

The prevention of undesirable behaviors in cats: effectiveness of veterinary behaviorists' advice given to kitten owners

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Abstract

Cats can form a strong relationship towards the owner and are thought to accept the advantages to live within a human family but behavioral problems are often present and they represent the cause of death for a number of these animals in most Western countries. Because cats younger than one year are at highest risk, the moment of adoption may be crucial in the development of a good cohabitation. Aim of this study was to evaluate the efficacy of a pre-defined set of suggestions provided to kitten owners in order to prevent the main undesirable behaviors of the domestic cat. 91 cats divided into two groups (control and experimental) are involved in the research. Owners of the cats of experimental group have been involved in the study in two steps. The first step was at the first veterinary check-up of their pets, when kittens were 2.8 ± 0.8 months old and they have been provided with advice aimed at preventing behavioral problems. As a second step, they have been interviewed ten months later. Owners of the control group were met and interviewed only once, during the first vaccination recall visit. Results show a significant higher percentage of owners belonging to the control group (43.5%; $\chi^2=7.214$; $P=0.007$) complained about one or more undesirable or unpleasant behavior of their cat. The evaluation of feeding occurrences revealed a difference ($\chi^2=11.480$; $P=0.012$) in the way owners fed their cats: owners of the experimental group fed their cat more often compared (71.4% vs 30.8% three or more times a day; 14.3% vs 30.8% twice a day).

More experimental cats lived mainly outdoor but having the indoor option available (42.2% vs 21.7%).

Cats of the experimental group were more reported to climb on some or specifically allowed furniture, whilst a greater number of cats in the control group climbed on every kind of furniture ($\chi^2=5.820$; $P=0.016$).

A significant difference was found for excessive vocalizations, higher in the control group (21.7% vs 4.4%; $\chi^2=4.529$; $P=0.033$).

The results of the current study support the hypothesis that providing an owner with advice regarding their own behavior toward their cat and the appropriate education of their kitten leads to better informed owners, but also cats showing less undesirable behaviors.

Key words: behavior; cat; owner; prevention; veterinary visit; kitten.

Introduction

Although dogs are known to be “man best friends”, establishing a reciprocal, complex bond with the owner (Blouin, 2003; Mariti et al., 2013), cats too are important for people (Zasloff, 1996) and can form a strong relationship towards the owner (Edwards et al., 2007).

Cats are thought to accept the advantages to live within a human family and territory, without abandoning their auto-determined and independent behavior (Neville, 1996). The ideal cat for humans is socialized, sociable, curious and able to adapt to every situation (Bernstein, 2007). Moreover, in indoor cats cleanliness, affection and playfulness are also appreciated. However, cat behavior and cat-human relationship are based on many variables (Adamelli et al., 2004). Therefore the moment of adoption may be crucial in the development of a good cohabitation. A new pet means play and pleasant moments, and probably many physical and psychological advantages, but it also requires responsibility and can arise challenges for the owners if the pet is affected by behavioral problems (Hunthausen and Seksel, 2004).

Regarding the cat, the most common problems arise as a consequence of the physical containment imposed to a not truly domesticated animal (Driscoll et al., 2009), as well as the misunderstanding of its actual needs, poor or absent environmental stimulations or heavy modifications of it, unrealistic owner expectations and disappointing cat-owner interactions (Turner, 1991), but also from human misinterpretations of natural feline behavior repertoire (Frank, 2004; Bowen and Heath, 2005; Seksel, 2009). In fact, behaviors such as scratching or jumping on the furniture, nocturnal activities, seeking for attention, plant chewing, roaming, vocalizing and chasing (Frank, 2004) are normal behaviors for the species, but they can be perceived as problematic by owners. Perceived undesirable behaviors for the owners can seriously compromise the human-animal bond and lead to relinquishment, abandon or euthanasia of the pet (Frank, 2004; Rochlitz, 2009). Moreover, behavioral problems represent the cause of death for a number of cats and dogs in most Western countries and animals younger than one year are at highest risk (Hunthausen e Seksel, 2004). It is therefore important for professionals dealing with the prevention and treatment of these problems to have an understanding of feline social structure and of the communication systems that are central to the maintenance of an affective feline society (Bowen and Heath, 2005).

