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Training dogs with help of the shock collar: short and long term behavioural effects

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Abstract

Behavioural effects of the use of a shock collar during guard dog training of German shepherd dogs were studied. Direct reactions of 32 dogs to 107 shocks showed reactions (lowering of body posture, high pitched yelps, barks and squeals, avoidance, redirection aggression, tongue flicking) that suggest stress or fear and pain. Most of these immediate reactions lasted only a fraction of a second. The behaviour of 16 dogs that had received shocks in the recent past (S-dogs) was compared with the behaviour of 15 control dogs that had received similar training but never had received shocks (C-dogs) in order to investigate possible effects of a longer duration. Only training sessions were used in which no shocks were delivered and the behaviour of the dogs (position of body, tail and ears, and stress-, pain- and aggression-related behaviours) was recorded in a way that enabled comparison between the groups. During free walking on the training grounds S-dogs showed a lower ear posture and more stress-related behaviours than C-dogs. During obedience training and during manwork (i.e. excercises with a would-be criminal) the same differences were found. Even a comparison between the behaviour of C-dogs with that of S-dogs during free walking and obedience exercises in a park showed similar differences. Differences between the two groups of dogs existed in spite of the fact that C-dogs also were trained in a fairly harsh way. A comparison between the behaviour during free walking with that during obedience exercises and manwork, showed that during training more stress signals were shown and ear positions were lower. The conclusions, therefore are, that being trained is stressful, that receiving shocks is a painful experience to dogs, and that the S-dogs evidently have learned that the presence of their owner (or his commands) announces reception of shocks, even outside of the normal training context. This suggests that the welfare of these shocked dogs is at stake, at least in the presence of their owner.

Keywords: Dog; Training; Stress; Welfare; Shock collar

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1. Introduction

A large variety of training methods are currently being used in dog training. These run from very "friendly" methods (e.g. clicker training) to the use of apparently harsh methods, like beatings and use of electronic and other equipment, that could cause wounds, pain and mental harm to the animals.

For many decades the electric collar was being used in the Netherlands, especially in training of police and guard dogs and for hunting and rescue work. The electric collar consists of a collar that includes a battery and electrodes, and a remote control, through which the trainer can deliver shocks of various durations and intensities to the dog. Some types of collar can be tuned finely to the sensitivity of the dog being trained; other types possess only a limited possibility of adaptation. Some collars include a feature to warn the dog by sounding a beep, before a shock is delivered. Shock duration may vary from 1/1000 of 1–30 s; shock intensity will vary with coat structure and humidity, but in general a current of a few thousand volts is used. Shocks are used mostly as a punishment, although some manufacturers promote the electric collar by stating that it should be used as a negative reinforcer, e.g. using the alleviation of pain after a series of very mild shocks has been delivered as a reward. Use of the shock collar has been promoted by Tortora (1982, 1984). Previously, shock has been used in research into avoidance learning in dogs (Solomon and Wynne, 1953; Church et al., 1966).

Although the pros and cons of the use of this type of collar have been evaluated by Polski (1994), and some descriptive data on the behavioural reactions of dogs to shocks has been provided by Feddersen-Petersen (1999), no systematic investigations regarding possible long term effects of the use of the collar have been published. Only one study (Beerda et al., 1997) showed behavioural and cortisol effects upon the reception of some shocks in laboratory dogs, that suggests that shocks are unpleasant. However, the results of this study cannot be applied to the actual dog-training situation for several reasons. First, the laboratory dogs did not expect any punishment at all; therefore their reactions could well be much stronger than those of dogs during training. Secondly, dogs in guard and police dog training are of another breed and thirdly, they are very excited during training. This could well influence pain sensitivity. Therefore, we set out to investigate the direct behavioural reactions of dogs upon receiving a shock during training, with the aim of finding what behavioural responses are elicited by the reception of a shock. We were interested especially in finding occurrences of pain, fear, avoidance, pain-induced aggression and submission. Secondly, we wanted to investigate what the long-term impact of shocks could be. Our reasoning, regarding the negative impact shocks could have on the dog's welfare, was the following. Suppose, that reactions to a shock only would involve cessation of the unwanted behaviour, then the impact on welfare could be assessed as negligible. Suppose, however, that signals suggesting pain and fear were shown concomitantly. Then, the impact should be considered as being larger. But, if the behavioural signals would fade after shocking was terminated and the dogs would behave completely normal thereafter, then the welfare implications should be evaluated as present but minimal. But if on the training grounds, and when no training was occurring, one could distinguish dogs that had received shocks in the past from dogs that had never received shocks, then the impact of shocks should be regarded as much greater and an interpretation of these shocks as "traumatic experiences" is likely to be accurate. In that case, the dogs should have associated getting shocked with being on the training grounds. Evidence would be stronger if shocked dogs could be distinguished from non-shocked controls outside of the training grounds. This would hold if the dogs had learned to associate their handler, or being ordered around, with the reception of shocks. In that case, shocking must indeed have been perceived as aversive by the dogs. In the latter case, a long-term impact on welfare is quite likely. On this basis we investigated the behaviour of shocked and non-shocked control dogs before and during training and also during a walk in a park, with the aim to find out if there were indications, that once shocked, dogs were indeed more fearful than non-shocked controls. We limited ourselves to behavioural reactions and omitted cortisol or other measures of physiological nature, because dogs during training are highly excited, which in our belief would render such measures useless. Also, measurements would tend to disrupt training, which would make cooperation by trainers and handlers impossible.

