

BISHOP BURTON

College

In association with



Techniques

FdSc Canine Behaviour and Training

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1.0 Introduction

Dog (*Canis familiaris*) behavioural problems may be addressed with a variety of different training techniques to which there are advantages and disadvantages (Lindsay, 2000). The chosen method of training may have implications upon the dog-human relationship and the emotional state of the dog (Ramirez, 1999).

2.0 Respondent Conditioning

Respondent conditioning involves repeatedly pairing an unconditioned stimulus with a neutral stimulus until the neutral stimulus becomes a conditioned stimulus (Follette and Dalto, 2015). For example, the sound of a bell presented immediately before food may become a conditioned stimulus and evoke the same response as food might (salivation) (Burch and Bailey, 1999).

2.1 Counter-Conditioning

Counter-conditioning counters the effect of previously conditioned stimuli by repeatedly pairing the stimulus with a counter stimulus (Westlund, 2015). For example, giving the dog a treat each time air is blown towards his face may change an aversive stimulus (air blowing) into an appetitive stimulus (Yin, 2009).

2.2 Systematic Desensitisation

Systematic desensitisation is a graded approach of exposure to conditioned stimuli resulting in a previously conditioned response no longer being elicited (Butler *et al.*, 2011). For example, a dog which is fearful of wheelchairs may begin desensitisation by being exposed to a static wheelchair twenty metres away; the wheelchair may then be moved closer in small increments until the dog is able to have the wheelchair next to him without any aversive response (Burch and Bailey, 1999).

2.3 Extinction

Extinction occurs when behaviour which had previously been reinforced, consistently ceases to elicit any postcedent change in the environment, resulting in the dog no longer performing the behaviour (Bentosela *et al.*, 2008). For example, a dog which begs for food at the table is no longer fed by people sitting at the table and therefore stops begging for food at the table (Burch and Bailey, 1999).

2.4 Flooding

Flooding involves exposing the dog to an aversive stimulus at its full intensity with no option of escape; the intention is to rapidly decrease a dog's fear of particular environments (Morrie, 1970). For example, shutting a dog which is fearful of other dogs into a room containing dogs and waiting for the fear to subside (Lindsay, 2000).

2.5 Habituation

Habituation reduces an unconditioned response to an unconditioned stimulus by repeatedly exposing an animal to the unconditioned stimulus (Davis, 1970). For example, a dog which is exposed to repeated popping of balloons may habituate to the unconditioned stimulus with the effect of reducing the startle response (O'Heare, 2010).

3.0 Operant conditioning

Operant conditioning is the strengthening or weakening of behaviour through postcedent reinforcement or punishment (Grossberg, 1971). For example, some dogs perceive water as appetitive so entering streams is reinforced whereas, other dogs may perceive water as aversive so the behaviour of entering the water may be punished (Ramirez, 1999).

3.1 Positive Reinforcement

Positive reinforcement is to add an appetitive stimulus immediately following a behaviour, resulting in the behaviour becoming more likely to recur (Heidenreich, 2007). For example, giving the dog a biscuit each time he sits makes the behaviour of sitting more likely to recur (Donaldson, 2010).

3.2 Positive Punishment

Positive punishment is to add an aversive stimulus immediately following behaviour, resulting in the behaviour becoming less likely to recur (McGreevy, 2009). For example, giving the dog an electric shock each time he crosses a boundary (invisible fence) makes the behaviour of crossing the boundary less likely to recur (Pryor, 2002).

3.3 Negative Reinforcement

Negative reinforcement is to remove an aversive stimulus immediately following behaviour, resulting in the behaviour becoming more likely to recur (Innes and McBride, 2008). For example, removing choke-chain pressure when the dog moves closer to the handler makes the behaviour of moving closer to the handler more likely to recur (Reid, 1996).

3.4 Negative Punishment

Negative punishment is to remove an appetitive stimulus immediately following a behaviour, resulting the behaviour becoming less likely to recur (Nader and Morgan, 2001). For example, removing attention when the dog jumps up to greet people, results in the behaviour of jumping up less likely to recur (Dennison, 2003).

