Are we Socially Impacted by our Pets?

The influence of dogs and cats on our evaluation of strangers

Annabel Restuccia

s3158454

a.restuccia@student.rug.nl

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group number: 33

Supervisor: (prof.) (dr(s).) Russell Spears

Second evaluator: (prof.) (dr(s).) Annette C. Mülberger

In collaboration with: Fellow students Iida Liukkonen, Lucie Ostendorf, Nikita Stienissen, Rosa van der Schoor and Jan (Ian) de Boer

Month 02, 2023

Abstract

Our study was intended to show what impact pets have on our lives. To investigate this impact, we created two scenarios where participants had to come up with estimations about strangers depending on their pet's reactions. The story of the scenarios turned around a person's need to find a roommate. We distinguished between two scenarios, respectively 'security' and 'judgment' scenarios. In the first scenario, dog and cat reacted negatively to the stranger. We expected the participants to be influenced by that and to have negative feelings about the stranger when they had to make up their minds about this potential roommate. In the judgment scenario, the pet had a positive reaction toward the stranger; therefore, we expected the participants to have a positive response as well when they had to decide on this particular roommate. In short, we looked at how people valued animals' spontaneous reactions to emotions of security and judgement. We found that the reaction of pets influenced evaluation and feelings about people. Participants were more likely to put more value on dogs reactions when asked about forming a distinctive group identity. The stereotype of dogs being more social was found also in our study. The assessment of strangers was more affected by dog owners than by cat owners in the security scenario.

Keywords: cats; dogs; social influence; self-categorization

Are we Socially Impacted by our Pets?

The influence of dogs and cats on our evaluation of strangers

The great philosopher of the 17th century, René Descartes declared in his book 'Discours sur la méthode' that animals were a 'Rex Extensa', a pure and simple machine, a simple automaton that reacts instinctively in response to stimuli. According to the philosopher, animals were devoid of sorrow because they lacked consciousness. Furthermore, because they were not in control over speech, reason or creativity, Descartes suggested that animals were useless and humans could have used them as they wished, for example in studies research. In our study, we aim to discredit Descartes' thoughts, showing rather how strongly animals can influence humans. We wanted to show how humans and pets are similar in terms of emotions. In contrast to Descartes' view, in fact, researches show that animals share to a certain extent the same human morality. Animals express forgiveness, fairness, retribution, reciprocity, and empathy, (Sax, 2010). They have a sense of fairness and compassion. In our investigations, when we refer to pets, we only considered dogs and cats, as they are the most common pets worldwide. Our goal is to show how dogs and cats may shape our judgments towards feelings, people and situations. We assumed that people imagined dogs to be social/pack animals, demonstrating loyalty, compassion and a sense of protection. We aimed to show that there is some "affective contagion" between the dogs and their owners. We also wanted to give justice to cats and to try to find their influence on humans, as all studies so far showed the cat being perceived as solitary, selfish, independent, and not actively willing to be part of the group identity.

A point worth noting is about primary and secondary emotions. Primary emotions (joy, sadness, anger, fear, disgust and surprise) are present in all mammals. Secondary emotions, on the other hand, are feelings that are more complex and they are named secondary because they are the response from the primary emotions blended with personality, social status, attitudes and cultural context. It might therefore seem impossible to apply secondary emotions to animals. A study by

Morris et al. (2008), tested if indeed pets were able to feel and express secondary emotions, and they discovered that dogs struggled with feelings of jealousy toward another animal or their owner.

Another fact to consider is group identity, which does not stop at the human level. We assumed that pets were part of this categorization. Many researches showed that when people build a deep relationship with their animals through reciprocity, affection, mutual loyalty, and commitment, they together create a unique group identity. In his review, talking about social influence and group identity (2021), Spears described group identity through Turner's self-categorization theory, in which being part of a "group identity" means interacting and sharing similar perceptions within the group. The self-categorization theory attempts to explain how people perceive themselves in cognitions, emotions and behaviours. Within the group, people view others as similar to themselves and therefore it brings a process in which 'me' versus 'you' becomes us (Turner et al., 2012). Another research by Arahori et al. (2017) was interested in showing the difference between animal owners and not owners in terms of understanding their emotions. In particular, it has been seen that in answering whether an animal was able to feel emotions, animal owners were largely responding more positively than not owners. Hence, proximity shapes the perception of familiarity. The fact of being under the same roof thus created harmony between the two species (Miklòsi et al., 2005).

Our questionnaire consisted of two scenarios, security and judgment, and two conditions: dog or cat. If participants were owner of a cat or dog they were put on cat or dog conditions respectively. If they owned both or no animals, they were put randomly on the cat or the dog conditions. They had to assess four potential roommates, based on nothing than the pets' reactions. Participants rated how they felt about the strangers by rating their own emotions towards them. In both scenarios, one stranger serves as a neutral comparison, while the other will be the person receiving the reaction from the pet, negative reaction in the security scenario, and positive reaction in the judgment scenario.

In our first hypothesis, we tested whether the behaviour of cats and dogs would influence our judgments of strangers. Recalling what was said in the previous paragraphs about group identity, humans tend to self-categorize with their pets. They create a relationship of mutual trust.

We also tested if in the security scenario, people would be more influenced by the negative reactions of dogs than by those of cats. We believed that dogs were often motivated to defend their owners. By contrast, cats were seen as solitary, selfish and independent (Plagemann, 2022). A study aimed at analysing dogs' barking, reported that people detected dogs to have high levels of emotional capacity (Miklòsi, 2005). The shared view was that dogs were good at understanding social cues, while cats were seen as having a materialistic and instrumental relationship with their owners. For this hypothesis, we expected the participants to evaluate the person who received the negative reaction from the pet (Person B), less favourably in the dog condition than in the cat condition.

We also hypothesised that in the judgement scenario participants would have been more affected by cats' responses than dogs', because a cat stereotype is that they are independent and choosy. We expected that participants in the cat condition evaluated the person receiving the positive reaction more positively than those in the dog condition.

Finally, we hypothesised whether pet owners would have been influenced stronger than non-owners. Owners trusted their pet's judgement as these pets were considered part of their identity group. We believed that owners and pets created a group identity that involved trust among members of the group (Spears, 2021). We hypothesised that pet owners were more heavily impacted by the animal's behaviour than non-owners because they should have been more attuned to their pets and have faith in their reactions, more than non-owners. As such, we looked at the difference between these two conditions, and we expected to find a significant difference.

Method

Participants and Design

For this study, we collected data from 547 participants, of which 352 were first-year psychology students at the University of Groningen. We collected data from 180 participants that were invited by the researchers. Overall, 85 responses were eliminated. Seventy responses of participants were removed because they did not finish the questionnaire. Thirteen participants were removed from failing the attention check. One participant failed the seriousness check and thus was also removed. Yet another one observation was deleted as it was a test by the authors. The final sample collected for the analysis consisted of 462 participants (344 women, 108 men, nine non-binary/third gender, one preferred not to say). The participants' ages ranged from 16 to 70 years old with a mean of $M = 23.05$ and a standard deviation of $SD = 9.71$. Data from 35 different nationalities were collected. Nevertheless, most participants were Dutch (51.3%), German (21.0%), or others (27.7%). Of all participants, 112 currently own or have owned a dog, 105 have a cat, 122 both and 123 participants had never owned a cat or a dog. The study was approved by the ethics committee of the University of Groningen.

