

# The use of Felifriend and Feliway spray for the clinical examination of cats

*Master research project – Faculty of Veterinary Medicine – Utrecht University*

*E.C. Bakker (3185257)*

*Supervisors: Drs. I.A.M. van Eijk, Dr. C.M. Vinke & Dr. M.B.H. Schilder*

*Department Animal in Science and Society*

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## Summary

*Objective:* The main objective of this research is to test whether or not Felifriend and/or Feliway spray can alleviate stress behaviour with domestic cats during some standard handling procedures at the veterinarian.

*Design:* Double blind, randomized clinical trial

*Animals:* 30 animal shelter-cats of both genders over 1 year of age.

*Procedure:* 30 cats were divided into three groups of 10 cats. The three groups of experimental cats are tested with a different spray in the environment (sprayed once at the left and the right front side of the cage) and sprayed once on the hands of the tester. The spray used in group A was the Feliway spray. The spray used in group B was the control (=water) spray. The spray used in group C was the Felifriend spray. Each cat was scored on social behaviour, anxiety and aggression during the clinical examination based on a modified stress score ethogram of Kessler and Turner and a modified Kessler and Turner human approach score ethogram. (Kessler and Turner, 1997).

*Results:* During the research only one significant result was found in relation to the stress score and the sexes in combination with the use of the pheromone and control sprays. However, because there were no equal amounts of males between groups a comparison could not be made. And because of a low number of investigated males (8/30), no statements can be made about differences between the sexes. The distribution of the stress score regarding sex showed a significant difference with a p-value of 0,0349. Unfortunately these results cannot be used because in group A (Feliway spray) there are no males. All other results during this research are not significant.

*Conclusion and clinical relevance:* This research concludes that a single time use of a pheromone spray has not lead to alleviation of stress behaviour of the cats. Maybe in the veterinary practice a single use of Feliway or Felifriend spray will not give alleviation of stress behaviour during standard handling procedures. However, more research should be done to further examine the effects of the pheromone sprays.

## Introduction

Cats are not always easy to examine during a clinical examination by a veterinarian, most often due to stress and/or fear reactions (fear reactions: e.g. flight, defensive aggression). The manufacturer states that Felifriend spray is developed to reduce the stress during a clinical examination/consultation with the aim to make the cat undergo the examination more easily and less aggressively.

Felifriend consists of a F4 fraction of the facial pheromone of cats and some carrier substances. Felifriend claims to reduce the cat's anxiety during veterinary consultations by using the pheromone spray (Felifriend manual). Another kind of pheromone spray for cats is the Feliway spray, which contains a F3 facial pheromone fraction of oleic acid in alcohol. Feliway claims to use the pheromone fractions that are used by felines to mark their territory. Therefore a cat should feel safe in their environment when the Feliway pheromones are sprayed into that environment so that over time a decrease in unwanted behaviour (feline marking/urine spraying) should be observed (Feliway website).

Cat facial secretions may contain up to 40 different chemicals, but only 13 are common to all cats and no cats secrete all of the chemicals at the same time. Studies by Dr. Patrick Pageat show it has been possible to identify five functional fractions (F1-F5), which appear to have distinct roles. Two of these (the F3 and F4 fraction) are synthesized artificially for veterinary products such as Felifriend and Feliway. The synthesized F3 fraction is supposed to reduce sexual urine spraying, reactive (non-sexual) urine spraying, unwanted scratching and stress during transport (Feliway website). The synthesized F4 fraction is supposed to reduce the risk of aggression while being handled, encourage animals to approach unfamiliar people and help adapt more readily to being moved to a shelter environment (Felifriend manual).

Griffith et al. (2000) suggest that exposure to the feline facial pheromone (FFP) from Feliway might be useful to increase the food intake of cats during hospitalization in the animal clinic. All cats in the research of Griffith et al. (2000) were client owned. Exposure to FFP gave a significant positive correlation between grooming and facial rubbing, walking and facial rubbing, interest in food and facial rubbing, eating and facial rubbing, grooming and interest in food, and grooming and eating. (Griffith et al., 2000) Therefore they suggest that FFP stimulated these behaviours. However, they did not identify significant effects of the pheromone on the interaction incidences (watching, sniffing, avoidance, licking, aggression and walking) of the cats towards the observer. The cats were observed in the cage without inflicting a stressor to the cat (Griffith et al., 2000).

