

Anticipation - The Sweetest Smell of All.

"Well," said Pooh, "what I like best," and then he had to stop and think. Because although Eating Honey was a very good thing to do, there was a moment just before you began to eat it which was better than when you were, but he didn't know what it was called."

A.A.Milne, Winnie the Pooh.

Science agrees with Pooh Bear. Knowing that something desired is coming our way feels really, really good. While the Bear of Very Little Brain didn't know what to call it, we know it as anticipation or expectation. The excitement woven into the pleasure of the predicted event has us buzzing whether we are awaiting the return of a loved one, expecting a delicious meal or standing by in line for a favourite fun park ride.

Anticipation is an emotion shared by all mammals according to the work of Jaak Panksepp, a neurobiologist who has spent his career exploring the science of emotion. His seminal work has been mapping out the seven emotional networks or systems in the brain of all mammals: SEEKING, RAGE, FEAR, LUST, CARE, PANIC/GRIEF, and PLAY. They are always represented in capital letters because they are so fundamental, so vital, Panksepp says, that they have similar functions across species, from people to dogs to rats.

The master emotion is considered to be the SEEKING system. Any time a dog (or indeed any animal including our own dear species) is in a state of activity, exploration or anticipation our SEEKING system is activated and the excitement and glee of anticipation is present. Mother Nature is a clever lady - considering food is often scarce and hard to come by in the wild, it makes sense to ensure that searching, hunting and anticipating the possibility of a meal feels great in and of itself. Seriously, if Mother Nature had left it to reinforcement schedules we would never have made it this far. Instead what we see when the SEEKING system is activated is a huge release of the neurotransmitter dopamine. Ahhhhh dopamine! What's not to love! This is the chemical that brings us those moments when we feel invincible, like we can do and achieve anything we set our hearts to. Dopamine surges through our brain while we are searching, seeking, hunting, expecting but will begin to decline once we are successful in our pursuits. At this point opiates take over and while this still feels pleasurable (often very) research has shown overwhelmingly that we are much more likely to keep working for the dopamine surge over a hit of opiates when all other things are equal.

For us as trainers it is vital to know the value of providing our dogs with appropriate activities that activate the SEEKING system. SEEKING feels so good that if we don't our dogs will simply find ways to activate it themselves. Luckily, many of us are already doing it without knowing it. Shaping games - especially when they do not involve a prompt of any sort, allowing the dog to offer behaviours freely, provide opportunities for the engagement of the SEEKING system. In fact any training where the dog knows the process and has a high enough rate of reinforcement to prevent frustration and the activation of the RAGE system will do the job. Adding in punishers though (intensity is irrelevant) will prompt the FEAR and potentially the RAGE systems. This muddies the neurobiological waters and prevents the value of the SEEKING system being engaged in the dog (and handler) in training.

The very best way to utilise the SEEKING system in our training though is to teach scent games. "As we see the world, the dog *smells* it," Alexandra Horowitz writes in her wonderful work "Inside of a Dog". "The world of scents", she says, "is at least as rich as the world of sight." Let your dog explore with his nose! While trick

training, agility and other sports will activate the SEEKING system to some degree, these are all human orientated. Scent work puts your dog squarely in a world he instinctively knows and understands. Scenting activities keep dogs centred and focused in a way that no other training activity can. Dogs who have issues with reactivity, fear aggression and general anxiety are helped enormously by scent games being introduced into their daily life for the reasons discussed above.

Don't kill the SEEKING system with a barrage of "leave it!", "come here!" and "stop that!" While dogs need to learn what is acceptable behaviour and what isn't, this doesn't have to happen at the expense of the stimulation of the SEEKING system. In fact, by ensuring following these rules leads to the dog's SEEKING system being turned on we get a win win situation. Interestingly enough, recent research shows a very strong link between depression and an under-activated SEEKING system. We all need to know that good stuff is coming our way. Animals in zoos have higher levels of dopamine for longer periods of time when they are made to search and hunt for their food rather than have it delivered in a bowl. This simple change will see reductions in stereotypic behaviour, fights among conspecifics and compliance with keeper requests. This information begins to really show us how vital having a goal - something to look forward to and work towards - is for our wellbeing.

When you begin to actively use opportunities to turn on the SEEKING system in your dog the benefits can be incredible. My little Quinn - once a very overreactive dog to other dogs now is a problem because he runs to other dogs off lead to say hello! I owe a lot of this to other dogs being linked to the activation of his SEEKING system. See the opportunities that are all around you. Teach your dog to find hidden food, favourite toys and other objects. For a real boost in feeling good teach your dog to find individual family members and favourite friends. Not only does the dog get a rush of dopamine during the search, but a hit of oxytocin - the bonding neurotransmitter, when the loved one is found! Simply taking your dog to different environments rather than going on the same old walk every day is also incredibly valuable in this area. And don't be surprised if exploring a new walk with your dog makes you feel a little lighter and happier too.

Looking at behaviour and training in this way does not replace the science of learning. All of that is still in play. What we get is a whole new amazing layer, a new way to look at the emotional associations that go along with the learning. Open up your mind to the world of neurobiology and feel your SEEKING system start!

References and further reading:

Books:

Inside of a Dog: What Dogs See, Smell, and Know.

by Alexandra Horowitz

Affective Neuroscience.

By Jaak Panksepp

The Archeology of Emotion

By Jaak Panksepp

The Healing Power of Emotion: Affective Neuroscience, Development and Clinical Practice

Diana Fosha and Daniel J. Siegel

Papers:

Affective consciousness: Core emotional feelings in animals and humans

Jaak Panksepp

Food reward: brain substrates of wanting and liking

Kent C. Berridge

Neuroscience of affect: brain mechanisms of pleasure and displeasure

Kent C Berridge and Morten L Kringelbach

Towards a functional neuroanatomy of pleasure and happiness

Morten L. Kringelbach and Kent C. Berridge

Which Cue to “Want?” Central Amygdala Opioid Activation Enhances and Focuses Incentive Salience on a Prepotent Reward Cue

Stephen V. Mahler and Kent C. Berridge