

# How much information do pet owners recall after a veterinary consultation?



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## Abstract

Communication between veterinarians and pet owners is necessary to ensure a good relationship, optimize owner compliance (for instance in medication regime) and of course to give pets the best care possible.

In human medicine it is known that medical information is not always recalled completely or correctly by patients or patient caregivers (pediatric medicine). This can lead to serious mistakes being made in for instance the use of medication or fasting before surgery.

In veterinary medicine, the information is very limited and thus there is a lot of room for possible improvement.

The aim of this study is to examine: 1) how much information is remembered by pet owners from a veterinary consultation (at the University clinic for companion animals, department of oncology), 2) which information is most likely to be memorized 3) and what variables (pet attachment, education, gender, age, living situation) could be the cause of errors in memory. Unfortunately due to lack of new patients this question remains unanswered until we can obtain more data in the future.

We also investigated whether there is a difference in attachment between visitors of oncology and other departments and pet owners not visiting the University Clinic for Companion Animals in Utrecht(UKG). We found no significant difference for visitors for different departments but we did find a significant difference in pet attachment between UKG visitors (N=102, M=70.75, SD=8.45) and non-UKG visitors (N=100, M=67.57, SD=9.41) that can account for 3.1% of the differences in total LAPS score.

The internet survey data showed a significant difference in attachment between men (N=34, M = 64.44, SD = 7.30) and women (N=66, M = 69.18, SD = 10.01) which can account for 6.9% of the differences in LAPS score.

This was not the case for any of the UKG visitor survey data or the other characteristics of our internet survey participants (age, education, occupation, household, dog/cat owners, age pet or pet ownership since pup/kitten or at an older age).

## Introduction

Communication between veterinarians and pet owners is sometimes not as good as either party would like it to be. Research has shown that the cause of this is that veterinarians' perceptions of pet owners' needs and expectations can differ from what pet owners really need and expect from their veterinarian<sup>1</sup>. The three keys to good veterinary-client communication are education, providing choices and two-way communication. Education, providing medical information to pet owners needs to be provided in understandable language (not too much medical jargon and explaining the jargon that cannot be avoided) and in the right amount. But how much information is desired varies from each owner to the next and must be assessed for each individual case by evaluating the current state of knowledge and the desire to receive more information. By providing choices pet owners are engaged in the care for their pet and start the process of making decisions. They are also far more committed to carrying out the selected option. But the willingness to be involved depends on if enough information was provided<sup>1</sup>.

How owner compliance in medication regime could be optimized was assessed by *Verker et al. (2008)*. After a consultation the veterinarian estimated the expected compliance, the owners filled in a survey regarding their opinion of the consultation and compliance was determined by an interview by telephone. The veterinarians were from different practices and owners were not informed about the goal of the study but that it was to improve veterinary services. In total 57 owners participated of which 40 were companion animal owners and 17 horse owners. Only 30 owners (52.6%) followed the medication regime correctly, ten (17.5%) didn't follow the right dosage and medication was skipped by four owners (7%), 18 owners (31.6%) were still giving their pet medication although the treatment should have been completed at that time. The veterinarians misjudged their clients' compliance and only estimated it correctly in 31 of 57 cases. What significantly improved compliance was repeating the most important instructions and verbally explaining the effect of the medication. Some factors that could lead to poor compliance but were not statistically proven were other people giving the medication than the ones receiving the information (4 out of 5 of these cases showed poor compliance). Also, not being able to administer the medication could be due to not being demonstrated how to do this correctly. Furthermore, the opportunity to ask questions (being explicitly asked), monitoring the treatment progress and stressing the importance of compliance could enhance it<sup>2</sup>.

Two-way communication is important to evaluate if the owner understands the information. To assess this, the veterinarian must leave room for questions and let owners discuss their concerns as well as check for verbal and non verbal communication that suggests (mis)understanding. When pet owners visit the veterinary clinic they receive a lot of medical information. Because of certain obstacles (education, emotional distraction, effort of the physician etc.) not all of this information is memorized. This often leads to misinterpretation and not adequately following medical instructions<sup>1</sup>.

In human medicine there have been different studies on this subject, testing how much information patients recall after a medical encounter, probable obstacles and how working memory of verbal medical information can be increased<sup>3,4</sup>. For example, in one of these studies they found that a focus group receiving medical information spontaneously recalled less than 25%. When they were asked open ended questions they recalled 67% and in a

multiple-choice taste the average amount of correct answers was 83%. Errors in communication and poor recall can have an adverse effect on the safety and quality of healthcare for patients <sup>3</sup>.

The most comparable area to veterinary medicine may be pediatric medicine, in which parents/caregivers receive a lot of medical information, not for their own health but for that of their children. In this area there have been several studies on the recollection of, for example, medication use and pre-anesthetic fasting instructions.

*Cantellow et al. (2012)* examined the recollection of fasting instructions for pediatric surgery of parents. Parents received fasting information from various sources but from the standard preoperative letter sent from the hospital. An anonymous survey and checklist were used to determine whether the parents understood/remembered the information correctly and whether or not they had followed the instructions. In a group of 120 children, 7% we're not adequately fasted preoperatively, which means they were at risk for pulmonary aspiration of gastric contents. Adding to that, that under lack of parental supervision children are sometimes able to obtain food, it is likely that more children were not fasted prior to surgery. Incongruence between advice and outcome could be due to lack of parental understanding of the risks of not fasting the children correctly but also not understanding which solids/liquids are allowed (because not all foods are mentioned in the letter) <sup>5</sup>.

