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Environmental Enrichment: A Cat`s Preferences

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Abstract

Environment enrichment refers to objects in the immediate environment that help to reduce anxiety or stress, in this context, referring to shelter animals. The past literature used for this study is specifically about cats in shelters and how cats who had cardboard boxes as environment enrichment showed significantly less stress and anxiety levels than those who did not have any environment enrichment. This study focuses on preferences for environment enrichment objects for cats; it included a cardboard box in accordance with the past literature as well as a cat bed, a laundry basket and towels taken from the laundry. It was hypothesised that the towels would be the preferred enrichment, though the results showed that it was the cardboard box that was the most preferred environment enrichment, being chosen seven out of ten trials (70%).

Keywords: Environment enrichment, preferences, cats, felines, cardboard box

It is not surprising that cats who live in shelters show high levels of stress, as the sudden surroundings of a new environment would be stressful to any species. Stressful experiences can have a major impact on the cats' welfare and may cause higher rates of diseases (Vinke et. al. 2014). A concern to many is how it may be possible to help reduce this stress in shelter cats. One solution that seems to come up often in related literature is the concept of environment enrichment. This refers to different kinds of objects that could be placed with cats in their cages in shelters that could potentially bring down their stress levels and in turn help them adjust to their new surroundings more efficiently.

A study conducted by Vinke, Godijin and Van (2014) focused on the stress experienced by shelter cats and if hiding in a box affected those stress levels. In this case, the box is

considered environment enrichment. This experiment was conducted specifically on cats who were new arrivals to the shelter. One group of cats were provided with a box in their shelter cage while the other group was not. There was a significant difference between the stress levels experienced by the two groups. Specifically, the group that had boxes had lower stress levels (Vinke et. al. 2014). Another notable detail was the variance seen in the stress levels in the different groups of cats. Those who were provided with a box showed minimal variance which in turn means that the box did have an effect, while the group of cats who did not have a box in their cage had a high variance of stress levels (Vinke et. al. 2014). By Day 14 of the study, the mean stress levels between both groups of cats was equal, though it is important to include that the group of cats who had boxes had actually reached that lowered stress level by the third day (Vinke et. al. 2014). These results show the importance of environment enrichment and the difference it can make in the cat's ability to cope with its new environment.

When it comes to taking advantage of the environment enrichment provided, it is quite obvious that shelter cats will indeed take the opportunity. A study conducted by Stella, Croney and Buffington (2014) focused on how cats reacted in different environments. The groups of interest for this particular study included the cats who were singly caged in either an enriched or unenriched environment. Cats who were in an enriched environment had hiding and perching opportunities while those in the unenriched environment did not. It was noted as an important finding that the cats who were given the opportunity to hide were likely to hide in the box when being observed; more specifically, 77% of the cats were observed in the hide or perch areas of their cages (Stella et. al. 2014). Another interesting fact that this particular study brought to attention was that the duration of hiding was longer in cats who were in cages without environment enrichment compared to cats who were in cages with enrichment (Stella et. al.

2014).

Once a cat has adjusted to its new environment, its behaviour changes. Whether this change is minimal or dramatic could be the difference between a cat getting euthanized by the shelter or being advertised for adoption. Data shows that cats with environment enrichment show decreased inactivity and increased play behaviours (Moore and Bain 2011), which in turn would increase the chance for the cat to be put up for adoption rather than being considered to be euthanized. The study led by Moore and Bain aimed to determine how quickly new arriving cats to shelters behaviour changed, and whether providing environment enrichment affected that change. Although the addition of environment enrichment did not appear to be statistically significant, it was hypothesised that that result could be due to the shelter environments being too stressful for the enrichment to make a measurable difference in, as well as the small amount of cats studied (Moore et. al. 2011). Regardless of the results, this study is still an important one to consider as it brings up the possible life or death situation shelter cats are in.