The questionnaire could be accessed online in two ways. Firstly, participants were able to enter through SONA-system of the University of Groningen. SONA is a software developed to organise and schedule studies as well as to recruit first year psychology students as participants and to allocate participation credits. However, people could also participate by having access to a link to this questionnaire independent from the SONA-system. These participants were invited by the researchers to take part in the study. Participants who were taking part through the SONA-system were exclusively psychology students from the University of Groningen. As compensation for participation in the study via the SONA-system, participants received 0.4 SONA-Credits. Students are required to participate in studies and receive SONA-Credits as a part of the course "Practical Introduction to Research Methods". They choose freely which studies they would like to participate in from a large number of options. If they do not want to participate in studies there is an alternative

of a writing assignment for the course mentioned. Participants were able to join from both the international and Dutch tracks with the requirement of understanding English to be able to complete the survey. Other participants who took the questionnaire via a Qualtrics XM link were part of the social environment of the researchers (family, friends, colleagues, etc.). Both these sampling methods make this a convenience sample.

The study has a 2 (Pet Condition: Dog vs. Cat) x 2 (Pet Ownership: participants owning the respective Pet vs. not owning the respective Pet) x 2 (domains: Judgement [positive reaction] vs. Security [negative reaction]) quasi experimental mixed design with repeated measures on the last factor. We ran the analysis in SPSS. Based on a G*power analysis, the desired sample size for the present study is 500 (RM-MANOVA allowing for within-between interaction, power = 0.8, expected effect size of 0.15 at $\alpha = 0.05$ [Faul et. al., 2007, 2009]).

Procedure, Group Assignment and Vignettes

The questionnaire was designed and presented on the platform Qualtrics XM, which the participants had access to via SONA or an independent link that was distributed by the researchers. Participants were provided with an informed consent form and an information sheet before starting the experiment. In this information sheet the participants were informed that the aim of the study is to examine understanding of pet behaviour. Then, the questionnaire continues on with questions about demographics and whether the participant owns or has owned a cat, dog or another pet. Based on ownership they were assigned to either the cat or the dog condition. Two scenarios were presented, with questions following after each scenario. These questions asked participants about their feelings towards either their cat or their dog and about the people mentioned in the scenarios. Next, they were asked to answer the Inclusion of Other in the Self (IOS) Scale (Aron et al., 1992), which measures how close the participant feels to their pet. Lastly, the participants were asked about their stereotypes about cats and dogs using the adapted Pet Psychology scale (Plagemann, 2022). The study ended with a seriousness check as well as a debriefing about the goals of the present study.

Condition Assignment

In the beginning of the experiment, participants were assigned to one of two conditions. These conditions differed by the participants' ownership of a dog or a cat. If the participant owns or has ever owned a cat, they were assigned to the cat condition, and the same applies for the dog condition. In case the participant owned both a cat and a dog or neither, they were randomly assigned to one of the two conditions. If the participant did not own a cat or a dog, they were asked to imagine they own either one based on their assigned condition. Thus, condition assignment was partly random but was also dependent on the pre-existing ownership of a cat or a dog. All in all, this left us with four conditions: cat owner/cat condition ($N=162$), non-owner/cat condition ($N=64$), dog owner/dog condition ($N=177$) and non-owner/dog condition ($N=59$).

Vignettes

In both conditions, participants were exposed to two scenarios. The first scenario featured a negative reaction from the pet (the security scenario); the second featured a positive reaction (the judgement scenario). In both scenarios the participants were asked to imagine that they live together with their pet. The participants were told to imagine that they were looking for a new roommate, scheduling interviews in their apartment at two times, inviting people that are applying for the room, coming in pairs. In the security scenario, after the people come in, the pet has a negative reaction to one person (Person B) and a neutral reaction to another (Person A). In the judgement scenario, the participants were asked to imagine another two people that came over for the viewing. Here, the pet has a positive reaction to one of the applicants (Person D) and a neutral reaction to the other (Person C). The pet's reaction was described through an explanation of its behaviour and its bodily responses to the applicants (see Appendix for complete description of both scenarios). No other information was given about the four people to keep the focus on the pet's reaction.

Measures

This study focused on the influence that a pet's behaviour can have on our feelings towards other people.

Emotions

After each vignette we asked several questions related to the scenario. These questions were the same for both scenarios. First, questions were asked in regards to the participant's perceptions of the pet's behaviour towards the two individuals. Participants rated the pet's feelings towards each stranger on a 7-point scale from 1 "not at all" to 7 "extremely". The emotions were "Happy", "Angry", "Fearful", "Sad", "Curious", "Positive", "Negative", "Friendly" and "Hostile" (see Appendix). This was followed by questions about the participants' feelings towards their pet ("Happy", "Disappointed", "Worried", "Embarrassed", "Curious", "Surprised", "Proud", "Angry", "Amused"). Here, they again were asked to indicate the strength of the emotions on a 7-point scale from 1 "not at all" to 7 "extremely" (see Appendix).

Next, participants were asked to answer questions about their perception of the two strangers. These questions included two sliders about the preference between the two people. First there was the Liking slider ("Based on the given information, who would you like more?") with zero being in favour of Person A/C and 100 being in favour of Person B/D. The same applies for the Roommate Preference slider ("Based on this scenario, which of these first 2 persons would you pick for your second bedroom?"). Next, 7-point scale bipolar questions were asked about "Trust vs. Suspicion", "Friendly vs. Unfriendly", and "At Ease vs. Threatened" and "Compatible vs. Incompatible" (see Appendix). These questions were repeated for all four strangers.

Group Identity

As a measure of group identity, we used the Inclusion of Other in the Self Scale (IOS) (Aron et al., 1992). Participants could choose which image of two circles best represented the relationship between them and their pet. Options were given on a 7-point scale with images of circles representing the degree of closeness (see Appendix).

Pet Psychology Scale

We used a modified version of the Pet Psychology Scale developed by Victor Plagemann (2022) to find out about the participants' stereotypes about cats and dogs. The scale consisted of 6 subscales each for cats and dogs and one item as an attention check randomly placed. The Pet-Psychology scale consisted of the following subscales: "Care for Owner", "Selfishness", "Group Mindedness", "Empathy", "Judgement", and "Security".

Table 1

Reliability of subscales of Pet Psychology scale.

	Questions	Cats	Dogs
		Cronbach's Alpha	Cronbach's Alpha
Care for owner (1)	4	.81	.63
Selfishness (2)	5	.77	.69
Group mindedness (3)	7	.62	.63
Empathy (4)	4	.88	.77
Judgement (5)	5	.79	.64
Security (6)	5	.77	.67

An example item would be "Cats/Dogs want their owners to be happy" (Care for owner) (See Appendix for more example items). Participants were asked to evaluate their agreement with these statements on a 7-point scale with answers ranging from "Not at All" to "Extremely".