In the last years, behavioral medicine spent a great effort in prevention by providing owners with suggestions about the normal behavior and behavioral development of their new pet, helping owners in raising realistic expectations (Gazzano et al, 2008). Owners are educated about how to basically train their pet, how correctly interpret the motivations underlying cat behaviors and how to manage, modify or simply embrace their expression (Hunthausen and Seksel, 2004). Owners understanding their cat's behavioral development, its needs and communication language are better able to prevent some problems from occurring. On the contrary, cats not adequately trained or deprived by an environment not enabling a congruous behavioral development could incur in behavioral problems such as: inappropriate play, aggression toward people, house soiling, attachment problems, overgrooming and car phobia (Bowen and Heath, 2005).

Thus, veterinary surgeons need to educate clients and teach them to see the world from the cat's perspective (Seksel, 2009). The first visit could be the better time for the veterinarian to open a good relationship with the pet and its human family, in order to prevent or manage and treat any behavioral problem (Overall, 1997; Beaver, 2003). Some veterinarians may prefer to address only those problems or concerns that are raised by the pet owner. However, preventive advice should be offered to all new pet owners, so that they know what is needed and what to expect when raising a new pet (Landsberg et al., 2003). Such approach was found to be effective in the prevention of behavioral problems in dogs (Gazzano et al., 2008).

This study aims at evaluating the efficacy of a pre-defined set of suggestions provided to kitten owners in order to prevent the main undesirable behaviors of the domestic cat.

Materials and methods

Subjects

This study involved 91 cats divided into two groups (an experimental and a control group). The experimental group was composed by 45 cats (55.6% males and 44.4% females, 60.0% of them being neutered when met the second time, see below), aged 12.8 ± 0.8 months, adopted at 2-4 months. The control group was composed by 46 cats (47.8% males and 52.2% females, 50.0% of them being neutered), aged 12.4 ± 1.2 months, living with their owners for at least six months.

Cats of both groups had never been injured, badly sick or surgically treated beyond neutering.

Owners of the experimental group have been informed and involved in the study in two steps. The first step was at the first veterinary check-up of their pets, when kittens were 2.8 ± 0.8 months old. At that time, owners have been provided with advice aimed at preventing behavioral problems (see Table 1), presented to the owners in a standardized manner, within 25 minutes, by a behaviorist veterinarian. As a second step, they have been interviewed ten months later. Owners of the control group were met and interviewed only once, during the first vaccination recall visit. Most of the owners (86.7% of the experimental group and 91.3% of the control group) were not at their first experience of cat ownership.

Questionnaires

Data were collected by means of a 48-item questionnaire containing closed and half-open questions, identical for both groups, during the first yearly vaccine booster visit. The questionnaire was completed by the behaviorist during a direct interview with the owners in the presence of the cat. The questionnaire was divided into four sections formed by:

1. Items about owner (age, sex, previous experience with cats);
2. Items about cat anagraphical data and history (time of adoption, origin, breed, length of maternal cares, and early intra-specific and inter-specific socialization experiences);
3. Items about environmental and social enrichment (indoor, outdoor or mixed life style; available facilities; number of bowls; number and daily management of litter; presence and use of different enrichment tools; human-cat and cat-cat relationships in the household);
4. Items about undesirable behaviors (response to handling, strangers, people in the family, other animals in the household, domestic noises, traffic noises), aggression (towards whom, with which frequency, how it starts, to which part of the body it's directed and how it stops), destructiveness, house soiling, repetitive/inappropriate behaviors (suckling, chewing, eating and/or drinking anomalies, overgrooming, and excessive vocalizations).

When questions were half-open, similar answers were then grouped into categories for analysis. In case descriptions were ambiguous, nonspecific, or pertaining to complex behaviors, more detailed information was obtained from the owners to understand their responses.

Statistical analysis

Data was analyzed in order to get a descriptive trend of the answers, which are presented in percentages for ease of interpretation. The number of observations in both groups was compared

with the Chi-square test ($P < 0.05$); when the expected frequency of the observations was lower than 5, the Fisher's exact test was used ($P < 0.05$).

Results

In this chapter only results regarded as important have been reported. Data regarding answers for which the number of observations was very similar in the two groups or the number of occurrences was too low to be analyzed have been omitted.