In another research by *Bayldon et al. (2013)* caregiver knowledge on medication name and administration was assessed by interviewing parents of children between the age of zero and seven years old right after their encounter with the physician. Although all participants said they had received clear information and only 1 participant was not confident that they would be able to follow the advice given by the physician the outcome of recall was shocking. Less than three quarters of medications were accurately named by the parent and only one-third of all caregivers recalled the correct administration instructions <sup>6</sup>.

These studies show that there is a need for improvement of communication between hospital employees (physicians, nurses, pharmacists etc.) and parents. Several others have studied the effect of interventions to enhance recall of medical information. For example, *Considine et al. (2007)* examined the effect of an educational intervention on discharge advice that parents leaving the emergency department with a child with fever were given. The intervention consisted of two tutorials about fever, for the nursing staff of the emergency department. According to the pre- and post-test multiple choice questions these tutorials significantly increased the knowledge of the nurses about the subject. The study showed a significant increase in frequency of how many times parents received written or verbal discharge advice on fever management in comparison to the pre-intervention group. Pre-intervention, handouts were given at discharge, but after the nursing staff gave them earlier, so the parents could read them and ask questions before leaving the emergency department. In most cases the parents did ask for more information or clarification. Also parents reported being given the accurate information more frequently post- than pre-intervention <sup>7</sup>.

*Yin et al. (2008)* evaluated the efficiency of pictogram-based intervention to decrease administration errors by caregivers of young children receiving liquid medication. In a randomized controlled trial one group of parents received standard care (consisting of routine counseling and in some cases a dosing instrument) and the other group that received intervention. This intervention consisted of a demonstration of medication dosing by the research staff using pictogram instruction sheets and a demonstration by the parents

demonstrating how they planned to administer medication, so called teachback. Intervention caregivers made 15% less errors in dose frequency, were more likely to report the correct preparation and reported more often the use of standardized dosing instruments. Dosing accuracy also increased from 47.8% in the control group to 20% in the intervention group. Parents in the intervention group were significantly less non-adherent than those in the control group (9.3 vs. 38%)<sup>8</sup>.

In veterinary medicine these kinds of studies haven't been executed yet but could prove to be meaningful to improve veterinary health care and the relationship between veterinarians and pet owners.

The goal of this research is to examine 1) how much information is remembered by pet owners from a veterinary consultation (at the University clinic for companion animals, department of oncology), 2) which information is most likely to be memorized 3) and what variables (pet attachment, education, gender, age, living situation) could be the cause of errors in memory.

As a sidestep it is interesting to see if there is a difference in attachment between visitors of oncology and other departments and pet owners not visiting the University Clinic for Companion Animals in Utrecht(UKG). This could reveal differences in the kind of owners that take further steps than others in providing the healthcare for their pet. Be it visiting a specialist clinic or taking what some people would say more drastic steps when their pet is diagnosed with cancer (such as chemotherapy, radiotherapy or invasive surgery).

## **Materials and methods**

### *Participants*

Pet owners visiting the department for medical oncology or radiotherapy at the University clinic for companion animals in Utrecht (UKG) with a dog or cat will be approached in the waiting area to participate in an investigation that will help improve our services. They will be asked for permission to make a voice recording of their visit and to interview them by telephone a few hours after leaving the clinic to ask them a few questions about their visit. No further information about the objective of this research will be given because this could influence their effort to memorize information that is provided. The objective of this investigation will be stated as “Would you be willing to participate in an investigation of the communication in the clinic so we can provide better services in the future?” (In Dutch: “Zou u mee willen werken aan een onderzoek over de communicatie in de kliniek zodat wij onze service kunnen verbeteren?” ).

### *Survey*

Participants will also be asked to fill in a survey (attachment I). The goal of the questions asked in this survey is to gather demographic information about our participants (education, gender, age, living situation etc.) and to assess emotional attachment to their pets. For the latter we will use a Lexington Attachment to Pets Scale (LAPS) <sup>9</sup>.

The choice for using the LAPS was based on the fact that it is suitable for use with dog as well as cat owners. Also there are correlations between the items mentioned in the LAPS and variables that are known to effect owner-pet attachment <sup>10</sup>.

For assessing the difference in pet attachment between visitors of oncology and other departments and pet owners not visiting the University Clinic for Companion Animals in Utrecht(UKG). For that reason, in addition to our own participants at the oncology department the front desk will also distribute a survey to other owners visiting the other departments of (attachment II) Also we will approach a random group of people through social media to fill in an internet survey (attachment III) through the investigators social media network.

### *Sound recordings*

All consultations (department medical oncology and radiotherapy) will be performed by the same veterinarian (Maurice Zandvliet, DVM, MVR, Diplomate ECVIM-CA (European College of Veterinary Internal Medicine – Companion Animals)) to eliminate the variable of physician communication style. This conversation will be recorded by a voice recorder after the participant has given verbal consent. When the research is completed all recordings will be destroyed.

### *Interview*

Because the owners may need some time to process all the information (for example in case their pet has a bad prognosis) they will not be interviewed right after the encounter, but two to four hours after leaving the clinic. During this period there will not be any further contact with the physician to avoid additional information that was not recorded to be passed to the pet owner.

All interviews will be completed by one single interviewer (Author Charlie Plantz Bsc, veterinary student). The interviewer has not been present during the medical encounter with the physician. Also, the physician will not be informed about the content of interview to limit emphasizing certain aspects of medical information.

