

Collar mounted electronic devices for behaviour modification in dogs

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ABSTRACT

This research project was designed to draw some conclusions from the observations of people who have used electronic collars for dog behaviour modification. The Innotek¹ electronic collars studied for this paper included three types: bark collars, boundary collars and remote trainers. If used correctly, punishment works best when used least and when the aversive stimulus is as moderate as possible while still achieving the desired effect. The electronic collars used by respondents in this study are designed to do this. They are, according to the distributor, when used properly (in accordance with manufacturer's instructions) neither able to injure nor to cause pain. The data gathered from this survey showed that electronic training collars can be an effective remedial measure for some types of problem behaviour in dogs.

INTRODUCTION

The principle action of collar mounted training devices is to respond immediately, reliably and consistently to inappropriate behaviour with an effective aversive stimulus. The aim is to prevent the unwanted behaviour as reasonably and as effectively as possible. Various kinds of collar mounted devices have been marketed and used over the years for behaviour modification of dogs. Different kinds of aversive stimuli have been employed including unpleasantly high pitched noise, citronella sprays to the head, or in the case of the devices considered here, small electric impulses to the skin of the neck.

Aversive stimulation when used in this way is intended to do two things. Firstly it should startle the dog sufficiently to interrupt the unwanted behaviour *pattern* and secondly, it should deter repetition of the unwanted behaviour *itself*.

While some behaviourists have a philosophical objection to the use of punishment as a remedy for unwanted animal behaviour, as Holmes (1999) sensibly pointed out - *All animal behaviour modifications should ideally be done through positive reinforcement - but this is not always practical or effective. Sometimes the only effective methods involve aversive stimulation. Occasionally dogs will be killed, injured, abused, tightly confined for prolonged periods or suffer some other discomfort, unless problem behaviour is quickly reduced. Appropriate use of the collars may stop further suffering by all parties.*



Aversive stimulation is required less often when it is given every time and triggered only by the problem behaviour. Ideally, the problem behaviour of the target animal should automatically trigger the aversive stimulation (Holmes, 1999). Boundary collars and bark collars considered for this paper have been designed to do exactly this. With remote trainers, an operator working with the dog acts to provide the sensing-activation pathway while the collar still delivers the negative reinforcement stimulus. Provided remote trainers are used competently, the cause and effect pathway is effectively the same as with the bark and boundary collars.

Upton (1992) found that most of the dogs at the animal shelter where he worked were there for behavioural reasons. These dogs were a nuisance and they had been abandoned because of it. There is obviously a good argument for the promotion of any reasonable method that effectively prevents nuisance behaviour.

The subject of electronic behaviour modifying devices has for some time been controversial. As Seksel pointed out: *This is a difficult and emotive area* (Seksel, 1999). The electronic 'check' that these types of collars deliver is considered by some to be excessively harsh. Claims of 'burns' being caused have been made (Seksel, 1999 and Wellington, 1999).

This research project was designed to seek opinions from a group of people who have actually used electronic collars for behaviour modification and draw conclusions from their observations.

The Innotek electronic collars studied for this paper include three types (bark collars, boundary collars and remote trainers). They are, according to the distributor, when used properly (in accordance with manufacturer's instructions) neither able to injure nor to cause pain.

MATERIALS AND METHODS

Three types of electronic training collars were investigated.

1. **Bark collar.** When the bark collar device is activated by the dog's barking, an instant aversive electronic stimulation is delivered to the skin of the neck of the dog. These collars have seven stimulation levels that can be preset for optimal effect.
2. **Containment system.** With the containment system, it is a constantly transmitting in-ground perimeter wire that activates the collar mounted device. Whenever the dog comes within range of the boundary wire, the collar device gives a warning sound. If the dog proceeds, then the same kind of aversive stimulus is administered.
3. **Training collar.** Training collars have a collar mounted receiver which is activated by a person (trainer) operating a hand held transmitter. When, while under supervision, the dog behaves inappropriately, an aversive stimulus can be delivered *via* the operator but *by* the collar. 'Training collars' are designed for long distance or wide range training.

An unedited list of people who had been supplied a collar mounted electronic training device was provided by Innotek Australia Pty Ltd. The survey sample consists of 30 people drawn from this list of 130. The survey respondents were selected at random and depending on their availability for interview. Respondents resided Australia wide. The questions asked of the respondents were designed to determine details about:

- the behaviour;
- the dog; and
- the device used.