2. Materials and methods

We studied the direct behavioural reactions upon administration of shocks to 15 dogs that were trained for the official (IPO) certificate as police service dogs. These were five Malinois crosses, one pure bred Malonois, eight German Shepherds and one Rottweiler (all intact males). We also were allowed to study 31 more dogs that followed standard watchdog training for a comparable (VH3) certificate, the highest possible in this type of training. All of these dogs were adult German Shepherds. Sixteen dogs (2 females, 14 males) had received shocks during training and 15 dogs (3 females, 12 males), that never had received shocks, were control dogs. Some control dogs were trained on the same training grounds and with the same trainer as some shocked dogs. These 31 dogs, their handlers and their trainers belonged to five different training groups, spread over the Netherlands. The group of 31 dogs was used not only to study direct behavioural effects of shocks, but also to compare the behaviour of shocked versus control dogs. We had no influence upon the methods and aids the trainers used during the training sessions we observed. During the training sessions, we only asked the handlers to walk their dogs and to perform some standard obedience exercises, as explained below.

To assess direct effects, we filmed training sessions on videotape using a Canon UC-X30 Hi-8 camera with 40× digital zoom, and analysed these tapes later on, using standard video equipment. In this way we sampled 107 shocks, delivered to 32 different dogs. The samples were analysed by one–zero sampling of the behavioural reactions (Martin and Bateson, 1993), using the behavioural elements and postures given in Tables 1 and 2. The durations of most reactions to shocks were immeasurably short, possibly due to the fact that dogs were asked to obey some command or take some action immediately afterwards. Afterwards, we checked with the trainers to accurately determine the number of shocks that had been given.

Subsequently, we filmed and analysed two training sessions of the shocked dogs to asses the reliability of our observation methods.

Data from shocked and control dogs that were used for comparisons were taken from training sessions during which no shocks were applied, in order to avoid possible confusion with direct effects. On the training grounds, we filmed three separate sequences for both

Table 1
Ear, tail and body position

	Description
Ear positions	
Pinnae maximally backwards	
Pinnae backwards	The pinnae are backwards for more than half, are upright of buckled, they are in one line with the stop of the nose and are not flat in the neck
Pinnae partly backwards	The pinnae turned backwards halfway and upwards; opening is completely visible from the side
Neutral ears	Pinnae partly sidewards and completely upwards, ear openings are partly visible from the side.
Pinnae partly high	Position between neutral and high
Pinnae maximally forward	Pinnae maximally forwards and turned towards another and forwards. Inside of pinnae not visible from the side.
Tail positions	
Tail very low	Tail tugged between hind legs
Tail low	Upper side of tail against back, tail forms an S.
Tail half low	Tail lower than neutral
Tail is neutral	Tail follows line of lower back of dog and appears not above the line of the back
Tail half high	Tail is held above the contour of the back
Tail high	Tail in a maximally high position
Body positions while walking and standing	
Normal sit	Sit in a normal position: legs stretched and head held
Shoulders	While sitting the shoulders are withdrawn
Walk normal	Walks with straight, legs not flexed
Bent legs	Walks with flexed hind legs
Completely flexed	Walks with flexed fore and back legs
Crouch stalk	Walks with strongly flexed fore and hind legs

groups of dogs. First, a "free" walk on the leash, lasting about 2 min. No orders were given to the dogs; secondly, obedience work which included exercising the following commands: sit and down in motion, heeling in slow, normal and fast walking speed with changes of direction, and recall to the handler; thirdly, protection work. This protection work included a number of exercises (search for criminal, hold and bark at criminal, escape and defence, followed by attack by the criminal, and finally, transport back). Also, we filmed these 31 dogs, while being walked in a park. There, the handlers were asked to walk the dog in a "free-walk on the leash", and subsequently to perform the same series of obedience exercises as done on the training grounds. This enabled us to make the following comparisons (see Fig. 1):

The data were sampled in the following way: We used an extensive ethogram, including separate ear, tail and body positions (Table 1) in addition to a number of behaviours (Table 2). Some behaviours or postures could only be scored in specific contexts, as indicated in Table 2.

