

# UNDERSTANDING CANINE COGNITION

THE SCIENCE OF CANINE  
LEARNING AND MEMORY

BY CAMERON FORD



# FORD K9<sub>LLC</sub>

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[www.fordK9.com](http://www.fordK9.com)

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PODCAST HOST FOR "K9S TALKING SCENTS"



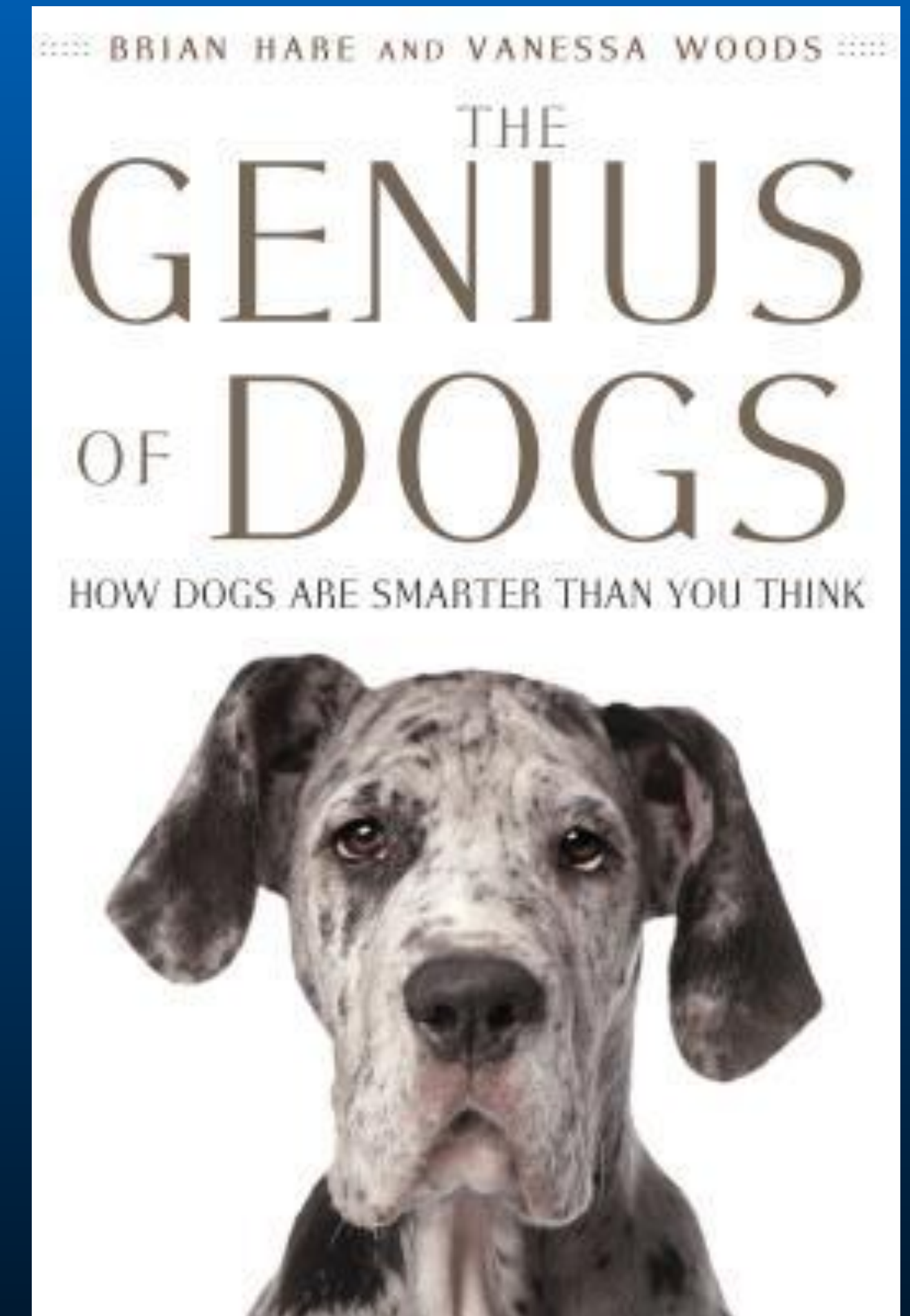
# GOALS OF THIS CLASS

- WHAT IS COGNITION
- UNDERSTANDING COGNITION
- HOW TO USE COGNITION IN SELECTING DOGS
- HOW TO USE COGNITION IN YOUR TRAINING