Because this investigation will take place in a real policlinic setting participants will not all receive the same information. Therefore after the consult questions will be made by listening to the voice recordings for each individual case. These questions will be based on cued recall (open ended questions)<sup>4</sup>. All pet owners will be asked the questions about the diagnosis, additional diagnostics, therapeutical options as well as prognosis, costs and risks for human health for each of these options (if according to the voice recordings these subjects were addressed).

### *Scoring recall*

Because the content of the consultation varies each time we cannot use the same scoring system as previous studies. Every participant scored by the recollection of the same keywords.<sup>3,4</sup>

For each recording, a list of keywords will be compiled the amount of keywords will determine how much points a participant can earn for naming each keyword. In total they can earn 100 points. For example if there are 25 keywords four points can be earned for each keyword. If the keyword is only partially named, for instance the participant does remember that the therapy lasts 3 weeks but not that the pet will receive treatment only on working days and so he/she tells the interviewer that their pet will need treatment for 21 instead of 15 times, they will receive only part of the total points that can be earned for this keyword.

Keywords are divided into six categories (diagnosis, diagnostics, treatment, prognosis, costs and risks for human health), the sum of the score in each category is the total recall score which can vary from 0-100 points.

### *Data analysis*

#### Recollection test

All data will be processed using SPSS (statistical package for the social sciences) to test correlations between interview score and the other variables (attachment, education, gender, age etc.).

#### Lexington attachment to pet scale (LAPS)

The LAPS consists of 23 questions and for each question participants can score 0 points for not agreeing at all, 1 point for disagreeing, 2 points for agreeing and 3 points for totally agreeing. This means that in total they can receive a score ranging from 0 to 69.

For LAPS question 21 "I am not very attached to my pet" the scoring was reversed (1 became 4, 2 became 3 etc.) because otherwise people who would have a high attachment would get a lower score on this question and therefore a false total score. On four surveys this question was misread ("I am very attached to my pet"), which was clear because of the other answers given, therefore these were not reversed.

#### Statistics

All data will be processed using SPSS 20.0. For analysis of the possible link between certain demographics and total LAPS score we used two tests. Binary characteristics (gender,



cat/dog and with owner since pup/kitten or at an older age) were compared using an independent samples t-test. The nominal data with more than two options (household, education and occupation), was assessed using a one way ANOVA. For the link between the numeric data such as owner and pet age of our survey participants and their total LAPS score we used a Spearman correlation test.

## Results

### *Surveymonkey*

After being online for 26 days, 112 people responded to the online survey. Twelve surveys were discarded because they were not completed. Participants were mostly female (66%). Ages of our participants ranged from 15-80 years old with a mean of 38.68 (SD= 16.427). The demographic characteristics of our group of participants for this survey are shown in table 1. There are no percentages mentioned because the N=100. Most participants had dogs (68%), ages ranged from 0 to 17 years old and the mean age of these pets was 5.65 (SD=4.516). In most cases (83%) pets had been with the participants since pup or kitten. Total score on the LAPS varied from 43 to 88 points with a mean of 67.57 (SD= 9.412).

Variables	N	Mean LAPS score	SD
Sex			
Man	34	64.44	7.30
Woman	66	69.18	10.01
Household			
Married/cohabiting with children	32	65.56	7.44
Married/cohabiting without children	35	69.91	10.124
Single/divorced with children	1	77.00	-
Single/divorced without children	32	66.72	10.06
Education			
LO	1	83.00	-
VMBO	1	60.00	-
Mavo	3	67.67	8.33
Havo	8	69.50	7.43
VWO	1	81.00	-
MBO	23	69.43	8.39
HBO	43	67.44	9.40
WO	20	63.85	10.57
Animal			
Dog	68	68.81	9.64
Cat	32	64.94	8.45
With owner since			
Pup/kitten	83	67.98	9.29
At an older age	17	65.59	10.04

**Table 1: Demographic characteristics combined with LAPS score of the internet survey participants**

An independent samples t-test showed a significant difference in total LAPS scores between men (M = 64.44, SD = 7.30) and women (M = 69.18, SD = 10.01;  $t(86.65) = 2.700$ ,  $p = 0.008$ , two-tailed). Sex can account for 6.9% of the differences in LAPS scores ( $d = 0.545$ ).

The difference in total LAPS score between dog (M= 68.81, SD= 9.64) and cat owners (M = 64.94, SD = 8.45) was not significant ;  $t(98) = 1.945, p = 0.055$ , two-tailed.

Also there was no significant difference between owners who had their pet since they were a pup/kitten (M= 67.98, SD= 9.29) or if they got them at an older age (M =65.59, SD = .10.04;  $t(98) = 0.952, p=0.343$ , two-tailed).

With a one-way analysis of variance we concluded that there is no significant difference between different education levels (eight groups; LO, VMBO, Mavo, Havo, VWO, MBO, HBO and WO) when it comes to pet attachment  $F(7, 92) = 1.43, p = 0.27$ .

Post hoc tests could not be performed because at least one group had fewer than two cases.

There was no significant difference between four different types of household (Married/cohabiting with children, married/cohabiting without children, single/divorced with children or single/divorced without children) and their pet attachment according to a one-way analysis of variance  $F(3, 96) = 1.66, p = 0.18$ .

Occupation was initially divided into 51 groups, for this we used a classification program used by the Dutch central bureau of statistics (CBS Standaard beroepenclassificatie 2010, attachment IV) and to this we added five other groups (student, unemployed, retired, housewife and self-employed).

