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People's attitudes and how they actually behave in direct contact with wolves or dogs

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1. Introduction

1.1. Living with wolves and dogs

Wilson and Reeder (2005) list the wolf (*Canis lupus*) as one out of thirty-five species of the dog family (Canidae) with 37 subspecies – one of them is *Canis lupus familiaris*, the domestic dog.

Dogs have been domesticated several times, with two major events (East Eurasia, >15 000 years ago and West Eurasia, > 12 500 years ago) forming the ancestors of today's dogs (Frantz et al., 2016). Domestication is the process of genetic change over generations, led by a selection on specific behaviour in adaptation to humans (Trut et al., 2004). But "domestication" is not to be understood as a planned process, at least not in the beginning. Due to being biophilic, humans have the "urge to affiliate with other forms of life" (summarised in Kotrschal, 2014; Wilson, 1984: p. 85) and this need found rules and justification in the animistic spirituality of our hunter-gatherer ancestors (Kotrschal, 2009).

Wolves used to live all over the Northern hemisphere long before dogs evolved (Koblmüller et al., 2016). Whereas approximately 200 000 wolves worldwide live in their habitats, dogs profited enormously from the human vector: Today more than 1 billion dogs live all over the world (Kotrschal, 2014). Their role in society varies a lot. Although their meat was one reason (Podberscek, 2007) and in East Asia sometimes still is (Tacon and Maynard, 2007), there was also the utility of guarding their owners' properties (Tan, 2007) and for many people who interact with dogs, these are working partners (Naderi et al., 2001) or merely social partners (Kotrschal, 2016; Wedl and Kotrschal, 2009).

Wolves are protected in most of central and Western Europe, whereas in most of Eastern Europe they are not (ww.iucnredlist.org). In North America large remaining wolf populations are found in Alaska and Canada. In the latter, they are hunted game species, in the US they are protected with exceptions. In Asia, wolves are present in nearly all countries, except for South East Asia and the Korean peninsula. They are mostly not protected (www.wolf.org). People's coexisting with both subspecies of course mainly depends on the attitudes towards those.

1.2. Attitudes towards wolves and dogs

Attitudes are formed by cognitive, affective and behavioural processes (Eagly and Chaiken, 1993). They reflect the expectance of the costs and benefits of a particular behaviour (Ajzen

and Fishbein, 1980) and serve to fast-track the decision-making process (Olson and Zanna, 1993). Since attitudes do not only influence our behaviour, but also our perception of the world, they are usually self-stabilising after being set up early in ontogenesis (Heberlein and Ericsson, 2005) and are updated by experience with a frequency of approximately five hertz (Cunningham and Zelazo, 2007).

Attitudes towards both dogs and wolves varied and vary from time period to time period (Kruuk, 2002) and from culture to culture (Serpell, 1995), and – hardly surprising as living close to or with wolves respectively dogs generated and still generates benefits as well as costs (Treves and Bonacic, 2016) – differ among people as well. Since wolves are protected in many countries, they are returning to a few areas of their former habitat (Boitani, 2000). Thus it is very important for efficient management plans to know what people's attitudes are (Chapron et al., 2014). Illegal killings are one of the main reason for the stagnating / decreasing number of large carnivores (Kaczensky, 2006) and they are more likely if people feel like their opinions get ignored by governments (Browne-Nuñez et al., 2015).

In general wolves, as well as other large carnivores, are often romantic symbols of pristine nature (Linell et al., 2015) – although for wolves, wild nature is not necessary to thrive (López-Bao et al., 2015). Attitudes towards wolves become more positive as the distance to the next wolf territory increases and urbanites are more positive about wolves than people in rural areas (Karlsson and Sjöström, 2007; Williams et al., 2002; Randveer, 2006; Kaczensky, 2006; Kleiven et al., 2004; Nilsen et al., 2007). Having rural roots while actually living in urban regions also correlates with a positive opinion about wolves (Heberlein and Ericsson, 2005). In contrast, experiencing damage and loss caused by wolves as well as fear of wolves lead to significantly more negative opinions about wolves (Dressel et al., 2015; Treves et al., 2013; Suryawanshi et al., 2013; Majić, 2007; Røskaft et al., 2007). Fear was more common in regions with few wolves or where wolves were about to arrive (Bisi et al., 2007; Kaczensky, 2006); this was also found for the US and Canada (Houston et al., 2010). Fear alone was not correlated with the acceptance of lethal control (Jacobs et al., 2014). In longitudinal studies, the opinion was found to vary over time: becoming more neutral in Croatia (Majić and Bath, 2010), but turning more negative in Sweden (Dressel et al., 2015) and Switzerland (Hunziker et al., 2012) after the return of the wolves.

In many studies, another characteristic connected with significant differences was gender.

Women were generally more fearful than men (Majić, 2007; Balciauskiené and Balciauskas, 2001). A meta-analysis including 38 surveys reported a more positive opinion of them in three and a more negative in 25 surveys, in 10 there was no significant effect of gender (Dressel et al., 2015). One of these 38 surveys was conducted in Austria: the "Akzeptanzstudie" 2005 found men to quote more positive attitudes towards wolves. Altogether, the feelings towards wolves were mostly described as positive (36.5%) or neutral (38%) (Wechselberger and Leizinger, 2005). In a study with 80 students of 37 nations, Otterstedt (2009) found that wolves were perceived as intelligent but dangerous.

The same students attributed dogs to be valuable (except for participants from Islamic backgrounds), intelligent and useful (Otterstedt, 2009). In constellations where people rely on the dog – for example as service dogs – they are experienced as friends and companions and trustworthy (Davis, 2007; Derr, 2007; Thurston, 2007). This close relationship is sometimes viewed critically, especially by non pet owners, who argue that dogs might become substitutes for human companions (Sarmicanic, 2007). In the UK, Spain and Italy dogs are the top preferred animal both for students and children, with generally positive attitudes towards them (Lakestani et al., 2011), as also found in many studies in Western countries (Ellingsen et al., 2010; Driscoll, 1995; Coleman et al., 2016). Some of them report gender differences with women having even more positive attitudes (Ellingsen et al., 2010). In Western countries dogs are mainly companions or activity partners (Topál et al., 1997; Kotrschal et al., 2009) and the relationship is considered to be mainly determined by emotional rather than cognitive aspects (Kotrschal et al., 2009; Kotrschal, 2016). Pet dogs are regarded as family members (Topál et al, 1997; Risley-Curtiss and Holley, 2006) and parental behaviour towards them might play a major role (Prato-Previde et al., 2006). A study conducted in Austrian shelters found the staff describing dogs as playful, cuddly and eager to learn, but nevertheless a little bit smelly and noisy and also in need of contact with humans (Arhent and Troxler, 2014).

Coleman et al. (2016) found attitudes to be a good predictor of the intention to interact with dogs. As intention is the most important determinant of a behaviour (Ajzen and Fishbein, 2005), predicting an intention might be the first interesting step. Attitudes towards a specific action are based on the perceived consequences of performing in that specific way (Eagly and Chaiken, 1993). Together with the subjective norm (the assumed opinion of other people of relevance to the person), these attitudes form the intention, according to the theory of reasoned action (Ajzen and Fishbein, 1980). Besides that, also motivation and opportunity

(Fazio, 1990) as well as perceived behavioural control (i.e. if a person has the skills and resources needed to perform an action) affect the intention (Ajzen, 2005). Eagly and Chaiken (1993) also take habits into account as well as self-identity outcomes, i.e. whether or not an action would violate or reinforce the self-concept of the person. Experience, especially direct experience, is considered to be more conductive to attitudes than information (Heberlein, 2012).

Behavioural studies concerning dogs and wolves most often concentrate on the differences and similarities of the behaviour of the animals and encourage the humans to behave as alike as possible (Miklósi et al, 2003; Virányi et al., 2008). Hampl (2013) found a difference in the behaviour of the humans during a walk on the leash, suggesting that even people who try to treat the animals as alike as reasonable differentiate between the two closely related species.

1.3. "Grasping" the world and petting

Animals, including humans, gain information about their environment in a multi-modal way. Touch as part of the sensory-motor system (Sevos et al., 2013) is an important input channel. Information about the features obtained by touching are incorporated in the mental representation of the whole object, thus increasing individual knowledge about the world (Wallraven et al., 2014). The haptic system is adjusted to gathering information quickly (Klatzky et al., 1985) – and, as curiosity is another characteristic of human beings (Berlyne, 1954) – touching is part of grasping the world.

But between individuals, touching can serve more functions than just receiving information about the other one: social touching is part of the care giving-grooming system and positive social contact has been found to trigger the release of oxytocin (de Vries et al., 2003), a hormone also important in the bonding between mothers and their infants (Unväs-Moberg, 1997) as well as in pair bonding (Carter et al., 1995). In calm, positive interactions (i.e. talking, petting, scratching behind the ears) between humans and dogs (own dogs as well as unfamiliar but friendly dogs), an increase of oxytocin was found in both humans and dogs (Odendaal and Meintjes, 2003). Oxytocin was found to have several effects that are associated with well-being (Kirsch et al., 2005; Petersson and Uvnäs-Moberg, 2007; Uvnäs-Moberg et al., 2015).

Therefore, it is not surprising that humans like to allo-groom (i.e. grooming others, in contrast

to self-grooming) – a behaviour common in all primates (Dunbar, 1988). It seems to provide the hormonal background for close relationships/alliances and include intense social and emotional connotations (Dunbar, 2010; Dunbar, 2004). Of course, social interactions are not always relaxing, but they can be quite stressful (Flinn, 2006), as well as new situations can tense nerves (Grandgeorge et al., 2011). In stressful situations people tend to have a variety of different coping strategies, either attentive (i.e. focusing attention on the source of stress) or avoidant (i.e. focusing attention away from it) (Suls and Fetcher, 1985). One of the avoiding strategies might include hiding (Creasey et al., 1997), sometimes behind a camera (Buchanan and Keats, 2011).

1.4. Research Question and Hypothesis

To investigate the different attitudes of people towards two representatives of the same species – a domesticated one and a "wild" one, even though used to friendly encounters with humans – I compared answers given in a questionnaire and behaviour in contact with unfamiliar, equally raised and kept wolves and dogs unfamiliar to the test persons. The participants were part of a visitor program at the attendees' expense, therefore I generally expect positive attitudes towards wolves with men being more positive in their attitudes than women (Majić 2007; Balciauskiené and Balciauskas, 2001). At the same time, I expect positive attitudes towards dogs as well (consistent with Lakestani et al., 2011; Driscoll, 1995; Coleman et al., 2016). For dogs, I expect women to be more positive (Ellingsen, 2010).

Fear and association with danger is a more common attitude towards wolves than dogs (Otterstedt, 2009), thus I expect the participants to spend more time allowing direct contact in the dog enclosure than in the wolf enclosure. I expect a predicting effect of the answers to a fear-related question in the questionnaire – participants who state more fear may generally squat down less and stand up more often if a wolf is coming towards them. As women are reported to experience more fear, I also expect a gender difference in time spent squatted down and in the reactions to possible contact. As it was found earlier that men and women touch their dogs equally often (Prato-Previde et al., 2006), I expect no gender difference in touching the animals in the encounters. Taking pictures and manipulating the camera may be more common in the less ordinary and therefore potentially more stressful (Grandgeorge et al., 2011) encounters with the wolves, serving at least particularly as coping strategy. For the same reason I expect the participants to be more relaxed in the dog enclosure.

Direct experience is capable of influencing attitudes (Heberlein 2012), therefore I expect differences in the behaviour of (former) dog owners and no dog owners. Habits may play a role in intentions and behaviour (Eagly and Chaiken, 1993), hence I expect dog owners to touch the dogs from above and eventually hold them more often than people without dogs (the participants are asked not to do any movements that may limit the animals in their freedom to move). Generally, I expect the participants to perform such movements more often in the encounters with the dogs than with the wolves, since the latter are not as common and therefore should be less influenced by habits.

For the direct "greeting" situations (i.e. the animal tries to lick the face of the participant, a behaviour common in wolves for greeting each other (Mech, 1970)), I expect the participants to stop it more often in the dog encounters. Wolves get a lot more mystified than dogs (Kotrschal, 2012), thus the element of it being a special event to get licked in the face may count more in wolf encounters. For the same reason, as well as for curiosity (Berlyne, 1954), I expect the participants to touch the wolves more often. Another attitude may be the degree of agreement to the whole setting (i.e. keeping hand raised wolves for behavioural science), therefore I expect participants who agree more to engage in more contact opportunities and allow the greeting attempts more often.

