Factors Relevant to Adoption of Cats in an Animal Shelter

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RESEARCH REPORT

Factors Relevant to Adoption of Cats in an Animal Shelter

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This study performed a multifactor analysis of the effects of the provision of toys, cage location, and cat characteristics (activity level, age, sex, and coat color) on 111 cats available for adoption in a nonhuman animal shelter. The analysis revealed a greater adopter viewing of cats housed at eye level and of those with toys—even though the toys did not affect the cats’ behavior. Adopters viewed cats who were active for longer periods of time. The active cats were more likely to be adopted during the 16-week study than cats who were less active.

Recent studies in shelters for nonhuman animals suggest that a cat’s activity level, playfulness, and cage enrichments (Gourkow & Fraser, 2006) can affect the cat’s adoptability. Adopters’ perception of a shelter animal may even be affected by the mere presence of toys in the animal’s cage, whether or not the animal actually plays with them (Wells & Hepper, 2000). Surveys of adopters and historical analysis of adoption records, however, suggest that coat color and appearance take precedence over enrichment and behavior when a cat is considered for adoption (Lepper, Kass, & Hart, 2002; Podberscek & Blackshaw, 1988). As in zoos, interest in particular animals may also be a function of ease of observing the animal (Davey, 2005; Johnston, 1998).

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This study examined the relationship between toy enrichment, cat activity level, and adopter interest while taking cat characteristics such as coat color and cage location into account. It was hypothesized that toys would both increase cat activity and adopter interest and promote adoption.

**MATERIALS AND METHODS**

Subjects and Housing

Subjects were housed at the American Society for the Prevention of Cruelty to Animals shelter in New York City. Cats included in the study were domestic shorthair breeds between 12 and 39 months of age, with no known behavior or health issues; the cats had resided in the shelter at least 3 but no more than 168 days. The study included 111 cats meeting these criteria (47 neutered males and 64 spayed females; mean 22 months of age; mean 23 days in the shelter at study commencement).

The cats were singly housed in the feline adoption ward of the shelter, which consisted of 24 single cages within a 54 m² area. Each cage (68 cm high × 62 cm deep and 66 to 91 cm wide) contained a shelflike perch, cardboard litter box, metal water bowl, and a cat bed. Cage doors were clear glass with 14 to 22 small air holes. The cages were arranged in two tiers at 46 cm and 132 cm above the floor. Five to 8 cats were observed at once. Cage location and tier were balanced across treatment groups by evenly distributing study cats among available cages in the room 18 hr before observations began. Nonstudy cats in the room numbered between 16 and 19. Caretakers minimized interaction with the cats during observations; otherwise, husbandry continued as usual. The cats were fed at 05:30 and 17:30.

Apparatus and Materials

Cats were assigned to either the TOY \((n = 55)\) or CONTROL \((n = 56)\) group. TOY cats were each given two toys 10 min before observations began: a yellow plastic ping-pong ball and a “Cat Dancer™” type toy made of a 65 cm piece of flexible yellow plastic strapping fed through a hole in a rubber stopper wedged in the cage door. Fifteen centimeters of the strapping rested outside the cage, enabling potential adopters to move the inner segment. However, very few did so. CONTROL cats did not receive toys. None of the cats had prior experience with the toys while in the shelter. Prior exposure to other toys was unknown.

Procedures

The study took place over 16 weekends, Day 1 (Saturday) and Day 2 (Sunday), from March through July of 2007. For each weekend, 5 to 8 cats who met...
the age, health, behavior, breed, and length-of-stay criteria and who had not
previously participated in the study were assigned to the two treatment groups
(balancing for color, sex, and age). The treatment condition remained in effect
over Days 1 and 2, and adoptions were tallied over both days. Observations of
cat behavior and of potential adopters, however, were conducted only on Day 1
from 11:00 (shelter opening time) until 17:30.

On Day 1, the observer (J.M.F.) sat quietly in the adoption ward recording
both the number and times each study cat was viewed and the duration of
each observation. Viewing was operationally defined as potential adopter moving
within 3 ft (0.914 m) of a cat’s cage and spending at least 3 s, face turned toward
the cat. Viewing ended when the adopter stepped away from the cage, face turned
away from the cage for at least 3 s. To observe the behavior of the study cats,
instantaneous scan samples were conducted at 30-min intervals from 11:00 to
17:30. Cats were recorded as being inactive (lying down, sleeping, or sitting
still) or active (any other behavior).

Data Analyses

The effect of toys, cat activity level (percentage of scans the cat was active),
cage location (top or bottom tier), and adoption status (whether the cat was
adopted during the study) on total viewing time and on number of viewings by
adopters was analyzed using the general linear model (GLM). Because the study
was conducted over 16 weekend replicates, study day was treated as a blocking
factor, as were coat color, age in months, sex, and number of days the cat had
been in the shelter at the start of the study. All factors were treated as additive,
fixed effects. Number of viewings was square-root transformed, average viewing
time was logarithmically transformed, and percentage of scans the cat was active
was angular transformed. The assumptions of parametric analysis were verified
through an inspection of residual plots versus the fitted values and a histogram
of the residuals.

The following GLM model was used: $Y = \text{treatment group} + \text{percentage}
of \text{scans the cat was active} + \text{cage location} + \text{adoption status} + \text{study day} +
\text{coat color} + \text{age} + \text{sex} + \text{days in shelter at start of study}$, where $Y$ = either
number of viewings or average time viewed. Percentage of scans the cat was active,
age, and days in shelter at start of study were treated as covariates. Using
the resulting ANOVA tables, the partial correlation was calculated between the
percentage scans the cat was active and either the number of viewings or the
average viewing time by taking the square root of the ratio: adjusted sums of
squares for percentage of scans active divided by adjusted sums of squares for
percentage of scans active + adjusted sums of squares error.