This was far too many and some groups contained zero participants, therefore the decision was made to only use nine groups (student, unemployed, retired, housewife, self-employed, lower educated occupations, middle educated occupations, higher educated occupations and scientific (university) educated occupations, shown in table 2).

A one-way analysis of variance showed no significant difference in total LAPS score between these nine groups,  $F(8, 91) = 1.116, p = .360$ . Bonferroni post hoc test confirmed that there was no significant difference between any of the nine groups.

Occupation	N	Mean LAPS score	SD
Student	24	65.58	11.03
Unemployed	5	65.80	16.39
Retired	5	71.80	9.20
Housewife	2	80.00	4.243
Self-employed	3	65.33	8.74
Lower education	8	63.50	7.21
Middle education	17	70.29	6.00
Higher education	29	67.59	8.31
Scientific (university) education	7	68.00	11.05

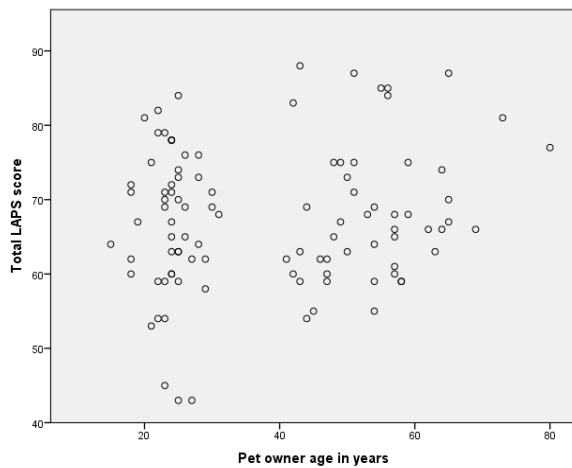
**Table 2: Occupation combined with LAPS score of the internet survey participants**

Variables	Minimum	Maximum	Mean	S.D.
Age owner	15	80	38.68	16.43
Age pet	0	17	5.65	4.52
Total score LAPS	43	88	67.57	9.41

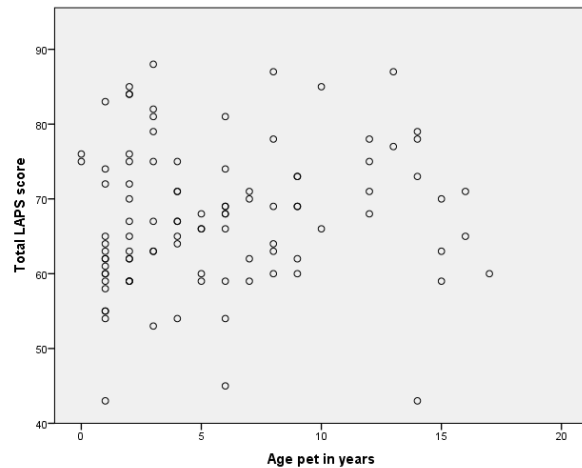
**Table 3: Descriptive characteristics of internet survey participants**

There was no linearity observed between pet owner age (descriptive analysis in table 3) and total LAPS score and thus no correlation (graph 1).

This was the same for pet age and total LAPS score (graph 2).



**Graph 1: Total LAPS score vs. pet owner age in years**



**Graph 2: Total LAPS score vs. pet age in years**

We evaluated the Cronbach’s alpha of our internet survey and it was 0.909; which is a high score. Because question number eight “I think an animal is just an animal” could be interpreted in more than one way, literally an animal is just an animal but some owners may interpret it as animals being of low value to them or humanization of animals. The SPSS option Cronbach’s alpha if item deleted showed that if this question was removed Cronbach’s alpha would be even higher (0.930).

*Survey participants other departments vs. oncology*

It took the employees at the front desk 12 days until all 60 surveys were distributed among UKG visitors that were visiting departments other than the oncology department. Unfortunately we were only able to collect 38 completely finished surveys the first time but a second attempt (during 2 days) led to a more satisfying amount of 50 completed surveys. Table 4 shows the demographic characteristics of this group of participants.

We then collected 52 surveys from pet owners visiting the oncology department (check-up and new patients enrolling in the recall study) during 12 days (spread over 12 weeks).

Variables	N	Mean LAPS score	SD
Sex			
Man	33	70.15	8.55
Woman	69	71.03	8.45
Household			
Married/cohabiting with children	39	67.97	8.24
Married/cohabiting without children	42	72.62	8.47
Single/divorced with children	3	72.00	2.65
Single/divorced without children	18	72.17	8.38
Education			
LO	2	80.50	3.54
VMBO	6	73.83	8.70
Mavo	15	69.13	8.43
Havo	6	74.17	7.17
VWO	8	70.63	7.93
MBO	20	74.55	6.83
HBO	29	69.17	9.19
WO	16	66.75	7.79
Animal			
Dog	78	71.15	8.43
Cat	24	69.42	8.56
With owner since			
Pup/kitten	77	70.71	8.09
At an older age	25	70.84	9.67
Visiting department			
Neurology	5	68.60	7.83
Surgery	1	72.00	-
Hematology	3	66.33	4.16
Gynecology	6	68.83	6.11
Ophthalmology	6	66.17	8.33
Dentistry	2	73.50	10.61
Radiology	2	73.00	12.73
Throat, nose, ear	6	69.00	8.88
Orthopedics	4	75.25	6.02
Cardiology	4	74.75	9.74
Internal medicine	4	68.50	7.14
Gastro-intestinology	2	62.50	3.54
Hepatology	2	70.50	14.85
Endocrinology	2	64.00	2.83
Dermatology	1	75.00	-
Oncology	52	71.96	9.06

**Table 4: Demographic characteristics combined with LAPS score of the UKG visiting survey participants**

With an independent samples t-test there was no significant difference found in the total LAPS scores of our male ( $M = 70.15$ ,  $SD = 8.55$ ) or female visitors ( $M = 71.03$ ,  $SD = 8.45$ ;  $t(100) = -.489$ ,  $p = .626$ , two-tailed).