In short, although dogs and wolves are closely related, I expect some differences in the behaviour of the participants:
- with the dogs: more relaxed impression, more time spent squatting down, more often reactions that promote direct contact and more behaviour they had been asked not to be performed towards these animals.
- with the wolves: taking pictures more often, more usage of contact opportunities, more appreciation of being "greeted" but also more active rejection of possible direct contact by standing up in the encounters.

I also expect an influence of gender in some behaviour (time spent squatted down, active rejection of direct contact), but not in all, and differences between (former) dog owners and no dog owners in behaviour in the dog encounters, but not in the wolf encounters. An effect of the attitudes may be found in all kinds of behaviour as well as for treating the subspecies in the same way. For the attitudes, I expect positive mindsets towards both subspecies, with men being more positive towards wolves and less positive towards dogs.

2. Material and Methods

2.1. Setting and Subjects

This study was conducted in the frame of a Sparkling Science Project at the Wolf Science Centre (WSC, www.wolfscience.at) in the game park of Ernstbrunn (Austria). "Sparkling Science" (www.sparklingscience.at) is a project scheme of the Austrian Federal Ministry of Science, Research and Economy in which high school students work as junior partners with scientists.

The main goal of the project was to investigate the attitudes of different groups of Austrian citizens towards wolves and dogs. From 2012 till 2014, two school classes (one from the BRG 10, Pichelmayergasse 1 and one from the BORG Mistelbach) worked together with Prof. Dr. Kurt Kotrschal and me, working as a project manager. They accompanied us throughout the whole process, from the initial idea and first hypotheses via creating a questionnaire, conducting interviews, digitalising and analysing the data to finally interpreting them. One group of the interviewees were participants of the "fotoshootings" at the WSC where people visit the wolves in the enclosures. They were also filmed during the pack visits with the wolves and dogs at the WSC. The high school students tried out the behaviour coding process as well, but due to time constraints, I did the coding myself.

At the time of the data collection, 13 dogs and 15 wolves were living at the WSC in packs of two to five animals each. Wolves and dogs live in separate packs, but are raised and kept in the same way, in order to have comparable populations. All animals were separated from their mothers and hand-raised from at the latest 10 days after birth (i.e. before starting to open their eyes – see Klinghammer and Goodmann, 1987). They are familiar with humans. Interaction includes teaching them several commands and letting them work for food rewards. They are never restrained or punished in any way, as the main rule for the whole work at the WSC is to avoid conflict by proper planning and foresightful handling of animals and situations. The animals are used to visitors who come accompanied by the trainers. Visitors can offer petting, but should never train or hassle the animals.

"Fotoshootings" are part of the WSC visitor and educational program. Once a month, up to 10 visitors (aged 18 years and older) spend a whole day at the WSC. In a security seminar they get to know about the WSC and about which behaviour is expected and which is not advisable

or not allowed. The fotoshooting participants are taught to avoid cornering the animals. This means petting is welcome whenever an animal voluntarily comes to the visitor, but holding on or following the animals and petting them from above is not allowed. After the introduction, the fotoshooting participants start to visit the packs attended by three to five trainers of the WSC. A single pack visit takes up to one hour, but consists of different parts. First, the participants are lead to a certain place in the enclosure (i.e. the greeting area), lined up in a half-circle and told to wait until the animals have calmed down. The trainers then allow the participants to squat down, if they wish to. The wolves and dogs are used to move freely between the visitors and decide whom they want to greet or be petted by. The participants are asked not to move their heads back during being greeted, as it would make the animals follow the head. If someone does not want to get greeted, the person might not squat down or stand up during the greeting. Taking pictures is allowed throughout the whole time. If the trainers get the feeling the animals get bored, they lead the participants to other places in the enclosure. They show the training of the animals and other behaviour that might be interesting to take pictures of. After about one hour, the participants leave the pack and go on to visit another one. Four to five packs are visited during this day, always one dog pack and three to four wolf packs.

Altogether, 126 people attended a fotoshooting during the time of the data collection. Some had to be excluded due to non- evaluable videos or not filling in the questionnaire, leaving a total of 104 subjects from twelve different days. Of the 52 women and 52 men, 76 were aged between 18 and 50 years and 28 were 51 or older. 46 were dog owners, another 23 had kept dogs earlier in live, 15 would like to have a dog but never had one and 20 were not interested in owning a dog.

2.2. Data Collection

The questionnaire consisted of some statistical-demographical questions on top of 33 statements on dogs and 30 on wolves. The topics covered the knowledge about specifics and needs, ecological / social roles, empathy, care giving, spirituality and projection surfaces and problems. For each statement, the participants were asked to state on a 7-point Likert scale, how much they agreed/disagreed with it, with 7 representing the highest level of agreement (Appendix A).

Data was collected from September 2012 to November 2013. The questionnaires were filled

out during lunch breaks for the first four fotoshooting-days. In order to increase the return rate, the questionnaires were handed and filled in before the first pack visit on the other days of the study. A Mann-Withney-U-Test revealed a statistically significant difference only for two statements on dogs and one on wolves. These three statements were not part of the correlation analysis between behaviour and questionnaire.

The first part of the pack visits (starting with the arrival at the meeting place, continuing until the group moved on to another part of the enclosure for a maximum of 20 minutes recording time) was videotaped by the high school students of the Sparkling Science project. Two students were standing at two different positions outside the enclosure, using a triploid and a sony handycam. The positions of the two camcorders were adjusted during the recording, according to the actual positions of the fotoshoot participants, ensuring each person was clearly visible on at least one of the two videos.

2.3. Behaviour coding

The videos of each the first wolf pack visit and the dog pack visit were coded for each person independently with Solomon Coder beta 15.11.19. Out of the two videos available per person only the one providing the better view was used. The configuration included eight behavioural classes (Appendix B). The subjective impression of each participant was noted as well (tense – intermediate – relaxed), as was the size of the camera (very tiny – small – average reflex camera – average with some extras – very big). For inter-observer-reliability one person experienced in the use of the Solomon Coder coded the videos for 21 participants for the wolves as well as for the dogs. Durations of the behavioural variables were correlated via Spearman's rank correlation coefficient and revealed coefficients between 0.793 and 0.999 with p values < 0,001 for all behavioural variables.

2.4. Statistical Analysis

The statistical analysis was carried out with SPSS 21 and R 3.3.0. For the influence of the questionnaire on the behaviour, I took the mean of four questions each for the wolf and dog items that dealt with topics relevant for direct contact and showed variability among the participants (Appendix C). As the duration of the pack visits varied, I computed the frequency of each behaviour in relation to the total duration of the pack visit, to compare the results of the different test days.

The difference in the behaviour of the participants towards wolves and dogs was calculated via a Wilcoxon Test. To see which factors influence the behaviour I calculated linear mixed effect models (LME) – with square root (sqrt) or square transformation if residuals were not equally distributed – independently for wolves and dogs, controlling for test days as random effect. For behaviour performed only by some participants, I calculated generalised linear mixed effect models (GLMM), using binomial distribution (Table 1).

For most types of behaviour within the wolf encounters, I tested the influence of the agreement with the whole setting as well ("Es ist in Ordnung, in der Verhaltensforschung mit handaufgezogenen Wölfen zu arbeiten."). For behaviours within the dog encounters I included the same behaviour performed in the wolf encounters before in the model (Table 1).

For one statement concerning the difference between wolves and dogs ("Einen zahmen Wolf würde ich genauso behandeln wie einen zahmen Hund"), I tested the correlation (Pearson) with the difference in used contact opportunities and the difference in undesirable behaviour.
For the questionnaire in general, the gender difference was examined with Mann-Withney-U-Test for the mean of dog respectively wolf items. For negative items (for example "Ich hasse Wölfe") the Likert scale was reversed before calculating the average. (See explanation in Appendix A).

Alpha was set at 0.05, trends were reported for $0.1 > \alpha > 0.05$. Bonferroni-Holm-correction was used for each behaviour (one model plus Wilcoxon test, adjusted p-level marked as p*).

Table 1: Tested factors, used model and eventually transformation per behaviour. Factors tested only in one subspecies are duly endorsed; the other factors were tested in both models.

Behaviour	Definition	Model	Tested Factors
Squatting down	Time spent squatted down or sitting / total time after squatting down was allowed	LME; for wolves with square transformation	age, gender, dog ownership, questionnaire, taking pictures, rejective reactions, fear questions (wolves only), squatting down at the wolves' (dogs only)

Behaviour	Definition	Model	Tested Factors
Taking pictures	Time handling the camera or taking pictures / time	LME with sqrt transformation for wolves; GLMM (Binomial) for dogs	age, gender, dog ownership, questionnaire, impression, size of the camera squatting down agreement with setting (wolves only) taking pictures at the wolves' (dogs only)
Used contact opportunities	Time spent petting the animal or allowing being greeted / time an animal was within reach of the participant	LME; sqrt transformation for both	age, gender, dog ownership, questionnaire, taking pictures, squatting down, time an animal was within reach, agreement with setting (wolves only), used contact opportunities at the wolves' (dogs only)
Greeting allowed	Greeting attempts the participant allowed / total greeting attempts directed to this participant	LME; square transformation for wolves	age, gender, dog ownership, questionnaire, impression, total greeting attempts, used contact opportunities, agreement with setting (wolves only), greeting allowed at the wolves' (dogs only)
Undesirable behaviour	Time spent petting from above, holding on an animal or refusing a greeting attempt / time an animal was within reach of the participant	GLMM (Binomial)	age, gender, dog ownership, questionnaire, time an animal was within reach, agreement with setting (wolves only), undesirable behaviour at the wolves' (dogs only), willingness to help in a dog shelter (dogs only)
Solicitation behaviour	Staying squatted down or actively squatting down when an animal was coming directly towards the participant / all occasions an animal was coming directly towards the participant	LME; sqrt transformation for wolves	age, gender, dog ownership, questionnaire, time an animal was within reach, taking pictures, agreement with setting (wolves only) solicitation behaviour at the wolves' (dogs only)

Behaviour	Definition	Model	Tested Factors
Rejective reactions	actively standing up when an animal was coming directly towards the participant / all occasions an animal was coming directly towards the participant	GLMM (Binomial)	fear question (wolves only) questionnaire (dogs only)
Sitting	Time spent in a position that would not allow standing up fast / time spent squatted down or sitting	GLMM (Binomial)	age, gender, dog ownership, questionnaire (dogs only), agreement with setting (wolves only), sitting in the wolf enclosure (dogs only)

3. Results

3.1 Questionnaire

Attitudes towards wolves and dogs were very positive with an average of 6.11 (SD=0.55) and 6.16 (SD=0.41) respectively. There was no gender difference in the wolf items (Mann-Whitney-U: z=-0.61, p=0.54) but in the dog items (Mann-Whitney-U: z=-2.805, p=0.037) with women being more positive about dogs.

3.2. Differences in behavioural patterns between wolf and dog encounters

Out of the eight variables tested, five were significant and one showed a trend: Participants were more relaxed in the dog pack (Wilcoxon: z = -3.319, p = 0.001; Fig. 1), showed undesirable behaviour more often towards dogs (Wilcoxon: z = - 5.503, p* (Bonferroni-Holm corrected) < 0.001; Fig. 2), interrupted the greeting attempts of dogs more often (Wilcoxon: z = -2.679, p* = 0.014; Fig. 3) spent less time squatted down in the dog enclosure (Wilcoxon: z = - 6.234, p* < 0.001; Fig. 4), spent less time taking pictures of the dogs (Wilcoxon: z=-8.325, p*<0.001; Fig 5.) and showed less solicitation behaviour when a dog was coming towards them as compared to a wolf (Wilcoxon: z = -6.534, p* < 0.001; Fig. 6).