Another study that, although did not necessarily show significant results, still puts forward important information that should be taken into consideration while thinking about this particular topic is one conducted by McCobb, Patronek, Marder, Dinnage and Stone (2005). This experiment looked at stress levels among shelter cats in four different animal shelters, taking into account those with environment enrichment and those without. Although the instrument used for measuring stress levels was deemed irrelevant by the experimenters, as it failed to identify cats with little sleep and high stress levels, it was still noted that environment enrichment levels may help to improve the overall wellbeing of cats in shelters (McCobb et. al. 2005).

Taking into consideration the other studies in this area and the fact that they only used cardboard boxes as environment enrichment, the hypothesis for the current study is that the

experimenting cat will choose the towels more so than any other enrichment offered to it. This is due to the material being more physically comfortable than a box, and also because towels can easily be formed into a nest area to help conduct heat.

Method

Subject

One domesticated house cat (*felis sylvestris catus*) approximately seven years old, 11 lbs with a slight heart murmur. The cat is my pet and has lived in the same environment since six weeks of age, though the environment has changed over time. The cat used in the study had no previous experimental history.

Materials

The enclosed hallway used to conduct this study was 3.6 m x 1.2 m. The floors were a dark brown hardwood and the white baseboards along the light brown-coloured walls were 22 cm high. The ceiling was white and the light fixture that illuminated the room during the evening hours was off-white and roughly 40 cm in diameter with a small silver knob in the centre. Though, it is worth noting that the cat made no obvious attempts at observing the ceiling or the light fixture. On the east facing wall in the hallway there was a white door (2.0 m x 0.9 m) with a gold door knob. The second door located on the west side of the north facing wall was slightly bigger, at 2.4 m x 0.9 m. This door was also white but with a silver knob. Located on the north facing wall, across from the larger door was a window. The window was split into two sections, the top section measuring 43 cm x 61 cm and the bottom section measuring 118 cm x 61 cm. Other objects located in this hallway that could have potentially been visual cues for the cat include one light switch on the north wall approximately 40 cm away from the smaller door.

There was also a second light switch on the west wall directly beside the larger door. There was an electrical outlet on the bottom of the north wall, approximately 30 cm away from the larger door. The outlets were 11 cm x 7 cm. Last, there was a vent on the floor in the corner of the south and west wall. The vent was 29 cm x 13 cm.

The enrichment that the cat could choose from were as follows. A cardboard box (34 cm x 29 cm x 10 cm and with flaps on the top of the box that corresponded widthwise with the side they were attached to, and which were 14 cm high) was used. A laundry basket with an opening that was 43 cm in diameter, 30 cm high and with a bottom that was 28 cm in diameter was also used. A pile of laundry consisting of three towels, two of which were a beige colour and 131 cm x 79 cm and one smaller blue towel that was 48 cm x 35 cm. was also used. And lastly, a plush cat bed that was extremely cushioned with the outside being a green and cream design of leaves and vines the inside being a cream, plush material, was also used. The bottom of the bed was completely covered by a gray, knit, cotton blanket. The diameter of the bed was 30 cm and it was 18 cm high. There were small flaps along the entire opening of the bed, that were 16 cm x 9 cm. The enrichment objects were located approximately 2.0 m away from each other each trial, two on the north wall and two on the south wall on any given trial.

The treats provided at the end of each trial were Whiskas Temptations ® tuna flavoured, manufactured in Toronto, Ont. by the company Mars.

Procedure

The cat was placed in the hallway closed off by doors. The location of the enrichments changed randomly with each trial. A space was also kept open to represent no environment enrichment chosen. When a trial started, the cat was placed in the middle of the room in the

center of all the enrichment objects. The observer stood off in the south-west corner of the room and remained completely silent and still except to record data. Enrichment was marked as chosen when the cat fully sat with its entire bottom in or on top of the enrichment. Trials did exceed 20 minutes. After each trial, the cat received a total of three treats after exiting the room. Trials were separated by a minimum of three hours to avoid any kind of conditioning.