Also there was no significant difference in total LAPS score between participants owning dogs ( $M = 71.15$ ,  $SD = 8.43$ ) or cats ( $M = 69.42$ ,  $SD = 8.56$ ;  $t(100) = .880$ ,  $p = .381$ ).

Neither did the fact that pets were with the owner since pup/kitten ( $M = 70.71$ ,  $SD = 8.09$ ) or at an older age ( $M = 70.84$ ,  $SD = 9.67$ ;  $t(100) = -.064$ ,  $p = .949$ ).

Using a one-way analysis of variance no significant difference was found between the participants household (Married/cohabiting with children, married/cohabiting without children, single/divorced with children or single/divorced without children) and the level of pet attachment,  $F(3, 98) = 2.37, p = .075$ . Post hoc test (Bonferroni) confirmed no significant difference between groups.

Between different education levels (eight groups; LO, VMBO, Mavo, Havo, VWO, MBO, HBO and WO) there was no significant difference found in total LAPS score  $F(7, 94) = 2.094, p = .052$ . Bonferroni confirmed no significant difference between groups.

A one-way analysis of variance showed that there was no significant difference in total LAPS score between visitors of different departments,  $F(15, 86) = .677, p = .800$ . Post hoc test could not be performed because two departments (surgery and dermatology) had less than two visitors.

By using an independent samples t-test it appeared that there was no significant difference in total LAPS score when we only divided visitors into two groups; oncology visitors ( $N=52, M = 71.96, SD = 9.06$ ) and visitors of other departments ( $N=50, M = 69.48, SD = 7.66; t(100) = -1.491, p = .139$ ).

Occupation	N	Mean LAPS score	SD
Student	0	-	-
Unemployed	6	75.67	7.47
Retired	8	70.13	9.99
Housewife	4	70.50	6.56
Self-employed	5	68.80	8.04
Lower education	15	72.53	9.29
Middle education	27	73.44	7.31
Higher education	26	68.46	8.276
Scientific (university) education	11	65.82	8.52

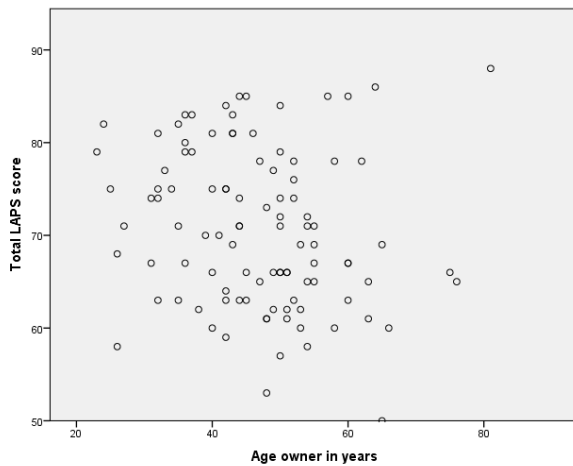
Table 5: Occupation combined with LAPS score of the UKG visitor survey

With a one-way analysis of variance no significant differences in total LAPS score for these nine different groups of occupation (student, unemployed, retired, housewife, self-employed, lower educated occupations, middle educated occupations, higher educated occupations and scientific (university) educated occupations, descriptive characteristics in table 5) were found,  $F(6, 95) = 1.861, p = .096$ . Post hoc Bonferroni test confirmed no significant differences between any of the nine groups.

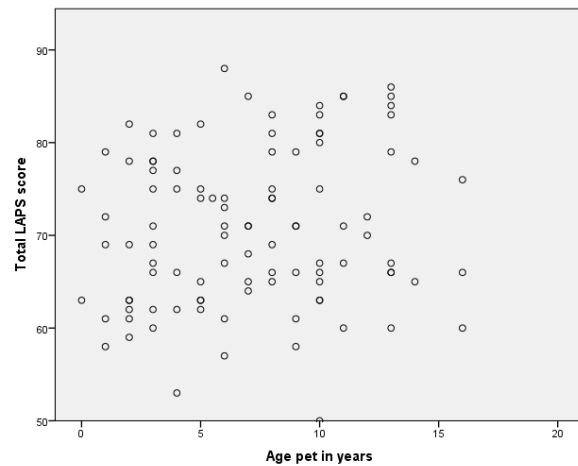
Variables	Minimum	Maximum	Mean	S.D.
Age owner	23	81	46.74	11.37
Age pet	0	16	7.12	4.08
Total score LAPS	50	88	70.75	8.45

Table 6: Descriptive characteristics of the UKG visiting survey participants

As we observed no linearity between pet owner age and LAPS score as well as pet age and total LAPS score from the internet survey this was no different for the UKG visitor survey data. Thus, there is no correlation between pet (owner) age and total LAPS score (graphs 3 and 4).