RESULTS

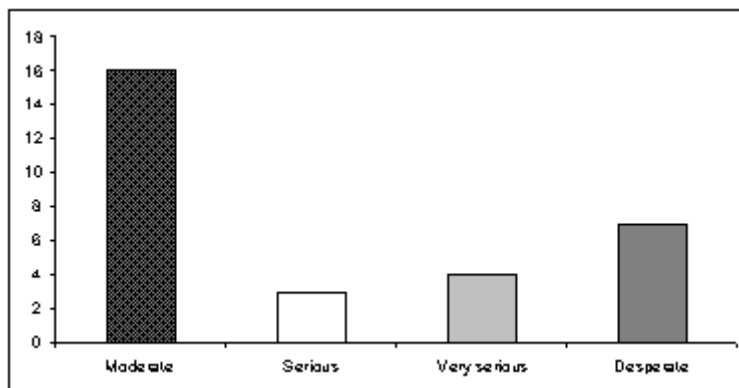
Behaviour problems, severity and prompts

Forty three percent of survey respondents had used a bark collar, 20% had used the containment system and 37% of respondents had used a remote trainer. The remote trainers had been used to train the dogs to do such things as:

- cease terrorising people as they walked past the dog tethered in its owner's ute;
- keep away from snakes;
- prevent biting stock while working; and
- stop hunting wallabies and other wildlife.

Almost three-quarters of dog owners had been self-prompted to correct the animal's behaviour problem, 7% had been prompted by their local authority and 20% by their neighbours.

Figure 1 shows a breakdown of problem severity.



The fact that 54% of respondents considered they only had a moderate behaviour problem and yet had still been prepared to take significant remedial action, suggests responsibility, competence and consideration of neighbours, local laws, livestock and the environment.

Proportion of dog types and gender

While the use of containment systems was not associated with any particular type of dog, bark control collars and electronic remote training devices were in greatest demand for working type dogs.

Gender breakdown of dogs in the survey sample showed 11 males, 5 desexed males, 8 females and 6 desexed females. Entire males and desexed females appear to be over-represented as the more prominent gender types requiring bark collars.

Figure 2 Gender breakdown.

Adverse effects

Ninety percent of survey respondents reported there were no adverse effects. One respondent explained that neighbours had removed the collar from their dog because they felt the dog had become distressed by it in the owner's absence. Two other respondents said they had noticed signs of skin irritation that appeared to be caused by the probes.

Satisfaction with the electronic collar solution

Ninety seven percent of survey respondents stated that they were satisfied or more than satisfied. Thirty seven percent of respondents had been very satisfied while 33% had been absolutely delighted with the results achieved from using the Innotek electronic collar.

A number of respondents spontaneously continued to comment on just how satisfied they were with the collars as follows:

- "bloody good thing";
- "best thing since sliced bread";
- "I would recommend it (electronic bark collar) to anybody with a barking dog problem"; and
- "made our life more peaceful".

Calming effect

Sixty-seven percent of respondents reported their dogs to be at least possibly more calm while 30% said their dogs were definitely more calm after using their Innotek electronic collar for behaviour modification.

The containment system had no apparent calming effect on the dogs in question. The majority of people using bark collars noted that their dogs were calmer and more settled after using it. With remote trainers, the calming effect showed an even balance of respondents noting and not noting a calming effect.

Previously tried methods

Only five respondents had not attempted to change their dog's unwanted behaviour some other way before using the electronic training device. The rest of the respondents had previously tried a range of alternative preventative measures, which included:

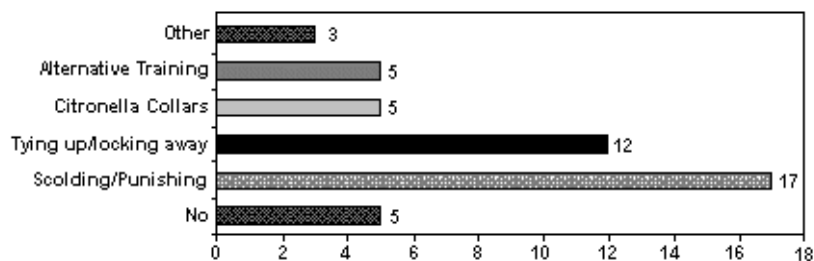
- Scolding and punishing (17)
- Tying up and locking away (12)
- Citronella collars (5)
- Remedial training (5)
- Others (3).

Among the 'other' category of previously tried alternative remedies were two 'own brand' of electronic collars made from pieces of wire and batteries while a third had used a standard cattle type electric fence to contain his dog within the property boundary. All three respondents who had tried these 'other' remedies reported the electronic collars to be both more effective and safer for both dogs and people.

Ninety-six percent of all respondents who had previously tried other remedies reported their electronic collar to be more effective than their previously tried methods. One respondent explained how he previously had to shoot the working dogs he could not train.

