**What Is the Science Behind Dog Training, anyway?**

The science in dog training is simply, how dogs learn. My hope is to unravel any misunderstandings about the terminology used within this science, for assistant trainers working with us, who love dogs.

There is a science to training dogs and it’s called the learning theory. This is not only how dogs learn, but how all animals learn, that is humans, dogs, dolphins, chickens, cats, etc. This theory is simply, the process of how learning actually happens. Of course, here, I’ll discuss learning in relation to dogs.

Since this learning is how all animals learn, anyone can google the Learning Theory and learn for themselves how to train dogs using this theory. But understanding the theory is another matter.

Learning happens all the time, even when we are not consciously trying to train a dog. Life itself offers opportunity for dogs to learn. If we feed them from the table when we eat, we have taught them, that hanging around the table, means they will get food. It also happens when we consciously teach a behaviour like Sit, but make no mistake, dogs are watching our every move and are learning every waking minute, whether we are consciously training or not.

The science is not new. Back in the early 1900’s behaviourists, Watson, Thorndike, Skinner and Pavlov studied behaviour in animals, offering terms like classical and operant conditioning via reward and punishment. So, when you hear about the science in dog training, some trainers think it’s made up by positive reinforcement trainers trying to disqualify punishment trainers. Unfortunately, this is completely absurd and serves only to divide and confuse trainers and the public.

**Here’s the science of how ALL animals learn, The Learning Theory**

Classical conditioning is associative learning and happens involuntarily or automatically and is predictable. Example is when Ivan Pavlov, a Russian physiologist fed dogs meat they began to salivate in anticipation of being fed. He then rang a bell before he fed the dogs and they soon learned that ringing the bell would produce food. So, classical conditioning, in this example, is that the dogs associated the bell with food. This would be a positive association. Classical conditioning helps dogs form positive associations with all sorts of stimuli. To take this a bit further; when raising a puppy, you can use classical conditioning when socializing the pup to noises, greetings, vacuum cleaners, etc. by offering treats or playing their favourite game, as rewards. The treats or games form a positive association with any stimuli.

**Operant conditioning** is the association between an action and its consequence and is voluntary. The consequence can be negative or positive. We are influencing their behaviour by asking for an action and offering a reward as a consequence for performing the action. When we teach conditioning to a dog, the first part is to hold a treat in an opened hand. Should the dog move to get the treat, the hand is closed and the dog backs away. The closing of the hand is the negative association. The dog learns not to move towards the treat for a second or two and the treat is then given. The dog learns that backing away from the treat gives a reward. This then is the positive association. If the dog likes the consequence, chances are he’s likely to repeat the behaviour in the future. This is called reinforcement.

There is another aspect to the association of action and consequence. For example, if a dog gets stepped on because he’s under your foot, he’ll learn to stay away from our feet. In this case, the consequence was bad, making the behaviour, of being under foot, less likely to happen again. When we teach a dog to Sit instead of jumping up as a greeting, we are punishing the dog for jumping up, by positively teaching and reinforcing the dog for sitting during greetings.

 **There is No Such Thing, as reward vs, Punishment.**

Here’s where it gets a little tricky and where some confusion lies. In reality, given the process whereby animals learn, there is no positive reinforcement only training. So, this means that if you call yourself or hear of a trainer calling themselves positive reinforcement only trainers, there is no such thing. It’s an impossible claim to make. In operant conditioning, you can’t reinforce behaviours without negatively punishing others. You may not be using tools like shock training or pinch collars or even sprays, that harm dogs but you are by definition using, punishment when teaching an alternative cue to stop an unwanted behaviour, again, the example of teaching Sit as an alternative behaviour to a dog that jumps up during greetings.

So, If dogs learn by association, be it positive or negative, let’s call a spade a spade and not pretend that we are positive trainers, using only positive methods, when the science we are showing others as ‘the way’ to train dogs, uses negative and positive punishment by its own scientifically studied design.

The critical distinguishing factor to impart is that the philosophy positive reinforcement trainers are using, doesn’t involve pain or discomfort during training, whereas positive punishment training does. Positive punishment training is uses force and pain to stop an unwanted behaviour. Examples of this kind of training are, hitting dogs, using electric shock collars, prong collars, correcting dogs using pain, emotional and or physical. Ever wonder what a dog thinks when the person they love attacks them.