Owner satisfaction

A significant higher percentage of owners belonging to the control group (43.5%) compared to the owners of the experimental group (15.6%; $\chi^2 = 7.214$; $P = 0.007$) complained about one or more undesirable or unpleasant behavior of their cat. In the same way, a significant higher percentage of owners of the control group (45.7% vs 4.4%; $\chi^2 = 18.328$; $P = 0.000$) sought for advice before the interview for a sake of curiosity or prevention as well as for finding a way to solve the problems.

Cat management

The evaluation of feeding occurrences revealed a difference ($\chi^2 = 11.480$; $P = 0.012$) in the way owners fed their cats. In detail, owners of the experimental group fed their cat more often compared (71.4% vs 30.8% three or more times a day; 14.3% vs 30.8% twice a day), whilst people of the control group fed the cat at each request more often than the owners of the experimental group (38.5% vs 14.3%).

The type of environment where the cat lived was not significantly different between the two groups ($\chi^2 = 5.137$; $P = 0.077$). However, owners of the experimental group were more prone to provide their cat with an outdoor access. As a matter of fact, more experimental cats lived mainly outdoor but having the indoor option available (42.2% vs 21.7%), a similar number of cats of the two groups lived mainly indoor but having the outdoor option available (26.7% vs 28.3%), while more control cats were strictly indoor (28.9% vs 47.8%).

Regarding the use of the indoor space, more cats in the control group were allowed to access all the rooms (91.3% vs 64.4%; $\chi^2 = 7.779$; $P = 0.005$).

Undesirable behaviors related to the environment

The two groups of cats displayed different behaviors against furniture ($\chi^2 = 7.123$; $P = 0.028$). In detail, cats of the experimental group were more reported to climb on some or specifically allowed furniture, whilst a greater number of cats in the control group climbed on every kind of furniture (see fig. 1; $\chi^2 = 5.820$; $P = 0.016$).

A greater number of cats in the control group sometimes or even habitually hanged on the curtains (see fig. 2; $\chi^2 = 3.940$; $P = 0.047$).

In case of domestic noises, a different tendency was noticed between the two groups: in fact a greater percentage of cats in the control group displayed an escaping response in comparison to the experimental one (24.4% vs 37.0%; n.s.). Moreover, more cats in the experimental group showed curiosity thought staying away from the noise source (35.6% vs 19.6%; n.s.).

A significant difference was found for excessive vocalizations, higher in the control group (21.7% vs 4.4%; $\chi^2 = 4.529$; $P = 0.033$).

Undesirable behaviors related to social relationships

Seeking for social contact was found to be very high in both groups (97.8% of experimental cats vs 95.7% of control cats), but they showed a great difference in the time the cat actively asked for a physical contact and the type of requested contact. Cats of the experimental group sought for physical contact (see fig. 3; $\chi^2 = 11.651$; $P = 0.011$) when the owners went back home, whilst cats

belonging to the control group were used to seek for contact while the owner was laying in the bed or on the sofa. Concerning the type of contact (see fig. 4), experimental cats showed more rubbing on the owner ($\chi^2=5.14$; $P=0.020$) and asking for physical contact ($\chi^2=9.14$; $P=0.003$) than the ones of the control group; no significant differences existed between two groups about kneading and licking the owners.

A greater percentage of experimental cats did not show negative responses to handling at any part of the body (82.2% vs 58.7%; $\chi^2=6.52$; $P=0.010$). The veterinary visit seemed to be better tolerated by experimental cats, but the difference was not statistically significant (71.1% vs 56.5%; $\chi^2=1.511$; $P=0.219$).

In the experimental group, 6.7% of cats showed aggression towards people, whilst it was displayed by 17.4% of cats in the control group, though the difference was not statistically significant ($\chi^2=1.556$; $P=0.212$).

As for the cohabitation with other pets, no cats in the experimental group were reported to have problems, whilst in the control group some cats were reported to have unfriendly relationships (6.8%), to display fear of (3.4%) or indifference to (6.9%) the other cats in the household. Moreover, in the control group many cats (28.6%) showed indifference to the family dog, whilst in the experimental group such indifference was not observed and owners reported that the relationship between cats and dogs was good with all (85.7% vs 57.1%) or, at least, with most part of other animals.