3.5 Differential Reinforcement

Differential reinforcement decreases the likelihood of problematic behaviours by omission of reinforcement and increases the probability of more appropriate behaviours by reinforcing them (Birch and Bailey, 1999). For example, the dog is ignored while jumping up and given a treat when all four paws are in contact with the ground. There are various forms of differential reinforcement, for example DFA (differential reinforcement of alternative behaviour) DFO (differential reinforcement of other behaviour) and DFI (deferential reinforcement of incompatible behaviour) (O’Heare, 2014).

4.0 Advantages and Disadvantages of Alternative Techniques

4.1 Advantages of Positive Punishment

Positive punishment (if timed correctly) may be an efficient way of preventing unwanted behaviours (Christiansen *et al.*, 2001) by triggering an avoidance response (Tortora, 1983). For example, a dog may stop (with immediate effect) practicing behaviours which result in an electric shock from a shock collar because the behaviour may elicit fear.

Positive punishment may be given at a distance from the handler (with the use of an electronic sock collar) which may reduce any association between the handler and the aversive stimulus (Reid, 1996) and reduce the risk of an aggressive response towards the handler (Berkowitz, 1993). Reid (1996) is of the opinion that the use of positive punishment can produce a long lasting behavioural effect which is resistant to extinction.

4.2 Disadvantages of Positive Punishment

Hiby *et al.*, (2004) found that behaviour problems are more likely to occur when training incorporates positive punishment. Dogs may respond aggressively to painful stimuli and may attack nearby objects, animals or people (Polsky, 2000). Positive punishment increases stress and decreases animal welfare (Beerda *et al.*, 1997) and inhibits learning; Haverbeke *et al.* (2008) found that positive punishment reduced performance and decreased correct response rates in military dogs.

Classical conditioning may cause the dog to associate positive punishment with other (unrelated) environmental stimuli and develop a conditioned emotional response towards it (Birch and Bailey, 1999); for example, becoming afraid of children if a shock collar is activated in their presence. Konok, *et al.*, (2014) are of the opinion that emotions are an evolutionary advantage by motivating animals to avoid aversives and seek appetitives. It is reasonable to argue therefore that a dog may also associate punishing stimuli with the human handler and attempt to avoid the person in future.

Dennison (2003) is of the opinion that positive punishment causes dogs to suffer fear, anxiety, aggression, and learned helplessness. Positive punishment of one behaviour may cause other inappropriate behaviour (Donaldson, 1996); for example, an angry owner shouting at a dog for urinating on the carpet may cause the dog to urinate out of sight of the owner in future, such as behind a sofa.

Maslow's hierarchy of needs, which stipulates that needs are fulfilled in a particular order, places safety and security as the second most important requirement for humans (Gambrel and Cianci, 2003). Michaels' (2016) adaptation of the hierarchy to represent canine needs, places safety and security in first and second place respectively in order of requirement (see figure 1). It may therefore be reasonably argued that the dog-human relationship will be adversely affected because of a lack of bonding (third need to be met) between dog and human if the human is using positive punishment and the dog does not feel safe or the dog responds with aggression and the human does not feel safe. Ramirez (1999) is of the opinion that for a relationship of trust to develop, an animal must be sure that the human is not going to hurt it.

