a kitten needs many positive experiences to accept a new person, but few negative experiences with that person to

confirm its wariness and fear of people. This has enormous welfare implications for cats in shelters in that poorly socialized cats take up limited space for longer while waiting for the personnel to find such a patient new owner, and well-socialized cats can be rehomed more easily and quickly. An ethically acceptable method to test the effects of negative (perhaps just lack of positive) and positive experiences with unfamiliar people needs to be developed and tested on cats of measurable socialization status (Kessler and Turner ^[11]) in order to test the model predictions.

3. Social Interactions with Humans

Turner's ethological studies of contact initiation between cats and their owners (summarized in Turner ^[10]) have resulted in many significant "effects" of different parameters and conditions that have been loosely interpreted. For instance, the more the cat of the relationship initiates the contact, the greater the total interaction time between the owner and the cat in that relationship. In future research and after controlling for the usual amount of contact initiation by the owner, one could instruct the owner to experimentally increase (or decrease) his or her initiation to test if that indeed affects total interaction time in the relationship. Whether more contact time is indicative of a more harmonious relationship remains to be examined. Or, the author found that indoor cats initiate a higher proportion of the contacts with the owners than cats that are allowed outdoors do when at home and speculated that the indoor cats might be compensating for lower levels of environmental stimuli indoors with increased human contact. Not only could examination of novel objects change by temporarily restraining an outdoor cat's access to the outdoors for a day or two (which might cause stress, indeed an additional important research question) but also the amount of contact initiation by the cat. However, a confounding factor would be that cats might be allowed outdoors because they are (or are perceived to be) less sociable. All of these points are important, since they could affect the human–feline relationship and/or cat welfare.

Turner ^[12] found a significant positive correlation between the owner's willingness to comply and the cat's willingness to comply with the partner's wishes to interact (all objectively defined) at other times. Again, correlations do not indicate causality, but this could easily be tested by experimentally instructing the owner not to comply, or to more frequently comply with the cat's approaches and vocalizations.

On a more practical level, men sometimes complain that household cats prefer to interact with the women in an abode (or even like them better). During public lectures, the author has often suggested that they feed the cats several days in a row (which often women regularly do), and/or to move down to the level of the animals when interacting (which women have been found to do, Mertens ^[13]) to elicit a change in the cats' interactive behavior. These are but two simple manipulations, which have never been tested but show promise for improving the men's relationships. Whether female cats tend to approach men and male cats approach woman in a standardized situation has never been investigated (again an unanswered question), but it is of general interest also to potential cat guardians.

The results of studies by Flegr et al. in Prague must be mentioned here as well. Even though many studies have indicated positive effects of companion animals on human health and well-being, the participants in most of those

were usually aware of the purpose of the studies; when this was not the case, keeping pets, especially cats, and even more so, having been injured by pets, was negatively associated with a number of aspects of quality of life [14]. Cat scratches, relative to cat bites, were more often associated with unipolar depression in a cross-sectional study of humans (probably due to infection with *Toxoplasma*) [15]. Furthermore, a strong gender effect of toxoplasmosis has been found on the pleasantness attributed to cat urine odor [16]: While infected women rated cat urine odor as being less pleasant than noninfected women, infected men rated the same odor as being more pleasant than did noninfected men, the differences being statistically significant. The role of odors (both feline and human) should probably be considered in any future study of cat–human interactions examining differences between men and women, male and female cats.

4. Social Cognitive Abilities in Cats

Social cognition in cats has just begun to awaken the interest of researchers, and Vitale and Udell [17] provided the first review of what we know and what we still need to investigate. They identified largely unexplored areas and suggested the following questions for future research: Do cats alter their social behaviors for communication with humans? Are there differences in the cognitive abilities of feral, shelter, and household cats? Do lifetime experiences, even training, influence cat cognition? The latter will also be of interest to disentangle such factors as age and breed that may influence the working and long-term memory of cats. Furthermore, new tests of perception abilities in cats should also include olfaction, not just vision, since olfaction plays an important role in the social lives of cats but probably also individual recognition of humans. Studies have found evidence that cats can distinguish between individual humans, and Saito et al. [18] demonstrated that they can distinguish between the voices of their owners and strangers. Although we now have good descriptions of cat vocalizations, we need more work on what they mean when they employ them in interactions with humans; here, the phonetic methods first used by Schötz et al. [19] might be helpful.