Attention & Seriousness Check

To improve our data validity we included some items in the questionnaire to evaluate whether the participant paid attention. The last question is a seriousness check where the participants have a chance to indicate if they have taken part seriously in this study or not. It mentions that there will be no consequences if participants answer with "No" to encourage them to answer this question honestly.

Results

The SPSS software was used for the analysis of the research findings. The first thing to be determined was to verify the assumptions of normality and homogeneity of the model. For the normality assumption, a Shapiro-Wilk test was conducted and for checking the homogeneity assumption, a Levene's test was performed. Concerning normality, the assumption that the data came from a normally distributed population was rejected. This behavior was expected for the normality assumption, due to the subjectivity of the questions in the questionnaire. On the other hand, the homogeneity test showed that there was no significant difference in the variances of the populations, and then no violation of homogeneity was observed. A manipulation check was carried out using a t-test by comparing pet emotions towards Person A and Person B, and Persons C against Person D, according to each case. The manipulation check showed the validity of the experiment for the security scenario and the judgement scenario (See Appendix).

Pet Psychology Scale

The reliability of the various sub-scales of the pet psychology scale showed, in general, favorable results for cats. However, the reliability of the dog scales was only acceptable for "Selfishness" and "Empathy", whereas the subscales "Care for Owners", "Group Mindedness", "Security" and "Judgement" were questionable (Table 1, in Method section). To find a significant difference between the results of cats and dogs, t-tests were conducted for all sub-scales. Across all sub-scales of the pet psychology scale, there was a significant difference between cats and dogs (Table 2). Dogs scored higher on Care for Owner, Group Mindedness, Empathy and Security whereas cats scored higher on Selfishness and Judgment.

Analysis of the Group Identity Measure

The univariate Two-Way ANOVA on the Group Identity measure was significant for both main effects, Pet condition and Ownership. We found no interaction effect between Pet and Ownership on the group identity measure (Table 10). The results showed a higher score for Dogs scored revealing that they are most commonly seen as part of participants' group identity than cats

(Table 10). Under the ownership condition, pet owners obtained a higher score than no owners. This indicates that the participants were more likely to form a distinct group identity with a pet if they had a pet.

Table 2

Pet Psychology Scale for dogs and cats respectively.

	cats		dogs			
	M	*SD*	*M*	*SD*	*t*(462)	*Cohen's D*
Care For Owner (1)	4.50	1.26	6.05	.76	-26.57**	-1.24
Selfishness (2)	4.44	1.13	3.16	.86	21.18**	.99
Group Mindedness (3)	2.99	.74	5.31	.65	-48.21*	-2.24
Empathy (4)	4.38	1.31	5.68	.82	-22.72**	-1.06
Judgement (5)	4.99	1.06	4.83	.83	2.967**	.14
Security (6)	3.82	1.06	5.74	.74	-35.09**	-1.63

*refers to $p < .05$, ** refers to $p < .001$

Hypothesis One

The first hypothesis was that pets' behaviour influences peoples' feelings towards strangers. To assess this, a t-test was carried out. First, in the security scenario, the slider testing the liking of either Person A or B reported a significant difference from the neutral answer position 50 (Table 3). Second, in the security scenario, the slider testing the roommate preference of either Person A or B reported a significant difference from the neutral answer position 50. Third, in the judgement scenario the slider testing the liking of either Person C or D reported a significant difference from the neutral answer position 50. Fourth, in the judgement scenario the slider testing the roommate preference of either Person C or D reported a significant difference from the neutral answer position

50. Overall, the conclusion that in all scenarios, there were significant differences between preferences and neutral supports our hypothesis that the behavior of pets influence our feelings towards strangers.

Table 3

Sliders comparing A&B and C&D towards the neutral point.

Scenario	Slider	*M*	*SD*	*t*(461)	*Cohen's D*
Security	Liking	20.78	19.42	-32.35**	-1.50
	Roommate	16.87	19.37	-36.75**	-1.71
Judgement	Liking	76.73	18.82	30.52**	1.42
	Roommate	77.93	19.86	30.22**	1.41

*refers to *p* < .05, ** refers to *p* < .001

Hypothesis Two

For the second hypothesis, it was expected that dogs were more influential than cats in the Security scenario, due to the association of dogs as the owner's protector. First, a multivariate ANOVA was conducted for the sliders Liking and Roommate Preference of either Person A or B (Table 4). This test showed no significant difference in influence for either dogs or cats on liking either Person A (neutral reaction) or B (negative reaction) and on preference for a roommate. The dog condition showed lower means in slider Liking and Roommate Preference compared to the cat condition.

Table 4

Sliders comparing A&B in Security and C&D in Judgement (split by cat and dog condition).

Scenario	Slider	Cat		Dog			
		M	*SD*	*M*	*SD*	*F*(1,458)	*Partial η2*
Security	Liking	22.23	17.24	19.40	21.24	2.46	.005
(A vs. B)	Roommate	17.95	17.08	15.84	21.32	1.37	.003
Judgement	Liking	73.49	19.16	79.83	17.99	13.42**	.028
(C vs. D)	Roommate	74.88	19.41	80.85	19.90	10.65*	.023

*refers to *p* < .05, ** refers to *p* < .001

The bipolar scales were then analyzed with Repeated Measures-ANOVA. On the scale "Trust vs. Suspicion", a significant difference was found when comparing Person A and B in the dog and the cat condition (Table 5). On the scale "At ease vs. Threat", a significant difference was found in the dog and the cat condition when comparing Person A and B (Table 5). On the scale "Friendly vs. Unfriendly", a significant difference between people in the dog and in the cat condition was found when comparing Person A and B (Table 5). On the scale "Compatible vs. Incompatible", no significant difference between people in the dog and in the cat condition was found when comparing Person A and B (Table 5).

Table 5

Bipolar Scales for comparing Persons A and B in the security scenario.

Bipolar Scales	Person	Cat		Dog			
		M	*SD*	*M*	*SD*	*F*(1,460)	*Partial η2*
Trust vs. Suspicion	A	2.74	.97	2.62	1.14	4.88*	.01
	B	5.48	1.14	5.74	1.35	4.88*	.01
Friendly vs. Unfriendly	A	2.54	1.02	2.41	1.22	10.74**	.02
	B	4.82	.10	5.28	1.35	10.74**	.02
At ease vs. Threat	A	2.48	1.02	2.28	1.02	6.32*	.01
	B	4.69	1.2	4.89	1.23	6.32*	.01
Compatible	A	2.65	1.13	2.57	1.34	1.22	.00
vs. Incompatible	B	5.31	1.11	5.45	1.43	1.22	.00

*refers to $p < .05$, ** refers to $p < .001$

Hypothesis Three

For the third hypothesis, cats were expected to be more influential in the judgment scenario than dogs. First, a multivariate ANOVA was conducted for the sliders Liking and Roommate Preference of either Person C or D. Here, it was found a significant difference between the cat and the dog condition. Dogs were found to be more influential (Table 4) reporting a higher mean in the judgement condition than the cat condition. This was against our prediction (Table 4).

Next, the bipolar scales were analyzed with Repeated Measures-ANOVA. Overall, all the bipolar scales yielded non-significant results for the difference between cats and dogs for the

Judgement scenario except for Trust vs. Suspicion. These results did not support our hypothesis of cats being more influential than dogs in the Judgement domain (Table 6).

