

Validation of A Questionnaire for Assessment of Iraqi Domestic Cat's Behavior

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Abstract

Over the past decade or so, cats have moved into position as the most popular companion animal. Even in the Middle East and Iraq, the number of domestic cats has multiplied rapidly over the past couple of years. They are easy to keep, and unlike dogs, there are no cultural restrictions on keeping cats. With society not properly educated about cat's behavior and its problems which crucially to investigate the current situation in our country since no such studies have been done so far. Therefore, in this study we tried to create a local tool for assessment of cat behavior. An Arabic questionnaire containing 51 behavioral questions and basic questions regarding the cats' demographic characteristics was locally designed for this purpose. The questionnaire was published online for cat owners to fill out expressing their cats' behavior using Google forms. One hundred of ninety four cat owners participated in the study. Reliability statistics showed that our questionnaire was reliable with an Alpha Cronbach 0.86. Fourteen factors were extracted using factor analysis which included 42 items which accounted for 51.3% of the variance. This validated questionnaire presents the most behavioral aspects of cats that can safely be used for evaluation of cats' behavior for practical and scientific purposes in the future inside Iraq.

Keywords: Demographic characteristics, Fearful behavior, Scratching, Aggression, Inappropriate urination

Introduction

Domestic cats (*Felis catus*) are valued by humans for companionship and their ability to kill rodents. Cats have a long history of companionship in many countries (Seigford et al., 2003). Arabs appreciate cats for their cleanliness (Ludwig, 2021). Their history in the Middle East goes back to about 7500 years BC (Driscoll et al., 2007). Cats are usually kept as house pets but can also be feral cats; the feral cat moves freely and avoids human contact (Libreg et al., 2000). Over the last decade or so, cats have moved into the position as the most common companion animal. In Iraq the number of domestic cats raised quickly during the last couple of years. It can be said that still many families are unfamiliar with normal cat behavior and needs, and may unintentionally cause or observe behavioral problems in their cats that threaten the cats' presence in the house. About four million cats are euthanized in the United States for behavioral problems (Patronek et al., 1996). Little is known about cat behavior and Cat behavior hasn't been addressed professionally in the Arab world as a whole and in Iraq specifically.

In order to evaluate behavior either behaviorist must observe animals' behavior or use a questionnaire. It is impractical to observe all participant cats during a study; thus, it's easier to use the help of the owner who's had the chance to observe their cat with the use of a questionnaire. Nevertheless, there is no validated questionnaire in the Arabic language that could be used for this purpose. Therefore, it is empirical to first create a domestic validated tool for behavioral assessment in Arabic countries and the objective of this study was to do so.

Materials and Methods

Population

All domestic owned cats from various regions of Iraq fit in the criteria of the study. One hundred and ninety-four cat owners participated in this study. The study included all different breeds of cats, ages, and sexes. Data of a convenient sample of Iraqi cats was collected via social media apps which were mostly used by Iraqi cat owners such as Facebook, Instagram, and TikTok.

Questionnaire

In the beginning, a set of questions were collected from previous validated questionnaires (Duffy et al., 2017; Litchfield et al., 2017), translated into Arabic, and modified to suit the local community. The questions were divided into two parts. The first section pertained to the individual information of the cat or its environment (such as age, sex, weight, sexual status, whether it was neutered or not, number of cats in the household, etc.). The second section included 57 behavioral questions through which the owner could assess his/her cat's behavior in certain situations. Each question described a specific situation in which the owner could respond to the presence of that specific behavior. The owners were able to describe specifically how often they would see that specific behavior from their cats through options of Never, rarely, sometimes, mostly, and always. Both sets of questions were uploaded as a single Google form. These options would be rated from one to five starting with never (1), rarely (2) and so forth.

Owners were guided to fill out the questionnaire through an uploaded video with the link of the Google form online in veterinary local pages. Data was collected from November 2022 to February 2023.

The questions included different behaviors such as fearful behavior, scratching, aggression, inappropriate urination, and other issues.