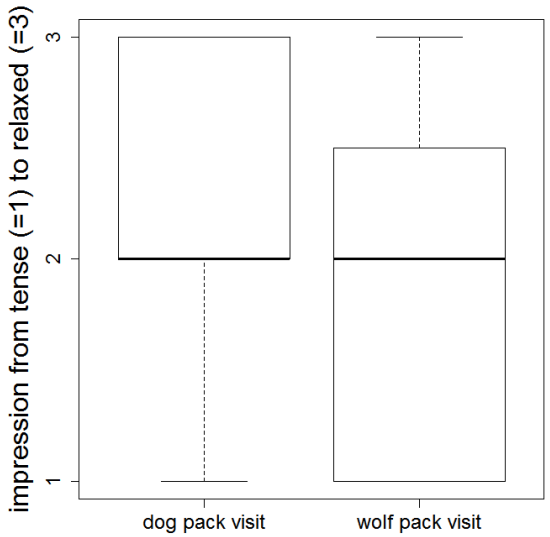

Figure 1: Subjective impression during the visit at the dogs respectively wolves. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data.

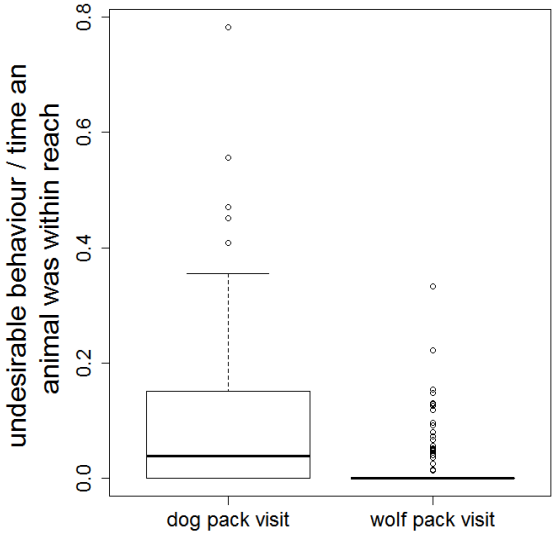

Figure 2: Amount of undesirable behaviour (in relation to the time an animal was within reach of the participant) performed towards dogs respectively wolves. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

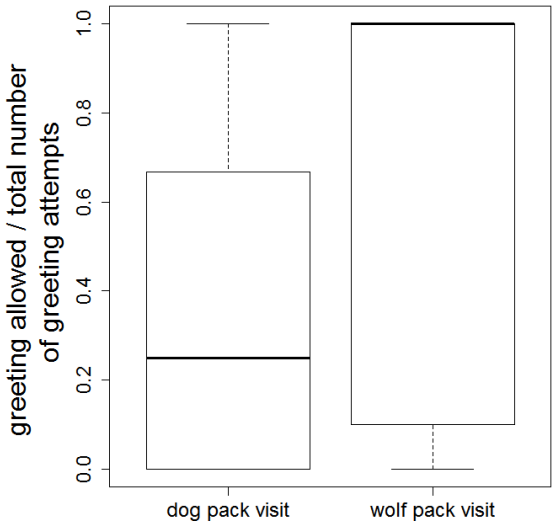

Figure 3: Amount of allowance of greeting (in relation to the total number of greeting attempts directed at this person) of either dogs or wolves. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data.

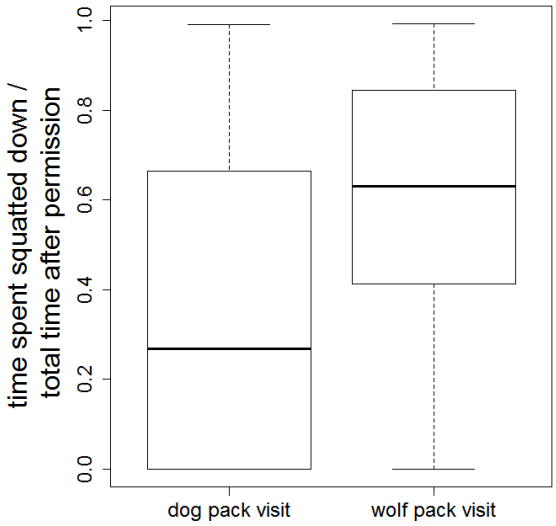

Figure 4: Amount of time spent squatted down (in relation to the total time after the permission to squat down was given) in the dog respectively wolf pack visit. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data.

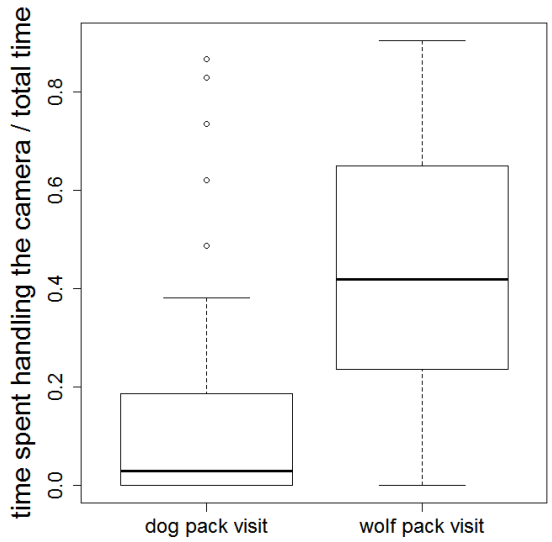

Figure 5: Amount of time spent handling the camera or taking pictures (in relation to the total time after arriving at the meeting area) of either dogs or wolves. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

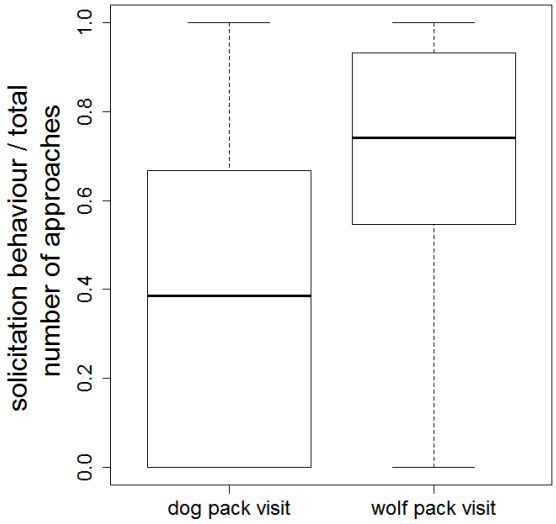

Figure 6: Solicitation behaviour as reaction to being approached (in relation to the total times the participant was approached by an animal) by either dogs or wolves. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data.

There was a trend of using fewer of the contact opportunities for positive contact at the dogs (Wilcoxon: z = - 1.849, p = 0.064; Fig. 7). There was no significant difference between the encounters with dog or wolf in the rejective reactions (Wilcoxon: z = -0.73, p* = 0.95) and the amount of time spent sitting (Wilcoxon z = -0.86, p* = 0.78). Both types of behaviour were very rare in both settings, showed by only 14 persons of 104 participants.

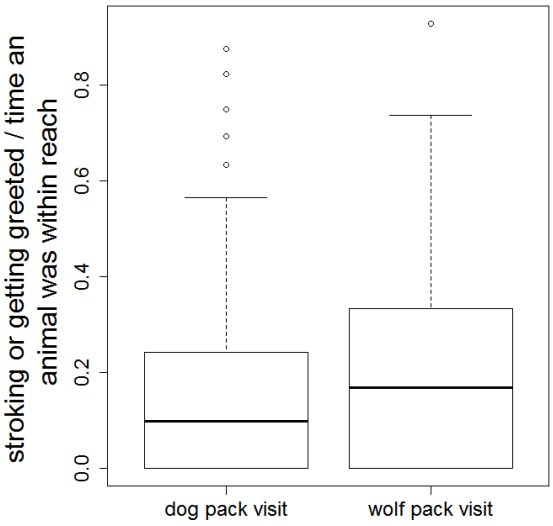

Figure 7: Amount of contact opportunities used for friendly contact (in relation to the total time an animal was within reach of the participant) with the dogs respectively wolves. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

3.3. Factors influencing the individual behavioural patterns

3.3.1. Squatting down

In the wolf enclosure, the time spent squatted down after permission was significantly influenced by age only (linear mixed effect model (LME): $F_{1,94}$=23.969, p<0.001; Fig. 8) – younger participants spent more time in a crouched position. The answers in the questionnaire (LME: $F_{1,91}$=1.25, p=0.27), dog ownership (LME: $F_{3,88}$=1.47, p=0.23), standing up as reaction to an approaching animal (LME: F=$_{1,88}$=1.84, p=0.18), taking pictures (LME: $F_{1,91}$=1.45, p=0.23), the fear-related statement (LME: $F_{1,87}$=0.03, p=0.86) and gender (LME: $F_{1,84}$=0.02, p=0.87) had no significant influence.

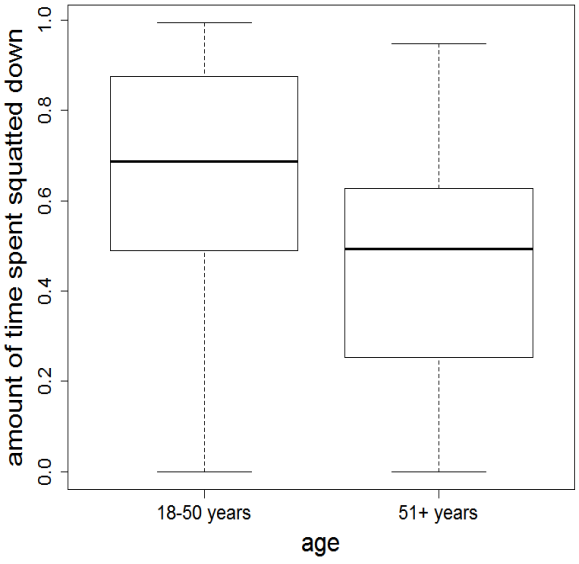

Figure 8: Amount of time spent squatted down (in relation to the total time after the permission to squat down was given) in the wolf enclosure of younger and older participants. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data.

In the dog enclosure, participants who had been squatting down more in the wolf enclosure also spent more time close to the ground (LME: F=$_{1,100}$=23.625, p<0.001; Fig. 9), as did

participants who agreed more with the statements of the questionnaire (LME: $F_{1,93}$=11.295, p=0.001; Fig. 10). No significant effect was found for gender (LME: $F_{1,92}$=1.21, p=0.27), dog ownership (LME: $F_{3,89}$=1.56, p=0.2), age (LME: $F_{1,93}$=0.63, p=0.43) and rejective reactions (LME: $F_{1,86}$=0.07, p=0.79).

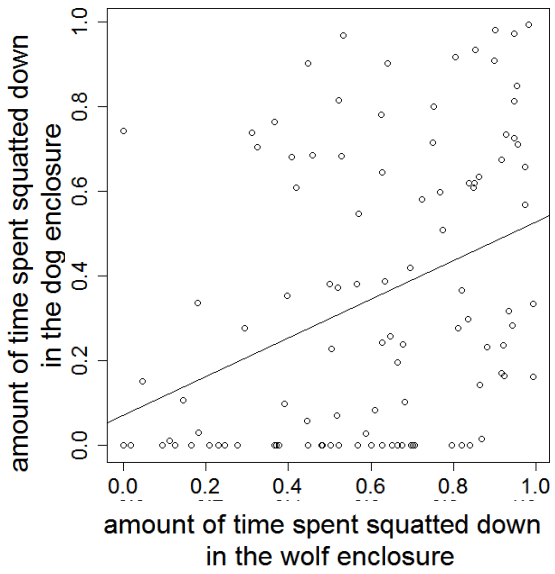

Figure 9: Amount of time spent squatted down (in relation to the total time after the permission to squat down was given) in the dog enclosure related to the same behaviour in the wolf enclosure. The fit line represents the trend of the data. The fit line is based on the least squares method.

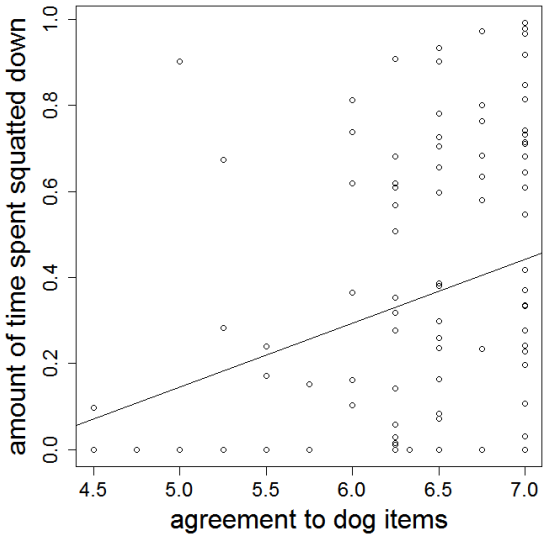

Figure 10: Amount of time spent squatted down (in relation to the total time after the permission to squat down was given) in the dog enclosure related to the attitudes stated in the questionnaire. 7.0 indicates the most dog-positive attitudes. The fit line represents the trend of the data. The fit line is based on the least squares method.