Results

The results from this experiment showed that the cat preferred the cardboard box over the other kinds of enrichment provided. The cat in this study picked the cardboard box 70% of the time (7/10 trials) and the towels only 20% of the time (2/10 trials). This data are shown in Figure 1. Additionally, the times taken to make the selection on each trial are shown in Figure 2. Generally speaking, the times decreased over the 10 trials.

Discussion

According to the results from this study, the originally stated hypothesis was incorrect. Though this is the case, this does not necessarily mean that this study did not serve its purpose. It is quite the opposite, as it is still apparent that there is a heavy preference for a kind of environment enrichment; cardboard boxes. This information can be seen in Figure 1. The X axis of the graph represents the different kinds of enrichment available to the cat, and the Y axis represents how many times the cat chose that particular enrichment throughout the ten trials. It shows that the laundry basket and the bed were not chosen at all, while the laundry (towels) were chosen twice. The cardboard box was chosen the most by far, at seven out of ten trials. This comes as good news to shelters, as cardboard boxes, especially small ones that cats easily fit into, are easy to come by. This result remains consistent with previous research. Though the

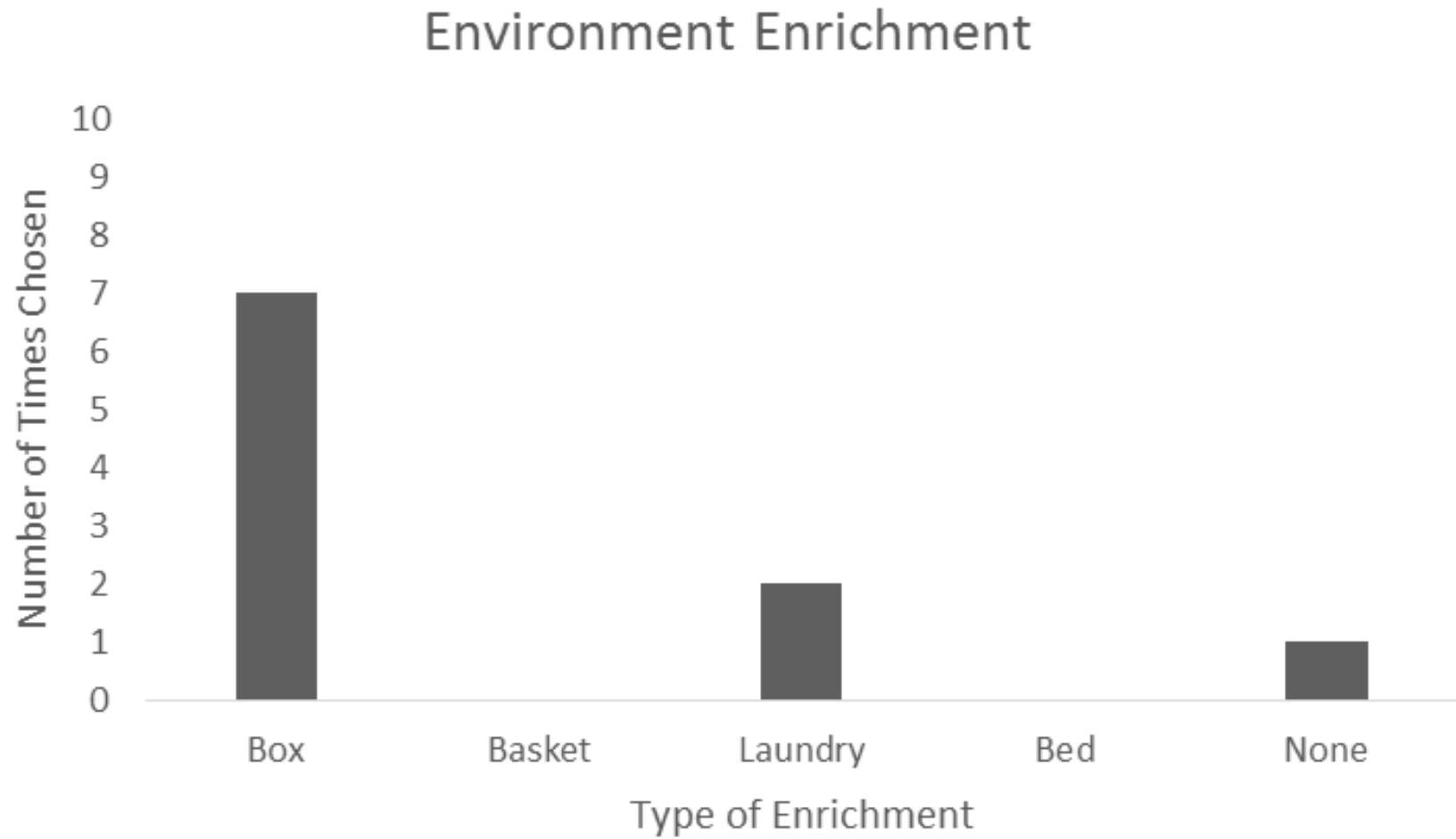


Figure 1: This bar graph depicts how many times each enrichment object was chosen throughout the ten trials