Indoor or outdoor

Only one of the 30 survey respondents stated they allowed their dog inside the house on a regular basis.



The remaining 97% stated they rarely or never allow the dog indoors with the family.

DISCUSSION

By the time nuisance behaviour is recognised as such, it has often also become habitual as well. While nuisance behaviour frequently has its genesis in the 'wrong dog - wrong environment - wrong owner' syndrome, breaking up those dog/environment/owner links by getting rid of the dog is seldom seen as an attractive solution. Other solutions are preferable and there can be no doubt the collar mounted electronic training devices considered in this study performed well for the people who had used them.

The nuisance caused by problem behaviour can impact unfavourably on the comfort of the owner, the comfort of their neighbours, the comfort of other animals and indeed on the comfort of the dog itself. Remedial measures for problem behaviour can, for a number of reasons, be a challenge even for experienced trainer/handlers. Foremost among these challenges are the special difficulties associated with 'self reinforced' behaviour.

Nuisance behaviour is *often* 'self reinforced' behaviour. When a dog is satisfied by the reward a given behaviour provides, it will reliably repeat that behaviour. This is the principle of operant conditioning. When the reward is 'internal' (as often the case with behaviour such as barking excessively, biting livestock, threatening passers by, roaming at will or chasing wildlife), the dog's training routine is self reinforced i.e. automatic. Unless prevented or deterred in some rigorous way, dogs very effectively self-condition nuisance routines such as those just mentioned. The behaviour becomes habitual. The nuisance becomes chronic.

The suggestion that habitual patterns of nuisance behaviour can be countered by simply removing the cause and then reinforcing alternate behaviour is unconvincing. This notion presupposes that the owner's ability to condition the alternate (preferred) behaviour by will power and positive reinforcement alone is going to be more effective than the dog's motivation to carry on the way it is. Such an assumption is naive. Some form of punishment is nearly always going to be required even though that punishment might in fact be no more than a gesture of displeasure or a command to desist.

The key in providing balance and common sense in all this is to understand that punishment is only a bad thing when used unnecessarily or excessively.

Some behaviourists would argue that punishment has no place in animal training at all. As with most other disciplines, animal behaviour has its share of fundamentalists

who cling with obsessive tenacity to fairly extreme points of view. The key in providing balance and common sense in all this is to understand that punishment is only a bad thing when used unnecessarily or excessively.

Juarbe-Diaz (1997) pointed out that while punishment inhibits a behaviour, it does not change motivation. Without suggesting any criticism of this observation in a general sense, the authors believe that with *self-reinforcing* behaviour, inhibition of the expression *is also* effective in inhibiting the motivation and its sensible application is justified.

There is no doubt that positive reinforcement of preferred behaviour is of benefit to the recovery of nuisance dogs.

The authors point out however, that there are four things that have to be done before a simple positive reinforcement technique can have any chance of success:

1. The cause/motivation of the nuisance behaviour has to be identified and addressed.
2. The owners have to be able to employ conditioning measures designed to encourage alternate (preferred) behaviour.
3. The owners have to be able to deter the unwanted behaviour.
4. The effect of pre-existing (sometimes long term) auto conditioning has to be cancelled out.

The collars, for a number of reasons, particularly numbers 3 and 4 above should be considered as aids in the application of positive reinforcement even though they can also be correctly described as 'remote positive punishers'.

Punishment is a commonly misunderstood behavioural term. Technically, punishment is the opposite of reinforcement. Punishment discourages the repetition of a given behaviour while reinforcement does the opposite. Punishment is not the same as abuse or cruelty even though this emotive connotation is persistent. Punishment is most correctly used when a lowest level of immediately effective aversive stimulation can be selected and applied. Punishment is most effective when the aversive stimulation is consistent and when it directly accompanies the inappropriate behaviour. Punishment should if possible both deter the unwanted behaviour and interrupt the pattern of behaviour expression. Accurate assessment of what will probably constitute reasonable - minimal - effective punishment requires the skill and judgement of an experienced animal behaviourist/trainer. Punishment is an instrument of training that should, when used, be used objectively i.e. without malice, without anger and without emotion. The electronic collars used by respondents in this study have been engineered specifically to achieve as many of these things as possible.

Each collar type (bark collar, boundary collar and remote trainer) is designed to be a specific behaviour deterrent. None is a play thing. Anyone who uses one should first try it on themselves to assess the level of the aversive stimulus that is delivered. In the event that the desired effects is not achieved when used for dog training, then the application is inappropriate and should not be persevered with. Overall (1999) pointed out that in cases where the deterrent effect of an (any) aversive stimulus does not definitely help to abate the inappropriate behaviour, then its continued use could arguably be considered abuse. It is a fair comment and it applies to electronic collars as much as to anything else in animal training.