Discussion

In dogs, providing behavioral and training advice during the first veterinary check-up has been demonstrated to be effective in preventing some common behavioral problems (Gazzano et al., 2008). The results of the study seem to confirm that the key for preventing behavioral problems is to help owners in the understanding of why their cat behaves in a given manner, providing instructions on how to manage, modify or embrace their cat behaviors (Seksell, 2009). As a matter of fact, it was found that a positive role is played by preventive advice given to cat owners at the first veterinary visit of the kitten: advised owners rarely referred one or more undesirable behaviors, they claimed much more satisfaction in their pet behavior and they less needed to seek for behavioral advice. Data suggests also that, if owners did not get behavioral and training advice, in many cases they will seek for them afterwards, possibly when problems have already arisen.

Therefore providing simple, short advice at the very beginning of a kitten-owner relationship is important in, pleasing the owners, protecting cat welfare and cat-owner relationship, but also in offering a complete service to the owners.

Veterinary surgeons have the duty to be aware of animal behavior and to anticipate and recognize its alterations (Overall, 1997; Landsberg et al., 2003; Bower, 2004; Landsberg et al., 2008; Neville, 2004), thus spreading knowledge and suggestions to cat owners.

When talking about undesirable behaviors in cats, we are dealing with a collection of behaviors which are normal but perceived as problematic by the owners (Mengoli et al., 2013) or which are truly problematic (Patronek et al., 1995; Salman et al., 2000). In the latter case a battery of underlying causes should be taken into account, such as the owner inability to satisfy the cat's needs (Rochlitz, 2009) and life conditions in which cats are kept (Turner, 1995; Overall, 1997). For instance, cats living strictly indoor are much more likely to develop behavioral problems compared to cats having outdoor access (Hubrecht & Turner, 1998; Rochlitz, 2000). In our sample, there was a slight prevalence of cats having outdoor access in the experimental group, which may partially

Commentato [C1]: Cosa dicono esattamente? Che sono comportamenti normali?

explain the least undesirable behaviors displayed by this group. However, it is possible that this difference in cat management is due to a better understanding of cats' needs, which was one of the aim of the provided advice.

A better knowledge/understanding of feline ethology was also found in the experimental group about food management: such owners provided cats with more meals during the day, which is more in line with their preferences of solitary predators (Picco and Natoli, 2009; Bradshaw et al., 1996). On the contrary, many owners in the control group provided food at every request of the cat, possibly leading to the development and reinforcement of undesirable request behaviors.

Educating a cat means allowing it to have a "cat life style" in an environment thought for humans, harmonically and respectfully with the species differences (Rochlitz, 2009). Many authors (Hunthausen & Seksel, 2004; Overall & Dyer, 2005) claimed the importance of providing a cat with a three-dimensional space organization: cats seek for high places because they guarantee security and territory control, and owners should satisfy this need by means of cat trees and playing stations where cats can climb, balance and scratch their claws. Analyzing the results of the section regarding undesirable behaviors related to the environment, climbing was more frequently expressed by cats of the control group. In particular, cats belonging to the experimental group climbed only on some furniture or on the ones they were allowed to, whilst the control cats climbed on all furniture, including curtains. Climbing the sofa, the carpet or the curtains are naturally kittens' favourite activities (Mengoli et al., 2013), and preventing destructions due to those behaviors can be done by an appropriate education and an accurate environmental enrichment.

Scratching furniture was more frequent among cats belonging to the control group. Scratching is the expression of a common cat behavior exploited in an unfitting environment (Heidenberger, 1997, Rochlitz, 2005, Mengoli et al., 2013). Once a cat has been adopted, the owner can prevent furniture scratching by installing a cat tree, locating it in a prominent position and possibly close to the resting area of the kitten (Hart, 1972; McKeown et al., 1988; Hunthausen and Seksel, 2004; Seksel, 2009) and inducing the scratching spraying on it feline interdigital pheromones (Pageat et al., 2010). Thus results of the current study suggest that owners of the experimental group provided kittens with a better environment.

About habituation to domestic noises, individuals of the experimental group showed a better habituation, although not statistically significant. Without a proper exposition to different stimuli in the first weeks of age, new situations could cause fear or aggressive responses (Hunthausen and Seksel, 2004) and probably both experimental and control cats lived in a stimulating environment during their development.