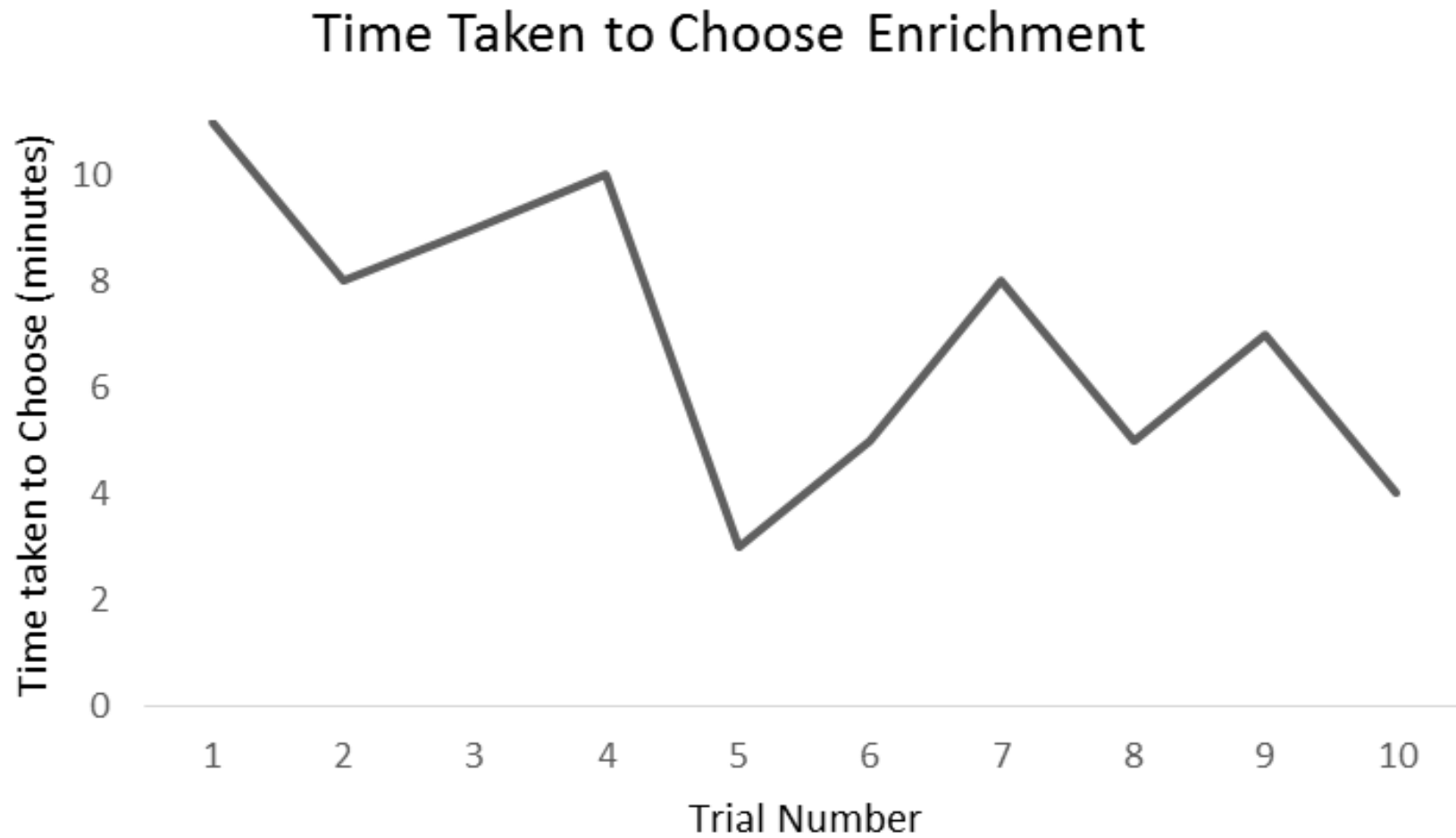


Figure 2: This line graph depicts the amount of time that was taken to choose an object of enrichment per trial.

experiments referenced to earlier were not using multiple kinds of enrichment, but they were using the same kind of enrichment that ended up being preferred. Now that this discovery has been made, there are advances that could be made to this study to explore this area further. For example, what would cats prefer inside these cardboard boxes? Cotton blankets, towels, perhaps nothing? Some other areas of research that this study may be of interest to include environment enrichment in other animals that may often be found as shelters, such as dogs, rabbits and other rodents such as hamsters and guinea pigs. Even pet stores and pet bed manufacturers could take an interest in this study. For example, perhaps cat bed manufacturers would prefer their model their beds to look and/or feel more like a cardboard box in order to be more attractive to cats.

There were particular precautions taken in this study to ensure the data were valid. One important precaution was picking enrichment objects that the experimenter had previously observed the cat actively choosing to spend time in in its daily life. This was to ensure that the cat was not picking a certain object because it was the only familiar object in the room. It was also ensured that no objects used in this study had any kind of sprayed pheromones. Certain pheromones are used to attract cats, and any object having any trace of them would have been an advantage for that object and in turn skewed the data.

Though, even with these precautions there were still some problems with this study. One major one was the small sample size. Only using one cat for the study is not a desired sample size, as there could be unknown problems with the cat such as mental problems or biases for certain enrichment objects that does not properly reflect the preference of all cats. In the future if this study were to be recreated, using more cats for a more desirable sample size would be an