Statistical analysis

Scoring behavioral items was done as follows: Never 1; Rarely 2; sometimes 3; mostly 4; always 5. Data from the completed questionnaires were subjected to factor analysis. The Kaiser eigenvalue rule was used to determine the number of interpretable factors that could be extracted, and varimax rotation was used to identify empirical groupings of items that measured different behavioral traits. Items were assigned to the factors on which they had the highest loadings. Cronbach alpha coefficient was calculated to assess internal consistency of the extracted factors (internal reliability). Factors with Cronbach alpha values 0.70 or more were considered to be reliable. Results are expressed as means standard deviation (SPSS, version 21; SPSS Inc.). We conducted factor analysis on the fifty-seven items of our

questionnaire. Items with absolute value of factor loadings between -0.4 and 0.4 were removed (Al-Gharban, 2017).

Results

Detailed demographic characteristics of participating cats are shown in Table 4-1. The breed of cats on the other hand is shown in table 4-2.

Table 4-1: Demographic information of participating cats

Characteristic	Number of cats (%)		
Sex	Male	castrated	20 (24.1%)
		Intact	63 (75.9%)
	Female	Neutered	15 (13.5%)
		Intact	96 (86.5%)
Age groups	X<1		88 (45.36%)
	1>x>4		95 (48.96%)
	4≥x>7		10 (5.15%)
	X≥7		1 (0.51%)
Cat's body weight	3 kg> BW		114 (58.76%)
	3kg ≤BW<7kg		73 (37.62%)
	7kg ≤ BW		7(3.60%)
Number of cats in the household	X<3		166 (85.56%)
	3<x<6		20 (10.3%)
	6≤x<10		3 (1.54%)
	10≤ X		5 (2.57%)

Table 4-2-Distribution of cats participating in the current study regarding their breeds

Cat breeds	No. of cats
Shirazi*	69
Persian	16
Himalayan	21
Chinchilla	18
Domestic local cat	35
Mixed breed	13
Other breeds	22
Total	194

*Shirazi is a locally known breed for a crossbred Persian moon-face cats

Statistical analysis

We conducted factor analysis on the fifty-seven items of our questionnaire. Items with absolute value of factor loadings between -0.4 and 0.4 were removed. In addition, single item factors and items with no obvious relationship with other items inside a factor were excluded as well. The total 57 items were grouped into 18 factors including 51 items. After evaluation of the items and factors four factors were excluded and another nine items were excluded leaving us with 42 items grouping in 14 factors which accounted for 51.3% of the variance (Table 4-6).

Table 4-6- Forty-two items and the 14 extracted factors with their naming according to the specific behavior

No.	Factor name (%variance)	Item	Loading factor
1	Friendliness towards strangers (13.67%)	(4) Is friendly with adult strangers who come the house	0.78
		(5) Is friendly with stranger children who come the house	0.85
		(6) Is friendly and likes to play with familiar children who come to the house.	0.77
		(7) Is friendly and willing to play with adult familiar people who come to the house	0.72
2	Playful behavior with people (5.76%)	(1) Eager to play with new toys and quickly learns how to play with it.	0.65
		(8) Likes to hide, ambush, jump and play hunting (moving or fixed objects)	0.65
		(10) Likes to play with family members (carries a toy with its mouth and present it to ask for play etc)	0.70
3	Threatening behaviors towards strangers (3.98%)	(13) Threatens and hisses if a stranger come to the house or get close to it or pet it.	0.835
		(14) Threatens and hisses if a stranger child come to the house or get close to it or pet it.	0.81
4	Attention and company seeking behaviors (3.33%)	(29) Likes physical contact with its owner while sitting or lying down	0.67
		(30) Purrs while being petted or sitting on laps	0.84
		(31) Likes to seek the owners' attention while reading or watching TV	0.72
5	Mating related behaviors (3.15%)	(9) Fights a lot with cats of the same sex	0.71
		(26) Is uncomfortable towards closed doors and yells to get out	0.63-
		(33) Hisses, attacks, hits, or bites other cats even if	0.44