It appeared, that the execution of the exercises we had filmed varied to a large degree. In order to sample data from the two groups of dogs that could be compared, we singled

Table 2
Behaviours, scored in four different contexts

Behaviour	Description	Scored during			
		Free walk	Obedience	Manwork	Shock
Panting	Only start scored	X			
Tongue out	Tip of tongue is briefly extended	X	X	X	X
Lick lips	Part of tongue is shown and moved along the upper lip	X	X	X	X
yawn	Includes intention movement	X	X	X	X
Replacement-sniffing	Sudden, short sniffing of ground, included its intention movement	X	X	X	X
Squeal	Short, repeated high pitched vocalisation	X	X	X	X
Shake	Shake body or head	X	X	X	X
Jump	Jumps against owner	X	X	X	X
Bite leash		X	X		
Urinate	Urinate in sitting or standing position	X	X		
High sounding yelping	Stronger and higher pitched yelping	X	X	X	X
High sounding bark	Single, high pitched bark	X	X	X	X
Fast open-and-close	Mouth opens just about 1 cm and almost closes in fast alternation	X	X	X	X
Bark	Normal barking	X	X		
Turn away head	Head is turned away from owner or criminal		X	X	X
Lift front paw			X	X	X
Look at owner				X	
Bark at criminal	High voiced, repeated barking at criminal			X	X
Screaming bark	Low pitched, loud bark				X
Growl-bark	Bark + simultaneous growling at criminal			X	
Soundless bark	Soundless barking movements			X	
Jaws	Jaws shut audibly			X	
Ears back	Ears back after shock				X
Tail lowered	Tail lowered after shock				X
Crouch	Dog ducks, with legs flexed and head towards ground			X	X
Back lowered	Only backside of body lowered				X
Head movement	Characteristic movement sidewards and downwards after being shocked			X	X
Snap	Snapping at owner			X	X
Avoid	Moving away from criminal with high speed			X	X
Circle	Turn 180–360° at point			X	X
Fast head movements	Dogs looks from owner to criminal in fast alternation			X	

An X denotes that the behaviour concerned has been scored in a particular context.

out instances that occurred in all exercises in all dogs, in order to score the behaviours that occurred at those moments. During free walk it was sufficient to score tail, body and ear positions just once and exactly 1 min after the beginning of the excersise. We used a one–zero sampling method to sample the other behaviours of the ethogram. During

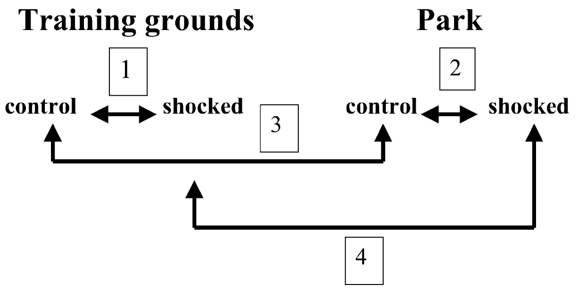

Fig. 1. The design of the study: the numbered arrows between conditions denote the comparisons that have been investigated. Control: control dogs, shocked: shocked dogs.

obedience exercises (14 commands) we could sample the ear positions 19 times, and the tail and body positions each seven times. Using one–zero sampling on 17 occasions again scored other behaviours. During protection work, the execution turned out to be so variable, that meaningful comparisons between both groups were possible only when using the data on “transport back of the criminal”, which stands for the following sequence: the handler orders the would be criminal to walk; the dog has to heel and follow the criminal together with the handler for about 30 m.

Here we used one–zero sampling for postures and behaviours. The tail and ear postures were scored 3 s after the first command; other behaviours were scored during 10 s after that first command, using one–zero sampling. All these observations lasted about 7 min per dog.

To each of the six ear and tail positions a score was allotted: the highest position got a −1, the lowest position got a −6. For each of the three contexts (free walk, obedience and protection work), for each training situation (park and training grounds) and for each dog an average ear, tail and body position was calculated.

Data for the two groups were compared using the Mann–Whitney *U* (MWU) test. When different contexts for the same group of dogs were compared we used the Wilcoxon matched pairs (WMP) test. In comparison, we left out behaviours that occurred in less than 50% of the dogs. We did this to prevent data from being influenced by just a few dogs.

Statistical tests were two-tailed, except in those cases, where we formulated explicit expectations: namely when comparing control with shocked dogs and when comparing free walking with training. Nominal *P*-values using an improved Bonferroni method (cf Hochberg, 1988), were also calculated, but are not shown here. When correction lead to a *P*-value becoming >0.05, the *P*-value concerned has been marked with an asterisk (*).

