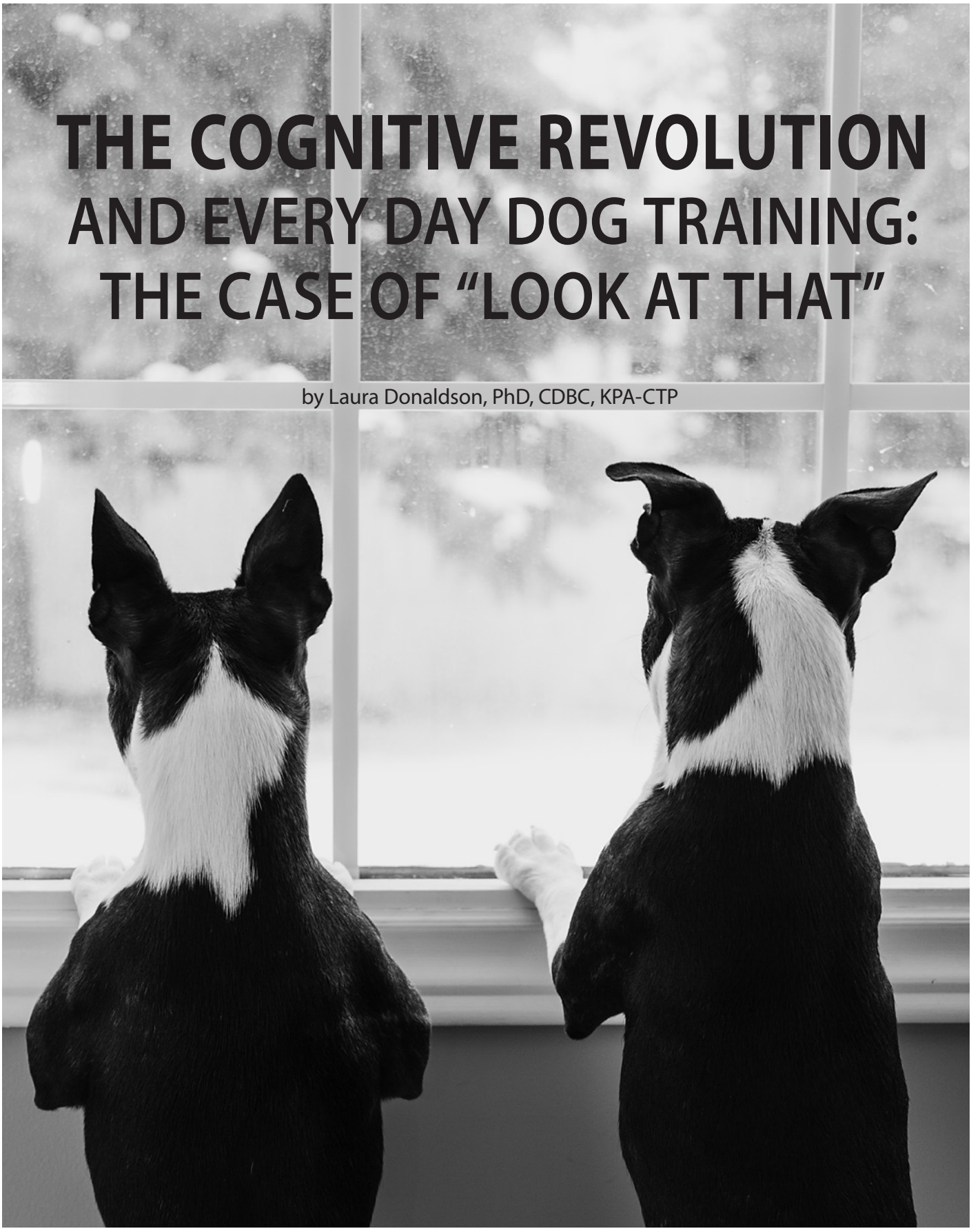
THE COGNITIVE REVOLUTION AND EVERY DAY DOG TRAINING: THE CASE OF "LOOK AT THAT"

by Laura Donaldson, PhD, CDBC, KPA-CTP



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◂ LOOK AT THAT! Dogs acknowledge a stimulus by orienting toward it in some way, most frequently with eyes and ears.