Even though Miklosi et al. [20] had already shown differences between dogs and cats in their ability to use human pointing gestures, especially that cats lacked some components of attention-seeking behavior compared with dogs, Pongracz et al. [21] in Hungary demonstrated that cats were indeed able to read and follow human gaze for referential information. Galvan and Vonk [22] determined that cats were only moderately sensitive to human emotions indicated by postural and vocal cues, but particularly so when displayed by their owners as opposed to strangers. The latter implies that learning is probably involved. Rieger and Turner [23] found a tendency for cats to react to negative moods of their owners when close to them with more vocalizations and flank-rubbing, while Turner, Rieger, and Gygas [24] later confirmed that cats alleviated negative moods, comparable to the effect of a human partner.

Especially for high-intensity emotions, Quaranta et al. [25] demonstrated experimentally that cats are able to cross-modally match pictures of emotional faces with their related vocalizations in both conspecifics and humans. These authors proposed that cats have a general mental representation for the emotions of their social partners both conspecific and human, but that remains to be proven.

All of the above-mentioned results and unanswered questions have significant implications for understanding the feline–human relationship and, in many cases, improving the welfare of the cats in such relationships.

5. The Ecology of Predation by Domesticated Cats

Ever since Churher and Lawton ^[26] in 1987 through Loss, Will, and Marra ^[27] in 2013 and later, outdoor cats have been accused of eliminating wildlife, especially bird species but also small mammals, and reducing biodiversity. Although there is no doubt about the truth of this on small oceanic islands where cats have been introduced (and sometimes left behind) by humans and the potential prey species lacked defensive strategies having evolved in the absence of endemic predators (Fitzgerald ^[28]; Fitzgerald and Turner ^[29]), Lynn et al. ^[30] have questioned the “moral panic” over outdoor domestic cats destroying wildlife and reducing biodiversity. In a very recent review, Turner ^[31] has summarized what is known about cat predatory behavior, considered those facts in a fair appraisal, and explained why the results of such studies as those mentioned at the outset have been overrated and misinterpreted by many conservationists, wildlife biologists, and the media. In particular, although any number of studies have extrapolated the numbers of prey items carried home by the estimated number of cats roaming outside and arrived at enormous numbers (millions to billions), none have ever mentioned the estimated prey population size. When one considers this for the Loss et al. ^[27] study calculating 1.4 to 3.7 billion birds annually in the USA and juxtapositions this to the 20 billion birds breeding each year according to the US Fish and Wildlife Service, those cats are taking what one might expect for a normal predator–prey relationship. Furthermore, there has been only one long-term (3 year) study of cat predation at all life stages on a close-to-the-ground breeding songbird population in an area densely populated with cats ^[32]. The authors were able to calculate predation rates on all life stages of the birds and demonstrated that the cats did not push this songbird population into “sink” status. Concerning affects on biodiversity, it is important to realize that local effects, especially what we can see around our residential areas, only contribute to alpha-diversity, but what counts on the species level is gamma diversity—which is rarely mentioned (Turner ^[31]). Alpha diversity is measured very locally in individual habitats; beta diversity is a measure of the heterogeneity between habitats; while gamma diversity (or biodiversity) is the overall species diversity of a range of habitats or communities within a larger region ^[33]. There has now been sufficient research on methods to reduce cat predation on birds and small mammals (from temporary confinement and over supplemental feeding to small bells and colorful collars), but more studies are needed to (1) put predated prey numbers in relation to estimates of total prey population size; (2) consider the effects of cats on reptiles and amphibians (again, juxtaposed against prey population estimates in a larger region); and (3) measure changes in the productivity of local prey populations over longer periods as Weggler and Leu ^[32] did.

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