Graph 3: Total LAPS score vs. pet owner age in years



Graph 4: Total LAPS score vs. pet age in years

#### *UKG visitors vs. non-UKG visitors*

Comparing the data from the internet survey with the data we collected from the UKG visitor survey with an independent samples T-test, we found that UKG visitors (N=102, M=70.75, SD=8.45) compared to non-UKG visitors (N=100, M=67.57, SD=9.41) scored significantly higher on the LAPS,  $t(200) = 2.52, p = 0.01$ . Whether participants were UKG visitors or not can account for 3.1% of the difference in total LAPS score ( $d = 0.36$ ).

#### *Performance on the recollection test*

Four participants had to be excluded from our study. One participant was excluded because of a medical condition that could influence his short-term memory. Another participant was too emotional to answer our question after her pet received a bad prognosis. Two participants were not available for recall during the time frame.

After 20 weeks we were only able to collect 24 participants for the recall study. This was due to the lack of new patients at the oncology department (particularly in the first 10 weeks). Therefore, this research will be passed on to a new research student who will execute the research as it was designed by the author, Charlie Plantz, Bsc. The goal is to reach at least 50 participants before statistics can be performed on our data.

## Discussion

### *Limitations to our study*

People who are more attached to their pet may be more motivated to fill in the surveymonkey and thus it may not be an accurate representation of the Dutch population. One of the disadvantages of using the LAPS is that respondents may have been tending more towards the positive answers. Also it has been shown that the LAPS is very effective in measuring strong attachment but not as much in assessing weak attachment.

We didn't find any proof as to how question 21 "I am not very attached to my pet." was scored. We found it more logical to reverse the score for that question so pet owners that were attached did not receive less points than the people that weren't and thus the total score would be incorrect.

Question eight "I think an animal is just an animal" could be interpreted in more ways, literally or by intrinsic value. A lot of difference was seen in interpretation of this item and so the decision was made not to alter the score.

Our Dutch LAPS' Cronbach's alpha was 0,909, which is high. Tested by *Douglas et al.* it scored a 0,928. Leaving out question eight "I think an animal is just an animal" in our Dutch version would lead to an even higher Cronbach's alpha of 0.930.

In other studies a standardized set of information was provided. In our case each pet owner received different information, fitting the individual case. For that reason our questions had to be custom made for each case. In the future a more reliable way to assess recall of information given in a veterinary setting a more standardized set of information should be used. For example a puppy or kitten consult, in particular with first-time dog/cat owners. In these appointments it is more likely that a veterinarian will give the same set of information (vaccination, parasites, training, neutering, diet etc.) each time.

Another problem we encountered was the timeframe in which the researcher telephoned the owners. Because the physician in some cases has to call the owners back later that day or the day after, for example to discuss results of diagnostic tests, the calls had to be made within a few hours to avoid distribution of additional information before recall. Sometimes owners were not available during the time frame or were still too emotional to be interviewed. In those cases they had to be removed from the study in order to assure a somewhat standardized time frame.

## **Acknowledgements**

I would like to thank my supervisors, Dr. Nienke Endenburg and Maurice Zandvliet (DVM) for their advice and guidance on how to execute this research.

Also I would like to thank Kim Boerkamp (DVM), who because of the recall had to pass all new patients on to Maurice Zandvliet to eliminate the variable of physician communication style.

To the ladies and gentlemen working at the front desk of the Utrecht University Clinic for companion animals (UKG), thank you for handing out the surveys to UKG visitors.

Thank you to all my friends, family and others that filled in the internet survey and all UKG visitors that filled in the paper version.

Finally I would like to thank all participants of the recall investigation who despite their nerves and worries when visiting the oncology department with their beloved pets were still very cooperative and did not hesitate to help a student with her research.



## Attachments

### *I. Survey participants medical oncology/radiotherapy department*

## Enquête onderzoek naar communicatie in de kliniek

Geslacht Man/vrouw

Leeftijd \_\_\_\_\_

Gezinssamenstelling

- Gehuwd/samenwonend met kinderen
- Gehuwd/samenwonend zonder kinderen
- Alleenstaand met kinderen
- Alleenstaand zonder kinderen

Nationaliteit \_\_\_\_\_

Hoogst genoten opleiding Basisonderwijs / lager beroepsonderwijs / VMBO / Mavo / MBO / Havo / VWO / HBO / WO

Beroep \_\_\_\_\_

Uw dier is een... Hond / Kat

Leeftijd van uw dier \_\_\_\_\_

In uw bezit sinds \_\_\_\_\_

E-mail adres \_\_\_\_\_

(als u geen tijd heeft om de enquête verder in te vullen, ontvangt u deze zsm via e-mail)

Z.O.Z.