3.3.2. Taking pictures

As shown in figure 11, the amount of time spent taking pictures in the wolf enclosure increased, the larger the camera was, with an exception for the very big cameras – participants with the largest cameras were spending approximately as much time handling their device as did participants with average reflex cameras (LME: $F_{1,90}$=13.203, p<0.001). There was no significant effect of the factors age (LME: $F_{1,86}$=1.38, p=0.24), gender ($F_{1,81}$=0.95, p=0.33), time spent squatted down (LME: F1,83=0.46, p=0.5), agreement with setting (LME: $F_{1,83}$=0.32, p=0.57), answers given in the questionnaire (LME: $F_{1,76}$=0.15, p=0.7), dog ownership (LME: $F_{3,78}$=0.6, p=0.62) and impression (LME: $F_{1,75}$=0.07, p=0.79).

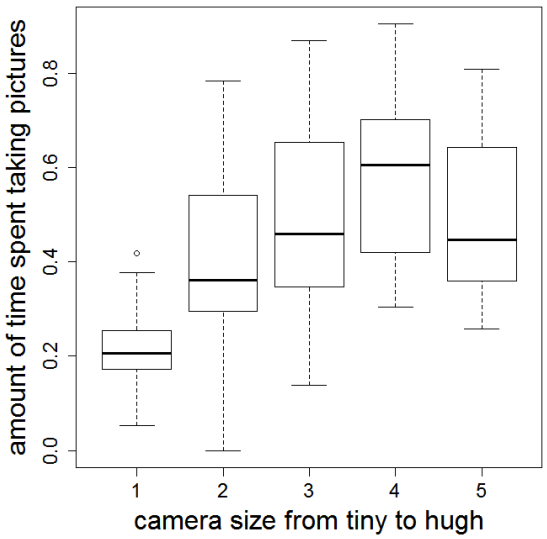

Figure 11: Amount of time spent handling the camera or taking pictures (in relation to the total time after arriving at the meeting area) of participants with cameras of different sizes. A higher number indicates a bigger camera. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

In the dog enclosure, next to the camera size (GLMM: χ^2_1=7.582, p=0.006; Fig. 12), the time spent squatted down (GLMM: χ^2_1 =7.723, p=0.005) had a significant influence as well: more of the participants with bigger cameras, as well as more of the participants who spent more time squatted down (visible in figure 13) were taking pictures of the dogs. As in the wolf pack visit, the questionnaire (GLMM: χ^2_1=2.48, p=0.11), gender (GLMM: χ^2_1=2.03, p=0.154), age (GLMM: χ^2_1=0.49, p=0.48), dog ownership (GLMM: χ^2_3=1.33, p=0.72) and impression (GLMM: χ^2_1<0.01, p=0.98) were not found to have a significant effect, nor was the time spent taking pictures in the wolf enclosure (GLMM: χ^2_1=1.65, p=0.2).

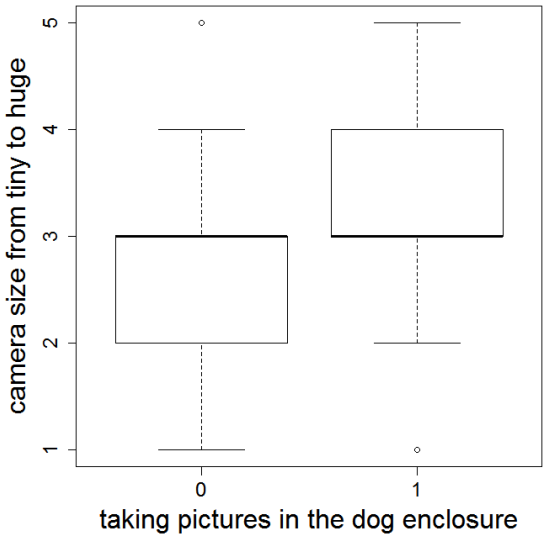

Figure 12: Camera sizes (1=tiny, 5=very big) of participants who did (=1) or did not (=0) take pictures of the dogs. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

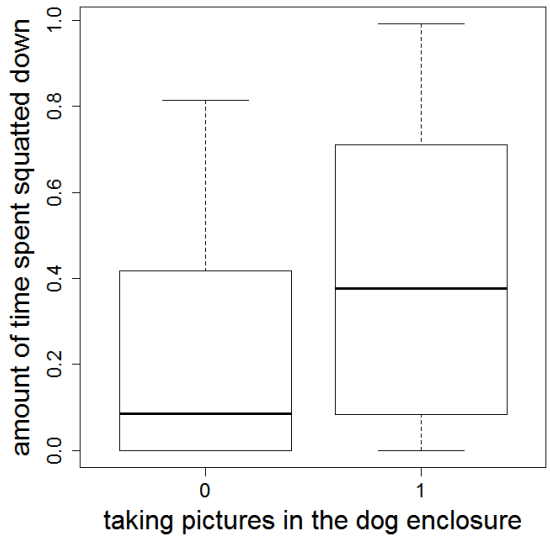

Figure 13: Amount of time spent squatted down (in relation to the total time after the permission to squat down was given) of participants who did (=1) or did not (=0) take pictures of the dogs. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data.

3.3.3. Contact opportunities used for friendly contact

The amount of contact opportunities used for friendly contact was influenced by four of the tested factors: women were engaging in more direct contact than men (LME: $F_{1,96}$=5.201, p*=0.049; Fig. 14), as were participants who spent a bigger amount of time squatted down

(LME: $F_{1,79}$=11.651, p*=0.002; Fig. 15) and participants who rated their agreement with the setting higher in the questionnaire (LME: $F_{1,98}$=6.604, p*=0.023; Fig. 16). Figure 17 shows that people who spent more time taking pictures used significantly fewer opportunities for direct contact (LME: $F_{1,92}$=9.594, p*=0.005).

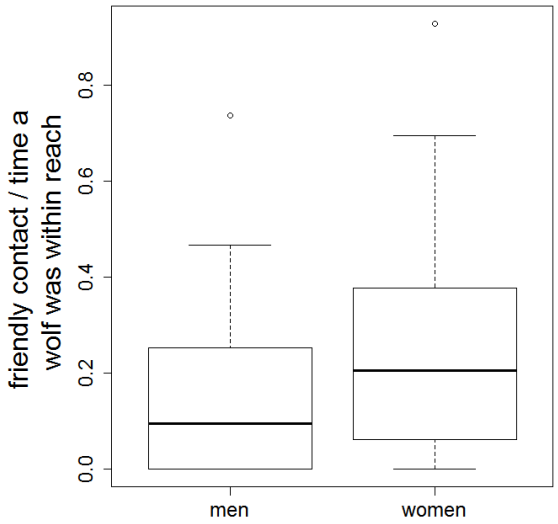

Figure 14: Amount of used contact opportunities (in relation to the total time a wolf was within reach of the participant) of men and women. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

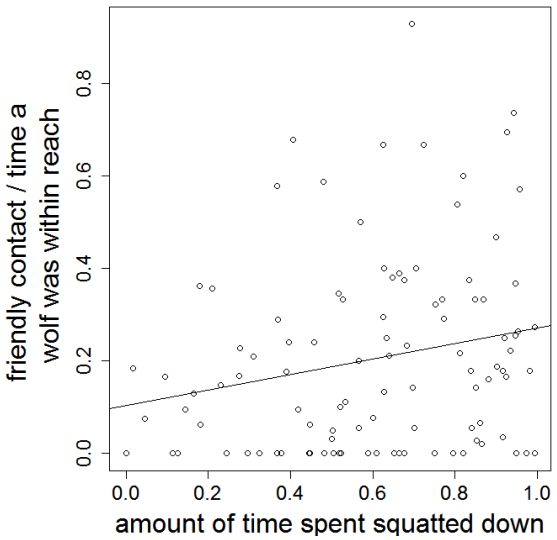

Figure 15: Amount of used contact opportunities (in relation to the total time a wolf was within reach of the participant) in the wolf encounters related to the amount of time spent squatted down (relatively to the total time after the permission to squat down was given). The fit line represents the trend of the data. The fit line is based on the least squares method.

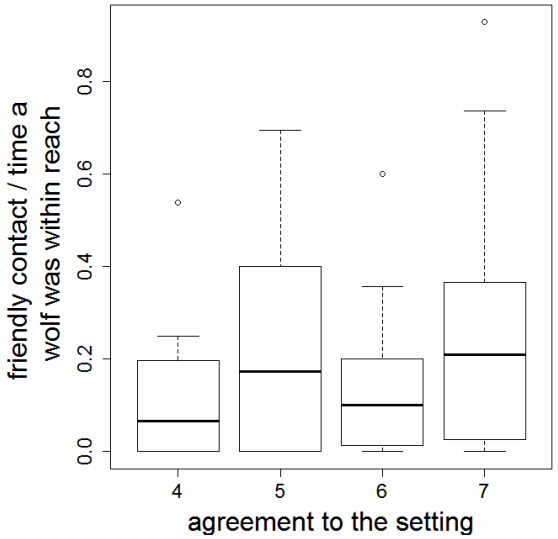

Figure 16: Amount of contact opportunities used for friendly contact (in relation to the total time a wolf was within reach of the participant) of participants with different degrees of agreement to the setting (7 indicates highest agreement, 4 intermediate agreement). Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

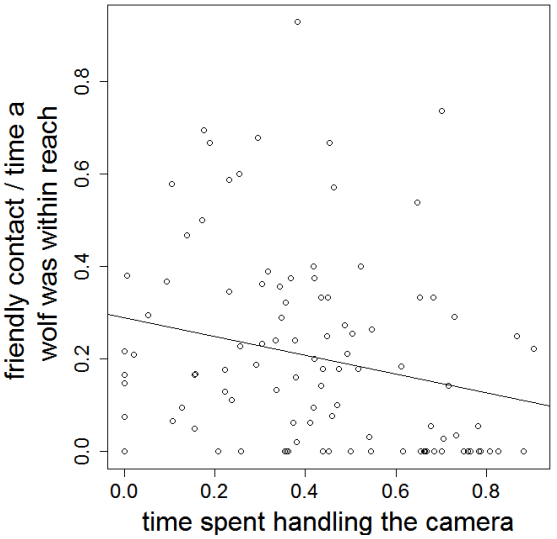

Figure 17: Amount of used contact opportunities (in relation to the total time a wolf was within reach of the participant) in the wolf encounters related to the amount of time spent handling the camera (in relation to the total time after arriving at the meeting area). The fit line represents the trend of the data. The fit line is based on the least squares method.

The factors age (LME: $F_{1,97}$=3.43, p*=0.13), dog ownership (LME: $F_{3,91}$=1.07, p*=0.73), total time a wolf was within reach (LME: $F_{1,76}$=0.51, p*=0.95) and the answers in the questionnaire (LME: $F_{1,88}$<0.01, p*=1) had no influence.

Of the significant effects in the wolf enclosure, only the amount of time spent squatted down was significant in the dog encounters as well (LME: $F_{1,100}$=52.312, p*<0.001; Fig. 18), as was the amount of used contact opportunities in the wolf encounters (LME: $F_{1,100}$=16,519, p*<0.001; Fig. 19). There was a trend in the effect of age (LME: $F_{1,100}$=5.026, p*=0.054) with younger participants engaging in more opportunities for contact, but no significant effect of dog ownership (LME: $F_{3,97}$=2.333, p*=0.16), answers in the questionnaire (LME: $F_{1,96}$=0.3, p*=1), amount of time spent taking pictures (LME: $F_{1,95}$=0.12, p*=1), gender (LME: $F_{1,94}$=0.05, p*=1) or total of time a dog was within reach (LME: $F_{1,93}$<0.01, p*=1).