Table 6

Bipolar Scales for Person C and D in the judgement scenario.

Bipolar Scales	Person	Cat		Dog			
		M	*SD*	*M*	*SD*	*F*(1,460)	*Partial η2*
Trust vs. Suspicion	C	3.53	.86	3.34	1.00	4.26*	.01
	D	2.30	1.07	1.88	.984	4.26*	.01
Friendly vs. Unfriendly	C	3.32	1.09	3.07	1.15	.90	.00
	D	2.09	1.06	1.72	0.93	.90	.00
At ease vs. Threat	C	3.20	.97	2.81	1.03	.00	.00
	D	2.15	.10	1.77	.92	.00	.00
Compatible	C	3.53	1.10	3.44	1.14	2.83	0.01
vs. Incompatible	D	2.19	1.11	1.88	1.10	2.83	0.01

*refers to $p < .05$, **refers to $p > .001$

Hypothesis Four

   The fourth hypothesis stated that pet owners were more strongly influenced by their pet than non-owners were. In the Security scenario, a multivariate ANOVA was conducted for the sliders Liking and Roommate Preference of either Person A or B, split by ownership and we found a significant difference with pet owners reporting lower means in the security condition (Table 7). Then, we analyzed the influence that ownership has in the Judgement scenario using a multivariate

ANOVA for the sliders Liking and Roommate Preference of either Person C or D, split by ownership. In this case, we did not find significant differences between owners and non-owners.

Table 7

Sliders comparing A&B and C&D (split by ownership).

Scenario	Slider	Owner		Non-owner			
		M	*SD*	*M*	*SD*	*F*(1,460)	*Partial η2*
Security	Liking	19.33	17.94	24.79	22.52	7.24*	.015
	Roommate	15.57	17.82	20.47	22.82	5.85*	.013
Judgement	Liking	76,71	18.84	76.77	18.86	.01	.000
	Roommate	77.36	20.31	79.49	18.56	1.04	.002

*refers to $p < .05$, ** refers to $p < .001$

Using Repeated Measures-ANOVA for Persons A and B's preferences in the Security scenario split by ownership (Table 8), and also Persons C and D split by ownership, at the bipolar scales, we found no significant difference (Table 9).

Table 8

Bipolar Scales for Person A and B in the security scenario (split by ownership).

Bipolar Scales	Person	Owner		Non-owner			
		M	*SD*	*M*	*SD*	*F*(1, 460)	*Partial η2*
Trust vs. Suspicion	A	2.63	1.03	2.82	1.13	3.27	.007
	B	5.73	1.17	5.28	1.40	3.27	.007
Friendly vs. Unfriendly	A	2.44	1.09	2.55	1.26	.003	.000

	B	5.09	1.17	4.97	1.32	.003	.000
At ease vs. Threat	A	2.37	1.14	2.39	1.08	1.81	.004
	B	4.63	1.24	4.85	1.09	1.81	.004
Compatible	A	2.57	1.25	2.72	1.22	.411	.001
vs. Incompatible	B	5.44	1.24	5.20	1.39	.411	.001

*refers to $p < .05$, ** refers to $p < .001$

Table 9

Bipolar Scales for Person C and D in the judgement scenario (split by ownership).

Bipolar Scales	Person	Owner		Non-owner			
		M	*SD*	*M*	*SD*	*F*(1,460)	*Partial η2*
Trust vs. Suspicion	C	3.38	.93	3.57	.96	.85	.002
	D	2.09	1.04	2.06	1.05	.85	.002
Friendly vs. Unfriendly	C	3.16	1.12	3.28	1.16	.27	.001
	D	1.91	1.02	1.88	1.00	.27	.001
At ease vs. Threat	C	2.99	1.03	3.05	.97	.91	.002
	D	1.93	1.00	2.03	.92	.91	.002
Compatible	C	3.45	1.13	3.59	1.09	.42	.001
vs. Incompatible	D	2.04	1.45	2.01	1.03	.42	.001

*refers to $p < .05$, ** refers to $p < .001$

Table 10

Group Identity measure

Pet condition		*M*	*SD*	*Partial η2*
Pet	Cat	4.16	0.05	.02
	Dog	4.50	0.05	.02
Ownership	Owner	4.52	0.03	.013
	Non-owner	4.14	0.06	.013
Pet*Ownership				.005

*refers to *p* < .05, ** refers to *p* < .001

Discussion

Our analysis revealed several interesting results. Using the Group Identity scale, we found that most of the participants agreed that dogs were part of our same group identity. Furthermore, owners of pets were more likely to form a distinctive group than non-owners. Analysing Pet Psychology scale, the results showed that dogs were considered more social than cats. We also showed that cat owners considered cats more influential than non-owners did. This is because of the stereotype that cats were less social, but when being the owner of that animal the bias went in favour of their pet.

As we expected in our first hypothesis, participants were influenced by the pet's reactions in both security and judgment scenarios. Participants evaluated the negative Person B, in the predicted way. The behaviours of the pet affected their judgment in evaluating a stranger in trust, compatibility and even good intentions.

In our second hypothesis, we expected dogs to be perceived as more influential than cats, in the Security scenario. This is because the stereotype is that dogs are perceived as more protective

than cats. However, we found not quite significant results, so our second hypothesis was not confirmed.

In our third hypothesis, we expected cats to be more influential in the judgmental scenario due to their stereotype to be judgmental. However, again our hypothesis was not supported, as this time the dogs were found to be more influential than cats in the judgmental scenario. Dogs were perceived as more influential in the judgmental domain because humans share with them a greater group identity. Either if cats are stereotypically seen as judgmental, the power of social influence was too strong and this showed an effect also in the judgmental domain in favour of dogs.

As we stated before owners form a distinctive group with their pets. In our fourth hypothesis, we looked at whether pet owners were more strongly affected by pet's behaviour than non-owners. Our hypothesis was partially supported. We only found a significant result in the Security scenario. The reason could be that owners trusted more their pets when their reactions were perceived as stronger, negative and suspicious. This hypothesis was not confirmed in the judgmental scenarios, where owners had to deal with a positive reaction, so less strong in terms of pets reactions.

I want to leave you with a little spoiler: in the last phase of his life, Descartes was exposed to a dog he later called "Mister Grat". Apparently, this animal was following him everywhere. The philosopher eventually changed totally his previous view and started to humanize pets recognizing that emotions and even consciousness were an integral part of animals' characteristics. This is another point in favour of our first hypothesis: animals do influence us!

Limitations

The purpose of our study was to show how the behaviour of cats and dogs influences human feelings toward outsiders. Our questionnaire did not include any information on the personality or attitudes of the four strangers. Furthermore, no details were provided on the character of the animals. Therefore, the only information and the only measures that could have influenced people's views was the behaviour of the pet. We did not include those individual features because we had no

interest in assessing other social factors. The way the animal reacts may also be significant depending on the nature of the animal. It would be more determinant a reaction coming from a pet that is usually calmer than from a pet that acts nervously in front of any person. Overall, the character of the person, the owner's attachment to his own pet, the stereotypes of non-owners, the individual personality of that particular pet, could have yielded different results and interesting interpretations.