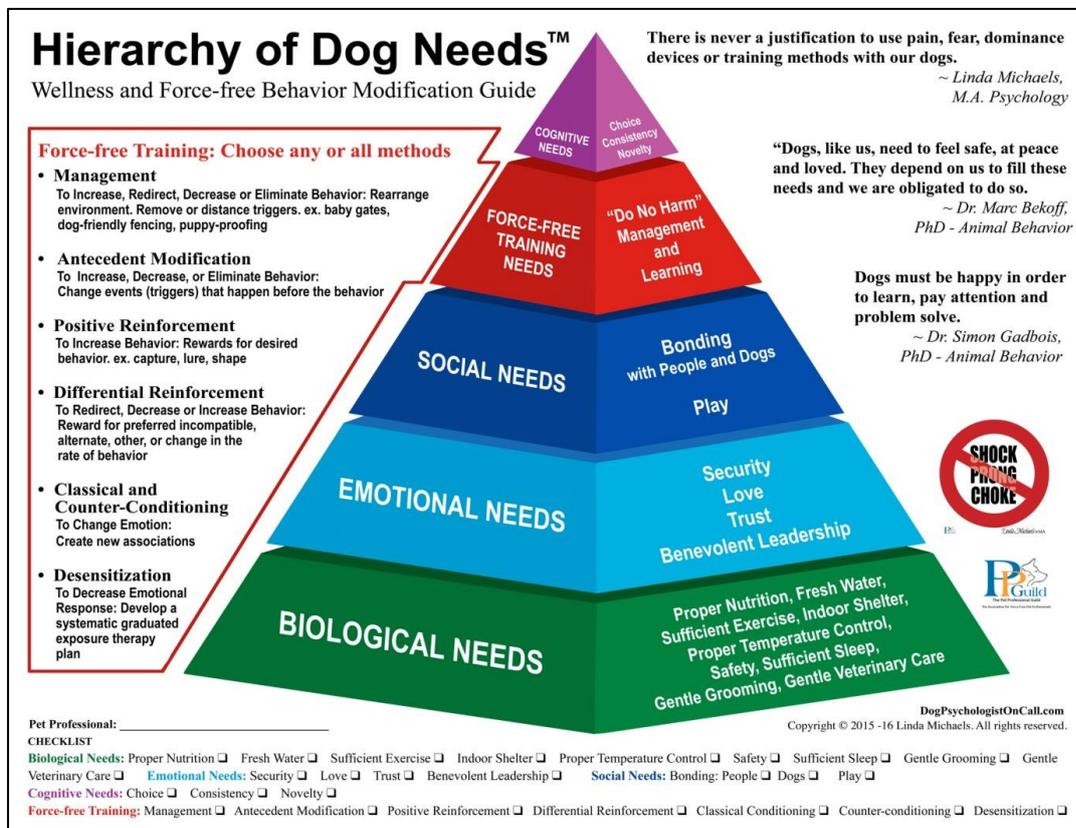


Figure 1: Hierarchy of Dog Needs (Michaels, 2016)

4.3 Advantages of Extinction

Extinction may be easily understood and implemented by dog owners as it may sometimes be achieved by simply ignoring the problematic behaviour; assuming the reinforcing stimulus is coming from the owner and not elsewhere (Burch and Bailey, 1999). The extinction protocol may be combined with other procedures such as positive reinforcement which may reduce any side effects (frustration or aggression); for example, whilst ignoring the problematic behaviour, positive reinforcement may be given for other, non-problematic behaviours (Miltenberger, 2008), as occurs during differential reinforcement protocols.

4.4 Disadvantages of Extinction

As a training technique, extinction may cause dogs to suffer an emotional response of frustration because a behaviour they have previously been reinforced for ceases to deliver the expected stimulus (Jakovcevic *et al.*, 2013). The dog may try with increasing intensity to obtain the appetitive stimuli (extinction burst) and in doing so may develop other problematic behaviours (Case, 2014). For example, the dog could develop the behaviour of barking at the handler if the handler stops feeding the dog when sitting at the table. After a period of time a behaviour which had stopped occurring due to cessation of reinforcement may reoccur; this is known as spontaneous recovery (Bentosela, *et al.*, 2008).

Mammals which do not receive an expected appetitive stimulus may develop raised cortisol (stress hormone) levels through activation of the adrenal glands and be more likely to exhibit aggressive behaviours (Papini *et al.*, 1997). Jakovcevic *et al.*, (2013) found that using the extinction method caused dogs to withdraw from the handler and become despondent.