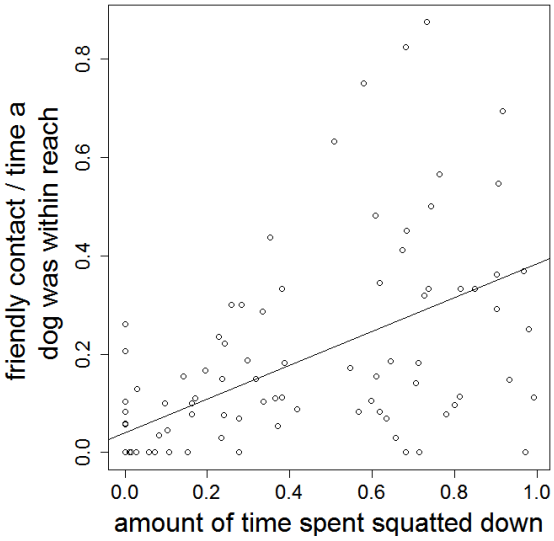

Figure 18: Amount of used contact opportunities (in relation to the total time a dog was within reach of the participant) in the dog encounters related to the amount of time spent squatted down (in relation to the total time after the permission to squat down was given). The fit line represents the trend of the data. The fit line is based on the least squares method.

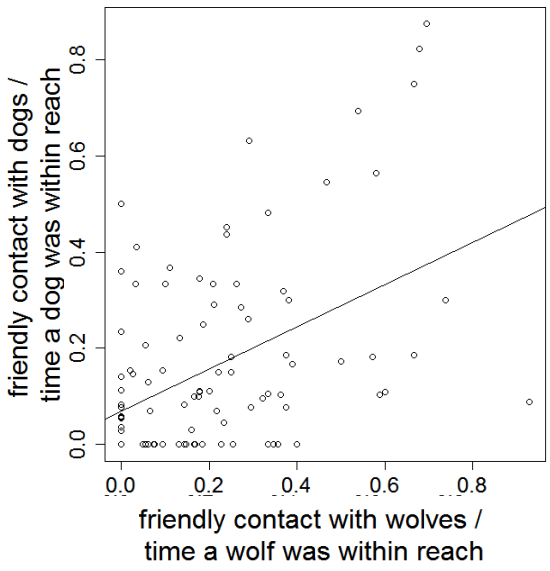

Figure 19: Amount of used contact opportunities (in relation to the total time a dog was within reach of the participant) in the dog encounters related to the same behaviour in the wolf encounters. The fit line represents the trend of the data. The fit line is based on the least squares method.

3.3.4. Allowing to be licked in the face

Figure 20 shows that participants who seemed to be more relaxed allowed greeting of the wolves significantly more often (LME: $F_{1,46}$=5.650, p=0.022). None of the other tested factors showed a significant effect: used contact opportunities (LME: $F_{1,45}$=1.96, p=0.17), age (LME: $F_{1,44}$=1.5, p=0.23), agreement with the setting (LME: $F_{1,43}$=0.79, p=0.38), dog ownership (LME: $F_{3,40}$=1.03, p=0.39), total number of greeting attempts of the wolves (LME: $F_{1,39}$=0.11, p=0.74), gender (LME: F1,38=0.02, p=0.88) and answers given in the questionnaire (LME:

$F_{1,37}$<0.01, p=0.93) all were above significance level.

The reaction to the greeting in the dog enclosure was not influenced by any of the tested factors: The total number of greeting attempts of the dogs (LME: $F_{1,53}$=2.64, p=0.11), the age (LME: $F_{1,52}$=0.75, p=0.39), reaction to the greeting attempts of the wolves (LME: $F_{1,23}$=0.36, p=0.55), impression (LME: $F_{1,22}$= 0.12, p=0.73), dog ownership (LME: $F_{3,19}$=0.63, p=0.61), amount of contact opportunities used for positive contact (LME: $F_{1,18}$=0.12, p=0.73), gender (LME: $F_{1,17}$=0.1, p=0.74) and the answers given in the questionnaire (LME: $F_{1,16}$=0.06, p=0.8) had no influence.

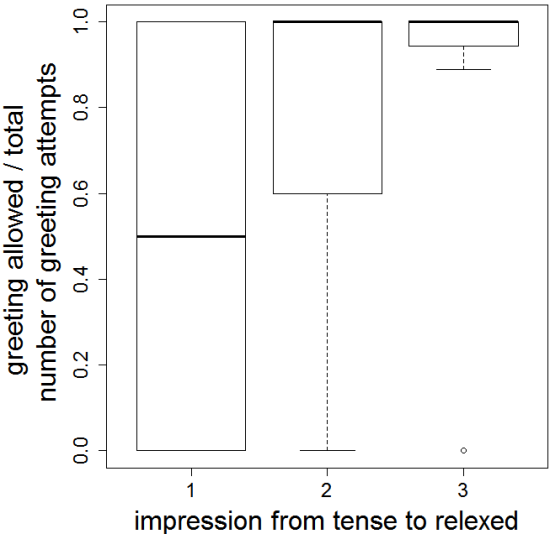

Figure 20: Amount of allowance of greeting (in relation to the total number of greeting attempts directed at this person) in the wolf encounters of participant who displayed different grades of tension (1=tense, 2=intermediate, 3=relaxed). Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

3.3.5. Performing undesired behaviour

The more often a wolf was within reach of a participant, the more likely it was that this participant showed undesired behaviour (i.e. interactions participants were asked not to do; GLMM: χ^2_1=9.941, p=0.002), as illustrated in figure 21. The answers in the questionnaire (GLMM: χ^2_1=1.08, p=0.3), age (GLMM: χ^2_1=0.37, p=0.54), agreement with the setting (GLMM: χ^2_1=0.25, p=0.62), gender (GLMM: χ^2_1=0.05, p=0.82) and dog ownership (GLMM: χ^2_3=0.44, p=0.93) had no influence.

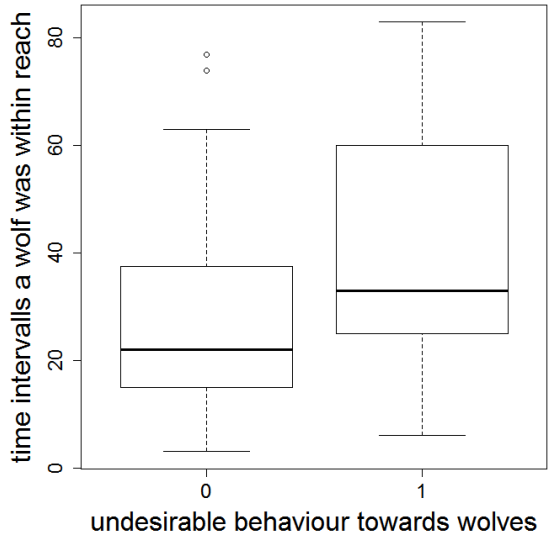

Figure 21: Number of time intervals a wolf was within reach of participants who did (=1) or did not (=0) perform undesirable behaviour. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

In the encounters with the dogs, there was a trend of an influence of the same factor (i.e. how often a dog was within reach) in the same direction (GLMM: χ^2_1=2.887, p=0.089), which can be seen in figure 22. Also the willingness to help in a dog shelter showed a significant influence (GLMM: χ^2_1=11.364, p<0.001) with people who stated more agreement showing

more undesirable behaviour towards the dogs (Fig. 23). No influence was found of the performance of undesirable behaviour in the wolf enclosure (GLMM: χ^2_1=0.74, p=0.39), the age (GLMM: χ^2_1=0.6, p=0.44), the answers given in the questionnaire (GLMM: χ^2_1=0.28, p=0.59), the gender (GLMM: χ^2_1=0.11, p=0.74) and dog ownership (GLMM: χ^2_3=0.7, p=0.87).

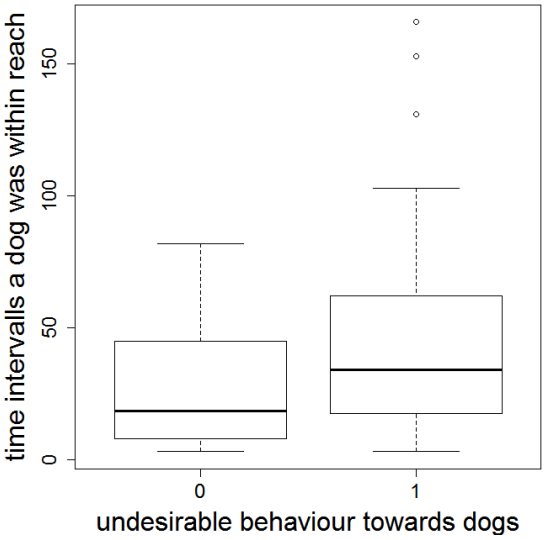

Figure 22: Number of time intervals a dog was within reach of participants who did (=1) or did not (=0) perform undesirable behaviour. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

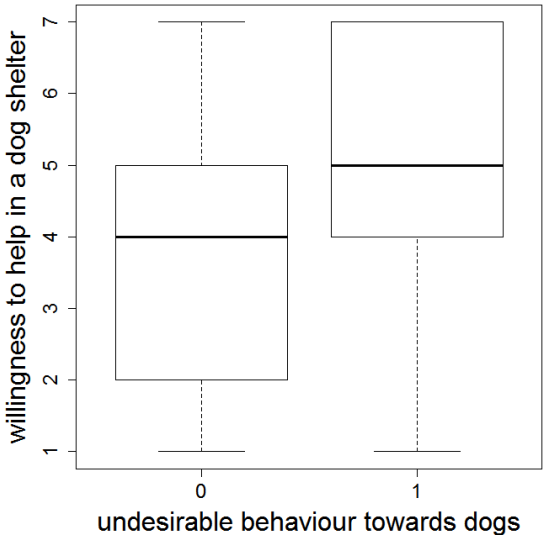

Figure 23: Willingness to help in a dog shelter (1=would never help there, 7=would love to help there) of participants who did (=1) or did not (=0) perform undesirable behaviour. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data.

3.3.6. Solicitation behaviour

As illustrated in figure 24, younger participants were more likely to stay squatted down or actively squat down when being approached by a wolf than were older participants (LME: $F_{1,93}$=19.804, p<0.001). Dog ownership showed a trend (LME: $F_{3,90}$=2.43, p=0.07), with no dog owners showing more solicitation behaviour, participants who had dogs or had had dogs least and participants who would like to have a dog in between (Fig. 25).

Agreement with the setting (LME: $F_{1,96}$=2.11, p=0.15), the answers given in the questionnaire (LME: $F_{1,88}$=2.31, p=0.13), the amount of time spent taking pictures (LME: $F_{1,95}$=1.95, p=0.17), the gender (LME: $F_{1,87}$=0.05, p=0.83) and the total time a wolf was close to the participant (LME: $F_{1,92}$<0.01, p=0.99) did not influence the amount of contact solicitation behaviour.

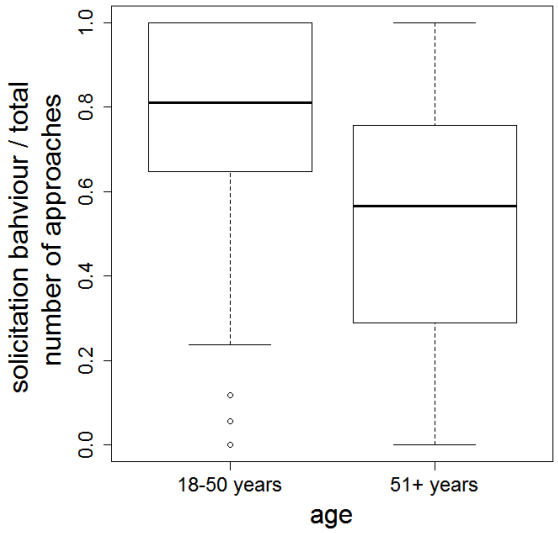

Figure 24: Amount of solicitation behaviour (in relation to the total number of approaches by a wolf) of younger and older participants. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

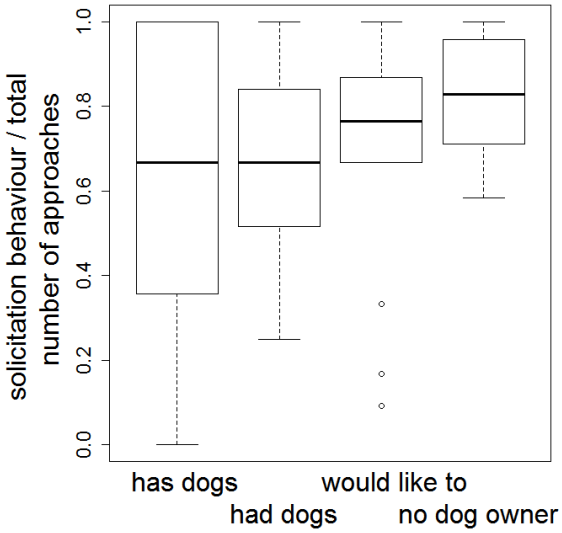

Figure 25: Amount of solicitation behaviour (in relation to the total number of approaches by a wolf) of participants with different degrees of dog ownership experience. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

In the encounters with the dogs, solicitation behaviour was significantly influenced by the amount of solicitation behaviour performed in the wolf enclosure earlier (LME: $F_{1,98}$=22.57, p<0.001; Fig. 26) – who had adopted a posture allowing possibly upcoming contact more often was more likely to do so in the dog enclosure as well. Dog ownership also had a significant influence (LME: $F_{3,92}$=4.629, p=0.005) with people who had had a dog most often reacting with solicitation behaviour to an approach by a dog, participants who would like to have a dog least and dog owners and no dog owners in between (Fig. 27). Age (LME: $F_{1,96}$=1.7, p=0.19), amount of time spent taking pictures (LME: $F_{1,95}$=1.25, p=0.27), answers in the questionnaire (LME: $F_{1,90}$=0.96, p=0.33), gender (LME: $F_{1,87}$=0.82, p=0.37) and the total time a dog was within reach of the participant (LME: $F_{1,90}$<0.01, p=0.92) did not influence the solicitation behaviour.