So, this science in dog training is not new. It’s been around for around a hundred years. I know that if I wasn’t paid for my work, I would be less likely to want to work again, tomorrow. My reward is money. Dogs’ reward is food, play and praise. This isn’t rocket science. It is the science of learning, and it applies to all animals, then why wouldn’t we want to lavishly reward on our dogs for all that we ask them to do in our human dominated world. When we bring a dog into our world, we must not expect them to be robots or to know that a shoe left on the floor, isn’t a play toy or the leg of the chair is different than the branch outside. Therefore, it’s our responsibility, as their guardians, to teach them what we want and how to behave in our world and none of this teaching needs to cause them harm.

**Bottom line.**

If we can teach dogs to do what we want and what we don’t want, without causing pain or discomfort, why in the world would we choose to do so? If we understand this proven scientific theory of learning, we can help dogs live long lives, free of stress and anxiety? The benefits of this kind of teaching will greatly improve and strengthen the bond between humans and dogs while helping to decrease the number of dogs who end up in shelters. Behaviour is the number one reason dogs end up in shelters. We can do something about that. After all, if dogs are truly our best friend, don’t we owe it to them to teach both the owners and them, the way they learn? Just how Science is Revolutionizing the World of Dog Training.

It was about 3 years of handling R,A,F, Police dogs, When I became an instructor, one of our main problems was the dogs we handled were barking at people, this had been a constant problem we had. When I came to an embarrassing realization, the dogs we handled had yet to meet a person who doesn’t look like everyone else, Uniformed, clean shaven, with a hat on. From being puppies for the 18 months of training the dogs had only ever been in contact with uniformed officers.

I read several books on raising a dog, and they all agree on at least one thing: proper socialization of a puppy, especially during the critical period from eight to 20 weeks, means introducing the dogs to as many people as we possibly could. Not just people, but diverse people, people with beards and sunglasses people wearing raincoats and disabled, people jogging, people in Halloween costumes. And, critically, people of different ethnicities. Fail to do this, and your dog may inexplicably bark at people in wheelchairs, walking sticks or big sunglasses.

**What’s More**

This emphasis on socialization is an important element of a new approach to raising the modern dog. It has replaced the old, dominating, Cesar Millan–style methods that were based on flawed studies of presumed hierarchies in wolf packs. Those methods made sense 20 some years ago, when in my early career in training in the late seventies. The establishment had always used dominance-oriented training, that had been past on from trainer to trainer, it had been the way the training staff had always trained. I was the leader of the pack, even when that meant stern corrections, like shaking her by the scruff of the neck. The dogs were in the main well-behaved, but some were easily discouraged when we tried teaching them something new.

I don’t mean to suggest I had no better options, there was then a growing movement to teach dog owners all about early socialization and the value of rewards-based training, and plenty of trainers who employed positive reinforcement. But in those days, the approach was the subject of debate and derision. But of course, a lot of the trainers I had worked with for many years, were reluctant to change. The thinking behind their reluctance was that treat-trained dogs might do what you want if they know a biscuit is hidden in your palm, but they’d ignore you otherwise.

Over time, with the assistance of a new class of trainers and scientists, I took many courses in reward, scientific training, and many courses to change my methods entirely, and I have been shocked to discover the booming product lines of puzzles, entertaining toys, workshops and “canine enrichment” resources available to the modern dog “parent,” which has helped boost the U.K. pet industry to over 50 billion in annual sales. Choke collars, shock collars, even the word *no* are all-but-forgotten. It’s a new day in dog training. However, there are still many dog trainers using the wolf pack mentality. Trainers who have not kept up with research and taken courses in modern training. There are still those that believe positive and negative training will not work.

The science upon which these new techniques are based is not exactly new, it’s rooted in learning theory and operant conditioning, which involves positive **(the addition of)** or negative **(the withdrawal of)** reinforcement. It also includes the flipside, positive or negative punishment. A brief description. Patting a dog on the head for fetching the newspaper is positive reinforcement, because you’re taking an action (positive) to encourage (reinforce) a behaviour. Saying NO to stop an unwanted behaviour is positive punishment, because it’s an action to *discourage* a behaviour. A choke collar whose tension is released when the dog stops pulling on it is negative reinforcement, because the dog’s desirable behaviour (backing off) results in the removal of an undesirable consequence, the collar getting tight. Taking away a dog’s frisbee because he’s barking at it is negative punishment, because you’ve withdrawn a stimulus to decrease an unwanted behaviour.

Much has changed about the way that science is applied today. As canine training has shifted from the old obedience-driven model directed at show dogs, to a more relationship based approach aimed at companion dogs. Trainers have discovered that the use of negative reinforcement and positive punishment actually slow a dog’s progress, because they damage its confidence and, more importantly, its relationship with a handler. Dogs that receive too much correction especially the harsh physical correction and mean spirited “Bad dog” scolding’s begin to retreat from trying new things.