Research by Kronen, Ludders, Erb, Moon, Gleed and Koski (2006) and the systematic review of Frank, Beauchamp and Palestrini (2010) showed no significant results in the use of the Feliway pheromones spray. Kronen et al. (2006) used four groups of cats to evaluate whether a synthetic analogue of feline facial pheromone (FFP), Feliway, calms cats before, and reduces struggling during intravenous catheterization. Kronen et al. (2006) used a modified Kessler and Turner stress score ethogram to score the cats. Behaviour of the cats were scored using a five-point scale in twelve categories (pupil size, eyelid opening, position of ears, head, tail, legs, whiskers and body, activity of the cat, the position of the cat, the cat's movement within the cage, the degree of sedation and each observer's overall subjective impression of calmness (Kronen et al., 2006)

One group was exposed to acepromazine (major tranquillizer) and a placebo (the placebo consisted of the aerosol carrier for FFP), one group to acepromazine and FFP, one group to FFP, and one group to a placebo (the placebo consisted of the aerosol carrier for FFP). Cats in the group who had both acepromazine and FFP appeared to be calmer than FFP cats based on the head position and location in the cage.

Also cats in the group who had both acepromazine and FFP had significantly higher scores and were therefore calmer than the acepromazine and placebo cats when scored on the head position and position in the cage. However the cats in the group who had both acepromazine and FFP had a lower score and were therefore less calm in the category of sedation. Feline facial pheromone cats were calmer than cats in the placebo group comparing body and leg position. Exposure to FFP did not significantly reduce struggling at catheterization (Kronen et al, 2006). It has to be taken into consideration that acepromazine causes sedation of the cat and therefore causes the cat to show calmer behaviour when examined.

In the systematic review of Frank et al. (2010) 14 studies, where DAP (Dog Appeasing Pheromone) (7/14 studies) or Feliway spray (7/14 studies) was used, were evaluated and systemically reviewed. 11 of the 14 reports reviewed provided insufficient evidence and 1 report provided lack of support for effectiveness of pheromones (for the treatment of undesirable behaviour in cats and dogs) (Frank et al., 2010). In some studies cats were individually housed and exposed to the Feliway spray, in other studies the cats were housed in groups.

Because of opposing results in the above described researches, we conducted a follow up research of the efficacy of Felifriend and Feliway. The efficacy of Felifriend has not been researched before.

## Hypothesis

The main objective of this research is to test whether or not Felifriend and/or Feliway spray can alleviate stress behaviour with domestic cats during some standard handling procedures at the veterinarian.

This research expects that cats show fewer stress related behaviours and more social behaviours (for example; tail up, scent rubbing, purring) towards the handler, when examined with Felifriend on the hands of the handler or with Feliway spray in the environment, than towards the handler in examined cats when control spray is used.

### **The pilot**

During a pilot it was tested whether or not the use of a spray (water spray) is influential on the stress behaviours of the cats. During the pilot several cats were tested and no difference in behaviour was detected when the spray was used. It was also tested whether the camera in front of the cage had influence on the behaviour of the cats. No change in behaviour of the cats was detected due to the camera. Furthermore it was tested if the use of the stress score ethogram and the use of the human approach score deemed applicable for research.

### **Materials and methods**

To ensure standardized research it was not possible to test cats during a clinical examination at the veterinarian. Among others, the airflow, cleaning products, smells, sounds and the tester can all be influential on the outcome while working with pheromone sprays. Therefore an animal shelter was chosen to serve as a research facility. In the animal shelter it was possible to standardize the circumstances for all cats. Two quarantine rooms were used to ensure that all experimental cats were held under the same circumstances. The veterinary room of the animal shelter could not be held under constant standardized circumstances and therefore the own animal cages were used for testing the cats.

The research population consists of 30 cats in a large animal shelter in Tilburg, the Netherlands, which were randomly and blindly divided into three groups of 10 cats. Studies on other species showed that female individuals are expected to be more sensitive to stressors than males (dogs: Beerda, 1999; rats: Bangasser et al., 2010). For this reason, preferably all cats in the research population were female. However, due to the lack of cats of the female gender male gender cats were also included. All of the cats were over 1 year of age, to ensure their social maturity.

The quarantine contained two separate rooms, which were divided by a hallway and doors, as shown in figure 1 (Godijn, 2013). The cats were solitarily housed in animal cages of L x W x H: 70 x 74 x 72 cm. All cages were made of stainless steel with a door consisting of vertical and horizontal bars at the front side, placed to one side of the room, so the cats did not have visual contact with each other (Godijn, 2013).