Extinction may sometimes be difficult to implement correctly because the trainer needs to understand and be able to control whichever stimulus is reinforcing the dog's behaviour (Lindsay, 2000). Additionally, behaviours are sometimes self reinforcing. For example, some stereotypies are thought to reduce stress (Mason and Latham, 2004). There may, therefore, be no external appetitive reinforcer to

withhold. Some problems, such as biting, are not suitable for addressing with extinction due to the risk of injury to people or animals (Burch and Bailey, 1999).

4.5 Advantages of Positive Reinforcement

Positive reinforcement allows the trainer to use an unconditioned reinforcer, for example food, which fulfils a fundamental biological need and reinforces behaviours without the necessity for prior conditioning (O’Heare, 2014). Conditioned reinforcers (for example, a clicker) may also be used; these allow fleeting behaviours to be reinforced more accurately and at greater distance than with food alone. Positive reinforcement allows complex behaviours to be trained in a process known as shaping, because successive approximations of the behaviour are reinforced with an appetitive stimulus (Burch and Bailey, 1999).

The provision of food in reinforcing behaviours produces a positive affective state in dogs and may be crucial in developing strong emotional dog-human bonds (Payne *et al.*, 2015). Positive reinforcement is the only one of the four quadrants of operant learning which does not contain an aversive element (Burch and Bailey, 1999). During positive reinforcement, classical conditioning is also taking place as the dog makes good associations with the handler and a conditioned emotional response develops as the dog learns to associate the trainer with appetitive stimuli (O’Heare, 2014).

Reinforcement rates may be manipulated to achieve differing effects, for example, a variable rate of reinforcement may produce a behaviour which is more resistant to extinction whilst a continuous reinforcement schedule may produce a behaviour which is less resistant to extinction (O’Heare, 2014). It is well documented that the opportunity of gaining an appetitive raises dopamine levels (increasing feelings of pleasure) and motivates animals to act (Sapolsky, 2011; Berridge and Robinson, 1998 and Blackburn *et al.*, 1987).

4.6 Disadvantages of Positive reinforcement

A positively reinforcing appetitive stimulus (such as food) can become an aversive stimulus (Perone, 2003). For example, if the dog becomes satiated, offering more food may act as an aversive (O’Heare, 2014). If the timing of the positively reinforcing stimuli is not correct then unintended behaviours may be reinforced (Ramirez, 1999). For example, when training a dog to sit, if the reinforcer is given as the dog begins to stand (possibly anticipating the appetitive) then the behaviour of standing may be inadvertently reinforced.

Human emotions may sometimes impair decision making (Bechara *et al.*, 2000). For example, training whilst angry or elated may prevent the trainer from concentrating on the task and may lead to unwanted behaviours being reinforced due to poor timing and focus (Ramirez, 1999).

5.0 Conclusion

Some of the various training techniques which may be used to address problematic behaviours in dogs are counter-conditioning (Westlund, 2015), systematic desensitisation (Butler *et al.*, 2011), extinction (Bentosela *et al.*, 2008), flooding (Morrie, 1970), habituation (Davis, 1970), differential reinforcement (Birch and Bailey, 1999), positive reinforcement (Heidenreich, 2007), negative reinforcement (Innes and McBride, 2008) and negative punishment (Nader and Morgan, 2001).

Positive punishment may produce long lasting effects which are resistant to extinction (Reid, 1996) but other consequences may be increased stress (Beerda *et al.*, 1997), increased aggression (Polsky, 2000), decreased welfare and decreased learning ability (Haverbeke *et al.*, 1997).

Extinction may be simple to understand and implement when the trainer is able to control the reinforcing stimulus (Birch and Bailey, 1999). The technique, however, may also induce frustration (Jakovcevic *et al.*, 2013), aggression (Papini *et al.*, 1997) and other problematic behaviours (Case, 2014).

Positive reinforcement may fulfil biological needs (O’Heare, 2015), allow training of complex behaviours (Birch and Bailey, 1999) and develop dog-human bonds (Payne *et al.*, 2015). Reinforcing stimuli are not absolute but depend on the environment and the state of the animal at the time (Perone, 2003). Human emotion affects training by preventing the trainer from concentrating on the task (Ramirez, 1999).

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