		they don't bother it	
		(35) Scratches house items and carpets even with the presence of a scratcher.	0.5
		(45) Tries to escape from the house if it finds a way	0.5
6	Stranger directed aggression (3.09%)	(21) Bites, urinates, or defecates and shows aggressive behavior when examined by the vet	0.53
		(22) Shows aggressive behavior such as attacking, biting, hitting when someone tries to touch its tail or back	0.5
		(23) Follows people, hits, attacks, and bites them when passing by and outside the game context.	0.77
7	Possession related behaviors (2.82%)	(18) Threatens and hisses if a familiar cat enters the house or get close to it while eating or resting	0.59
		(24) If approached by someone while eating will hiss, attack, yell, or hit	0.59
		(48) Is greedy (when it comes to protecting food, resting spot, etc...)	0.65
		(54) Breaks and destroys house objects	0.45
8	Aggression towards other animals (2.75%)	(47) Is jealous (tries hurting other cats or animals and people that are under the care of the owner	0.53
		(55) Hisses, attacks, or bites dogs	0.76
		(56) Hisses or bites other animals	0.74
9	Friendliness towards other cats (2.46%)	(15) Is friendly with strange cat that comes to the house (by rubbing its nose or sniffing it or touching its body)	0.85
		(16) Is friendly with outdoor cats or if it encounters cats.	0.79
10	Inappropriate urination (2.45%)	(36) Eliminating outside the litter box in inappropriate places like, blankets, clothes, etc...	0.85
		(53) Sprays urine on vertical objects or places in the house	0.79
11	Obedience (2.2%)	(27) Responds to its name	0.5
		(28) Comply to orders like: sit or no	0.76
		(40) Is stubborn and	0.58
12	Status related aggression (2.03%)	(20) Is bothered when a familiar person hugs it	0.72
		(25) If another cat or a family member approaches its litter box, food bowl, favorite toy or spot will hiss, yell, hit or bite	0.46
		(46) Is isolated and independent	0.45-
13	Obsessive behaviors (1.9%)	(37) Likes chewing things such as fabric material especially when upset	0.5

14	Pray drive (1.8%)	(38) Likes to suck an angle of a blanket or family clothes	0.77
		(51) Runs in circles and chases its tail	0.4
		(2) Interested in chasing small animals such as birds, rodents, etc...	0.5
		(3) Likes to hunt and present it to the family members.	0.4

Discussion And Conclusion

Despite ongoing advances in the feline health Care, behavior problems are still the most common cause of euthanasia in pet cats (New et al., 2000). Our study was the first of its kind in regard to addressing behavioral problems in pet animals in Iraq. 194 cat owners participated in this study; 111 out of which were female and 83 were male. Iraqis tend to prefer female cats; however, this small sample does not represent the whole population. Male cats in our study were more likely to be castrated than females with 24% castration rate in male compared to 13.5% neutering rate in their female counterparts. The overall neutering rate in our study was only 18%. Our castration rate is very low compared to the developed countries. For example, in Japan in which people have ethical issues with neutering animals also have a higher rate (about 50%) of neutering in cats (YAMADA et al., 2020). However, a study in Iran was published in 2015 with similar rate to our study (9% in males and 14% in females) (Tamimi et al., 2015). This rate could reach to 80% or more in the developed countries (Chu et al., 2009). Neutering can alter some of the cats' behavior and decrease their problematic behaviors.

The most popular cat breed in Iraq was "Shirazi" with 69% of the participants followed by the local domestic shorthair cat with feral origin (35%). Out of 194 cats participating in this study, 183 were under the age of three years old, while 45% of the total participants were kittens under the age of one year old (Table 4-1). This finding shows that cat ownership is a new and advancing culture in our country. Most cat owners (85.5%) owned only one cat and the number of multi-cat households was not high (Table 4-1).

Many questionnaires in various languages and cultures were validated for the same reason but with different questions and scoring system and factoring (Seinfeld et al., 2003; Duffy et al., 2017; YAMADA et al., 2020). However, the bases on which the questions are based are similar and evaluate the most important behaviors of cats inside the houses. Our findings are validated for use in our country and for Arabic countries.

Conclusion

In this study we validated a new locally designed Arabic questionnaire that could be used to evaluate cats' behavior for behavioral issues and for scientific purposes that relate to cat behavior inside Iraq. We recommend the use of this questionnaire for behavioral studies in the future. We also recommend large scale studies that could provide us with more accurate results.

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