Figure 1:

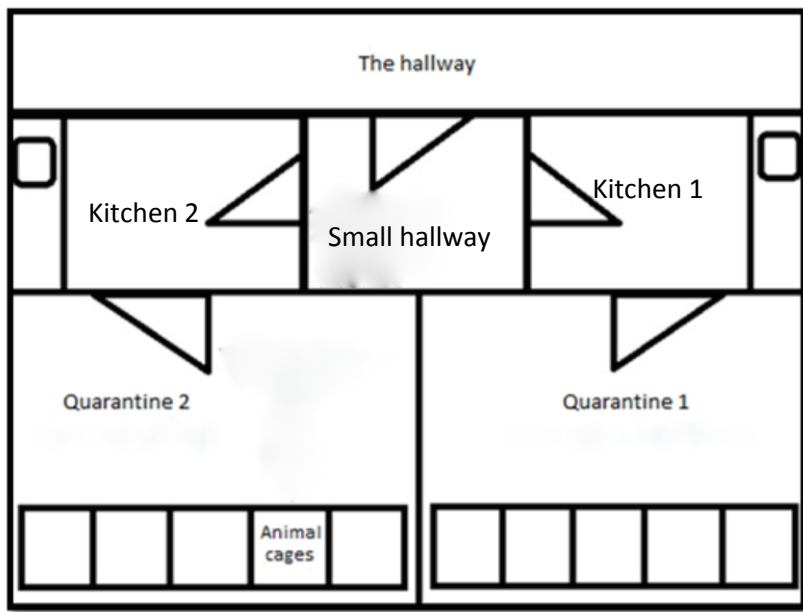


Figure 1; sketch of the layout of the quarantine

All animal cages within the quarantine were arranged in the same order as seen in photographs 1 and 2 and employees of the animal shelter were instructed as seen in enclosure 2.

Photograph 1:



Photograph 2:



Photograph 1 & 2; Pictures of the layout of the own animal cages for research

The three groups of experimental cats were tested with a different spray in the environment (left and right front side of the cage) and on the hands of the tester. The spray was applied fifteen minutes before testing in the cage as well as on the hands of the tester one minute before testing. The interaction of the tester with the cat in the quarantine took place at 14.30 hours on day 2 of arrival of the cat at the shelter. The interaction consisted of an open hand (with the back of the hand facing upward) going into the cage of the cat and the hand was presented towards the cat

All spray flacons had the same appearance to ensure that neither the observer nor the tester knew the difference and which spray they are using. After the test of every single cat the hands were cleaned to make sure that all traces of the spray and cat itself were gone before another cat was tested.

Because the quarantine only consisted of 2 rooms, firstly only group A and group B were tested. To divide the cats randomly and blind a schedule was made in advance. The schedule described that the first cat coming into the animal shelter was classified into group A and the next one in group B etcetera. However in some cases the quarantine room was full and the employees of the animal shelter placed the cat in the other quarantine room and thus registering this on the schedule. Because there was no control on which gender arrived first the sexes are not equally distributed between the groups. After all cats of both groups were tested a one-week spray-free period followed, to ensure that all the traces of sprays A and B were gone. After this week group C was tested. During the spray-free period the cleaning was done daily following the normal cleaning protocol of the animal shelter. The ventilation was regulated with a both a ventilation system and a roof window, which could be opened.

### *Observations*

Each cat was scored on social behaviour, anxiety and aggression during the clinical examination based on an modified stress score ethogram of Kessler and Turner and a modified Kessler and Turner human approach score ethogram as seen in enclosure 1 (Kessler and Turner, 1997).

To assess the stress level of an individual cat in a non-invasive method, this research uses the stress score ethogram. The ethogram consists of seven potential stress levels whereby the minimal stress score 1 is defined as 'fully relaxed' and the maximal stress score 7 as 'terrorized'. It scores 11 components of the cat; body, belly, legs, tail, head, eyes, pupils, ears, whiskers, vocalization and activity. To score the behaviour of an individual cat towards a human approaching the cat, this research uses the human approach score ethogram. This ethogram consists of 4 levels whereby the minimal score 1 is defined as friendly behaviour and the maximal score 4 as unfriendly behaviour towards the tester/observer (Kessler and Turner, 1997).

### *Results*

The data analysis had been done with the aid of SPSS (IBM SPSS Statistics, version 20). The level of significance was set at  $\alpha \leq 0,05$ .

After the testing was done it turned out that the spray used in group A was the Feliway spray. The spray used in group B was the control (=water) spray. The spray used in group C was the Felifriend spray.

The means of the human approach score and stress score were calculated for each group of cats as seen in figure 2 and table 1.