Our sample was a convenience sample. We used first year students that had to collect credit to pass the subject "Practical Introduction to Research Methods". Consequently, we can easily hypothesize that their motivation was mostly to receive the credit than spontaneous took part in the study to help the researchers. Our participants were also components of our families, friends and colleagues. Again, this was a convenience sample, and the motivation of helping us could have played a role in the results.

We hope that future studies will build on new findings and include these other variables.

References

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. Journal of personality and social psychology, 63(4), 596.

Arahori, M., Kuroshima, H., Hori, Y., Takagi, S., Chijiiwa, H., & Fujita, K. (2017). Owners'view of their pets' emotions, intellect, and mutual relationship: Cats and dogs compared. Behavioural Processes, 141(Part 3), 316–321. https://doi-org.proxy-ub.rug.nl/10.1016/j.beproc.2017.02.007

Descartes, R. (2020). Discourse on the Method: Unabridged 1637 Rene Descartes version. Les Prairies Numeriques.

Dhont, K., Hodson, G., Loughnan, S., & Amiot, C. E. (2019). Rethinking human-animal relations: The critical role of social psychology. Group Processes & Intergroup Relations, 22(6), 769–784. https://doi-org.proxy-ub.rug.nl/10.1177/1368430219864455

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior Research Methods, 39, 175-191. https://doi.org/10.3758/BF03193146

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behavior Research Methods, 41, 1149-1160. https://doi.org/10.3758/BRM.41.4.1149

Miklósi, Á., Pongrácz, P., Lakatos, G., Topál, J., & Csányi, V. (2005). A Comparative Study of the Use of Visual Communicative Signals in Interactions Between Dogs (Canis familiaris) and Humans and Cats (Felis catus) and Humans. Journal of Comparative Psychology, 119(2), 179–186. https://doi-org.proxy-ub.rug.nl/10.1037/0735-7036.119.2.179

Morris, P. H., Doe, C., & Godsell, E. (2008). Secondary emotions in non-primate species? Behavioural reports and subjective claims by animal owners. Cognition and Emotion, 22(1), 3–20. https://doi-org.proxy-ub.rug.nl/10.1080/02699930701273716

Ng, J. W. X., Tong, E. M. W., & Kwek, S. L. (2017). The appraisal similarity effect: How

social appraisals influence liking. The American Journal of Psychology, 130(3), 353–366. https://doi-org.proxy-ub.rug.nl/10.5406/amerjpsyc.130.3.0353

Plagemann, V. (2022). Self Cat (or Dog) and Social Influence: Interspecies Influence and the Role of Theory of Mind [MA thesis]. University of Groningen.

Sax, B. (2010). Review of Wild justice: The moral lives of animals. Anthrozoös, 23(2), 199–201. https://doi-org.proxy-ub.rug.nl/10.2752/175303710X12682332910178ù

Spears, R. (2021). Social influence and group identity. Annual Review of Psychology, 72(1), 367–390. https://doi.org/10.1146/annurev-psych-070620-111818

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). Rediscovering the social group: A self-categorization theory. Basil Blackwell.

Turner, J. C., & Reynolds, K. J. (2012). Self-categorization theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), Handbook of theories of social psychology., Vol. 2. (pp. 399–417). Sage Publications Ltd. https://doi-org.proxy-ub.rug.nl/10.4135/9781446249222.n46

Wan, M., Kubinyi, E., Miklósi, Á., & Champagne, F. (2009). A cross-cultural comparison of reports by German Shepherd owners in Hungary and the United States of America. Applied Animal Behaviour Science, 121(3–4), 206–213. https://doi-org.proxy-ub.rug.nl/10.1016/j.applanim.2009.09.015

Appendix

(complete questionnaire)

Informed Consent & Research Information

INFORMATION AND INFORMED CONSENT FOR THE STUDY:

"Pet Psychology"

Research Code: PSY-2223-S-0065

You receive this information because you are invited to participate in a research study investigating people's understanding of their pet's behaviour and how that behaviour may shape our perceptions. For this study, it is required that you use a desktop computer or a laptop, as only such devices ensure that the contents will be appropriately displayed. We kindly ask you not to participate using a tablet or a smartphone.

Researchers:

de Boer, Jan Harm

Liukkonen, Iida

Ostendorf, Lucie

Restuccia, Annabel

Stienissen, Nikita

van der Schoor, Rosa

Prof. Dr. Russell Spears

Contact:

Nikita Stienissen

Email: n.stienissen@student.rug.nl

Iida Liukkonen

Email: i.v.liukkonen@student.rug.nl

Affiliation of all researchers: University of Groningen, The Netherlands

Aim of the study:

The aim of the study is to examine understanding of Pet Behavior.

Procedure:

First, you will respond to a few questions in which you are asked to provide some demographic information (e.g. your age). After that you will read short descriptions of situations involving a pet and answer a few questions about these situations (e.g. what you would feel in those situations). It is crucial to the successful completion of the study that you read the short descriptions of the situations completely and carefully.

It is essential that you complete this study in one go (without interruptions) when you are on your own. We kindly ask you to respond to all questions by providing the answer that best represents your opinion, thoughts, or feelings. There are no right or wrong answers.

This study takes approximately 15 minutes.

There are no risks associated with participating in this study.

Compensation: You will receive 0.4 SONA Credits for participating in this study.

Participation is voluntary:

Participating in this study is completely voluntary. It is your choice whether to participate or not. You have the right to decline to participate and withdraw from the research at any time without having to provide any reasons. Withdrawing from this research does not entail any negative consequences.

Your privacy and personal data:

The data that will be collected during this study will be treated confidentially. Data processing takes place for education/training purposes, to write a Bachelor thesis. The data will only be handled by the Researchers. Your SONA number will be recorded in this study to allow compensation. Information that could identify you as a person, such as your SONA number, will be removed after assigning you the credit and won't be shared with other researchers. Thus, only anonymized data might be disseminated such that your anonymity is guaranteed. This means that research data that may be published, for example in scientific journals, cannot identify you.

In sum: as soon as you have received your credit we will remove the SONA identifier so that your data are no longer practically traceable to you (i.e. as far as possible anonymous).

More information:

If you have any questions about this research, you can contact the researchers: Nikita Stienissen (Email: n.stienissen@student.rug.nl) or Iida Liukkonen (Email: i.v.liukkonen@student.rug.nl). If you have any complaints about this research, you can contact the Ethics Committee of the Psychology department of the University of Groningen via ecp@rug.nl mentioning the research code (PSY-2223-S-0065).

By participating in this research, you indicate that you are doing this on a voluntary basis. You also consent to the use of your data for the purposes that have been mentioned here.

If you have read the above and agree to participate in the study, please answer "Yes" to begin the study. If you do not consent or want to withdraw, you can quit the questionnaire without any consequences.