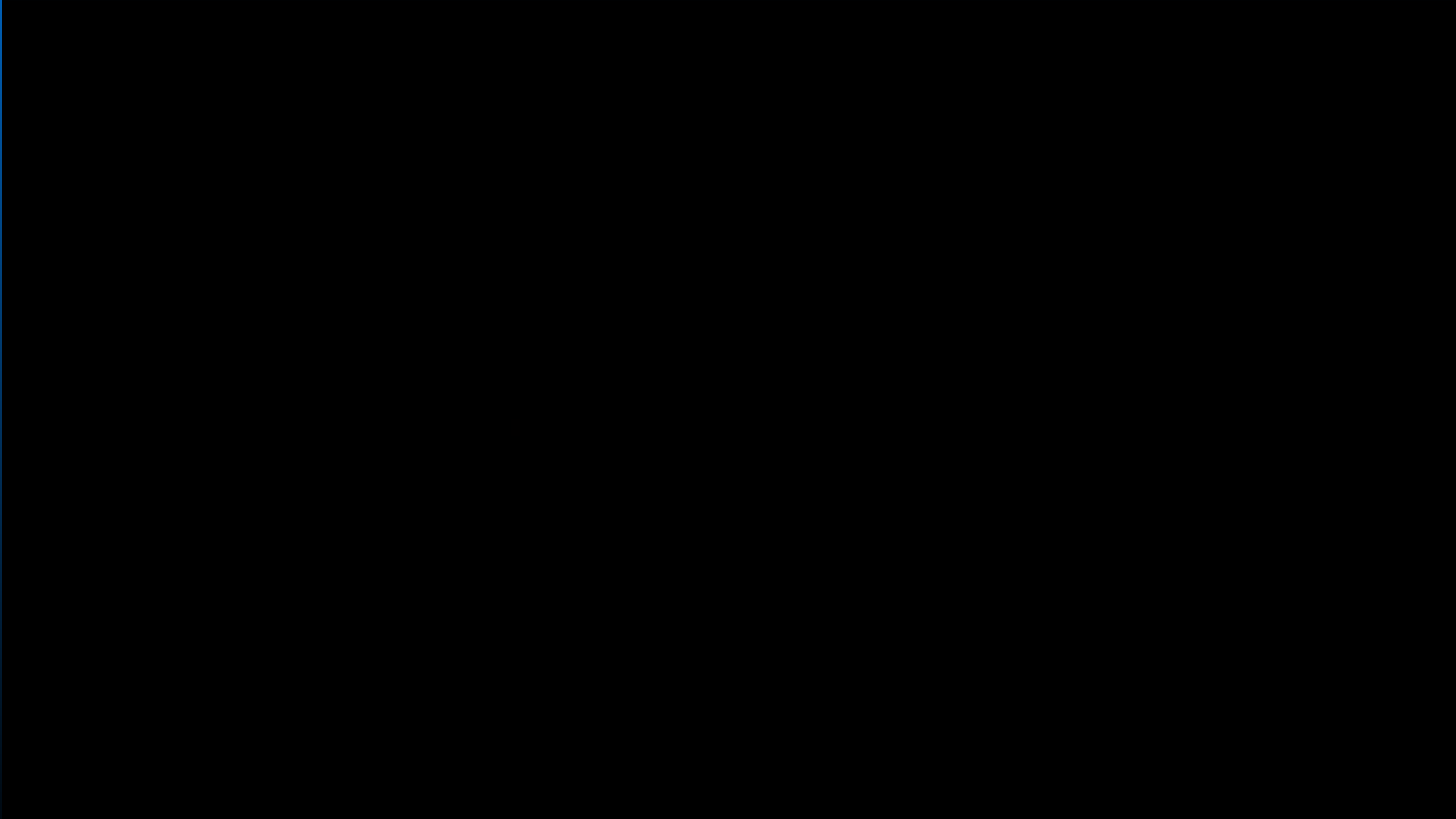


- **DR. BRIAN HARE:**
- DUKE UNIVERSITY
- DOGNITION
- THE GENIUS OF DOGS

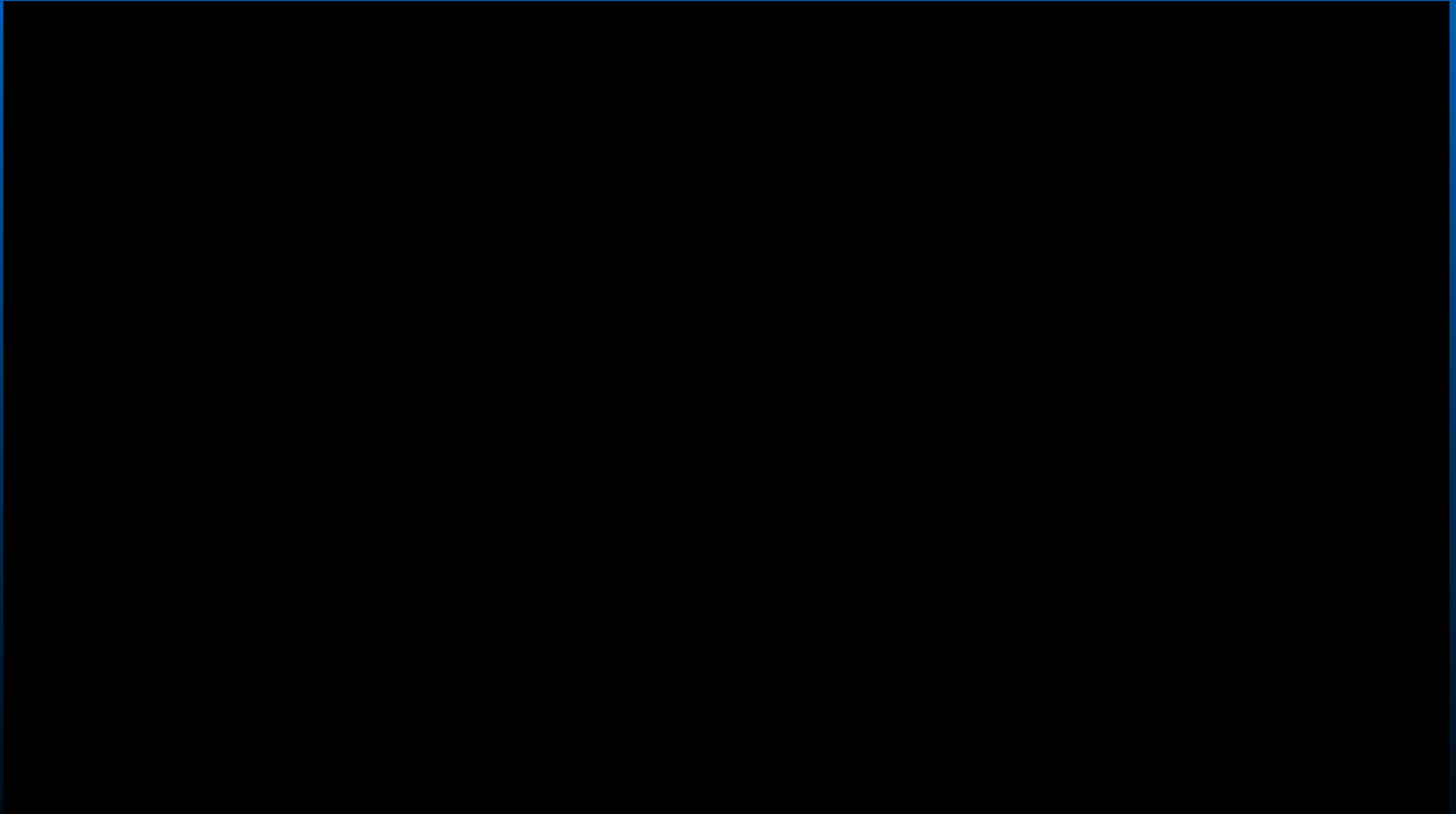


# WHAT IS COGNITION?

- **Cognition** is the mental processes involved in gaining knowledge and comprehension. These processes include thinking, knowing, remembering, judging and problem-solving.
- Example: Dogs using gestures to gain inference to figure things out. You standing near something can signify importance. Your hands pointing, your speed as you walk in an area. *\*Gestural Communication like we do with toddlers\**
- No other species on the planet has the ability to read human intention and communication better than a dog