**Table 1: Descriptive Statistics group and scores**

Group		N	Mean	Std. Deviation
Group A Feliway	Humanapproach	10	2,50	,850
	Stressscore	10	3,78640	1,261198
	Valid N (listwise)	10		
Group B Control	Humanapproach	10	1,70	1,160
	Stressscore	10	3,42740	1,129864
	Valid N (listwise)	10		
Group C Felifriend	Humanapproach	10	2,00	1,054
	Stressscore	10	4,05890	1,028298
	Valid N (listwise)	10		

Table 1; the mean scores of the human approach score and stress score of group A, B and C.

The highest mean score for the human approach is in group A (Feliway spray) with a mean score of 2.50 and the lowest score is in group B (control spray) with a mean score of 1.70. The highest mean score for the stress score is in group C (Felifriend spray) with a mean score of 4.06 and the lowest score is in group B (control spray) with a mean score of 3.43. This is also shown in figure 2.

Figure 2:

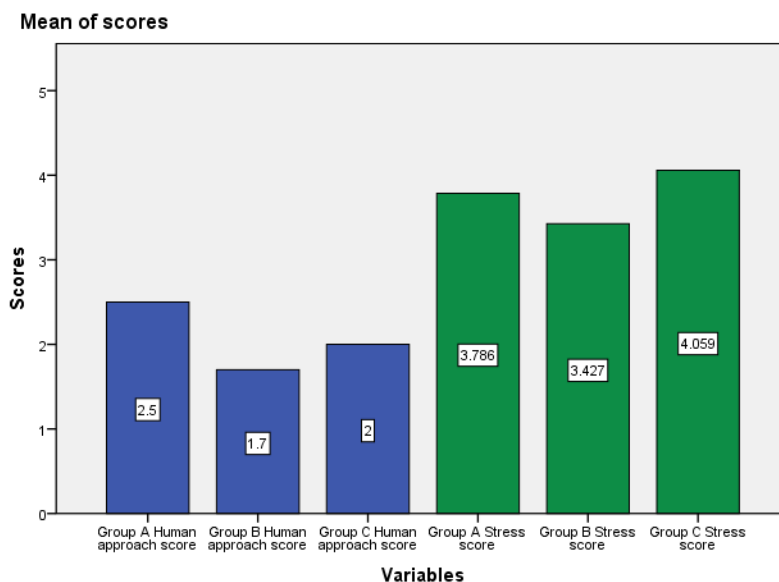


Figure 2; The mean scores of the human approach score in the colour blue of group A, B and C. Also the mean scores of the stress score in the colour green of group A, B and C.



The means of the scores between the sexes divided in the groups was also calculated. However there were only females and no males in group A (Feliway spray). See table 2 below.

**Table 2: Descriptive Statistics groups and sex with scores**

Group	Sex		N	Mean	Std. Deviation
Group A Feliway	female	Humanapproach	10	2,50	,850
		Stressscore	10	3,78640	1,261198
		Valid N (listwise)	10		
Group B Control	female	Humanapproach	5	2,40	1,342
		Stressscore	5	4,24560	1,083184
		Valid N (listwise)	5		
	male	Humanapproach	5	1,00	,000
		Stressscore	5	2,60920	,159432
		Valid N (listwise)	5		
Group C Felifriend	female	Humanapproach	7	1,86	1,069
		Stressscore	7	4,09071	1,025470
		Valid N (listwise)	7		
	male	Humanapproach	3	2,33	1,155
		Stressscore	3	3,98467	1,261628
		Valid N (listwise)	3		

*Table 2; the mean scores of the human approach score and the stress score for each sex in each group.*

The highest human approach score for the males is in group C (Felifriend spray) with a score of 2.33 and the lowest in group B (control spray) with a score of 1.00. The highest stress score for the males is also in group C (Felifriend spray) with a score of 3.98 and the lowest score is in group B (control spray) with a score of 2.61.

For the females the highest human approach score is in group A (Feliway spray) with a score of 2.50 and the lowest score is in group C (Felifriend spray) with a score of 1.86. The highest stress score for the females is in group B (Control spray) with a score of 4.25 and the lowest in group A (Feliway spray) with a score of 3.79.

The calculated scores of the sexes of all groups are shown in table 3 and figure 3. Of both sexes both the human approach score and stress score are shown.