- yes

Demographics

Age	Please indicate your age. (Open Question)
Gender	Please indicate your Gender. • Female • Male • Non binary/third gender • Prefer not to say
Nationality	Please indicate your nationality. • Dutch • German • English • Other (text box)
Ownership dog	Do you own a dog now or have owned a dog? • Yes • No
Ownership cat	Do you own a cat now or have owned a cat? • Yes • No
Ownership other pet	Do you own a pet, or have you owned a pet other than a dog or a cat (for example with your family)? • Yes, a (text box) • No

Assignment to condition:

1. Dog is owned, but cat not: assignment to dog condition

2. Cat is owned, but dog not: assignment to cat condition

3. Neither is owned: random assignment

4. Both are owned: random assignment

Intro for conditions: For the following questions, please think of your cat/dog (based on condition). If you don't own a cat/dog (or haven't owned one), please imagine you have one.

Scenario 1: Security (negative Valence)

Description (dog condition)	Imagine you are looking for a new roommate. You're conducting interviews for the day and you first invite two people to come in for a viewing in your apartment, which you share with your dog. On the day of the viewing, your doorbell rings. You are on your way to open the door, where your dog is sitting next to a window. When you open the door to let the first person in, Person A reaches out to shake your hand. Your dog seems uninterested. A few minutes later, you hear the doorbell ring once again and allow the second person to come in. Person B reaches out to shake your hand when suddenly you notice that your dog runs in between you and Person B. It bares its teeth, starts barking and has its tail down between its legs. Please answer the following questions about this situation:
Description (cat condition)	Imagine you are looking for a new roommate. You're conducting interviews for the day and you first invite two people to come in for a viewing in your apartment, which you share with your cat. On the day of the viewing, your doorbell rings. You are on your way to open the door, where your cat is sitting next to a window. The first person arrives and you open the door to let them in, Person A reaches out to shake your hand. Your cat is not interested. After a few minutes, the doorbell rings once again and Person B arrives. You open the door and Person B reaches out to shake your hand when suddenly you notice that your cat starts hissing at Person B. Its tail is held down close to its body and the fur on its back stands up. Its ears are now turned backwards and are flat on the head. Please answer the following questions about this situation.

Emotions pet towards acquaintance	How do you think your cat/dog feels towards Person A in this situation? (7-point scale: not at all to extremely) • Happy • Angry • Fearful • Sad • Curious • Positive • Negative • Friendly • Hostile
Emotions pet towards acquaintance	How do you think your cat/dog feels towards Person B in this situation? (7-point scale: not at all to extremely) • Happy • Angry • Fearful • Sad • Curious • Positive • Negative • Friendly • Hostile
Emotions Participant towards pet	How do you feel towards your cat/dog in this situation? (7-point scale: not at all to extremely) • Happy • Disappointed • Worried • Embarrassed • Curious • Surprised • Proud • Angry • Amuse
Cognitive Empathy (about Person A)	Do you understand the feelings of your cat/dog? (7-point scale: not at all to extremely)
Affective Empathy (about Person A)	Do you share the feelings of your cat/dog? (7-point scale: not at all to extremely)

Cognitive Empathy (about Person B)	Do you understand the feelings of your cat/dog? (7-point scale: not at all to extremely)
Affective Empathy (about Person B)	Do you share the feelings of your cat/dog? (7-point scale: not at all to extremely)
Slider Liking	Who do you like more? (100-point slider, from A to B)
	The following questions refer to Person A.
Bipolar Scale Trustful vs. Suspicion	How does your cat/dog behaviour make you feel towards Person A (7-point scale: Trustful to Suspicious)
Bipolar Scale At ease vs. Threat	How does your cat/dog behaviour make you feel towards Person A (7-point scale: At ease to Threat)
Bipolar Scale Friendly vs. Unfriendly	Based on your cat/dog behaviour could Person A be potentially friendly or unfriendly? (7-point scale: Unfriendly to Friendly)
Bipolar Scale Compatible vs. Incompatible	Based on your cat/dog behaviour could Person A be potentially compatible or incompatible? (7 point scale: Compatible to Incompatible)
	The following questions refer to Person B.
Bipolar Scale Trustful vs. Suspicion	How does your cats/dogs behaviour make you feel towards Person B? (7-point scale: Trustful to Suspicious)
Bipolar Scale At ease vs. Threat	How does your cats/dogs behaviour make you feel towards Person B? (7-point scale: At ease to Threat)

Bipolar Scale Friendly vs. Unfriendly	Based on your cats/dogs behaviour could Person B be potentially friendly or unfriendly? (7-point scale: Unfriendly to Friendly)
Bipolar Scale Compatible vs. Incompatible	Based on your cats/dogs behaviour could Person B be potentially compatible or incompatible? (7 point scale: Compatible to Incompatible)
Slider Roommate Preference	Based on this scenario, which of these first 2 persons would you pick for your second bedroom? (100-point slider, from A to B)

Scenario 2: Judgement (positive Valence)

Description (dog condition)	Later the same day, Person C comes in for a viewing in your apartment. A few minutes later another person rings the doorbell and you invite Person D in. You show both persons the apartment. Later you go into the living room, where your dog is lying in its bed. You invite the two people to sit on your couch, to have small talk. You ask them if they want something to drink. After both answer with yes, you go to the kitchen counter to prepare the drinks. From the kitchen you can still see the room, as well as your dog. Suddenly, you notice that your dog walks by Person C and is approaching Person D, wagging its tail fast, the ears upright. Then it lays down in front of Person D, displaying their belly. Please answer the following questions about this situation
Description (cat condition)	Later the same day, another two people come in for a viewing in your apartment. Person C arrives first and you show them the apartment. Later you go into the living room, where your cat is laying in its bed. The doorbell rings once again and Person D arrives. You let the two people sit down on your couch. You ask them if they want something to drink. After both answer with yes, you go to the kitchen counter to prepare the drinks. From the kitchen you can still see the room, as well as your cat. Suddenly, your cat walks by Person C, ignoring them, and approaches Person D, purring and rubbing its head against their leg. Then it jumps on their lap and lays down. Please answer the following questions about this situation.

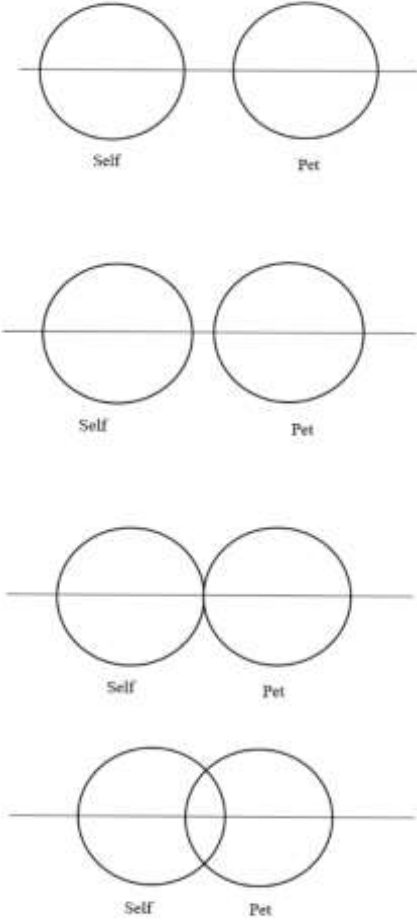|	
Emotions pet towards acquaintance	How do you think your cat/dog feels towards the acquaintance in this situation? (7-point scale: not at all to extremely) • Happy • Angry • Fearful • Sad • Curious • Positive • Negative • Friendly • Hostile
Emotions Participant towards acquaintance	How do you feel towards Person A in this situation? (7-point scale: not at all to extremely) • Happy • Angry • Fearful • Sad • Curious • Positive • Negative • Friendly • Hostile
Emotions Participant towards acquaintance	How do you feel towards Person B in this situation? (7-point scale: not at all to extremely) • Happy • Disappointed • Worried • Embarrassed • Curious • Surprised • Proud • Angry • Amuse
Cognitive Empathy (about Person C)	Do you understand the feelings of your cats/dogs? (7-point scale: not at all to extremely)
Affective Empathy (about Person C)	Do you share the feelings of your cats/dogs? (7-point scale: not at all to extremely)