BBC

# HOW DOES COGNITION HELP US?

- ▶ Duke has been working on a series of tests (Brain games) that have shown to be predictive in identifying successful working dogs.
- ▶ This is testing system that can be measured vs. our normal subjective type selection testing, or at least be used in conjunction with *the* normal tests.
- ▶ Next is, how far back in age can we go... And can these tests predict a successful working dog (Puppy Cognition)
- ▶ How much handler involvement plays a major role in K9 learning and ability to problem solve.
- ▶ Will give us a proven best practices approach to teaching and training. **(Detection dogs meeting the Frye rule)**

# BRAIN GAMES FOR SELECTION TESTING

- ▶ OBJECTIVES:
- ▶ How well can the K9 problem solve
- ▶ Mental and motivation flexibility
- ▶ Can they maintain focus (Impulse Control)
- ▶ How good are their memory skills (Episodic/Implicit Memory)
- ▶ Memory vs. Nose
- ▶ How much do they use or want to use the human for help
- ▶ Power of the K9 mind during training (making inferences)
- ▶ There is no right or wrong answers per say. You evaluate over all performance and how quickly they reach success on the game



# Warm Ups





# Distracting Pointing Cue Test. (Gestural Communication)





# Distracting Pointing Cue Test. (Gestural Communication)





# Distracting Pointing Cue Test. (Gestural Communication)





# Marker Cue Test. (Making an Inference)





# Marker Cue Test. (Making an Inference)





# Marker Cue Test. (Making an Inference)





# Causality Test. (Making an Inference)





# Causality. (Making an Inference)





# Causality. (Making an Inference)





# Working Memory





# Working Memory





# Working Memory





# Working Memory with Distraction





# Working Memory with Distraction





# Un-solvable





# COGNITION AND TRAINING

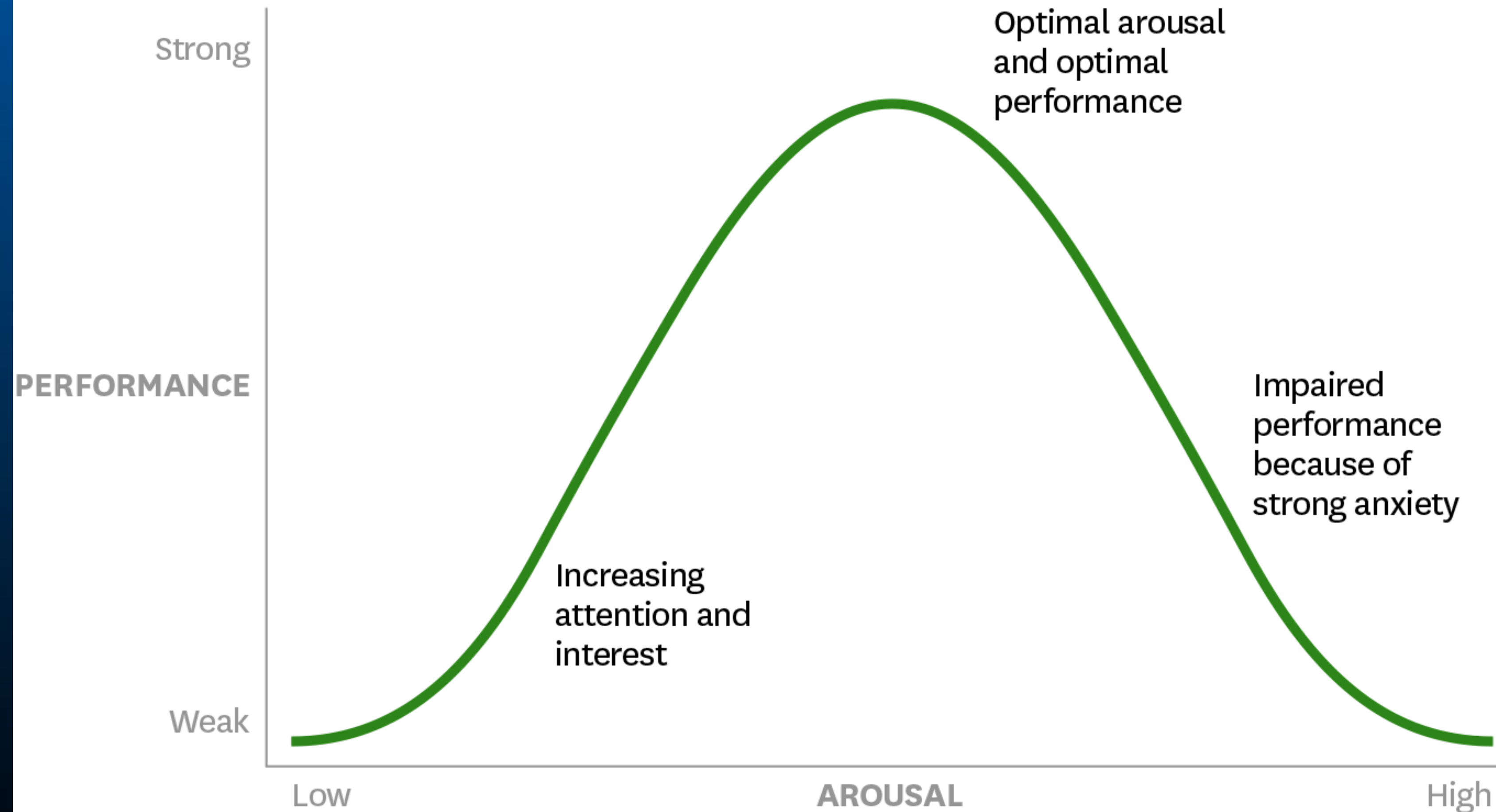
- ▶ Create training situations that allow the dog to learn and self discover.
- ▶ Create Segments of learning that will later link together (Chaining). Ability to self discover and not use Handler for info creates a dog who is far more effective.
- ▶ A Handler who puts themselves into the problem solving equation, can commonly create a dog who then seeks handler to solve problem.
- ▶ What you see on a test can give you insight in what you may see in training (EXAMPLE... Excessive Barking)