If you love dogs and haven't yet heard about the canine "cognitive revolution," you've been living in a bubble. Psychologist and zoologist Sara Shettleworth broadly defines cognition as "an array of mechanisms by which animals acquire, process, store, and act on input (information) from the environment . . . These include perception, learning, memory and decision-making."

Animal cognition studies have adopted this information-processing perspective from the cognitive psychology of humans, and it has proved immensely fruitful in both explaining and predicting numerous behavioral phenomena in non-human animals.

The study of specific mechanisms through which dogs process and interpret environmental information has become widely researched, hotly debated and, most importantly, monetarily funded. Because of this, dog enthusiasts can now engage in a new sort of destination tourism by visiting, both online and in person, the academic centers that are the intellectual offspring of this renewed interest: the Canine Cognition Centers of Yale and Duke; the Canine Cognition Lab at Harvard; the Dog Cognition Lab at Barnard; the Canine Science Collaboratory at Arizona State; the Clever Dog Lab at the University of Vienna (Austria); and perhaps most famously, the Family Dog Research Project headed by Ádám Miklósi at Eötvös Loránd University (Hungary) – and this list is far from complete. Indeed, according to Miklósi, the dog has become a major subject in helping scientists of all disciplines understand behavioral and mental evolution.

To date, however, most of the information about canine cognition remains located in highly controlled scientific contexts rather than the unpredictable, "applied" world of everyday dog training – and the few attempts to impact the daily practices of dog training have yet to be widely adopted. For example, Tiffani Howell and Pauleen Bennett, researchers at the Animal Welfare Science Centre, School of Psychology and Psychiatry in Australia, borrow insights from studies on social cognition in dogs to develop a much-improved puppy "socialization toolbox, for use by breeders, which encourages and reinforces continued social interaction between dogs and human beings." This research looks very promising in terms of its potential effects, but it has yet to saturate contemporary dog breeding practices. Similarly, the "Do as I Do" method, which taps dogs' capacity for social mimicry to teach certain behaviors, remains somewhat limited in its applicability to the daily routines of household dogs and their human companions.

My own perspective on the cognitive revolution and everyday dog training frames the issue from a different angle. Rather than a top-down approach that invents new training methods based on experimental insights, I explore how the so-called "cognitive revolution" can improve the effectiveness of and deepen understanding about the dog training practices that I already use.

As a case in point, I focus on a very well-known behavioral strategy from Leslie McDevitt's Control Unleashed™ training program and similarly named books for dogs and puppies: the Look at That (LAT) protocol. While "Control Unleashed" was originally developed for dogs that become too aroused in performance venues such as agility, many dog trainers have found the Look at That protocol useful in a wide variety of contexts. LAT works not only for agility trials, but also for more general issues like dog-dog and dog-human reactivity; canine anxieties about environmental triggers such as bicycles, moving cars and skateboards; and any fearfulness that a dog might have about anything new, to name just a few. I have even used it successfully to resolve the perennial problem of household dogs chasing the family cats. In my decade and a half as a dog training professional, I have found LAT to be one of the most productive and versatile protocols available for transforming a dog's behavior.

At its most basic, LAT asks that dogs acknowledge a stimulus by orienting toward it in some way (most frequently, with the eyes and ears), and then detach from this stimulus by reorienting to the handler. This reorientation is often accompanied by the dog physically turning around toward the handler or exhibiting some similarly noticeable separation. Eventually the stimulus itself becomes the cue for a dog to reorient toward the handler.

▸ Look At That protocol encourages dogs to process environmental information by using a pattern of communicative looking known as "gaze alternation."