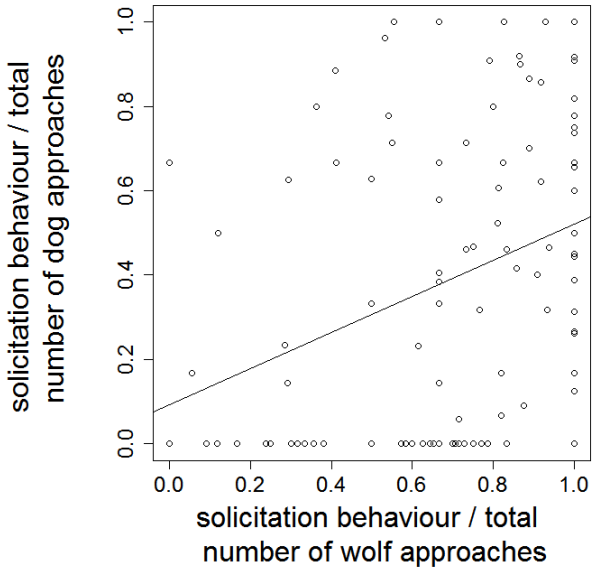

Figure 26: Amount of solicitation behaviour (in relation to the total number of approaches by a dog) related to the same behaviour in the wolf encounters. The fit line represents the trend of the data. The fit line is based on the least squares method.

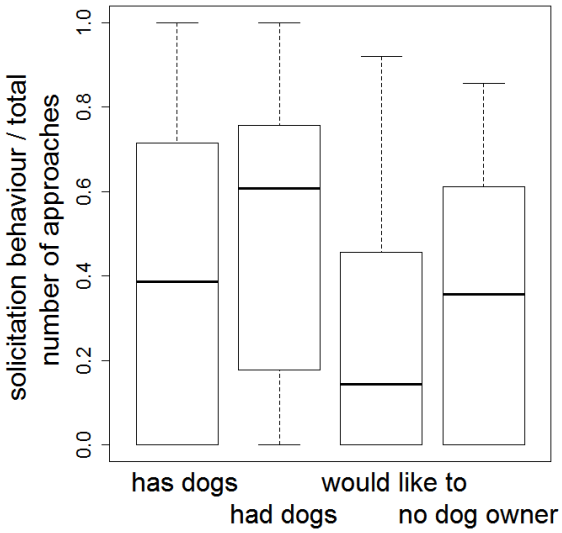

Figure 27: Amount of solicitation behaviour (in relation to the total number of approaches by a dog) of participants with different degrees of dog ownership experience. Median and the interquartile range are given. Whiskers indicate the 1.5 interquartile range of the data. Circles represent outliers.

3.3.7. Rejective reactions towards animal contact

Standing up as reaction to a wolf that came directly towards a visitor was performed by only 10 of 104 participants. I tested it for an influence of the answer to the fear-related question but found none (GLMM: χ^2_1=1.34, p=0.25). In the encounters with the dogs it was performed by only 6 participants and showed no influence of the answers in the questionnaire when tested in a GLMM (χ^2_1=0.13, p=0.72).

3.3.8. Sitting down

Sitting down (instead of remaining in a position that would allow standing up quickly when advised to) was shown by 10 participants in the encounters with the wolves. There was no influence of age (GLMM: χ^2_1=2.15, p=0.14), agreement with the setting (GLMM: χ^2_1=0.6, p=0.43), gender (GLMM: χ^2_1=0.62, 0.43) and dog ownership (GLMM: χ^2_3=3.4, p=0.33).

Fourteen participants sat down in the dog enclosure. Gender was the only factor significantly influencing this behaviour with men sitting down slightly more often (GLMM: χ^2_1=4.941, p=0.026). Age (GLMM: χ^2_1=2.23, p=0.14), the answers in the questionnaire (GLMM: χ^2_1=1.25, p=0.26), sitting down in the wolf enclosure (GLMM: χ^2_1=0.96, p=0.33) and dog ownership (GLMM: χ^2_3=1.86, p=0.6) had no influence.

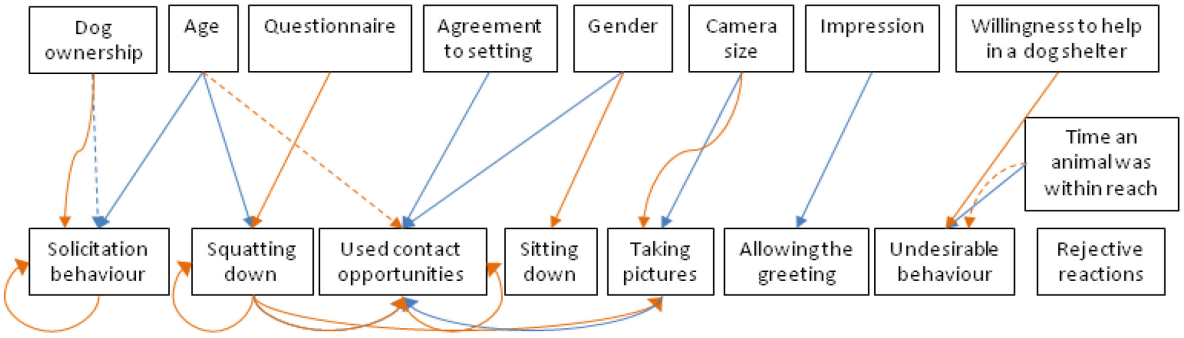

Figure 28: Tested factors and how they influenced each other

Blue arrows show an effect on the behaviour in the wolf encounters, orange arrows in the dog encounters. Dotted lines report a trend. An orange arrow from a behaviour to itself reports an influence of how this behaviour was performed in the wolf encounters on how it was performed in the dog encounters.

3.4. Treating wolves and dogs the same?

There was no correlation between the chosen agreement to the statement "Einen zahmen Wolf würde ich genauso behandeln wie einen zahmen Hund" and the difference in the behaviour towards the two subspecies. Neither the amount of contact opportunities used for friendly contact (ρ=-0.04, p=0.66) nor the amount of undesirable behaviour (ρ=-0.06, p=0.52) showed any correlation.

4. Discussion

People behave differently towards wolves and dogs, although wolves and dogs are closely related, even if they are raised and kept under the same conditions. The difference was significant in most of the analysed behavioural patterns, suggesting different motivation levels of engaging in direct contact with the two canines, with more interest in wolves than in dogs. Differences were partly as I expected them: Participants were more relaxed in the dog enclosure and dedicated more time to handling their camera in the wolf enclosure. Direct encounters with tame wolves seem to tense nerves more than direct encounters with dogs. The reaction to getting licked in the face was as expected as well, with more repelling of these greeting attempts of dogs than of wolves. These findings fit the common habit of withdrawing the face from situations that are commonly referred to as being unhygienic – but the participants pulled their faces back to a lesser degree in the encounters with the wolves, revealing a motivation that was stronger than the habit of withdrawing. The amount of time spent squatted down was significantly bigger in the wolf enclosures, indicating a bigger interest in direct contact with the "wild" representative. This finding contrasts with the expectations, thus revealing that fear was not affecting the behaviour in a large degree, and goes in line with the solicitation behaviour, that was found to be significantly more frequent in the wolf enclosure as well: the participants were eager for direct contact with the wolves. The trend of more usage of the contact opportunities with the wolves reinforces this impression. This has also a purely rational background: participants came and paid mainly for the wolves, with the dogs being an addition, interesting at best, but not really exciting.

This sample of participants may be expected to be biased towards wolves, but as only 19% declared themselves as non dog owners, without former dog ownership and without interest in having a dog, there clearly should be a bias towards dogs as well. Thus it could be interesting to compare the findings to other groups, who were not that much interested in wolves to come to participate at their own expense.

Most of the factors influencing intention and behaviour – attitudes, subjective norm, motivation, opportunity, perceived behavioural control, habits and self-identity outcome (Ajzen and Fishbein, 1980; Eagly and Chaiken, 1993; Fazio, 1990; Ajzen, 2005) – seem to be of secondary importance only: The time an animal was within reach was not influencing the occurrence of "friendly" activities towards them, i.e. how often a participant had the opportunity to engage in direct contact did not influence his (conscious or unconscious)

decision to do so. Thus *opportunity* is unlikely to explain the difference in the behaviour towards the two canines. *Subjective norm* seems unlikely as an explanation for differences as well, since the participants were asked to treat the animals the same and the trainers who guided them engaged in a lot of friendly contact with the dogs themselves, demonstrating this behaviour as desirable. *Attitudes* towards both wolves and dogs were positive, so it was not a general dislike of one or the other that led to the differences. Recourses and skills (i.e. *perceived behavioural control*) per se do not differ between stroking a dog or a wolf (although the personal impression might do). This suggests *motivation* as a very important factor to explain the difference in the behaviour between the two visits in the enclosures. In addition to the motivation, also the *habits* might be important, encouraged by the finding that undesirable behaviours were the only ones to occur more often in the direct contact with the dogs – the lack of former experience with wolves should lead to a lack of habits in direct contact, leading to acting in the desired way more often.

Another result that speaks against a big influence of attitudes on the different manifestation of the behavioural patterns towards wolves and dogs was the lack of a correlation between behaviour and how the participants assumed they would behave: Neither the amount of contact opportunities the participant used for friendly contact nor the undesirable behaviour were correlated with the answer of how similar they thought they would treat tame wolves and dogs.

Finally, in the calculated models, the attitudes were found to directly influence only few behaviours: In agreement with Coleman et al. (2016), the attitudes were a good predictor of the intention to interact with the dogs, as the participants who agreed more with the dog items also squatted down more in the dog encounters. But the amount of used contact opportunities was not found to be influenced by it, therefore the factors leading to the actual action were not found to be linear, as already suggested by Eagly and Chaiken (1993). The general attitude towards the setting, i.e. how much the participants agreed with keeping hand-raised wolves in behavioural science, was found as a factor influencing how much of the opportunities for direct contact with the wolves the participants finally used for friendly contact. The more they agreed, they more they engaged in direct contact, eventually serving as an indicator of self-identity outcomes (Eagly and Chaiken, 1993).

Allowing the greeting of the wolves was the only behavioural pattern related to how tense or

relaxed the participants seemed to be. Taking pictures and manipulating the camera were not identified here as a coping strategy of nervous participants, in contrast to Buchanan and Keats (2011) who described it as one of a number of possible coping strategies. The size of the camera was the only factor out of the investigated ones to affect the time spent handling it in the wolf pack. Thus the motivation (Fazio, 1990) and intention (Ajzen and Fishbein, 2005) to take pictures can be assumed to be the most likely factors to influence doing so. Taking pictures takes time. This is emphasised by the result that used contact opportunities declined with increased time used for taking pictures. This difference matches with the impression stated by the trainers at the WSC, that some people primarily come to take pictures and some to be in contact with the wolves. The latter can be said to be true definitely for the 10% of the participants who did not even bring a camera. For the dogs, the "either pictures or contact" motivation found at the wolf encounters was not true: people who squatted down more also were more likely to take pictures, showing that it was an overall interest in this subspecies. This result gets emphasised by the influence the attitudes stated in the dog items of the questionnaire had on the percentage of time spent squatted down in the dog enclosure: the more positive the attitudes were, the more time the participants spent squatted down.