Among the undesirable behaviors related to social relationships, questionnaires have revealed a statistically higher number of cats in the control group showing excessive vocalizations. Mertens and Turner (1988) found that vocalizations vary on the basis of human reactions, being reinforced by the owner and becoming difficult to extinguish (Beaver, 2003), due to the lots of energy needed (Haupt, 2000). It can be hypothesized that owners of the control group were not aware of this risk, rewarding a behavior which became annoying.

Moreover, data revealed a better cat-human relationship if the owners received behavioral advice. In particular, cats belonging to the experimental group sought for physical contact with their owners more often and at each homecoming, a ritual which is particularly loved by humans. Many more cats of the control group, instead, sought for physical contact while the owners were lying on a bed or a sofa, which may result disturbing to some people, e.g. if they are woken. The type of contact is

also important: rubbing and physical contact were more expressed by the cats belonging to the experimental group. Rubbing the chin, the head and the flanks are typical olfactory marking behaviors and social communication skills (Cameron-Beaumont, 1997), and many owners tend to increase the occurrence by reinforcing the cat (Neville, 1996), likely because such behaviors are very appreciated by cat owners. Mertens (1991) found that cats allowed to have an outdoor access rub on their owners more than those confined indoor. Both factors, rewarding and outdoor, may explain why cats of the experimental group showed it more.

Even if the difference was not statistically significant, more cats in the experimental group showed a good attitude while handled in different parts of the body and they tolerated better any medical treatment proposed by the veterinary surgeon, showing a better socialization and a correct habituation to human handling. Hunthausen and Seksel (2004) suggested that owners should get their kittens used to take a bath, to have claws trimmed and to be brushed, in order to avoid fear or negative responses; moreover, they should act as veterinarians, simulating a checkup of ears and eyes, opening the mouth and handling the cat in the same manner a veterinary surgeon will do in an actual visit. The same authors underline that such manipulation should be done gently and slowly, without forcing the cat, but positively reinforcing him/her each time the session is well tolerated. A positive response to handling is also important in preventing aggression, which can appear as soon as a physical contact or a containment is tempted (Heath, 2004). About aggression toward people, no statistical difference was noted between two cat groups, even if a greater percentage of control cats resulted aggressive. Bowen and Heath (2005), Curtis (2008) and Seksel (2009) report that aggression often arises from inappropriate play proposed by owners to the cat, offering hands and feet. Owners should not allow their animal to play aggressively and they have to carefully withdraw when their cat behaves badly. Moreover, owners should never play with their cat offering parts of their body nor exciting it; redirecting the play behavior to cat toys should be sufficient (Frank and Dehasse, 2003; Crowell-Davis et al., 1997). Owners must be advised about cat aggressiveness and informed about the fact that this behavior is treated through an adaptation period after adoption (Marder et al., 2007). Seksel (2009) refers the importance of providing the cat with proper cat toys that should be changed at regular intervals in order to keep the cat interest high. Inappropriate play behavior is more commonly observed in orphan kittens who have never learn to control play intensity by interacting with their mother and playing with their siblings (Haupt, 1985; Overall 1994_a; Overall, 1994_b; Horwitz and Neilson, 2007; Seksel, 2009) or poorly manipulated kitties (Reisner et al., 1994). Finally, data reveals that cats belonging to the experimental group have a better relationship with other animals in the family: owners of the experimental group seemed to understand the importance of early socialization experiences for their pets. Many problems related to irritability and scarce adaptability would not arise in adult cats if they were intensively manipulated and exposed to a number of stimulations and experiences, such as contacts with other cats and dogs, in the sensitive period (Neville, 1996). Cats gaining a minimal level of socialization to other species at eight weeks of age could display aggressive behaviors towards people or dogs (Beaver, 2003) or, anyhow, they could become asocial adults showing fear or flying behaviors (Bradshaw, 1992; Hunthausen & Seksel, 2004). Bowen and Heath (2005) claimed that veterinary and breeders share the goal of producing emotionally stable kittens, adaptable to every life style they will be exposed to and able to happily cohabit with people and other animal species.

Conclusions

The results of the current study support the hypothesis that providing an owner with advice regarding their own behavior toward their cat and the appropriate education of their kitten leads to better informed owners, but also cats showing less undesirable behaviors. Moreover, being aware of the ethological needs of a cat and how to train it at best, owners build a strong and satisfying bond with their cats and protect their welfare. Therefore, providing behavioral advice to kitten owners should be regarded as an effective tool and a service that should be provided by veterinarians for their clients.