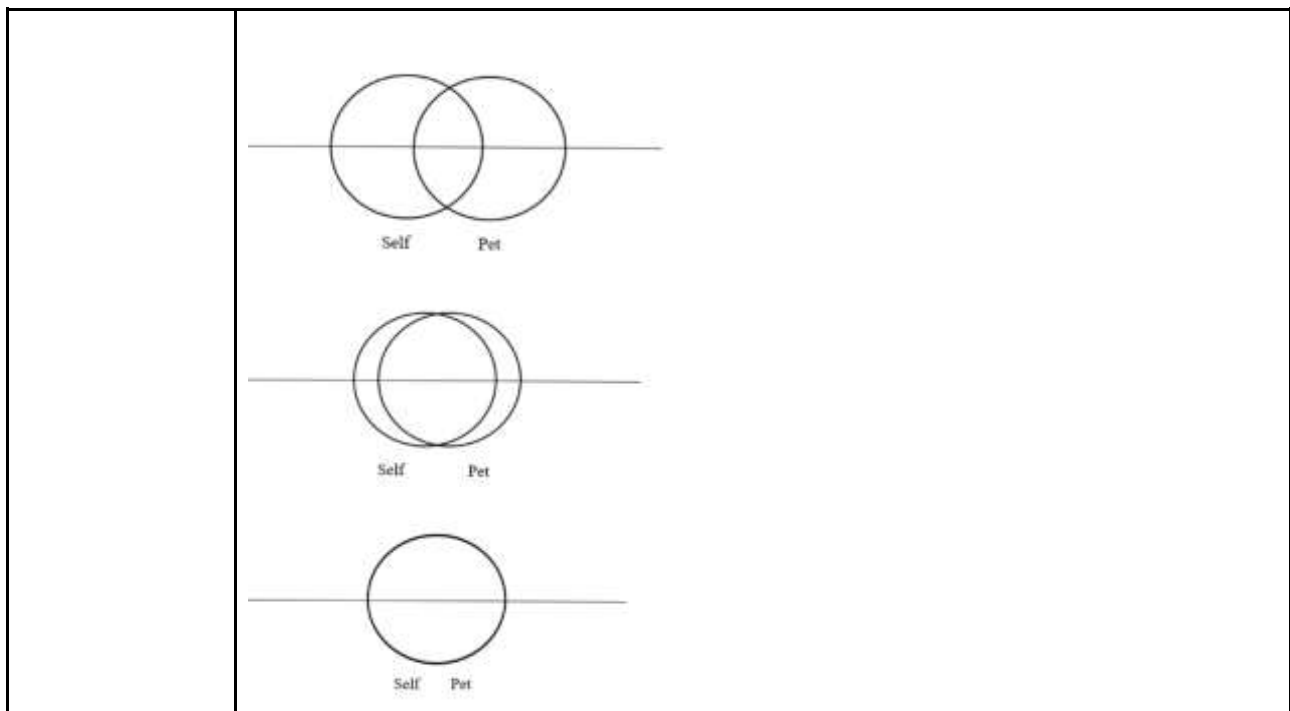| Cognitive Empathy (about Person D)	Do you understand the feelings of your cats/dogs? (7-point scale: not at all to extremely)
Affective Empathy (about Person D)	Do you share the feelings of your cats/dogs? (7-point scale: not at all to extremely)
Slider Liking	Who do you like more? (100-point slider, from C to D)
	The following questions refer to Person C.
Bipolar Scale Trustful vs. Suspicion	How does your cats/dogs behaviour make you feel towards Person C? (7-point scale: Trustful to Suspicious)
Bipolar Scale At ease vs. Threat	How does your cats/dogs behaviour make you feel towards Person C? (7-point scale: At ease to Threat)
Bipolar Scale Friendly vs. Unfriendly	Based on your cats/dogs behaviour could Person C be potentially friendly or unfriendly? (7-point scale: Unfriendly to Friendly)
Bipolar Scale Compatible vs. Incompatible	Based on your cats/dogs behaviour could Person C be potentially compatible or incompatible? (7 point scale: Compatible to Incompatible)
	The following questions refer to Person D.
Bipolar Scale Trustful vs. Suspicion	How does your cats/dogs behaviour make you feel towards Person D? (7-point scale: Trustful to Suspicious)
Bipolar Scale At ease vs. Threat	How does your cats/dogs behaviour make you feel towards Person D? (7-point scale: At ease to Threat)

Bipolar Scale Friendly vs. Unfriendly	Based on your cats/dogs behaviour could Person D be potentially friendly or unfriendly? (7-point scale: Unfriendly to Friendly)
Bipolar Scale Compatible vs. Incompatible	Based on your cats/dogs behaviour could Person D be potentially compatible or incompatible? (7 point scale: Compatible to Incompatible)
Slider Roommate Preference	Based on this scenario, which of these first 2 persons would you pick for your second bedroom? (100-point slider, from C to D)

Group Identity measure:

Pictorial measure of Group Identity	The images you see below represent yourself and your pet as well as much how much you see the both of you as a group. The more the circles overlap, the closer you see your relationship with your cat/dog. Which image best represents the relationship you have with your Pet?

Pet psychology scale

Subscale	Item name	In my view…
Care for Owner	PPS_CareOwner_C_1	Cats care for their owners (7-point scale: not at all to extremely)
Care for owner	PPS_CareOwner_D_1	Dogs care for their owners (7-point scale: not at all to extremely)
Care for owner	PPS_CareOwner_C_2	Cats want their owners to be happy (7-point scale: not at all to extremely)
Care for owner	PPS_CareOwner_D_2	Dogs want their owners to be happy (7-point scale: not at all to extremely)
Care for owner	PPS_CareOwner_C_3	Cats like their owners more than strangers (7-point scale: not at all to extremely)
Care for owner	PPS_CareOwner_D_3	Dogs like their owners more than strangers (7-point scale: not at all to extremely)

Care for owner	PPS_CareOwner_C_4 (Reversed)	Cats don't care about their owners (7-point scale: not at all to extremely)
Carelessness check		Pick number 3 (7-point scale: not at all to extremely)
Care for owner	PPS_CareOwner_D_4	Dogs don't care about their owners (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_C_1	Cats behaviour serves only their own needs (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_D_1	Dogs behaviour serves only their own needs (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_C_2	Cats are selfish (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_D_2	Dogs are selfish (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_C_3	Cats are manipulative (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_D_3	Dogs are manipulative (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_C_4	Cats are sly (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_D_4	Dogs are sly (7-point scale: not at all to extremely)