3. Results

3.1. Reliability of our observations

For data from two separate observation sessions, made in shocked dogs that walked freely and did obedience exercises on the training grounds, we compared the scores for the ear and tail positions and frequencies of some five behaviours that occurred in more than 50% of the dogs. Therefore, the number of dogs may vary per test. For this purpose we calculated Spearman's rank correlation coefficients.

During free walking, the ear positions for the two data sets were highly correlated: $r = 0.92$, $P < 0.000$. Tail positions correlated highly also: $r = 0.70$, $P = 0.003$. Other behaviours could not be tested due to a too low number of dogs performing these.

During obedience work, both the ear positions ($N = 15$, $r = 0.90$, $P < 0.000$), and the tail positions ($N = 15$, $r = 0.74$, $P = 0.003$) were highly correlated. For most of the remainder of the behaviours that could be tested, the same was true—tongue flicking: $N = 9$, $r = 0.69$, $P = 0.006$; lick mouth: $N = 6$, $r = 0.85$, $P < 0.000$; yawning: $N = 9$, $r = 0.59$, $P = 0.03$; and turn away: $N = 15$, $r = 0.71$, $P = 0.005$. The only exception was the behaviour lift front paw: $N = 8$, $r = 0.57$, $P = 0.34$.

We concluded, that for the tail and ear positions and for most of the stress-related behaviours that we were able to test, that the results from two different data sets were sufficiently similar and that our measuring methods therefore were reliable.

3.2. *Direct behavioural effects of shocks*

The most frequent wrongdoings by the dogs that elicited a shock from the trainer, were the following: dog does not obey "let go" command: 34×; dog heels ahead of the handler: 33×; dogs bites the criminal at wrong moment 12×; dog reacts too late on command "heel": 8×. In six more contexts the dogs received four or fewer shocks.

The frequencies of behavioural reactions are shown in Table 3.

Table 3
Direct reactions of 32 dogs to 107 shocks

Behaviour	Frequency	No. of dogs
Lowering of ear position	46	22
High sounding yelp	35	17
Tongue flicking	30	18
Lowering of tail position	27	13
Squeel	23	13
Characteristic head movement	22	7
Avoidance	20	14
Screeming bark	12	5
Crouch	11	6
High sounding bark	9	7
Lift front leg	8	8
Back lowered	8	4
Jump	7	6
Snapping at owner	6	4
Lick mouth	5	2
Circle	4	2
Shake	3	2
Sniff ground	1	1
No reaction	12	7

3.3. Are there long-term effects?

3.3.1. Does the behaviour on the training grounds of shocked dogs differ from that of control dogs?

Testing for possible differences between control and shocked dogs ($N = 15$ and 16, respectively) on the training grounds (comparison 1, see Fig. 2a–e) rendered the following results, using one-tailed MWU tests.

During free walking, shocked dogs had lower ear positions than controls ($U = 51.5$, $P = 0.006$), but tail positions did not differ ($U = 82.5$, $P = 0.14$).

Regarding stress-related behaviours, only the occurrence of licking lips could be tested using the Fisher exact probability test. Significantly more shocked dogs showed licking lips than did control dogs ($P = 0.005$). The other behaviours occurred too rarely to be tested.

During obedience exercises, again, the shocked dogs had lower ear positions than did the control dogs ($U = 68$, $P = 0.041$*), tail positions again did not differ ($U = 110.5$,

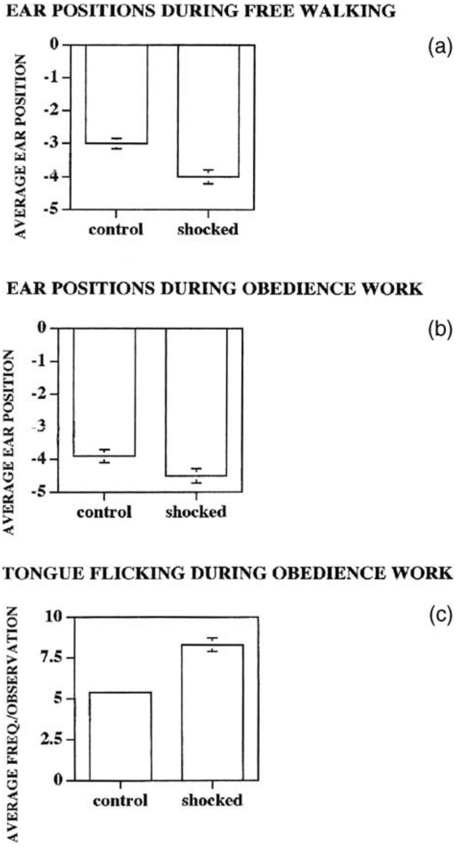

Fig. 2. (a–e) Significant differences in postures and behaviours between control dogs and shocked dogs on the training grounds. Averages and S.E.M.'s are given. Av.: average; freq.: frequency; observ.: total observation time. For (a) and (b), the more negative the number on the *y*-axis, the lower the position of the ears.