# COGNITION AND TRAINING

## The Yerkes-Dodson Law

How anxiety affects performance.



SOURCE ROBERT M. YERKES AND JOHN D. DODSON

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# COGNITION AND TRAINING... THE MEMORY

- ▶ Less is MORE (Reps and Variables)
- ▶ Less Reps creates clear memory to pull from (Pictures)
- ▶ Less Variables allows for faster success in learning
- ▶ Reinforcement History
- ▶ Stress and learning
- ▶ Once a Day vs Once a Week Study
- ▶ Scent Memory and Task Memory
- ▶ Scent Memory (Cocktail vs Single odor)



# Cognition Testing Disclaimer

- ▶ The tests will tell you much of what you already know about your dog. However, it will also give insight into knowing your dog better.
- ▶ There is no RIGHT or WRONG results to each test... its about the whole test and what it tells you.
- ▶ Doing the Cognition testing 1 time in an unknown area for your dog and with minimum warm up time may NOT give you same results as if you conduct the tests in a known area where the dog is more comfortable and not distracted.
- ▶ You can do these tests a few times to get a avg. result.
- ▶ The information from the results will give you guidance as to what to be aware of and what to apply to employ efficient training.



# COMMON TESTING ERRORS

- ▶ Not going to the RIGHT first
- ▶ Fake Baiting when they do not have to (Pointing/Marker cue test)
- ▶ Looking at the dog or baited side, body position
- ▶ Loading the wrong side and what to do if that happens
- ▶ NOT putting reinforcer behind barrier
- ▶ NOT flipping the fabric on Causality