However, unlike other protocols that might seem similar—Alice Tong's "Engage/Disengage," for example —Look at That is not a behavior chain trained with a clicker or a verbal marker. Nor is it a "trick" to help fearful dogs, as one account of the protocol has described it. Quite the contrary, in fact: LAT gives dogs an enormous flexibility and the decision-making power of changing their responses.

As dogs become more fluent in this behavior, for instance, a full-blown visual or auditory engagement with a stimulus often becomes just a slight turn of the head or an ear flick. Even the recommended cue for LAT, "Where's the (bike, dog, terrifying car)?" encourages open-ended and interactive engagement. And eventually a dog might even decide that a stimulus does not warrant an acknowledgement, which is a sure sign of success.

This year McDevitt has characterized LAT as a conversation in which the dog points out stimuli to the handler and adopts a role somewhat like a news reporter: "I think part of LAT's effectiveness is the dog taking on this reporter role and the desensitization/counterconditioning happens as a side effect of the dog's operant behavior (rather than straight classical conditioning). My aim is to not desensitize to a specific trigger but to create a conversation, or rule structure, about how the dog can be that reporter who points out things of interest to his person and gets thanked for it."

This is one reason that I prefer the term "interactive cognitive dialogue" to describe how LAT works, because this phrase more precisely highlights its contributions to canine behavioral wellness. Sometimes, a dog's cognition – his processing of information from, and interpretation of, the environment – becomes distorted. Indeed, many reactive, fearful or anxious dogs assign too much risk to the environment by interpreting it as more dangerous or more threatening than circumstances warrant. However, when dogs become adept in LAT they:

- Learn how to do more realistic, adaptive risk assessments of their environment, which in turn leads to better decision-making about their behavior.
- Are rewarded for processing information about, but not reacting to, unexpected stimuli that they encounter such as another dog or an unfamiliar person.
- Are encouraged to be in a cognitive rather than emotionally reactive zone. This is due to dogs becoming "news reporters" as previously described.
- Engage in a conversation, or interactive cognitive dialogue, with their humans about a stimulus (often known as a "trigger") rather than directly confronting it.

These outcomes are particularly important for dogs that routinely go over threshold by either becoming too aroused or shutting down in a particular context, whether that be an agility trial or a walk around the block.

Interesting, you might say, but what does all this have to do with the cognitive revolution and everyday dog training? First, the more we understand how and why behavior protocols do (or do not) work, the more effective and precise we can be in adapting and using these protocols in daily life with our own dogs. Second, a particular subset of canine cognition provides a critical key to unlocking the considerable power of LAT as a behavioral strategy: the unique ability of dogs to use social referencing. I say "unique" because both evolution and experience have proven that wolves cannot do LAT, but dogs and human infants can.

In their seminal study subtitled "wolves do not look back at humans but dogs do," Miklo´si et al. found that, "after undergoing training to solve a simple manipulation task, dogs that are faced with an insoluble version of the same problem look/gaze at the human, while socialized wolves do not. Based on these observations, we suggest that the key difference between dog and wolf behavior is the dogs' ability to look at the human's face. Since looking behavior has an important function in initializing and maintaining communicative interaction in human communication systems, we suppose that by positive feedback processes (both

evolutionary and ontogenetically) the readiness of dogs to look at the human face has led to complex forms of dog-human communication that cannot be achieved in wolves even after extended socialization."

Commentators on Miklo´si's study have complained about its sponginess in defining the act of looking back. For it to qualify as referential, does looking back need to occur for a certain duration or use certain behavioral mechanisms? While there is still much to be decided in terms of more general operational definitions, the communicative looking involved in social referencing is quite specific in how it outlines this behavior.

The use of social referencing to talk about the cognitive capacity of dogs is a paradigm transplanted from literature on the psychosocial development of infants. In this literature, the term "social referencing" describes the two-step process by which infants use the emotional vocal and facial displays of an adult to guide their behavior toward environmental objects, persons or situations. In step one, the infant looks back and forth between the stimulus of concern and the informant (the adult from whom the infant is taking her emotional cues). In step two, the infant changes her behavior toward the concerning stimulus according to whether the informant reacted positively or negatively to it.