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• Table 1-Advice provided to kitten owners of the experimental group

Cat behavior	<ul style="list-style-type: none"> • Behavioral development of the kitten, focusing on the importance of early socialization to be guaranteed • Importance of gradualness in the cat habituation process to new social and non-social stimuli • The double nature of cats as predators and preys • Emphasis on the need for environmental enrichment • Importance of daily but not constrained physical contact and handling
Advice on training and management	<ul style="list-style-type: none"> • Punishment denial • Use of positive reinforcement to increase the likelihood that desirable behaviors will occur • Management of litter box, food and water bowls, space (tridimensional view, resting places, hiding facilities etc.) • Need of a cat tree and how to train a cat to use it • Importance of feeding the cat several time a day and providing water and fresh herbs • Proper play: which kind of toys should be provided to the cat, how and for how long they should be presented • Training: how to redirect undesirable behaviors on proper targets (avoiding hands, feet, and furniture) • Habituation to the tray and to the car

FIG.1: Percentage of cats climbing on different pieces of furniture

Commentato [C2]: Togliere dal titolo del grafico

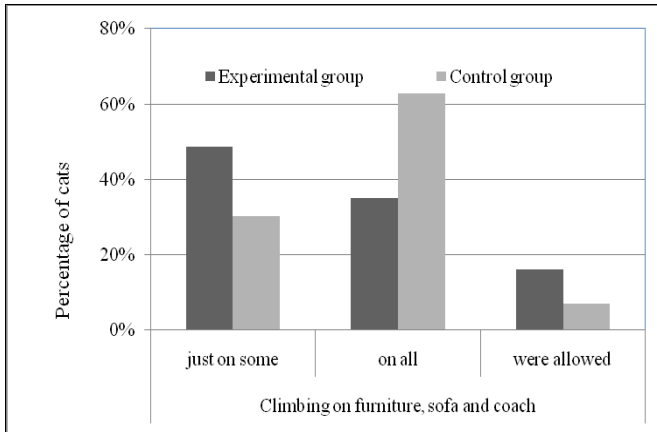


FIG:2: Percentage of cats climbing on curtains and scratching

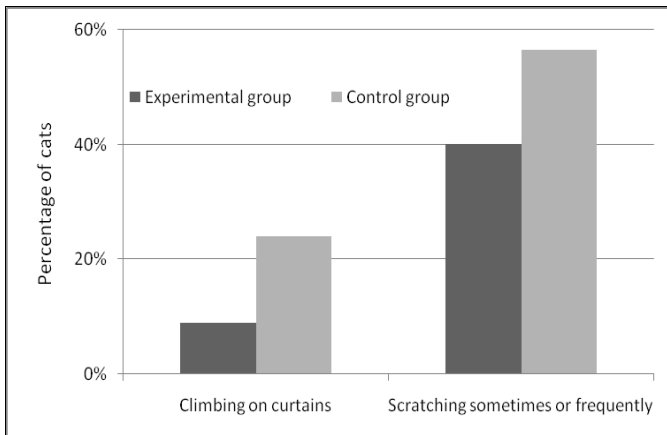


FIG. 3: Occurrence of physical contact between cat and owner.

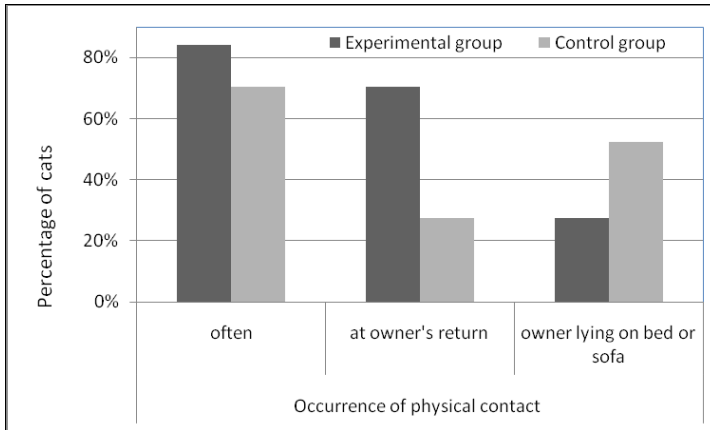


FIG.4: Type of contact requested by cats to the owner