These new methods are backed by a growing body of science and a rejection of the old thinking, of wolves (and their descendants, dogs) as dominance oriented creatures. The origin of so called “alpha theory” comes from a scientist named Rudolph Schenkel, who conducted a study of wolves in 1947 in which animals from different packs were forced into a small enclosure with no prior interaction. They fought, naturally, which Schenkel wrongly interpreted as a battle for dominance. The reality, Schenkel was later forced to admit, was that the wolves were stressed, not striving for alpha status.

A study later with dozens of dogs selected from schools that either employed the use of shock collars, leash corrections, another school whose techniques were sticking entirely or almost entirely to the use of positive reinforcement (treats) to get the behaviour they wanted. It has been proven dogs from the positive schools universally performed better at tasks the researchers put in front of them. However, the dogs from aversive schools displayed considerably more stress, both in observable ways, licking, yawning, pacing, whining and in cortisol levels measured in saliva swabs.

These new findings are especially relevant over the last two years. Dog adoption in the COVID-19 era has ballooned, arguably because isolated people are newly in search of companionship and because working from home makes at least the idea of raising a puppy feasible. Before the pandemic, it was young city dwellers driving the boom in demand for and supply of dog trainers who employ positive methods, and an explosion in the employment of professional trainers across the globe. Often because they’ve delayed or decided against having children, executives and business owners are spending lavish amounts of money on pets, toys, food, puzzles, fancy harnesses, rain jackets, life jackets and training, and those professional trainers. Sadly, there are many so called dog trainers exploiting the industry, people who no little about training and have taken online courses to give themselves credibility. Because the industry is not regulated it has become big business.

The field is changing rapidly. Even in the last year, trainers have discovered new ways to replace an aversive technique with a win if a dog scratches (instead of politely sitting) at the door to be let out, many trainers will have in recent years advised owners to ignore the scratching so as not to reward the behaviour. They would hope for “extinction,” for the dog to eventually stop doing the bad thing that results in no reward. But that’s an inherently negative approach. What if it could be replaced with something positive? Now, most trainers would now recommend redirecting the scratching dog to a better behaviour, a *come* or a *sit,* rewarded with a treat. The bad behaviour not only goes extinct, but the dog learns a better behaviour at the same time.

The debate is not entirely quashed. Mark Hines, a trainer with the pet products company Kong, who works with dogs across the country, says that while positive reinforcement certainly helps dogs acquire knowledge at the fastest rate, there’s still a feeling among trainers of military and police dogs that some correction is required to get an animal ready for service. “Leash corrections and pinch collars are science-based, as well,” Hines says. “Positive punishment is a part of science.”

The key, Hines says, is to avoid harsh and unnecessary kinds of positive punishment, so as not to damage the relationship between handler and dog. Dogs too often rebuked will steadily narrow the range of things they try, because they figure naturally that might reduce the chance they get yelled at.

The Cesar Millans of the world is not disappearing. But all or mostly positive camp is growing faster.

While there is some lingering argument about how much positivity vs. negativity to introduce into a training regimen, there’s next to zero debate about what may be the most important component of raising a new dog, socialization. Most trainers now teach dog owners about the period between eight and 20 weeks in which it is vital to introduce a dog to all kinds of sights and sounds they may encounter in later life. Most “bad” behaviour is really the product of poor early socialization.

Enrichment is another booming area of the dog-training world. Not feeding out of a regular dog bowl for the first six months, because it was so much more mentally stimulating for dogs to eat from a food puzzle, a device that makes it just a little bit challenging for an animal to acquire breakfast. These can be as simple as a round plastic plate with kibble dispersed between a set of ridges that have to be navigated, or as complex as the suite of puzzles developed by Swedish entrepreneur Nina Ottosson. At the highest level, a dog might have to move a block, flip the lid up, remove a barrier or spin a wheel to earn food. Another common source of what we consider “bad” behaviour in dogs is really just an expression of boredom, of a dog that needs a job and has decided to give himself one, digging through the garbage, barking at the postman. Food puzzles make dinnertime a job. When first introduced, nobody believed dogs would eat food out of a puzzle, but it is growing amongst trainers and public alike.

Dogs are smart and can read insecurity. It makes them question their faith in the handler and, in some cases, decide they know better. Raising a good dog is about building trust between the dog and the handler. That does require some correction a “Hey” when the dog goes wrong, but what’s most important is confidence, both in the dog and the handler. “We’re trying to get an animal that thinks for itself. Your job is to teach him you’re worth listening to. As future trainers it your job to bring the most up to date training there is available and to keep learning throughout your career as canine trainers. Giving your charges the best life they most definitely deserve.