The Look at That protocol works in a very similar way because it encourages dogs to process environmental information by using a pattern of communicative looking known as "gaze alternation." Gaze alternation is a term coined in the research article "Dogs' Social Referencing toward Owners and Strangers" by Isabella Merola, Emanuela Prato-Previde and Sarah Marshall-Pescini in 2012, to characterize the "three-way interaction" between a dog and the person-stimulus-person or the stimulus-person-stimulus – the origin point of the gaze does not matter.

In the Merola et al., 2012 study, the experimental stimulus was a 14–inch-wide fan with long, green plastic ribbons attached to the spokes. When the fan was turned on, the ribbons added both movement and noise to the stimulus. The "persons" were both the owners of the participant dogs as well as strangers the dogs did not know. Merola and her group of University of Milan researchers purposefully included strangers in this study so they could validate that dogs used social referencing as a form of cognition, or information processing, and not primarily as a means of seeking comfort from their owners.

The social referencing literature on infants indicates when a baby looks referentially not only toward its parent but also equally toward a stranger, it is seeking information about its environment rather than comfort from a caregiver. Merola makes a similar argument in the case of the study's dogs: When confronted with the scary stimulus of the plastic fan blowing long, green ribbons, 76 percent of the dogs alternated their gaze between the fan and their owner while 60 percent also looked back and forth from the fan to the stranger.

This data caused the researchers to note that "according to a number of authors, looking at a stranger as much as at a familiar care-giver (acting as the informant) indicates that looking behavior cannot be considered just a form of comfort-seeking due to the activation of the attachment system, but rather it should be interpreted as a search for information about the specific context." In other words, the evidence that a majority of the dogs used gaze alternation both with their caretakers and unfamiliar humans implies that the dogs were not just seeking reassurance in the presence of the scary fan; they were actively trying to gather and process information about how to interpret this stimulus.

Merola's research illuminates some of the most important ways the Look at That protocol works, although LAT dogs are not under controlled conditions and, instead of a fan, the stimulus becomes a kid on a fast-moving bike or a dog walking down the sidewalk. I argue that LAT asks dogs to engage with a potentially concerning environmental trigger by using the three-way interaction of gaze alternation. When the dog is first learning the behavior, the sequence would most likely be person-stimulus-person as the handler draws the dog's attention to potentially scary objects (just to be clear, one begins teaching LAT using only neutral, non-concerning items).

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After this initial period, the gaze alternation sequence would tend to assume the stimulus-person-stimulus form with the dog taking the initiative in alerting to the trigger. Alternating looks between his human and the trigger is a way for a dog to gather the necessary information about whether the trigger is safe or dangerous, and whether the dog can trust his handler to keep him safe. In terms of this last criterion, it is important to note that all of LAT's information processing is on a "look but don't touch" status. Dogs need to know they can acknowledge a trigger and have a dialogue about it with their humans, but they will never be forced to interact with it.

It is true that other species besides dogs – horses, cats and even, according to McDevitt (2017), an aggressive sea lion – have successfully been taught elements of LAT's basic behaviors: orienting to one target and then reorienting to another (most often, a human face). What is missing in these cases, however, is the use of gaze alternation as a vehicle for gathering information and then using that information to interpret or change the environment.

Take the case of horses, whose considerable cognitive abilities scientists have only begun to explore. A pair of researchers from Kobe University in Japan, Monamie Ringhofer and Shinya Yamamoto, investigated whether and how horses would send signals to humans when faced with an unsolvable task. In this case, the unsolvable task was the presence of a seemingly unresponsive caretaker and an empty food bucket. With an explicit gesture to the 2003 study by Miklo´si et al., Ringhofer and Yamamoto observed that when the horses believed their caretakers were ignoring them by not filling the food buckets, they "touched and continuously looked at their caretaker, which could be interpreted as a request, while [Miklo´si's] dogs demonstrated gaze alternation between a human and the food's location, which was interpreted as a directional signal (or 'showing' behavior)."