**In hoeverre zijn de volgende stellingen op u en uw dier van toepassing?**

	Zeer eens	Eens	Oneens	Zeer oneens
Mijn dier betekent meer voor me dan iedereen uit mijn vriendenkring.	0	0	0	0
Ik deel geheimen met mijn dier die ik aan niemand anders vertel.	0	0	0	0
Ik geloof dat dieren dezelfde rechten en privileges hebben als gezinsleden.	0	0	0	0
Ik geloof dat mijn dier mijn beste vriend is.	0	0	0	0
Mijn reactie op andere mensen wordt redelijk vaak beïnvloed door de manier waarop ze op mijn dier reageren.	0	0	0	0
Ik houd van mijn dier omdat hij/zij meer trouw is aan me dan de meeste mensen in mijn leven.	0	0	0	0
Ik houd ervan om aan andere mensen foto's van mijn dier te laten zien.	0	0	0	0
Ik denk dat een dier gewoon een dier is.	0	0	0	0
Ik houd van mijn dier omdat hij/zij niet oordeelt over mij.	0	0	0	0
Mijn dier weet wanneer ik me slecht voel.	0	0	0	0
Ik praat vaak tegen anderen mensen over mijn dier.	0	0	0	0
Mijn dier begrijpt me.	0	0	0	0
Ik geloof dat van mijn dier houden me helpt om gezond te blijven.	0	0	0	0
Dieren verdienen net zoveel respect als mensen.	0	0	0	0
Mijn dier en ik hebben een hele hechte band.	0	0	0	0
Ik zou bijna alles doen om voor mijn dier te zorgen.	0	0	0	0
Ik speel vaak met mijn dier.	0	0	0	0
Mijn dier is geweldig gezelschap.	0	0	0	0
Mijn dier maakt me blij.	0	0	0	0
Mijn dier maakt deel uit van mijn familie.	0	0	0	0
Ik ben niet erg gehecht aan mijn dier.	0	0	0	0
Het hebben van een dier maakt mij gelukkig.	0	0	0	0
Ik beschouw mijn dier als een vriend.	0	0	0	0

-  
21 juni 2013

*II. Survey participants other departments*

Utrecht,  
15-2-2013

Geachte meneer/mevrouw,

Welkom bij de Universiteitskliniek voor Gezelschapsdieren (UKG).

Bij de balie heeft u een envelop ontvangen met daarin deze enquête. Deze Lexington attachment to pets scale (LAPS) is speciaal ontwikkeld om de gehechtheid van eigenaren aan hun dieren te meten.

In het kader van de relatie mens-dier, doen wij onderzoek naar de gehechtheid tussen eigenaren en hun dier. Graag willen wij weten wat het dier voor u betekend en wat u er allemaal mee doet.

Daarom willen wij u vragen deze enquête in te vullen. Uw medewerking wordt zeer op prijs gesteld en is volledig anoniem. Als u de enquête heeft ingevuld kunt u deze weer inleveren bij de balie.

Mocht u nog vragen hebben dan kunt u deze mailen naar: [onderzoek.ukg@gmail.com](mailto:onderzoek.ukg@gmail.com)

Met vriendelijke groet,

Charlie Plantz (onderzoekster)

Dr. Maurice Zandvliet (begeleider)

Dr. Nienke Endenburg (begeleider)

-  
21 juni 2013

## Enquête onderzoek relatie mens-dier

Geslacht Man/vrouw

Leeftijd \_\_\_\_\_

Gezinssamenstelling

- Gehuwd/samenwonend met kinderen
- Gehuwd/samenwonend zonder kinderen
- Alleenstaand met kinderen
- Alleenstaand zonder kinderen

Nationaliteit \_\_\_\_\_

Hoogst genoten opleiding Basisonderwijs / lager beroepsonderwijs / VMBO / Mavo / MBO / Havo / VWO / HBO / WO

Beroep \_\_\_\_\_

Voor welke poli komt u? \_\_\_\_\_

Met uw.. Hond / kat

Leeftijd van uw dier \_\_\_\_\_

In uw bezit sinds \_\_\_\_\_

E-mail adres \_\_\_\_\_

(als u geen tijd heeft om de enquête verder in te vullen, ontvangt u deze zsm via e-mail)

Z.O.Z.

**In hoeverre zijn de volgende stellingen op u en uw dier van toepassing?**

	Zeer eens	Eens	Oneens	Zeer oneens
Mijn dier betekent meer voor me dan iedereen uit mijn vriendenkring.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik deel geheimen met mijn dier die ik aan niemand anders vertel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik geloof dat dieren dezelfde rechten en privileges hebben als gezinsleden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik geloof dat mijn dier mijn beste vriend is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn reactie op andere mensen wordt redelijk vaak beïnvloed door de manier waarop ze op mijn dier reageren.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik houd van mijn dier omdat hij/zij meer trouw is aan me dan de meeste mensen in mijn leven.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik houd ervan om aan andere mensen foto's van mijn dier te laten zien.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat een dier gewoon een dier is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik houd van mijn dier omdat hij/zij niet oordeelt over mij.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier weet wanneer ik me slecht voel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik praat vaak tegen anderen mensen over mijn dier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier begrijpt me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik geloof dat van mijn dier houden me helpt om gezond te blijven.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dieren verdienen net zoveel respect als mensen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier en ik hebben een hele hechte band.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik zou bijna alles doen om voor mijn dier te zorgen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik speel vaak met mijn dier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier is geweldig gezelschap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier maakt me blij.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier maakt deel uit van mijn familie.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik ben niet erg gehecht aan mijn dier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het hebben van een dier maakt mij gelukkig.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik beschouw mijn dier als een vriend.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

III. Internet survey

**Pet owner attachment scale**

Demografische gegevens

\* 1. Wat is uw geslacht?

Man

Vrouw

\* 2. Wat is uw leeftijd?

\* 3. Gezinsamenstelling

Gehuwd/samenwonend met kinderen

Gehuwd/samenwonend zonder kinderen

Alleenstaand met kinderen

Alleenstaand zonder kinderen

Overige (geef nadere toelichting)

\* 4. Wat is uw hoogst genoten opleiding?

Basisonderwijs

Lager beroepsonderwijs

VMBO

Overige (geef nadere toelichting)

Mavo

Havo

VWO

MBO

HBO

WO

\* 5. Wat is uw beroep? (Indien u student bent ook graag de studie vermelden.)

