

The Importance of Training Double-Blind in K9 Detection Teams

I'm fortunate enough that I can travel the world visiting various canine programs and talking to trainers with all backgrounds. While our approaches and styles of training may differ, we all share one thing in common: making the world a safer place.

The level of importance of this work never escapes me as our dogs are one of the most important "rocks" in our security system.



Military and police efforts simply can't be as effective without the use of dogs, and this goes for detection dogs, as well. They play a vital role in the health and medical field, from alerting us to cancer or the onset of a seizure or heart attack, to finding bedbugs, mold, and bacteria in our homes. In many cases, detection dogs are the only option because there are no electronic detectors yet that can do the job as efficiently.

In the rare circumstances that electronic detectors can do the job, we see that dogs are faster and cheaper than their electronic counterparts. But are they also more reliable?

Reliability

"Reliability" is a bit of a hot topic in the canine detection world. If an explosive detection dog gives an alert on cargo that's to be transported by air, then we run into the problem of costly delays. If a narcotic dog alerts at the dashboard of an expensive BMW... who is going to open this? Or how about a tobacco dog alerting on a truck... who is going to take out the load? As long as dog teams are reliable and are putting in the time and effort to become the best they can be in their respective jobs and responsibilities, being an expense or cause of delay to locate and rid harm is worth it. This being said, "false indications" – negative and positive – will happen, so we must include them as part of the training program to better equip and prepare.

False indications

So, what does "false indications" mean exactly? A *false negative* means that the dog gives us no alert, no indication, but there is actually a target scent in the area that the dog has searched. So, basically, the dog missed it. Conversely, a *false positive* means the dog indicated on something, but the target scent is not there. Both are what we call "false alerts"; but from both a training and operational perspective, it's important we're able to understand the difference.

There are many reasons why dogs make these mistakes. Often the training is too simple; there's not enough variation or predictability. If dogs normally finding a lot of targets during a 10 minute search, they tend to give more false positives in long searches without any finds. They get frustrated and try to make their handler start a reinforcing process.

If distractors are used during training in a way that's too obvious, then false alerts will follow on substances that are close to the specifications of the target scents.

If trainers aren't working "clean" enough then either the "contamination" will be the trigger for the dog to indicate, or the imprint phase of the target scents wasn't executed properly.

These are just a few of the many reasons that can lead to false indications.

Negative reinforcement or positive punishment

Other weighty issues are the use of negative reinforcement or positive punishment in detection dog training (where dogs get scared, overly stressed, and start making mistakes).

Imagine that negative reinforcement or punishment is a part of the training; So if the dog makes a mistake, like a false alert, this will be followed by bad consequences. Now the scanning of the handler becomes even more interesting for the dog. Because if the slightest indication of 'incoming trouble' is there the dog will avoid of escape the situation. Not sure if the interesting smell is a distractor or the target scent? Dogs are deflecting and act like nothing is there. Too much pressure on the dog for 'finding nothing?' Dogs will start indicating on other scents than the target scent. By now the dog will be more concentrated on scanning the handler and stay out of trouble than using his nose to find the target scent.

Influence of the handler

In 1907, German psychologist Oskar Pfungts conducted an experiment with a horse and trainer. This became known as the Clever Hans principle. He noticed that the horse couldn't perform mental tasks and was simply watching the reactions of his trainer. When a question was asked, like how much is $2 + 2$, the horse would scratch the floor 4 times with his hoof, then stop. All the bystanders thought the horse could calculate, but it turned out that the horse was simply watching his trainer very carefully.

[*The Clever Hans principle*](#) is strong, but focuses on more than just the handler. If a dog's not gaining information directly from the handler, the environment can give this information. The trainer who sets up this exercise becomes an important source of information, but even bystanders become information-givers in their own right. As soon the group of onlookers stop moving and/or talking, the dog quickly understands he or she is nearby the hidden target!

Animals, especially dogs, are very good in scanning our body language. They understand easily how to scan the handler for extra information and confirmation. We can't hide our body signals. As soon as a detection dog comes close to a 'hot spot', our body language is 'signaling' the dog. It's much like the game we used to play as children, when someone hides something for us and tells us where to go using "warm" or "cold" directives.

As soon as the dog understands the handler knows where the target scent is hidden, we set ourselves up for failure. From that point, the dog will pay more attention to the handler instead of using his or her own nose and mind.