important change to make. It would also be preferable to have more time in between each trial. This is to ensure that the cat does not end up being conditioned to choose a certain enrichment in exchange for the treats given at the end of each trial. Though this did not seem to be a big issue in this study, as the cat did pick different enrichment objects near the end of the experiment rather than the box. It would also be an improvement to the study to use a better method of observation. Having the experimenter in the same room as the cat may pose a distraction, depending on the familiarity between them and the animal. An example of a better method of observation would be a room with a two-way mirror. That way the experimenters can see the cat's every move included in choosing an environment enrichment without distracting the cat.

Although the results from this study were not consistent with the original hypothesis, they are still important and provide ample information on the subject being studied. Knowing that cats prefer cardboard boxes as environment enrichment opens doors of opportunity for future research, animal shelters and even pet paraphernalia manufacturers. This subject is one that has ample opportunity for more research and production from said research.

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Appendix A

Environment Enrichment Worksheet

ENVIRONMENT ENRICHMENT PREFERENCES IN CATS – WORKSHEET

Date: _____

Trial #: _____

Time Species is put into test room: _____ - _____

Enrichment Chosen:

(choose one)

- Cardboard box
- Pile of towels
- Plush bed
- Laundry Hamper
- None

(Estimated) Time it took to choose enrichment: _____

Environmental Factors (if any):