Apart from prompting further discussion about electronic collars, reinforcement and punishment in animal behaviour, this survey showed 3 interesting trends that the authors thought might be of interest to others.

1. The apparent over-representation of 'working' dogs in the data gathered here appears significant. Many people, who do *not* have a working environment for their dogs, nevertheless actively acquire working type dogs as pets. Though the reasons why people do this are beyond the scope of this paper to discuss, the fact remains that problems *do* tend to arise as a result of this kind of 'wrong dog - wrong environment - wrong owner' situation. Those problems *do* have to be addressed - preferably without necessitating the surrender or indeed the demise of the dog itself.
2. This study flagged evidence of an 'out-side' dog syndrome, which might also be significant. The indoor-outdoor question was included in the questionnaire because it seemed to regularly come up as a factor in barking and roaming cases managed by this practice. Because dogs are such highly social animals, the rigid exclusion from regular in-house social interactions with other members of the household is probably a significant behavioural stressor for them. It would seem that an unusually high proportion of the dogs with behavioural problems in this study were 'outside dogs'. While once again beyond the scope of this study to analyse and evaluate in depth, 'social exclusion' may be another common manifestation of the wrong dog - wrong owner - wrong environment syndrome causing problems that need remedies without disposal.
3. Another interesting perception gleaned from this study was that the collars tended to have a positive calming effect on the dogs in question. This was universally so for the dogs with barking problems. Inclusion in the survey questionnaire of the question concerning calming effect arose from our own clinical experience where a number of clients had spontaneously commented about it after using these electronic bark collars.

Excitement associated with certain behaviour potentiates that behaviour's self-reinforcement. If you can suppress the excitement, you can also suppress the excitement linked behaviour. Barking is a special case because of what the authors have termed 'loop stimulation'. Not only does barking cause excitement, but excitement also causes barking - hence the 'loop'. We would suggest that the calming effect that had been so consistently noticed by survey respondents using bark collars resulted from breaking that stimulation loop.

It goes without saying that prevention is always better than cure. This applies to dog behaviour problems as much as it does to problems of any kind. Dog owner education and advice on nuisance prevention should be promoted at every opportunity and by every agency that has the resources to do so. In the situation however, when problems *have* arisen, the data gathered from this survey shows that electronic training collars (where appropriate) can definitely assist in remedial treatment.

The findings of this modest research project should not be considered absolute. From a statistical point of view this was a small survey. Nor should the findings be interpreted as generic for all electronic collar training devices. The fact that two respondents in the survey said they had, before changing to the Innotek product, used 'home-made' electronic training devices is telling. Goodness knows what might be out there and going under the name of electronic training devices. It suffices to say that blanket observations about the effects of *any* training techniques or devices should be made with due circumspection.

RECOMMENDATIONS

The authors make the following recommendations relevant to the appropriate use of collar mounted training devices that administer a correctional electronic stimulus designed to deter specific kinds of unwanted dog behaviour.

While punishment per se is not a bad thing, punishment misused is abuse. To prevent the misuse of remedial training aids in general, it is recommended that dog owners considering such options should seek expert advice before doing so to ensure that:

- the cause of the inappropriate behaviour has been established and the correctional device chosen is necessary and appropriate;
- predisposing and triggering factors associated with the inappropriate behaviour have been identified and addressed to the extent possible;
- the dog owner understands the application (how it works and what it does);
- the dog owner knows how to operate the device properly;
- the dog owner understands the importance of positive reinforcement of preferred behaviour;
- the device is used for an initial owner-supervised period to ensure that it does not cause undue distress to the dog;
- the device is used for an initial owner-supervised period to ensure that it is effective; and
- case records are kept at the point of retail sufficient to demonstrate that appropriate advice has been provided in each case.

Allegations relating to misuse, abuse or adverse effects resulting from the application of collar mounted electronic training devices need to be validated before they can be taken seriously.

To establish the veracity of alleged adverse effects, expert investigation of such claims is needed. This investigation should include:

- a review of the technical specifications of the device in question;
- a technical assessment of its performance;
- an expert opinion on the nature of the adverse effect be it physiological, histological or behavioural; and
- a check on whether or not instructions in proper use had been followed properly.

If validated adverse effects were to be recorded, especially if a trend could be established appropriate remedial steps could then be undertaken to address that situation.

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Footnote

¹ Innotek Australia Pty Ltd, PO Box 765, Mudgeeraba Qld 4213

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