Dogs are always looking for the easiest way to get their reinforcement, and "finding something" becomes easier. Scanning the places where the handler will be, watching when he stops talking to his colleagues, breathes, or moves differently. Even the slightest change in our body language will be noticed by our dogs. And it's not only connected to the place of the hide. It also has a big influence on the decision-making part. As soon as the dog locates the possible hide, the dog will scan his handler again. Scanning for extra information hidden in the handler's body language. The big question for the dog this time is, "is this a real target scent that will lead me to reinforcement, or is it a distraction that's a waste of energy when I go into an alert?"

Testing your influence

The influence of the handler is a big issue. Research and tests like [*Handler beliefs affect scent detection dog outcomes*](#) by L. Lit, J.B. Schweitzer and A.M. Oberbauer showed us how easy it is to do this, even when the handler is aware of the ongoing test! In this test, dog teams were asked to do a building search. There were post-it notes placed in sight for the handler. With text like 'distractor', 'meat', 'explosives' etc. Handlers were asked not to take note of these texts. What they didn't know was that the text was not aligned with the 'scent' that was actually hidden on those places. The data showed it was very clear that handlers were influenced by these 'clues'. Because even when their dogs made good alerts, the handlers started to doubt their dogs. All because of the post-it notes with text like 'meat' or 'dogfood' on those places.

Trust and confidence

Trust and confidence is a big issue not only between handler and dog, but also in general in the 'security systems' where animals are involved. The 'commander' in charge wants to have clear information about the status. "Can I send this cargo by plane after a check of the dog?" "Do I need to open the dashboard of this expensive BMW?" "Do I cut open the walls and floor of this truck because the tobacco dog keeps alerting in this 'empty' truck?" In all of this, the dog handler is the 'interface' between the detector dog and the person in charge of the security system. This interface (dog handler) must be able to give clear information about the status of the situation. Remarks like "my dog shows special interest for that place" or "normally he sits down, but I saw his left ear moving a little differently than normal so I'm pretty sure something is there" aren't reliable. And when handlers tell me there's a 65% chance the target scent is there... that's not good enough. We need better results. Is it there-yes or no? If this question cannot be clearly answered, we need to re-evaluate the training program and head back to the drawing board.

Why we need to work double blind?

Our goal is to have more than enough confidence and trust between the handler and dog. To have a solid alert that cannot be mistaken. To have a dog trained well enough to pick out and differentiate between real target scents and the fake scent pictures. A dog who can cope with all sorts of distractions and not get frustrated if he or she finds nothing during multiple searches. Working "double blind" is the first important step. As soon as the dog is on a level where body language and target scents are well imprinted and recognized, double blind is the rule. That means the dog handler doesn't know where the target scents will be hidden, the trainer who prepared the exercise isn't present, and the bystanders know nothing, so they can't unknowingly suggest, give clues, or information. Electronic complements, such as video, can also be very helpful in these circumstances. Set up video in such way that you can see the handler and the dog in the picture. Make sure you can play this back in slow motion. Look for the clues that can indicate the dog that a reward is coming or that he is near the target scent. Set up your next training trial in a way that you can avoid these 'triggers'.

Collecting data

Finally, another important (and supportive) topic is that collecting and analyzing of data. All too often there's a communication gap between management and the operational dog teams at the start of training programs. Dog handlers seem to be quite shy when data collection starts; but, if this is well introduced and explained why it's important, then data will turn out to be very helpful. Data clearly and succinctly indicates the weak and strong points of any training program; but the focus of data must be on making the dog teams more reliable. If data is used to check if the dog handler is doing his or her job, then we've moved off-goal and off-point, making this a far different concern and matter.

Starting a double blind exercise can be quite nerve-wracking. Nerve-wracking because we have no clue where the targets are hidden, and no clue how much. This nervousness directly influences the performance of any detection dog who is also scanning a handler who is not giving information about hides and target scent anymore. This, and if the handler is nervous, the dog won't feel as confident. After a few repetitions, trust and confidence is usually restored, and a very proud handler starts to become even prouder of his or her dog. The dog will notice this change in his or her handler. Calm and confidence will inspire much different work in a dog than nervousness and anxiety ever will.

All of this will make the "interface" more reliable and clearer to understand for the commander in charge of the operations. This doesn't mean we can completely remove false alerts. Everyone, even electronics, will make mistakes; but if we all try to understand the mistakes, use them as stepping stones instead of crutches, we can make our systems much better.

Simon Prins

www.simonprins.com