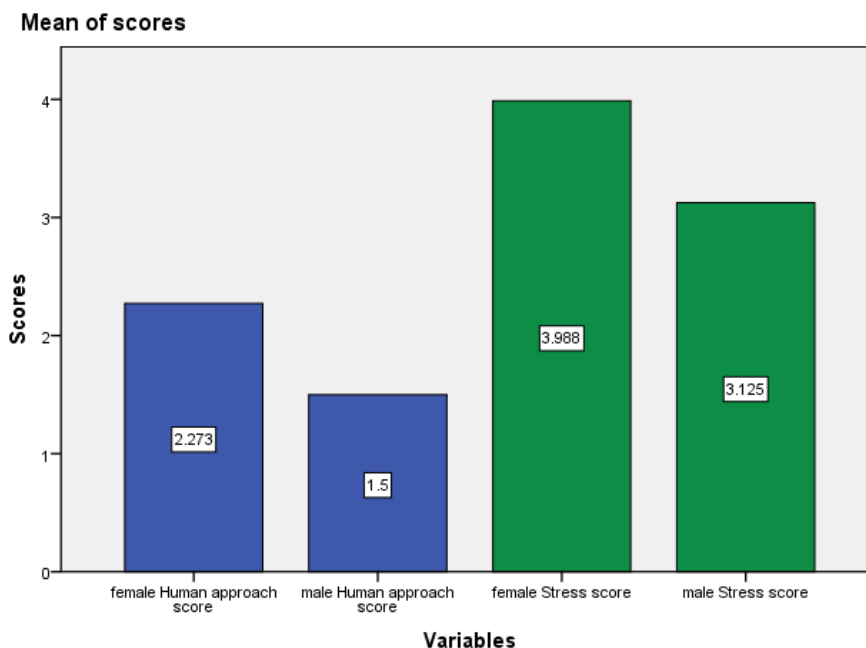
**Table 3: Descriptive Statistics sex and scores**

Sex		N	Mean	Std. Deviation
female	Humanapproach	22	2,27	1,032
	Stressscore	22	3,98759	1,115483
	Valid N (listwise)	22		
male	Humanapproach	8	1,50	,926
	Stressscore	8	3,12500	,987957
	Valid N (listwise)	8		

*Table 3; the mean stress score and human approach score for both sexes*

The above table shows that females have a higher mean human approach score (2.27) and also have a higher mean stress score (3.99) than de males. This is also shown in figure 3. T-test for equality of means of the stress score has a two sided p-value of 0,064. The same test for the human approach score has a two sided p-value of 0,073.

Figure 3



*Figure 3; the mean human approach scores for both sexes in the colour blue. The mean stress scores for both sexes in the colour green.*

We tested the values of the human approach score as well as the stress score to investigate its type of distribution. The test shows that there is no normal distribution in both the human approach score as well as the stress score.

Statistic calculations of the behavioural scores of the cats were done to see whether there are any significantly relevant results found between the groups (Kruskall Wallis test (KW) with post hoc Mann- Whitney U (MWU) testing in case of an overall significance in the KW test).

The Kruskal Wallis Test gives no significant difference between the distribution of the stress score between group A, B and C; the p-value is 0,266. There is also no significant difference between the distribution of the human approach score between group A, B and C; the p-value is 0.226.

We also tested whether of or not there is a significant difference between the sexes and the distribution of the scores. A Mann-Whitney U test shows that there is no significant difference between the sexes in the human approach score; the p-value is 0,1176. However the distribution of the stress score and sex shows a significant difference with a p-value of 0.0349. This result can be an indication of a relation between the stress score and the sex of the cat in relation to the used spray. This research suggests that male cats have a lower stress score than female cats as an effect of the different sprays.

We also used binning of the stress score groups (see table 4 and figure 4) and human approach groups to reduce the effects of minor observation errors (see table 5 and figure 5) and used a Pearson chi-square test and a Spearman test, the result is as follows:

**Table 4: Stressscore (Binned) \* Group Crosstabulation**

Count	Group			Total
	Group A	Group B	Group C	
1,000 - 2,000	0	0	0	0
2,001 - 3,000	5	6	2	13
3,001 - 4,000	1	1	4	6
4,001 - 5,000	1	1	1	3
5,001 - 6,000	3	2	3	8
6,001 - 7,000	0	0	0	0
Total	10	10	10	30

*Table 4; the amount of cats within a binned stress score for group A, B and C*

The above table shows that the biggest group of cats (5/10) in group A (Feliway spray) have a binned score of 2,001 – 3,000. 6/10 cats in group B (control spray) have a binned score of 2,001 – 3,000 and in group C (Felifriend spray) 4/10 cats have a binned score of 3,001-4,000.