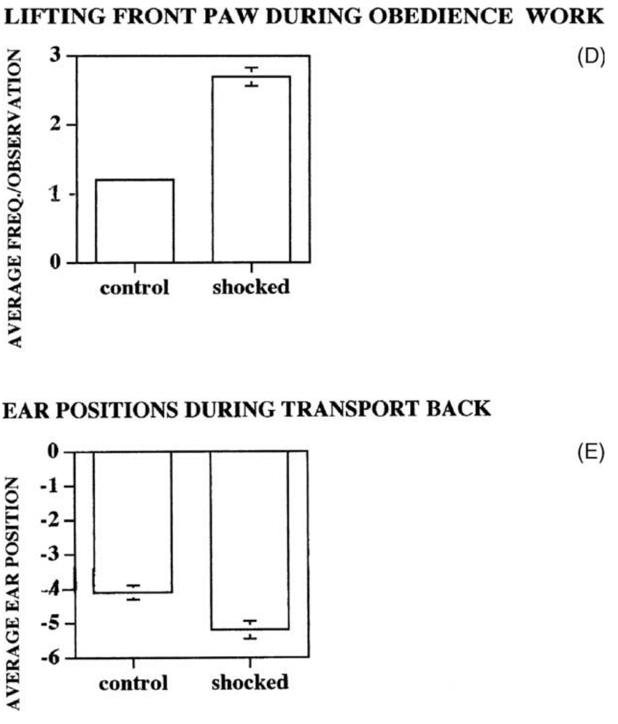

Fig. 2. (*Continued*).

$P = 0.211$). We could test five stress-related behaviours for differences between the two groups. Tongue flicking was shown more by shocked dogs ($U = 51$, $P = 0.006$); as was lift front paw ($U = 55$, $^*P = 009$). The remaining three behaviours that could be tested, lick lips ($U = 114$, $P = 0.830$), yawning ($U = 118$, $P = 0.953$), and turn away ($U = 88$, $P = 0.216$) were shown about equally often by both groups.

During protection work, ear positions in shocked dogs were lower ($U = 45$, $P = 0.004$) than in control dogs, but tail positions did not differ ($U = 92.5$, $P = 0.412$). Also, shocked dogs showed more paw lifting ($U = 40.5$, $P = 0.007$). Furthermore, significantly more shocked dogs walked with completely flexed limbs than control dogs (7 versus 2, Fisher exact probability test, $^*P < 0.05$), but there were no differences regarding the numbers of dogs in both groups that showed tongue flicking or licking lips. Average values and S.E.M.'s are presented in Fig. 2a–e.

3.3.2. Does the behaviour of shocked dogs in a park differs from that of control dogs?

Comparison 2 (all MWU tests, one tailed, with $N = 15$ for shocked dogs and $N = 10$ for control dogs) rendered the following results.

While walking on the leash, shocked dogs showed lower ears more often ($U = 34$, $P = 0.023$) but not lower tail positions ($U = 67.5$, $P = 0.680$) than control dogs. Stress-related behaviours were too rare to be tested. During obedience exercises, again, ear positions of

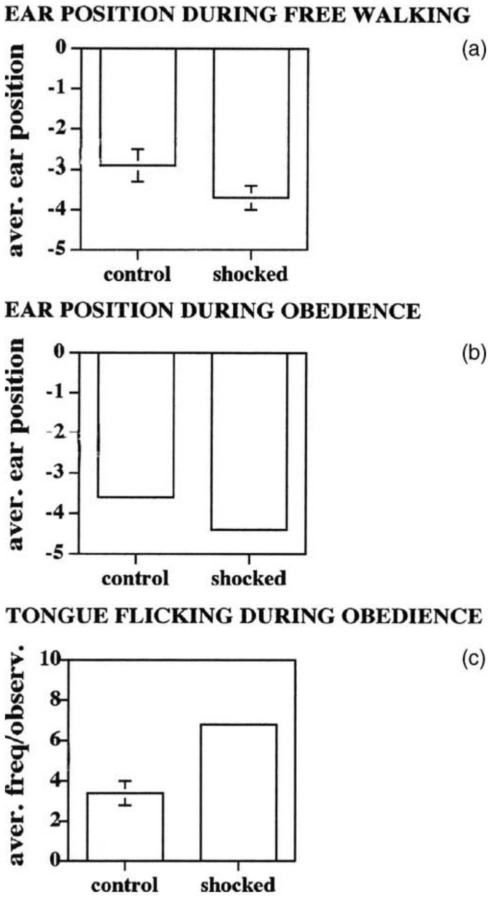

Fig. 3. (a–c) Significant differences in postures and behaviours between control dogs and shocked dogs in a park. Averages and S.E.M.'s are given. Av.: average; freq.: frequency; observ.: total observation time. For (a) and (b), the more negative the number on the *y*-axis, the lower the position of the ears.