Dogs and horses have evolved in very different contexts with humans, and this might be enough to explain the difference in their use of social cognition as well as communicative looking more specifically. I suspect the examples of other species learning the Look at That protocol might be very similar. Many non-human animals are capable of using looking as a demand/request or looking as a targeting behavior, but available data currently supports that only dogs and certain primates, including humans, are able to deploy it as a form of social referencing.

Another study by Merola et al., 2011, highlights an often-overlooked aspect of LAT training: the importance of the handler's observational conditioning in influencing how a dog interprets a trigger. The tendency to focus mainly on the canine component of Look at That obscures the ways in which the human response to the dog is as significant as the dog's response to the human.

The second Merola study clearly shows that an owner's positive or negative facial/vocal display toward the blowing fan was crucial to the dog's subsequent behavior: "dogs in the positive and negative group exhibited an opposite use of the space available, mirroring their owner's movements. In both these phases, dogs in the positive group moved closer to the fan following the owner's approach, and the only four dogs that touched the fan were all in this group. In the negative group, dogs spent most of their time in the zone furthest from the fan, and

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did so even more when the owner crouched down and expressed a fear response." Dogs whose owners' facial or vocal expressions indicated that the fan was safe (Animal behaviorist Dr. Ian Dunbar might call this "using the jolly routine") tended to approach and investigate the fan; dogs whose owners' facial and vocal expressions indicated the fan might be dangerous stayed away.

Merola admits the possibility that this mirroring behavior might be due to a "secure base effect," i.e., the tendency of dogs to stay near their owners in stressful situations. However, in the study, dogs in the positive group actually interacted less with their owners than those in the negative group. This study concludes that if the dogs in both groups were just seeking proximity to their owners because of the perceived stressful situation, no difference would have emerged between them: "Once explicit either approach or avoidance behavior was manifested, dogs were highly influenced by their owner in their reaction to the ambiguous object through a process of observational conditioning."

In terms of the Look at That protocol, these findings suggest that how a human responds to an environmental stimulus is critical to how their dog interprets it. This should be a lesson more generally to all dog trainers on the importance of remaining calm whenever they encounter a stimulus that is concerning to their dogs, and quite possibly to the handler as well.

It seems fitting to end this piece with a more personal reflection about how understanding the cognitive underpinnings of the Look at That protocol has changed what I do in my own practices of everyday dog training. To be honest, 10 years ago I taught LAT as yet another handler-directed behavior: I gave the cue, the dog looked at the stimulus and then turned back to me. While there was interaction, there was also no question that I was in charge of what was happening.

My research into why this protocol works so well has profoundly transformed this model. I now understand that dogs have highly evolved abilities, especially in the realm of social cognition, and that they communicate with humans in ways that we are only beginning to understand. The Look at That protocol demands that I must become much more aware of this and more adept at recognizing when and how my dogs are engaging in conversations with me. I want my dogs to ask questions of me, not just take orders. Look at That is very effective in teaching dogs to calmly accept previously concerning triggers. Even more importantly, it provides the opportunity for an ongoing cognitive partnership with my dogs – a partnership in which we exchange information and share emotions, that embodies the give and take of all relationships, and that allows us a brilliant glimpse into the future of everyday dog training.

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Since 2006, ***Laura Donaldson, PhD, CDBC, KPA-CTP*** *has been the owner of Four Paws, Four Directions Dog Training & Behavior Consulting, LLC, located in the beautiful Finger Lakes region of upstate New York. When she is not working with dogs and their human companions, she can be found herding sheep with her Border Collies, tending to Thelma and Louise, her Barred Plymouth Rock hens, clicker training Obi, her African Gray Parrot and following the instructions of her three household cats (the real "bosses" in the family). Laura can be reached via email at fourpaws@twcny.rr.com.*