Gender difference was found in the attitude towards dogs. In line with Ellingsen (2010), women rated their agreement to the dog items significantly higher than men. In contrast to Dressel et al. (2015) this was not the case in their attitudes towards wolves. Nevertheless gender had an influence on the direct encounters with wolves: women, described to be the "more fearful gender" for example in Majić (2007), were using more of the contact opportunities. This emphasises that fear was not relevant in this setting where participants came freely and at their own expenses. Gender had no influence in dog encounters, going in line with Prato-Previde et al. (2006) that there is no gender difference in touching dogs. There was not much evidence that direct experience (Heberlein, 2012) played a major role, as the difference of dog owners and non dog owners was found to influence only the solicitation behaviour.

Overall, in the examined context, there was a clear bias towards direct experience with wolves, compared to dogs. This was not due to a general disaffirmation of dogs, as both attitudes and (desired) dog ownership showed, and it led to proportionally more efforts for direct contact with the wolves and less undesirable behaviour towards them. The effect of the extraordinary, desired and unique opportunity seemed to result in a higher motivation for

interaction with, and interest in, wolves.

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6 Zusammenfassung (German Summary)

Trotz ihrer engen stammesgeschichtlichen Verwandtschaft sind Menschen Wölfen und Hunden gegenüber recht unterschiedlich eingestellt. Im Rahmen dieser Studie wollte ich untersuchen, wie solche individuellen Einstellungen mit dem Verhalten von Leuten in direktem Kontakt mit Wölfen und Hunden in Einklang stehen. Es wurden 104 Personen, die gleich aufgezogene und gehaltene Hunde und Wölfe in deren Gehegen besuchten, beobachtet und befragt. Analysiert wurden Verhaltensweisen, wie der Anteil der Zeit, die hockend verbracht wurde – also in einer Position, die den direkten Kontakt fördert – Reaktionen auf die Annäherung eines Tieres, Reaktionen auf bestimmte Verhaltensweisen der Tiere (insbesondere “im Gesicht lecken” als Begrüßung) und Verhaltensweisen, die im Umgang mit diesen Tieren vermieden werden sollten. Des Weiteren füllten die Teilnehmerinnen und Teilnehmer einen Fragebogen mit 33 Aussagen zu Hunden und 30 Aussagen zu Wölfen aus um einen Einblick in ihre Einstellungen zu geben. Die Einstellungen gegenüber Hunden und Wölfen waren sehr positiv. Frauen äußerten sich hier noch positiver zu Hunden als Männer. Bei den Einstellungen gegenüber Wölfen gab es keinen Geschlechterunterschied. Das Verhalten gegenüber Wölfen unterschied sich deutlich von dem gegenüber Hunden. Das Interesse an Hunden war geringer als jenes gegenüber Wölfen: Die teilnehmenden Personen erschienen zwar entspannter bei dem Besuch im Hunderudel, aber sie verbrachten weniger Zeit hockend, zeigten weniger kontaktförderndes Verhalten bei Annäherung eines Hundes, fotografierten weniger und ließen sich weniger oft im Gesicht ablecken. Des Weiteren zeigten sie bei den Hunden mehr Verhaltensweisen, die zu unterlassen sie gebeten worden waren. Eine direkte Korrelation zwischen den Antworten aus dem Fragebogen und dem Verhalten bestand nur bei wenigen Verhaltensweisen: Personen, die die positivste Einstellung gegenüber Hunden zum Ausdruck brachten, verbrachten auch am meisten Zeit in einer Position, die den direkten Kontakt förderte. Teilnehmerinnen und Teilnehmer, die grundsätzlich mit der Haltung von handaufgezogenen Wölfen in der Verhaltensforschung einverstanden waren nutzen mehr der sich ihnen bietenden Möglichkeiten für freundliche Kontakte mit den Wölfen. Ich konnte kein Zusammenhang zwischen der Vorstellung, ob die teilnehmenden Personen die Wölfe und Hunde gleich behandeln würden, und dem tatsächlichen Verhalten dieser Personen finden.

7 Abstract

People's attitudes towards dogs and wolves differ a lot, despite their close relatedness. In this study I wanted to investigate how the personal attitudes comply with the behaviour in direct contact with wolves and dogs. 104 participants visited equally raised and kept wolves and dogs in their home enclosures. Behaviour such as the time spent squatting down and hence allowing direct contact with the animals, taking pictures, engaging in friendly contact with the animals, reaction to being approached by an animal, reaction to specific behaviour of the animals (i.e. getting licked in the face) and behaving in ways not suitable for this setting (i.e. undesirable behaviour) were observed. The attendees also filled in a questionnaire with 33 statements on dogs and 30 statements on wolves to reveal their attitudes. There was no influence of the vision whether the participants would treat wolves and dogs the same and their actual behaviour towards the two subspecies. The attitudes themselves were found to be very positive as well towards wolves as towards dogs, with a gender difference in the dogs, were women stated even more positive attitudes I found quite some differences in the behaviour towards wolves respectively dogs. The participants were not as interested in the dogs: although more relaxed in the dog pack, they spent less time in contact promoting positions and less often reacted with solicitation behaviour to an approach by an animal, took fewer pictures of them, interrupted their licking in the human face more often and performed undesirable behaviour more often. Direct correlation between the answers given in the questionnaire and the behaviour towards the animals was found only for few behaviours: Participants stating the most positive attitudes towards dogs also spent most time in positions that promote allow direct contact. Agreement to the work with hand-raised wolves in behavioural science was found beneficial for the amount of contact opportunities the participants used to engage in friendly contact with the wolves. I could not find a connection between how equal the participants assumed they would treat the wolves and the dogs and their actual behaviour when visiting the animals.

Keywords: attitudes, behaviour in direct contact, wolves, Canis lupus, dogs, Canis lupus familiaris

Appendix A: Questionnaire

For statements in italic letters the Likert scale was reversed before the mean over all questions was built.

Fragebogen zur

Einstellung gegenüber Wölfen und Hunden

Dieser Fragebogen wurde im Rahmen eines Sparkling Science Projekts mit dem Wolf Science Center in Dörfles bei Ernstbrunn von den Schülern und Schülerinnen der ****-Klasse des BG und BRG 10 in Wien, Pichelmayergasse 1, entworfen.

Er soll verschiedene Aspekte der aktuellen Einstellung von Menschen gegenüber Wölfen und gegenüber Hunden erfassen.

Ihre Teilnahme an unserer Umfrage hilft uns, herauszufinden welchen Stellenwert die Bevölkerung Wölfen und Hunden zuerkennt.

Alle Angaben werden strikt anonym ausgewertet und die Datenschutzrichtlinien werden eingehalten.

Erhebung in _____ **Datum: _____**

Ihr Betreuer/ Ihre Betreuerin: _____

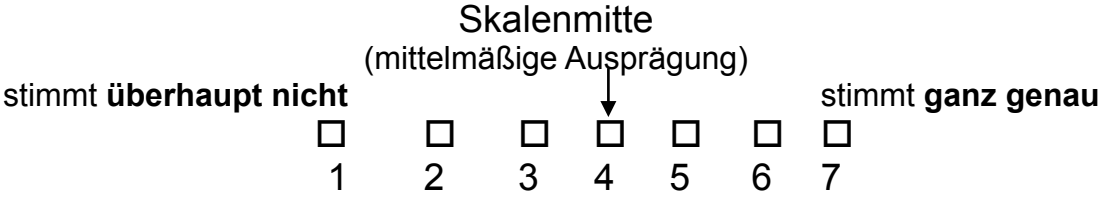
Schule: BG und BRG 10 Pichelmayergasse 1, 1100 Wien

http://www.brg-pichelmayergasse.at/home/

Hinweise zum Ausfüllen des Fragebogens:

Bitte, kreuzen Sie mit Kugelschreiber für jede Aussage an, wie sehr sie Ihrer Einstellung entspricht oder nicht entspricht.

Wir arbeiten mit Skalen:



Das geht ganz einfach: wenn der Sachverhalt, den wir abfragen, Ihrer Meinung nach überhaupt nicht stimmt, machen Sie Ihr Kreuz in das Kästchen ganz links. Wenn er Ihrer Meinung nach ganz genau stimmt, machen Sie Ihr Kreuz in das Kästchen ganz rechts. Mit den Kästchen dazwischen können Sie Ihr Urteil abstufen.

Falls Sie Fragen kommentieren oder ausführlicher beantworten wollen, können Sie das auf der letzten Fragebogenseite tun.

An dieser Stelle bereits herzlichen Dank für Ihre Mitarbeit und viel Spaß beim Ausfüllen unseres Fragebogens!

Befragungskategorie (vom Projektteam auszufüllen):

_____

	stimmt überhaupt nicht 1	2	3	4	5	6	stimmt ganz genau 7
1. Hunde schenken bedingungslose Liebe.	☐	☐	☐	☐	☐	☐	☐
2. Ich bin der Meinung, dass Wölfe beseelte, empfindsame Wesen sind.	☐	☐	☐	☐	☐	☐	☐
3. Speziell ausgebildete Hunde können Behinderten bei der Bewältigung des Alltags helfen.	☐	☐	☐	☐	☐	☐	☐
4. In einem Wald, in dem Wölfe vorkommen, würde ich bedenkenlos spazieren gehen.	☐	☐	☐	☐	☐	☐	☐
5. Ich respektiere Wölfe als Mitgeschöpfe unserer Umwelt.	☐	☐	☐	☐	☐	☐	☐
6. Hunde brauchen täglichen Auslauf.	☐	☐	☐	☐	☐	☐	☐
7. Es ist in Ordnung, in der Verhaltensforschung mit handaufgezogenen Wölfen zu arbeiten.	☐	☐	☐	☐	☐	☐	☐
8. Hunde akzeptieren andere Tiere im gleichen Haushalt.	☐	☐	☐	☐	☐	☐	☐
9. Ich kann mir vorstellen, dass junge Wölfe beim Spielen lernen, miteinander auszukommen.	☐	☐	☐	☐	☐	☐	☐
10. Menschen haben die Pflicht, sich um ihren kranken Hund zu kümmern.	☐	☐	☐	☐	☐	☐	☐
11. Information der Bevölkerung über aktuelle Forschungsergebnisse ist der beste Wolfsschutz.	☐	☐	☐	☐	☐	☐	☐
12. *Hunde sind abstoßende Tiere*.	☐	☐	☐	☐	☐	☐	☐
13. Ich glaube, dass Menschen mit Hundeangst kein leichtes Leben haben.	☐	☐	☐	☐	☐	☐	☐
14. Vorurteile sind in Österreich die größte Gefahr für das Überleben der Wölfe.	☐	☐	☐	☐	☐	☐	☐
15. Hunde sind Sympathieträger in der Werbung.	☐	☐	☐	☐	☐	☐	☐
16. Ich kann nachempfinden, dass Naturvölker Wölfe als Brüder ansehen.	☐	☐	☐	☐	☐	☐	☐

Noch vier Seiten ...