The effect of treatment, number of viewings, cage location, and adoption
status on cat activity level was also analyzed using GLM. Blocking factors,
transformations, and verification of the assumptions of parametric analysis were completed as mentioned earlier. The GLM model was percentage of scans cat was active = treatment group + number of viewings + cage location + adoption status + study day + coat color + age + sex + days in shelter at start of study. Covariates were number of viewings, age, and days in shelter at the start of the study. Analyses were performed using Minitab Version 15 software (Minitab, State College, PA). A statistic was considered significant if $p < .05$.

**RESULTS**

Some cats were viewed multiple times, sometimes by the same and sometimes by different potential adopters. Even though the presence of toys did not affect cats’ activity level, $F(1, 83) = .77$, $p = .38$, cats with toys were viewed more times than cats without toys, $F(1, 83) = 10.56$, $p = .002$. Cats in the top-tier cages were also viewed more times than cats in the bottom tier, $F(1, 83) = 20.31$, $p < .001$, and tended to be more active than those below, $F(1, 83) = 3.15$, $p = .08$. Cats with higher activity levels tended to be viewed more times than less active cats (partial $r = .29$, $p = .058$); cats who were adopted during the study tended to have been viewed more times than cats who were not adopted, $F(1, 83) = 3.72$, $p = .057$.

More active cats were viewed, on average, for a significantly longer duration than were cats who were less active (partial $r = .44$, $p < .001$), as were cats in the upper tier cages, $F(1, 83) = 6.96$, $p = .01$. Cats with toys tended to be viewed for longer periods of time, $F(1, 83) = 3.62$, $p = .06$. There was no difference between cats who were and were not adopted during the study in terms of the average duration of viewing. Neither the number of times nor the duration of adopter viewing of cats was affected by coat color, sex, or age ($.15 < p < .47$).

Sixteen cats were adopted during the study: 6 CONTROL and 10 TOY cats. Cats who were adopted during the study had a higher activity level than those not adopted, $F(1, 83) = 8.05$, $p = .006). Because only 16 cats were adopted during the study, the effects of treatment, coat color, sex, or age on adoption were not able to be analyzed. The color group with the highest proportion of cats adopted was black cats (26%). Adopted cats were 62.5% male and 37.5% female. Among the study cats, the median age at adoption was 18 months.

**DISCUSSION**

The presence of toys on shelter cats’ behavior and adopter interest was examined. Even though the presence of toys in cages did not affect the cats’ behavior, cats
with toys were viewed more often than cats without toys. Adopters viewed cats in the upper tier more times than cats in lower tiers, and active cats were viewed longer than inactive cats. Adopted cats were more active and had been viewed more times than nonadopted cats. Coat color, sex, and age did not affect viewing by adopters.

Cats must be viewed before they can be adopted. In this study, cats who were adopted tended to have been viewed more times than those not adopted. Despite the toys’ failure to stimulate heightened cat activity, the toys did lead adopters to view cats more times than those without toys, and 10 of the 16 cats adopted were from the TOY group. Wells and Hepper (1992) found a similar effect of toy presence on adopter interest in shelter dogs.

Gourkow and Fraser (2006) found that the addition of toys to shelter cats’ cages increased adoptions. In the present study, toys placed in the cats’ cages resulted in cats being viewed for longer periods of time; however, due to the low number of total adoptions, the relationship between toys and adoption could not be statistically analyzed. We did find that more than half of the adoptions that occurred were from the TOY group. In contrast to the Gourkow and Fraser study, however, all the cages in the current investigation, even those in the CONTROL group, were already somewhat enriched: all cats resided in a cage with a bed, perch, semihidden area underneath the perch, litter box, and water bowl. In addition, bird sounds and classical music were played ambiently throughout the cat adoption area. In the Gourkow and Fraser study, the control cage featured only a litter box, water bowl, and towel. Addition of toy enrichment to those cages may have created an important contrast and therefore significantly affected adoption.

Possibly due to visibility differences, cats in upper tiers in this study generated more viewing by adopters than did cats in lower tiers. Unlike lower tier cats, those in the upper tier were visible even if they were sleeping in a cat bed or huddled under the perch. Davey (2005) reported such a link between visibility and exhibit staying power in zoos; Johnston (1998) noted that zoo visitors viewed exhibits for longer periods if the animals were in close proximity. In this study, upper tier cats tended to be more active than lower tier cats, possibly because they were being viewed more often and for longer duration than lower tier cats. This attention may have, in turn, further heightened their activity and generated even more adopter interest. Cats located in the upper tier cages may also have demonstrated increased activity because cats often use elevated areas as vantage points to assess their surroundings and the approach of people (Rochlitz, 2000). Fearful and anxious cats, as a result of being elevated, may have been less inclined to freezing and hiding due to a heightened ability to monitor their surroundings. Overall, the strategic stocking of cages that provide the best visibility of, and by, cats in an animal shelter may be a means to cost-effectively generate adopter interest in cats who have proved harder to place.
CONCLUSION

Similar to studies of zoo animals (Bitgood, Patterson, & Benefield, 1986; Johnston, 1998) and shelter dogs (Wells, 1996, as cited in Wells & Hepper, 2000), this study demonstrated that adopters prefer to both view and adopt cats who are active. Shelters may also find it beneficial, therefore, to find ways of generating activity in their cat wards. Although the addition of toys in cages was not effective in stimulating feline activity in this study, toys did attract observer attention; this, in turn, led to adoption. Further studies, designed to identify cage enrichments or other conditions that provoke the interest of both cats and potential adopters, could help shelter management to establish an environment that promotes adoption. In addition, because cat activity positively affects adopter viewing behavior and adoption, research investigating means to increase cat activity could have positive implications for the shelter field.

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