This is also shown in figure 4 where the binned scores from low to high have the colours blue (2.001-3.000), green (3.001 – 4.000), yellow (4.001 – 5.000) and purple (5.001-6.000). There were no cats in the binned groups 1.000-2.000 and 6.001-7.000 and for this reason this group is not mentioned in figure 4.

The Pearson square test for the stress score has a two sided p-value of 0,512. The spearman test has a two sided p-value of 0,453.

Figure 4:

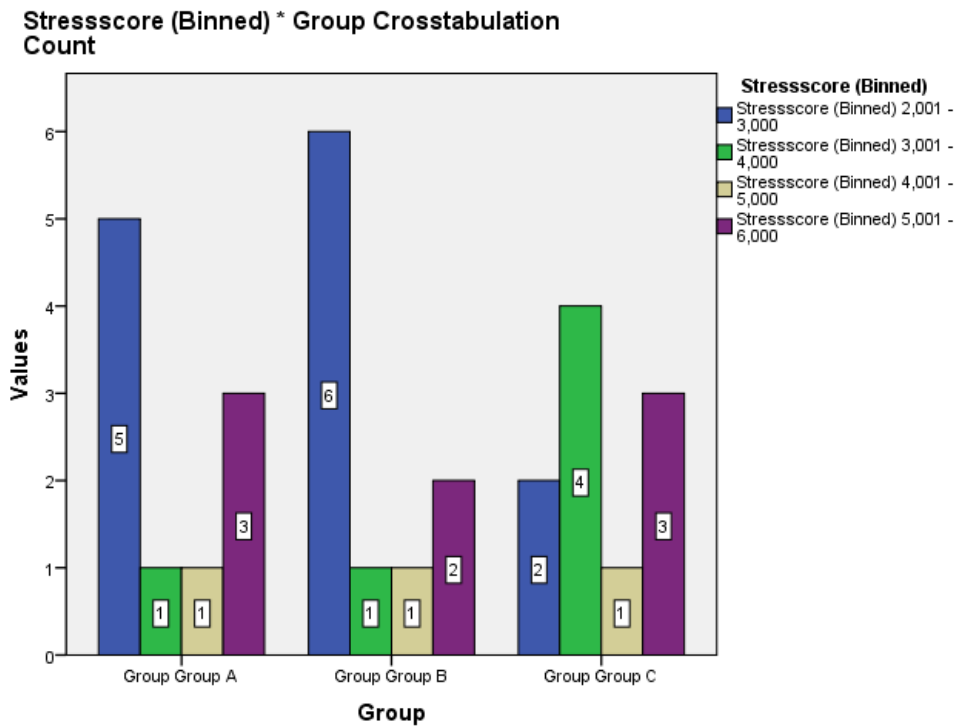


Figure 4; binned stress score for group A, B and C. The binned scores from low to high have the colours blue (2.001-3.000), green (3.001 – 4.000), yellow (4.001 – 5.000) and purple (5.001-6.000). The y-axis shows the number of cats and the x-axis shows the different groups.

Table 5: Humanapproach \* Group Crosstabulation

Count	Group			Total
	Group A	Group B	Group C	
1	2	7	5	14
2	1	0	0	1
3	7	2	5	14
4	0	1	0	1
Total	10	10	10	30

Table 5; The amount of cats for each human approach score divided into group A, B and C.

The human approach scores are also split up into groups to see which score has the highest number of cats for each group. In group A (Feliway spray) 7/10 cats has a score of 3. In group B (Control spray) 7/10 cats has a score of 1 and in group C (Felifriend spray) 5/10 cats has a score of 1 and 5/10 cats had a score of 3. This is also shown in the below figure 5.

The Pearson square test for the human approach score has a two sided p-value of 0,151. The spearman test has a two sided p-value of 0,294.

Figure 5:

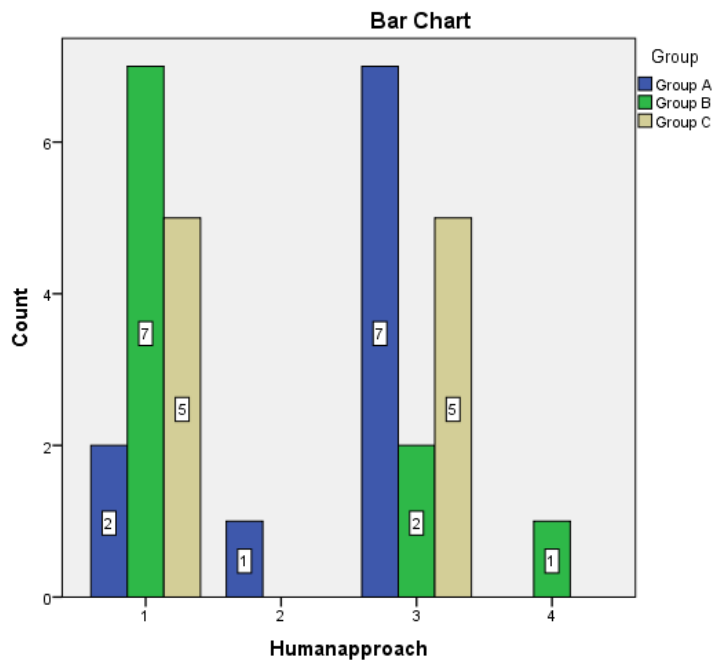


Figure 5; the amount of cats for each human approach score divided into group A, B and C. Group A (Feliway spray) is the blue colour, group B (Control spray) is the green colour and group C (Felifriend spray) is the yellow/brown colour. The y-axis shows the number of cats and the x-axis shows the human approach scores.

## Conclusion and discussion

During the research only one significant result was found in relation to the stress score and the sexes in combination with the use of the described sprays. However, because there are no equal amounts of males between groups a comparison could not be made. And because of a low number of investigated males (8/30), no statements can be made about differences between the sexes. For this reason the distribution of the stress score regarding sex shows a significant difference with a p-value of 0,0349. Unfortunately these results cannot be used because in group A (Feliway spray) there are no males.

All other comparisons during this research are not significant. Therefore it could be concluded that a single use of a pheromone spray has not lead to alleviation of stress behaviour of the cat during this research. So maybe in the veterinary practice single time use of Feliway or Felifriend spray will not give alleviation of stress behaviour during standard handling procedures. Kronen et al. (2006) used in 1 group a single use of a pheromone spray in combination with acepromazine. They concluded the cats were calmer, displaying with their head position and location in the cage, but less calm on the level of sedation. Kronen et al. (2006) concluded that no significant effect on behaviour of the cats, associated with the use of pheromone spray, was present (Kronen et al., 2006). However, more research should be done to further examine the effects of the pheromone sprays.

During the research the cats were tested in the two quarantine rooms of the animal shelter and not in a veterinary practice. In each room a different spray was tested on the individual cats on day 2 after arrival. However other cats were present in the room while the spray was sprayed in the cage of the individual cat. The possible effect on those other present cats, which were not tested yet, due to the forming and spreading of small aerosols, can be influential for these cats when being tested the following days even though both the Feliway website and Felifriend manual claim the spray stays active in the environment for a maximum of 24 hours. (Feliway website; Felifriend manual). For this reason it might be possible that some of the cats were already exposed to the spray before being tested on the effects, therefore the effect might be altered.

It should also be mentioned that due to the small sample size (only 10 cats per group) that were used for this research, the individual differences between cats have a large impact on the statistics. For example when one cat had a really low score, but another cat in the same group had a very high score. In a group of 10 cats, 1 deviating cat score will have more influence on the mean score in the group than in a group of for example 30 cats total. Therefore preferably more cats would be used for research, however because the number of cats was dependent on the intake of cats at the animal shelter during the research period, a higher number of cats in the groups could not be achieved.

Cat 6735 is an example of a cat that was frightened at first but after smelling the spray eventually laid on her side and showed almost no signs of fearful behaviour. She was tested in group A (Feliway spray). On the other hand, almost all male cats in group C (Felifriend spray) were at first when opening the cage very friendly towards the tester, but after smelling the spray, almost all of them turned away their head and went back to a corner of the cage. This research data shows that there are individual differences between cats on their reaction of the spray.

The mean stress score of the cats in the groups varies in a score from 3.43/7(group B) until 4.06/7(group C). It could be that the cats were not stressed enough to see the effects of the sprays. However in Kronen et al. (2006) the scores of the cats (in this case higher scores are calmer cats) were also indicative for cats that are not very stressed. With a few exceptions, in Kronen et al. (2006) a lot of 3/5 and 4/5 scores were shown (Kronen et al., 2006)

At last the stress scoring ethogram of Kessler and Turner scored on 11 variables of behaviour of the cat. Some variables were well defined such as pupil dilatation or carriage of the ears but some variables were not, such as the vocalization. When a cat was quiet or made no sound (enclosure 1) the cat achieves a score of 1 till 7, which was averaged into a score of 4. This makes the scores more questionable and gave less variation between cats, because most of the cats made no sound and therefore got a score of 4, which influenced the mean total stress score of each cat.