	stimmt überhaupt nicht 1	2	3	4	5	6	stimmt ganz genau 7
17. Ein Hund gibt seinem Besitzer das Gefühl, gebraucht zu werden.	☐	☐	☐	☐	☐	☐	☐
18. Die natürliche Wiedereinwanderung der Wölfe nach Österreich ist ein Zeichen für eine intakte Umwelt.	☐	☐	☐	☐	☐	☐	☐
19. Hunde fördern die sozialen Fähigkeiten bei Jugendlichen.	☐	☐	☐	☐	☐	☐	☐
20. Besitzer von Nutztieren sehen im Wolf eine wirtschaftliche Gefahr.	☐	☐	☐	☐	☐	☐	☐
21. Beim Trainieren soll der Hund belohnt werden.	☐	☐	☐	☐	☐	☐	☐
22. Einen zahmen Wolf würde ich genau so behandeln wie einen zahmen Hund.	☐	☐	☐	☐	☐	☐	☐
23. Hunde brauchen Körperkontakt.	☐	☐	☐	☐	☐	☐	☐
24. Hunde verstehen die Gefühle ihrer Besitzer.	☐	☐	☐	☐	☐	☐	☐
25. Einem entlaufenen fremden Hund würde ich helfen.	☐	☐	☐	☐	☐	☐	☐
26. Es macht mich traurig, dass Jäger Wölfe erschießen.	☐	☐	☐	☐	☐	☐	☐
27. Ich bin der Meinung, dass Hunde beseelte, empfindsame Wesen sind.	☐	☐	☐	☐	☐	☐	☐
28. Ich habe Verständnis für Hirten, die Wölfe erschlagen.	☐	☐	☐	☐	☐	☐	☐
29. Wolfsähnliche Hunde sind gefährlich.	☐	☐	☐	☐	☐	☐	☐
30. Wölfe wirken auf mich wie magische Schutzgeister.	☐	☐	☐	☐	☐	☐	☐
31. Die Figur des bösen Wolfs im Märchen „Rotkäppchen“ beruht auf einer wahren Begebenheit.	☐	☐	☐	☐	☐	☐	☐
32. Hunde brauchen während ihres Aufwachsens liebevolle Betreuung.	☐	☐	☐	☐	☐	☐	☐

Noch drei Seiten ...

	stimmt überhaupt nicht 1	2	3	4	5	6	stimmt ganz genau 7
33. Der Besitz eines Hundes steigert das Wohlbefinden.	☐	☐	☐	☐	☐	☐	☐
34. Hunde schützen vor Einbrechern.	☐	☐	☐	☐	☐	☐	☐
35. *Wölfe sind böse Kreaturen*.	☐	☐	☐	☐	☐	☐	☐
36. Gemeinsames Spielen ist wichtig für die Beziehung zwischen Mensch und Hund.	☐	☐	☐	☐	☐	☐	☐
37. Aufmerksame Hundebesitzer verstehen, was ihnen der Hund durch seine Körpersprache mitteilt.	☐	☐	☐	☐	☐	☐	☐
38. Verantwortungsloser Umgang mit Hunden führt zu Problemen.	☐	☐	☐	☐	☐	☐	☐
39. Ich bin für den konsequenten Schutz von Wölfen.	☐	☐	☐	☐	☐	☐	☐
40. Ich hasse Wölfe.	☐	☐	☐	☐	☐	☐	☐
41. Hunde brauchen im Alltagsleben feste Regeln.	☐	☐	☐	☐	☐	☐	☐
42. Ich finde, dass Zeitungsberichte ein falsches Bild von Wölfen vermitteln.	☐	☐	☐	☐	☐	☐	☐
43. Den Einsatz von Hunden im Gesundheitsbereich finde ich sinnvoll.	☐	☐	☐	☐	☐	☐	☐
44. Junge Wölfe respektieren erwachsene Rudelmitglieder.	☐	☐	☐	☐	☐	☐	☐
45. Hunde brauchen auch ruhige Beschäftigung.	☐	☐	☐	☐	☐	☐	☐
46. Landwirte sollen Wolfsrissen vorbeugen, indem sie ihr Vieh durch Elektrozäune schützen.	☐	☐	☐	☐	☐	☐	☐
47. Tägliche Gesundheitskontrolle beim Streicheln ist Pflicht für Hundehalter.	☐	☐	☐	☐	☐	☐	☐
48. Ich würde als freiwilliger Helfer im Wolfsforschungszentrum arbeiten.	☐	☐	☐	☐	☐	☐	☐

Noch zwei Seiten ...

	stimmt überhaupt nicht 1	2	3	4	5	6	stimmt ganz genau 7
49. Wölfe sind anpassungsfähig.	☐	☐	☐	☐	☐	☐	☐
50. Hunde können Menschenleben retten.	☐	☐	☐	☐	☐	☐	☐
51. Jeder Wolf setzt seine Fähigkeiten zum Nutzen des ganzen Rudels ein.	☐	☐	☐	☐	☐	☐	☐
52. Hunde brauchen einen Platz zum Ruhen und Zurückziehen.	☐	☐	☐	☐	☐	☐	☐
53. Landwirte sollen ihr Nutzvieh durch Herdenschutzhunde vor Wölfen schützen.	☐	☐	☐	☐	☐	☐	☐
54. Das dichte Straßennetz in Österreich ist eine Gefahr für Wölfe.	☐	☐	☐	☐	☐	☐	☐
55. Hunde sind äußerst lernfähig.	☐	☐	☐	☐	☐	☐	☐
56. Wölfe sorgen für einen gesunden Wildbestand, weil sie kranke Tiere töten.	☐	☐	☐	☐	☐	☐	☐
57. Ein Hund darf nicht ausgesetzt werden.	☐	☐	☐	☐	☐	☐	☐
58. Für einen verletzten Wolf würde ich Hilfe holen.	☐	☐	☐	☐	☐	☐	☐
59. Hunde verdienen genau so viel Respekt wie Menschen.	☐	☐	☐	☐	☐	☐	☐
60. Ich würde mich als freiwilliger Mitarbeiter / freiwillige Mitarbeiterin einem Tierheim bei der Hundebetreuung zur Verfügung stellen.	☐	☐	☐	☐	☐	☐	☐
61. Um den Wolfsschutz zu verbreiten würde ich Informations-Flyer austeilen.	☐	☐	☐	☐	☐	☐	☐
62. Gestresste Hunde gefährden Kleinkinder.	☐	☐	☐	☐	☐	☐	☐
63. Wölfe können Waldschäden verringern, indem sie den Wildbestand regulieren.	☐	☐	☐	☐	☐	☐	☐

Noch eine Seite ...

1. Welcher Altersgruppe gehören Sie an?
☐ unter 18 ☐ 21 – 25 Jahre ☐ 31 – 40 Jahre ☐ 51 – 60 Jahre
☐ 18 – 20 Jahre ☐ 26 – 30 Jahre ☐ 41 – 50 Jahre ☐ 61 – 70 Jahre

2. Geschlecht: ☐ männlich ☐ weiblich

3. Familienstand/Wohnsituation:
☐ alleinstehend ☐ in einer Partnerschaft ☐ mit Kindern im Haushalt ☐ mit Eltern im Haushalt

4. Welchen Schul- bzw. Universitätsabschluss haben Sie?
☐ keinen Abschluss ☐ Hauptschule ☐ AHS ☐ BHS ☐ Fachhochschule ☐ Universität

5. Ihr Beruf:

6. Sind Sie Mitglied einer Gruppe oder einer Organisation, die sich für Tierschutz oder Naturschutz einsetzt? ☐ ja ☐ nein

7. Essen Sie Fleisch? ☐ ja ☐ nur helles Fleisch ☐ nur dunkles Fleisch ☐ nein

8. Sind Sie oder waren Sie Hundehalter oder hätten Sie gerne einen Hund?
☐ ich habe __ Hund(e) ☐ ich hatte __ Hund(e) ☐ hätte gerne Hunde ☐ ich bin kein Hundehalter

☐ ich habe einen großen Hund / ☐ ich habe einen kleinen Hund.
Schulterhöhe: _____

☐ Rasse: _____ / ☐ Mischling zwischen _____

9. Kennen Sie das Wolf Science Center (WSC) in Ernstbrunn?
☐ ja, ich war bereits hier ☐ ich habe davon gehört, war aber noch nicht dort ☐ nein

10. Haben Sie bereits an einem WSC-Besucher-Programm (Führungen, Fotoshoot,…) teilgenommen?
☐ ja: Wann? Welches Programm?_____
☐ nein

11. Planen Sie an einem WSC-Besucher-Programm (Führungen, Fotoshoot,…) teilzunehmen?
☐ ja: Wann? Welches Programm?_____ ☐ nein ☐ vielleicht

12. Planen Sie einen Wolfskontakt?
☐ ja ☐ nein ☐ vielleicht

13. Wohnort:

14. Wo liegen die Wurzeln Ihrer Familie?

_____

(Kontinent, Land, Bundesland)

VIELEN DANK, DASS SIE SICH ZEIT GENOMMEN HABEN!

Appendix B: Coding Scheme

Behaviour Name	Description	Behaviour type
Marker		
Eintritt	Participant enters enclosure	Marker
Meeting Point	Participant reaches place in the enclosure where the first session shall take place	Marker
Erlaubnis	Trainer allows the participants to squat down	Marker
Sichtbarkeit		
sichtbar	all behavioural patterns of the coding scheme would be visible if performed	State Event
nicht sichtbar	participant is out of sight	State Event
teilweise sichtbar	participant is only partly visible, some behavioural patterns may not be seen clearly	State Event
Foto		
Foto	Participant is holding his camera in the according position to take pictures	State Event
Spielt	Participant is handling the camera while looking at it	State Event
Foto - Null	Although the participant is only partly visible, it is obvious that he is neither handling the camera nor taking pictures	State Event
Körperhaltung		
steht	Participant is standing upright	State Event
hockt	Participant is squatting down, remaining in a position that would allow to stand up fast if required	State Event
bückt	Participant is standing, but bending over	State Event
sitzt	Participant is sitting or remaining in another position that would not allow standing up fast	State Event
Kontakt		
Nähe	An animal is within reach of the participant	State Event
Mensch berührt	The participant is touching an animal	State Event

Tier berührt	An animal is making direct contact with the participant	State Event
Nähe - Null	Although the participant is only partly visible, it is obvious that no animal is within reach	State Event
Grüßen-Reaktion		
zulassen	Participant is holding the head nearly still while licked in the face by an animal	State Event
Kopf weg	Participant is withdrawing the head while an animal tries to lick his face	State Event
Wegdrücken	The participant is pushing an animal that was about to lick his face back	State Event
Aufstehen	The participant is standing up while an animal tries to lick his face	State Event
Trainer schreitet ein	WSC staff member is luring the animal that tries to lick a participants face away	State Event
Grüßen - Null	Although the participant is only partly visible, it is obvious that no animal tries to lick his face	State Event
Tier zu Mensch		
Reaktion - gleiche Position	The participant is not changing his position while an animal walks towards him, his head is orientated towards the animal and it is to be expected to come within reach	Point Event
Reaktion - aufstehen	The participant is standing up while an animal walks towards him, his head is orientated towards the animal and it is to be expected to come within reach	Point Event
Reaktion - hinhocken	The participant while an animal walks towards him, his head is orientated towards the animal and it is to be expected to come within reach	Point Event

Tier zu - Null	Although the participant is only partly visible, it is obvious that no animal is coming towards him while his head is orientated in the direction of the animal	State Event
Streicheln falsch		
oben	The participant is stroking an animal from above	State Event
festhalten	The participant is restricting an animal in its freedom to move	State Event
nachgreifen	The participant is reaching after an animal that is moving away from him	State Event
nachgehen	The participant ist following an animal	State Event
falsch - Null	Although the participant is only partly visible, it is obvious that he is not performing neither "oben" nor "festhalten" nor "nachgreifen" nor "nachgehen"	State Event
Streicheln richtig		
Streicheln richtig	The participant is stroking an animal that is not moving away. He is stroking the side of the animal orientated towards him, not touching the head nor the back	State Event

Appendix C: Questions used as representatives of the questionnaire

The mean of the following dog items out of the questionnaire was used to test for the influence of the questionnaire:

- "Hunde brauchen Körperkontakt." (i.e. "Dogs need body contact.")
- "Ich bin der Meinung das Hunde beseelte, empfindsame Wesen sind." (i.e. "I believe that dogs are soulful, sensitive beings.")
- "Einem entlaufenen fremden Hund würde ich helfen." (i.e. "I would help an unfamiliar dog that has gone astray.")
- "Hunde verdienen genauso viel Respekt wie Menschen." (i.e. "Dogs deserve as much respect as humans.")

The mean of the following wolf items out of the questionnaire was used to test for the influence of the questionnaire:

- "Ich kann nachempfinden, dass Naturvölker Wölfe als Brüder ansehen." (i.e. "I can relate to indigenous people who view wolves as brothers.")
- "Wölfe wirken auf mich wie magische Schutzgeister." (i.e. "Wolves seem to me like magical guardian spirits.")
- "Ich bin der Meinung das Wölfe beseelte, empfindsame Wesen sind." (i.e. "I believe that wolves are soulful, sensitive beings.")
- "In einem Wald, in dem Wölfe vorkommen würde ich bedenkenlos spazieren gehen." (i.e. "I would go for a walk in woods with free ranging wolves without hesitation.")