shocked dogs were lower than for control dogs ($U = 30$, $^*P = 0.012$), but not so the tail positions ($U = 49.5$, $P = 0.160$). Of five stress-related behaviours that could be tested, only tongue flicking was shown more by shocked dogs ($U = 12.5$, $P = 0.001$), lick lips ($U = 54$, $P = 0.261$), lift front leg ($U = 54$, $P = 0.261$), yawning ($U = 70$, $P = 0.810$) and turn away ($U = 49.5$, $P = 0.160$) were shown equally often by both groups of dogs. Average values and S.E.M.'s are presented in Fig. 3a–c.

3.4. Is being on the training grounds more stressful than being in the park?

3.4.1. Are control dogs more frightened on the training grounds than in the park?

Two-tailed WMP tests for $N = 10$ dogs, resulted in no significant differences for ear or tail positions during free walking of control dogs ($N = 1$ (9 ties), $T = 0$, $P = 0.317$ in both

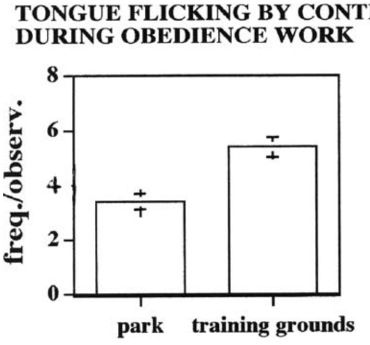

Fig. 4. Significant difference in behaviour between park and training grounds for control dogs. Average and S.E.M. are given. Av.: average; freq.: frequency; observ.: total observation time.

situations). During obedience work, again, no differences between ear and tail positions in park and training grounds could be detected. ($N = 10$, $T = 13.5$, $P = 0.152$ and $N = 9$, $T = 15.0$, $P = 0.370$, respectively).

From the stress-related behaviours, five occurred frequently enough to be tested. Only tongue flicking occurred more on the training grounds than in the park ($N = 7$, $T = 2.5$, $P = 0.003$). The other tested behaviours, lick lips ($N = 8$, $T = 16$, $P = 0.763$), lift front paw ($N = 5$, $T = 6$, $P = 0.680$), yawning ($N = 1$ (9 ties), $T = 1.0$, $P = 0.655$), turn away ($N = 8$, $T = 10.5$, $P = 0.271$), were shown equally often in both conditions. Average value and the S.E.M. of the only significant difference found are presented in Fig. 4.

3.4.2. Are shocked dogs more frightened on the training grounds than in the park?

WMP tests on comparison 4 revealed that during free walking ear positions did not differ between situations ($N = 11$, $T = 17.5$, $P = 0.156$), but that shocked dogs carried their tails lower on the training grounds than in the park ($N = 8$, $T = 0$, $^*P = 0.009$). Lick lips ($N = 10$, $T = 5.5$, $^*P = 0.024$) and lift front paw ($N = 13$, $T = 7$, $P = 0.026$) were shown more often on the training grounds, but tongue flicking ($N = 14$, $T = 27.5$, $P = 0.115$), yawning ($N = 8$, $T = 8.5$, $P = 0.176$) and turn away ($N = 7$, $T = 8.5$, $P = 0.262$) were shown about equally often in both conditions. See Fig. 5a–c for average values and S.E.M.'s.

3.4.3. Is being trained more stressful than being walked?

By means of two tailed WPM tests we investigated whether or not postures or the occurrence of stress-related behaviours differed between being walked or being trained for controls and shocked dogs.

For shocked dogs, ear positions were lower during obedience work than during walking ($N = 16$, $T = 0$, $P = 0.000$). Also, during protection work ear positions were lower than during walking ($N = 15$, $T = 12$, $P = 0.006$). Tail positions were lower during obedience than during walking ($N = 16$, $T = 0$, $P = 0.000$). There were no