Selfishness	PPS_Selfish_C_5	Cats know how to get what they want (7-point scale: not at all to extremely)
Selfishness	PPS_Selfish_D_5	Dogs know how to get what they want (7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_C_1	Cats are cooperative (7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_D_1	Dogs are cooperative (7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_C_2	Cats act on behalf of their owner (7-point scale: not at all to extremely) +
Group mindedness	PPS_GroupMind_D_2	Dogs act on behalf of their owner (7-point scale: not at all to extremely) +
Group mindedness	PPS_GroupMind_C_3	Cats prefer being in a group (7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_D_3	Dogs prefer being in a group (7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_C_4	Cats see themselves as part of a household(7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_D_4	Dogs see themselves as part of a household (7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_C_5 (reversed coded)	Cats prefer being on their own (7-point scale: not at all to extremely) +
Group mindedness	PPS_GroupMind_D_5 (reversed coded)	Dogs prefer being on their own (7-point scale: not at all to extremely) +

Group mindedness	PPS_GroupMind_C_6 (reversed coded)	Cats are independent (7-point scale: not at all to extremely) +
Group mindedness	PPS_GroupMind_D_6 (reversed coded)	Dogs are independent (7-point scale: not at all to extremely) +
Group mindedness	PPS_GroupMind_C_7 (reversed coded)	Cats like to go their own way (7-point scale: not at all to extremely)
Group mindedness	PPS_GroupMind_D_7 (reversed coded)	Dogs like to go their own way (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_C_1	Cats understand the emotions of humans (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_D_1	Dogs understand the emotions of humans (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_C_2	Cats can perceive what somebody feels (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_D_2	Dogs can perceive what somebody feels (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_C_3	Cats are affectionate (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_D_3	Dogs are affectionate (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_C_4	Cats show compassion (7-point scale: not at all to extremely)
Empathy	PPS_Empathy_D_4	Dogs show compassion (7-point scale: not at all to extremely)

Judgment	PPS_Judge_C_1	Cats show if they like someone. (7-point scale: not at all to extremely)
Judgment	PPS_Judge_D_1	Dogs show if they like someone (7-point scale: not at all to extremely)
Judgment	PPS_Judge_C_2	Cats are picky about who they like (7-point scale: not at all to extremely)
Judgment	PPS_Judge_D_2	Dogs are picky about who they like (7-point scale: not at all to extremely)
Judgment	PPS_Judge_C_3	Cats vary in their preferences about people (7-point scale: not at all to extremely)
Judgment	PPS_Judge_D_3	Dogs vary in their preferences about people (7-point scale: not at all to extremely)
Judgment	PPS_Judge_C_4	Cats are good judges of character (7-point scale: not at all to extremely)
Judgment	PPS_Judge_D_4	Dogs are good judges of character (7-point scale: not at all to extremely)
Judgment	PPS_Judge_C_5	Cats have a good intuition about people (7-point scale: not at all to extremely)
Judgment	PPS_Judge_D_5	Dogs have a good intuition about people (7-point scale: not at all to extremely)
Security	PPS_Security_C_1	Cats sense which strangers are a potential threat (7-point scale: not at all to extremely)
Security	PPS_Security_D_1	Dogs sense which strangers are a potential threat (7-point scale: not at all to extremely)
Security	PPS_Security_C_2	Cats are motivated to protect their owners (7-point scale: not at all to extremely)

Security	PPS_Security_D_2	Dogs are motivated to protect their owners (7-point scale: not at all to extremely)
Security	PPS_Security_C_3	Cats are loyal (7-point scale: not at all to extremely)
Security	PPS_Security_D_3	Dogs are loyal (7-point scale: not at all to extremely)
Security	PPS_Security_C_4	Cats are willing to take risks to protect their owner (7-point scale: not at all to extremely)
Security	PPS_Security_D_4	Dogs are willing to take risks to protect their owner (7-point scale: not at all to extremely)
Security	PPS_Security_C_5 (reverse coded)	Cats do not worry about their owner's safety (7-point scale: not at all to extremely)
Security	PPS_Security_D_5 (reverse coded)	Dogs do not worry about their owner's safety (7-point scale: not at all to extremely)

Seriousness check

Seriousness	We would like to know if you answered this questionnaire seriously. There will be no consequences for you if you answer the following question with no. You still get your SONA-credits!
	Did you answer the questions in this questionnaire seriously?
	• Yes
	• No

--End--

Debriefing

With this study, we want to find out whether we can be socially influenced by animals, more

specifically, pets. We predict that this influence is stronger for pet-owners than for non-owners. To

test this, you have been allocated to a condition involving either a cat or a dog reacting to some strangers. Participants are assigned to one of these two conditions, determined by whether they have a dog or cat as a pet, or chosen randomly if not. We will examine what effect the pet's behaviour has on your perceptions in the different situations. The first scenario at the door with A and B concerns security. In this scenario we will examine if the behaviour of the pet will be interpreted as a protective reaction. We expect that in this scenario the dog's reaction will have a stronger influence on you than the cat's. The second scenario with Person C and D on the couch is about judgement. Here we will examine if the behaviour of the pet is interpreted as reflecting their discretionary judgement or preference for one person rather than another. We expect that in this scenario the cat's reaction will have a stronger influence on you than the dog's. For both scenarios we want to see if the pets' perceived emotion impacts your preference of either one of the two strangers. The data collected during this study will be treated confidentially. We hope you enjoyed this study and thank you for participating! Finally, we kindly request that you don't discuss this study with others who may be participating as this may influence their results and invalidate the result for the sample as a whole. Many thanks again for your cooperation!

Perceived Emotion of Pet Towards Strangers A & B and C & D

	Emotions	*M*	*SD*	*t*	*df*	*p*
Person A x B	Happy	1.77	1.49	25.63	461	<.001
	Angry	-3.76	1.84	-43.89	461	<.001
	Fearful	-3.73	1.87	-42.93	461	<.001
	Sad	-.94	1.64	-12.41	461	<.001
	Curious	-1.24	1.73	-15.43	461	<.001
	Positive	1.83	1.65	23.83	461	<.001
	Negative	-3.97	1.70	-50.18	461	<.001
	Friendly	1.64	1.64	21.40	461	<.001
	Hostile	-3.97	2.26	-37.79	461	<.001
Person C vs. D	Happy	-2.76	1.67	-35.58	461	<.001
	Angry	.36	.90	8.62	461	<.001
	Fearful	.50	1.10	9.79	461	<.001
	Sad	.35	.95	7.90	461	<.001
	Curious	-3.69	1.94	-40.91	461	<.001
	Positive	-2.88	1.71	-36.21	461	<.001
	Negative	.84	1.24	14.70	461	<.001

Perceived Emotion of Pet Towards Strangers A & B and C & D

Friendly	-3.17	1.77	-38.55	461	<.001
Hostile	.25	1.27	4.22	461	<.001

Friendly	-3.17	1.77	-38.55	461	<.001
Hostile	.25	1.27	4.22	461	<.001