# Summary

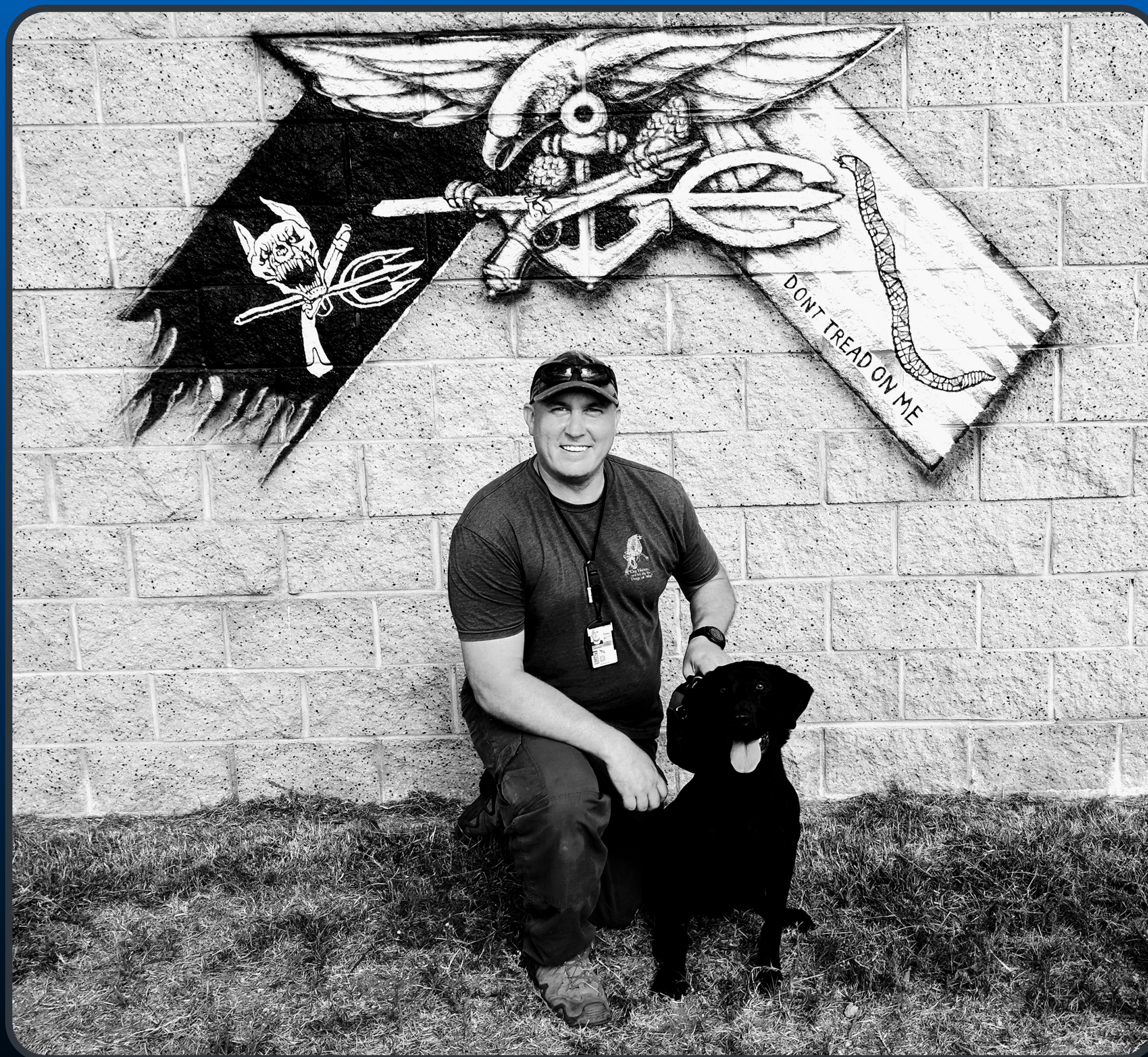
- ▶ The value of science in dog training and selection.
- ▶ These discoveries are giving us an ability to demonstrate K9 reliability and can stand to legal scrutiny.
- ▶ Build your K9 program on proven methods based on science practices... not a craft.
- ▶ Be ready to be evaluated by professionals with PhD's with in depth knowledge on K9's
- ▶ Can you and your K9 meet standards...when tested (no notice)
- ▶ Picking the best K9's for our line of work
- ▶ Questions



# NSW Research Results

- ▶ Before using Cognitive selection testing 43% of dogs Selected made it to deployment.
- ▶ After using Cognitive selection tests 76% made it to Deployment
- ▶ Another significant change was a 30% reduction in training time.
- ▶ This was attributed to knowing the dogs better and setting up training that allowed for better task learning and memory or scent and task and understanding of using nose before memory.





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- \* SEMINARS
- \* WEBINARS
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**PODCAST: K9s TALKING SCENTS**