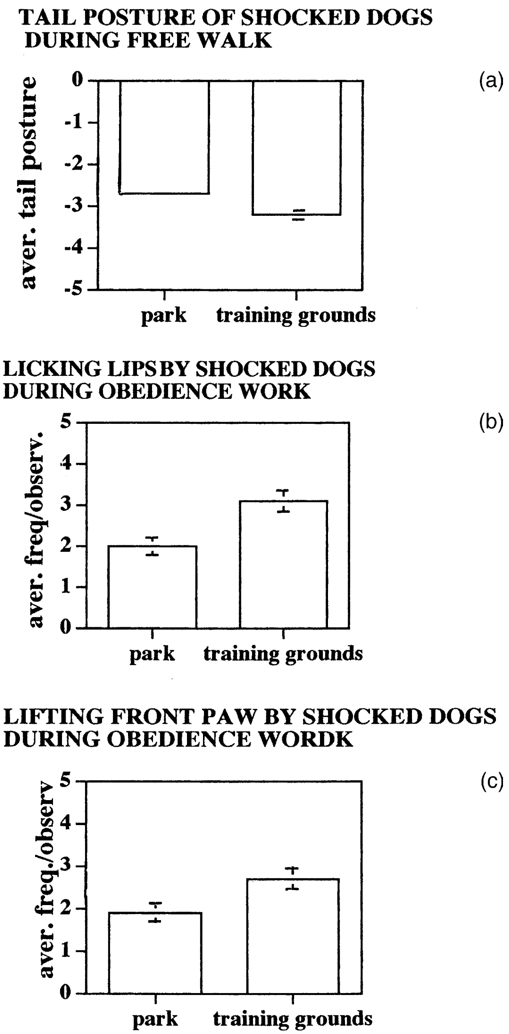

Fig. 5. (a–c) Significant differences in postures and behaviours between park and training grounds for shocked dogs. Averages and S.E.M.'s are given. Av.: average; freq.: frequency, observ.: total observation time. For (a), the more negative the number on the *y*-axis, the lower the position of the tails.

differences in tail positions when comparing walking and protection work ($N = 10$, $T = 16$, $P = 0.256$). Differences in the occurrence of stress-related behaviours could not be tested.

For control dogs, trends were the same. Ear positions were lower during obedience than during walking ($N = 14$, $T = 4$, $P = 0.002$). During protection work, ear positions also were lower than during walking ($N = 9$, $T = 0$, $P = 0.006$). Tail positions also were lower during obedience than during walking ($N = 15$, $T = 0$, $P = 0.001$), and during protection work these were almost significantly lower than during free walking ($N = 7$, $T = 3.5$, $P = 0.058$).

4. Discussion

4.1. On the methods

The fact that several simultaneous comparisons have been made when answering a question necessitates the use of a (improved) Bonferroni correction. On the other hand, we measured the same behaviours and postures in different conditions, so that in fact a kind of repeated measurement design was used. The risk of using a Bonferroni correction is, that meaningful significant differences may disappear. This is illustrated by the disappearance of the significant difference between shocked and control dogs concerning their ear position during obedience exercises on the training grounds (Section 3.3.1). A similar difference shows up in Section 3.3.2. This significance also would disappear after correction. The fact that this repeated measurement would render identical significant results by chance is remote. This is the reason why we showed uncorrected *P*-values.

4.2. Is being shocked painful or just annoying?

Inspection of Table 3, depicting immediate responses of dogs to shocks, shows a number of behaviours, that in the literature are connected to pain, fear and/or submission. Lowering of the components that make up the posture of the dog (ear and tail position and position of head and body), are related to submission and fear (Fox, 1974; van Hooff and Wensing, 1987; Beerda et al., 1997, 1999, 2000) and harsh training (Schwizgebel, 1982). Beerda et al. have shown, that, even in the absence of a person or dog, dogs lower their posture when confronted with an unexpected aversive stimulus. This shows that lowering of the posture is not an expression of submission per se, but certainly is connected to fear. They also have shown, that certain behaviours (e.g. lifting a front paw, tongue flicking, licking lips and vocalisations) are connected to either chronic or acute stress.

Vocalisations are also indicative of pain (Hellyer, 1999; Noonan et al., 1996; Conzemius et al., 1997), especially the higher frequency squeals, yelps and barks. Biting attempts can be interpreted as pain-induced aggression (Light et al., 1993; Ulrich, 1966; Polski, 1998). A characteristic, swift head movement sidewards and downwards often follows a shock as does a swift avoidance action. Both these reactions also indicate that reception of a shock is unpleasant. All in all these responses show that shocks elicit fear and pain responses. This means that shocks are not just a nuisance, but are really painful. In spite of the enormously high arousal of the dogs in this type of training, that very likely implies an increase of analgesia, receiving a shock may sometimes be perceived as a traumatic event by a dog. One of our study dogs still behaved as though it received shocks during protection work although the last shock was delivered 1.5 years before!

Although shocks may be painful, this does not imply that there is physical damage. A recent report on possible damage by the use of shock collars provides no evidence for physical damage and states that this is even unlikely (Klein, 2000).