### *Possible follow-up studies*

Investigate the differences and similarities between the effects of Felifriend spray, the Feliway spray and a control spray. It might be possible that a higher number of cats give a different stress score and human approach score. However it might be that, when researched, nor the pheromones nor a control spray, give a different stress score and human approach score.

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## Enclosure 1

Modified Human-Approach-Test Scores (Kessler and Turner, 1999)

<i>Score</i>	<i>Behaviour</i>
1	Reacts in an friendly way to people (rubbing, tail up, purring)
2	Turns towards people
3	Moves away or avoids any contact with people
4	Reacts in an unfriendly way to people (hissing, scratching and/or biting or attempting to do so)

Modified Stress Score Ethogram (Kessler and Turner, 1997)

Cat	Body	Belly	Legs	Tail	Head	Eyes	Pupils	Ears	Whiskers	Activity	Vocalisation
1. Fully relaxed	Laid out one side or on back.	Exposed, slow ventilation.	Fully extended.	Extended or loosely wrapped.	Laid on the surface, chin upwards or on surface.	Closed or half opened, maybe blinking slowly.	Normal.	Half back.	Lateral.	Sleeping or resting.	None
2. Weakly relaxed	Laid ventrally or half on side or sitting.  Standing or moving, back horizontal.	Exposed or not exposed, slow or normal ventilation.	Bent, hind legs may be laid out. When standing extended.	Extended or loosely wrapped. Tail up or loosely downwards.	Laid on the surface or over the body, some movement.	Closed, half opened or normal opened.	Normal.	Half back or erected to front.	Lateral or forward.	Sleeping, resting, alert or active, may be playing.	None
3. Weakly tense	Laid ventrally or sitting.  Standing or moving, back horizontal.	Not exposed, normal ventilation.	Bent. when standing extended.	On the body or curved back, maybe twitching. Up or tense downwards.	Over the body, some movement.	Normal opened.	Normal.	Half back or erected to front, or back and forward on head.	Lateral or forward.	Resting, awake or actively exploring.	Miaow or quiet
4. Very tense	Laid ventrally, rolled, or sitting.  Standing or moving, body behind lower than in front.	Not exposed, normal ventilation.	Bent. When standing hind legs bent, in front extended.	Close to the body, tense downwards or curled forward maybe twitching.	Over the body or pressed to the body. Little or no movement.	Widely opened or pressed together.	Normal or partially dilated.	Erected to front or back, or back and forward on head.	Lateral or forward.	Cramped sleeping, resting or alert, may be actively exploring, trying to escape.	Miaow, plaintive miaow or quiet
5. Fearful, stiff	Laid ventrally or sitting. Standing or moving. Body behind lower than in front.	Not exposed, normal or fast ventilation.	Bent.  Bent near to surface.	Close to the body or curled forward close to the body.	On the plane of the body, less or no movement.	Widely opened.	Dilated.	Partially flattened.	Lateral, forward or back.	Alert, may be actively trying to escape.	Plaintive miaow, yowling, growling or quiet
6. Very fearful	Laid ventrally or crouched directly on top of all paws, may be shaking. Whole body near to ground, crawling.	Not exposed, fast ventilation.	Bent.  Bent near to surface.	Close to the body or curled forward close to the body.	Near to surface, motionless.	Fully opened.	Fully dilated.	Fully flattened.	Back.	Motionless alert or actively prowling.	Plaintive miaow, yowling, growling or quiet
7. Terrorized	Crouched directly on top of all fours, shaking.	Not exposed, fast ventilation.	Bent.	Close to the body.	Lower than the body, motionless.	Fully opened.	Fully dilated.	Fully flattened, back on head.	Back.	Motionless alert.	Plaintive miaow, yowling, growling or quiet

## Enclosure 2

### Protocol Onderzoek Felifriend en Feliway

= 9.00 uur en 12.00 uur



Voeren om 9.00 uur 's ochtends en 12 uur 's middags.

Na het voeren om 12.00 uur:

Ventilatie op **10** en dakraam **dicht**

Onderzoekstijdstip: 15.00 uur (De katten worden op dag 2 na binnenkomst éénmaal gebruikt voor onderzoek)

Hokjes zien er allemaal zo uit:



## Feliway? NEE!!

Er mag **GEEN** Feliway gebruikt worden door de asielmedewerkers in de quarantaine gedurende de gehele onderzoeksperiode van juni t/m augustus.