Fig. 1 Demographic information

**Pet owner attachment scale**

Uw dier

\* 6. Uw dier is een... (als u zowel een hond of kat heeft graag voor één van beide invullen)

Hond

Kat

7. Hoe oud is uw dier?

\* 8. Hoe lang heeft u uw dier al?

Sinds pup/kitten

Pas vanaf latere leeftijd, namelijk...

Fig. 2 Information about pet

Pet owner attachment scale				
Lexington attachment to pet scale (LAPS)				
*9. In hoeverre zijn de volgende stellingen op u en uw dier van toepassing?	Heel erg mee oneens	Oneens	Eens	Heel erg mee eens
Mijn dier betekent meer voor me dan iedereen uit mijn vriendenkring.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik deel geheimen met mijn dier die ik aan niemand anders vertel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik geloof dat dieren dezelfde rechten en privileges hebben als gezinsleden.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik geloof dat mijn dier mijn beste vriend is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn reactie op andere mensen wordt redelijk vaak beïnvloed door de manier waarop ze op mijn dier reageren.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik houd van mijn dier omdat hij/zij meer trouw is aan me dan de meeste mensen in mijn leven.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik houd ervan om aan andere mensen foto's van mijn dier te laten zien.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat een dier gewoon een dier is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik houd van mijn dier omdat hij/zij niet oordeelt over mij.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier weet wanneer ik me slecht voel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik praat vaak tegen anderen mensen over mijn dier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier begrijpt me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik geloof dat van mijn dier houden me helpt om gezond te blijven.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dieren verdienen net zoveel respect als mensen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier en ik hebben een hele hechte band.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik zou bijna alles doen om voor mijn dier te zorgen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik speel vaak met mijn dier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier is geweldig gezelschap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier maakt me blij.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mijn dier maakt deel uit van mijn familie.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik ben niet erg gehecht aan mijn dier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het hebben van een dier maakt mij gelukkig.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik beschouw mijn dier als een vriend.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fig. 3 Lexington attachment to pet scale (LAPS)

*IV. CBS Standaard beroepenclassificatie editie 2010*

- 100 Elementaire beroepen
- 200 Lagere docenten sport-, zorg-, en transportvakken
- 201 Lagere communicatie-, kunst- en grafische beroepen
- 202 Lagere commerciële, administratieve, secretariële beroepen
- 203 Lagere beroepen in openbare orde en veiligheid
- 205 Lagere technische beroepen
- 206 Lagere agrarische en reinigingsberoepen
- 207 Lagere gezondheidszorgberoepen
- 208 Lagere verzorgings- en sociale dienstverleningsberoepen
- 209 Lagere horeca-, toerisme- en recreatieberoepen
- 259 Lagere transport- en logistiekberoepen
- 400 Middelbare docenten in transport- en sportvakken
- 401 Middelbare communicatie- en kunstzinnige beroepen
- 402 Middelbare commerciële, administratieve, secretariële beroepen
- 403 Middelbare juridisch bestuurlijke beroepen en beroepen in de openbare orde en veiligheid
- 404 Middelbare wiskundige, natuurwetenschappelijke en informaticaberoepen
- 405 Middelbare beroepen in de techniek
- 406 Middelbare beroepen in landbouw en milieu
- 407 Middelbare beroepen in de gezondheidszorg
- 408 Middelbare beroepen in de verzorging en sociale dienstverlening
- 409 Middelbare beroepen in horeca, toerisme en recreatie
- 459 Middelbare beroepen in transport en logistiek
- 600 Hogere docenten en onderwijskundige beroepen
- 601 Hogere beroepen in de humaniora, communicatie en kunst
- 602 Hogere economische, commerciële, administratieve en secretariële beroepen
- 603 Hogere juridisch bestuurlijke beroepen en beroepen in openbare orde en veiligheid
- 604 Hogere wiskundige, natuurwetenschappelijke en informaticaberoepen
- 605 Hogere technische beroepen
- 606 Hogere agrarische en milieukundige beroepen
- 607 Hogere beroepen in de gezondheidszorg
- 608 Hogere beroepen in de verzorging, sociale dienstverlening en sociaal wetenschappelijk onderzoek
- 609 Hogere beroepen m.b.t. horeca, toerisme, recreatie en sport
- 659 Hogere beroepen in transport en logistiek
- 699 Managers (hoger werk- en denkniveau)
- 800 Wetenschappelijke docenten en onderwijskundige beroepen
- 801 Wetenschappelijke beroepen in de humaniora, communicatie en kunst
- 802 Wetenschappelijke economische, commerciële en financieel administratieve beroepen
- 803 Wetenschappelijke juridisch bestuurlijke beroepen en beroepen m.b.t. openbare orde en veiligheid
- 804 Wetenschappelijke wiskundige, natuurwetenschappelijke en informaticaberoepen
- 805 Wetenschappelijke technische beroepen
- 806 Wetenschappelijke agrarische en milieukundige beroepen
- 807 Wetenschappelijke beroepen in de gezondheidszorg
- 808 Wetenschappelijke beroepen m.b.t. sociale dienstverlening en sociaal wetenschappelijk onderzoek
- 809 Wetenschappelijke beroepen m.b.t. transport, toerisme en vrijetijdsbesteding
- 899 Managers (wetenschappelijk werk- en denkniveau)



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