4.3. Is the welfare of shocked dogs impaired?

In spite of the impossibility of controlling the events taking place in the park and on the training grounds, a careful choice of opportunities to score behaviours and postures made it possible to sample behavioural data that enabled us to compare the postures and behaviours of shocked dogs with those of control dogs and thus to investigate a possible lasting impact of being shocked. The differences that we found between shocked and control dogs were small but consistent. From the facts that: (a) shocked dogs consistently showed a lower ear posture than control dogs during free walking and obedience in park and on training grounds, and that shocked dogs showed lower ear positions while involved in protection work; (b) shocked dogs show tongue flicking more often during obedience work in park and training field; (c) shocked dogs show more lifted front paw during obedience work, we conclude that:

(1) shocked dogs are more stressed than control dogs on the training grounds;
(2) shocked dogs are also more stressed than control dogs in the park;
(3) shocked dogs connect their handlers with getting shocks;
(4) shocked dogs may also connect orders given by their handlers with getting shocked.

The second point illustrates that effects of the electric collar, at least when used in a harsh way, may be visible outside the training area. The most likely factor here is the presence of the handler. In spite of the fact that some 75% of handlers and trainers that were interviewed by a student of ours are of the opinion, that the dogs do not relate the presence of the handler with getting shocked, the dogs obviously do. Secondly, we have some evidence that getting an order, which previously was immediately followed by a shock or shocks, had obtained a negative connotation: for example one dog, shocked immediately after getting a “heel” command, yelped after getting the next “heel” commands without being shocked.

All this means, that when in presence of the handler, the dog has learned to expect something aversive. Obviously, the enormous rewards the dogs experience during training, i.e. chasing down, catching a criminal and winning the sleeve, do not counter the negative effects of getting shocked. This is in spite of the fact that handlers of non-shocked dogs admitted that they use prong collars, and that their dogs experienced beatings and other harsh punishments, such as kicks or choke collar corrections.

Afterwards we wished that we had done a control experiment; namely have the shocked and control dogs walked by an unknown person. Our results largely confirm the findings of Schwizgebel (1982) who showed that dogs from trainers that punished a lot, showed lower postures, a flexed sitting position and a lifted paw and tongue flicking.

We also have shown that the training in itself is stressful for both groups of dogs as compared to walking on the leash. The example given above is one of the many mistakes that were made during protection dog training: the command was followed by a shock so quickly that the dog was not able to prevent a shock. This leads to an unwanted conditioning: the dog has learned that getting a command predicts getting a shock.

We hope a future comparison of German shepherd dogs trained in a more friendly way will bear out that indeed a friendly training regime leads to less signals of stress. We have not proved that the long-term welfare of the shocked dogs is hampered, but we have made clear that it is under serious threat.

4.4. Why is there so much and such heavy punishment during police and guard dog training?

First, this type of training is typically and traditionally work by and for men: it is mostly men, that do these trainings and they have been doing it their way and successfully for many years. Men mostly are harder on animals than women, men may be perceived as more threatening than females (Wells and Hepper, 1999; Hennesy et al., 1997). Secondly, training time is too short. Thirdly, prestige is an important factor: championships or high rankings count heavily. All this promotes severe punishment in order to get quick results. Success in training does not promote willingness to change the type of training. Fourth, the type of dog used here are highly motivated, hard, temperamental and possess low biting thresholds. They stem from special breeding lines and quickly become so excited, that mistakes are easily made and commands not obeyed. This also promotes punishments. Also, the high excitement may have analgesic effects, so that softer physical punishments do not have the desired effect.

Fifth, during training excessive emphasis is being laid upon biting. The “let go” command, that is often not obeyed and therefore elicits punishment, is trained much later than biting.

Last, these dogs are expensive to extremely expensive animals. Handlers and trainers both want to get the maximum out of the animals.

4.5. Conclusions and recommendations

We concluded that shocks received during training are not only unpleasant but also painful and frightening. Furthermore, we found that shocked dogs are more stressful on the training grounds than controls, but also in a park. This implies, that whenever the handler is around, the dog seems to expect an aversive event to occur. A second unwanted association might be that the dogs have learned to associate a specific command with getting a shock.

Apart from the acute pain and fear, these expectations may influence the dog’s well being in the long term in a negative way. To counter misuse of the shock collar, it is proposed to ban its use for “sports”, but save it for therapeutic applications, such as for suppressing hunting and killing sheep. The effects we found occurred in spite of the fact that control dogs also underwent fairly harsh training regimes.

Trainers and handlers should study learning theory far better and review the structure of the training in order to teach the let go command in an earlier phase and to reduce the number of mistakes. They should incorporate more rewards during exercises. Also, less temperamental and less forceful dogs should be bred. This also would decrease the chance that dogs make mistakes for which they could receive punishment.

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