



# LINCOLN

DOGNITION REPORT - APRIL 28, 2024



## **THE RENAISSANCE DOG IS GOOD AT A LITTLE BIT OF EVERYTHING.**

In a world of helicopter parents and the relentless pursuit of perfection, it is easy to discount the value of a steady performance. Lincoln is a Renaissance Dog, which means he is good at a little bit of everything. Although his performance in the different games may vary, overall Lincoln showed accomplished social skills and solid independent problem solving. Rather than being a specialist with a single expertise, Lincoln is a generalist. While others focus on the proverbial tree, Lincoln can see the entire forest.



# THE DOGNITION PROFILE

Usually, when you get test results, you see a score that means you either passed or failed. To compare your results to someone else, you see who got the higher score. This is why your dog didn't take a test. Instead, you played a series of games together - and when you play a game there is more than one way to win. Success often comes from playing to your strengths.

There has recently been a revolution in how we think about intelligence. The Dognition Profile is based on this cutting-edge field called cognitive science. Cognition is the study of how the mind works and draws on many scientific disciplines, from psychology to computer science to neuroscience.

*By studying animals, cognitive scientists have made three important discoveries:*

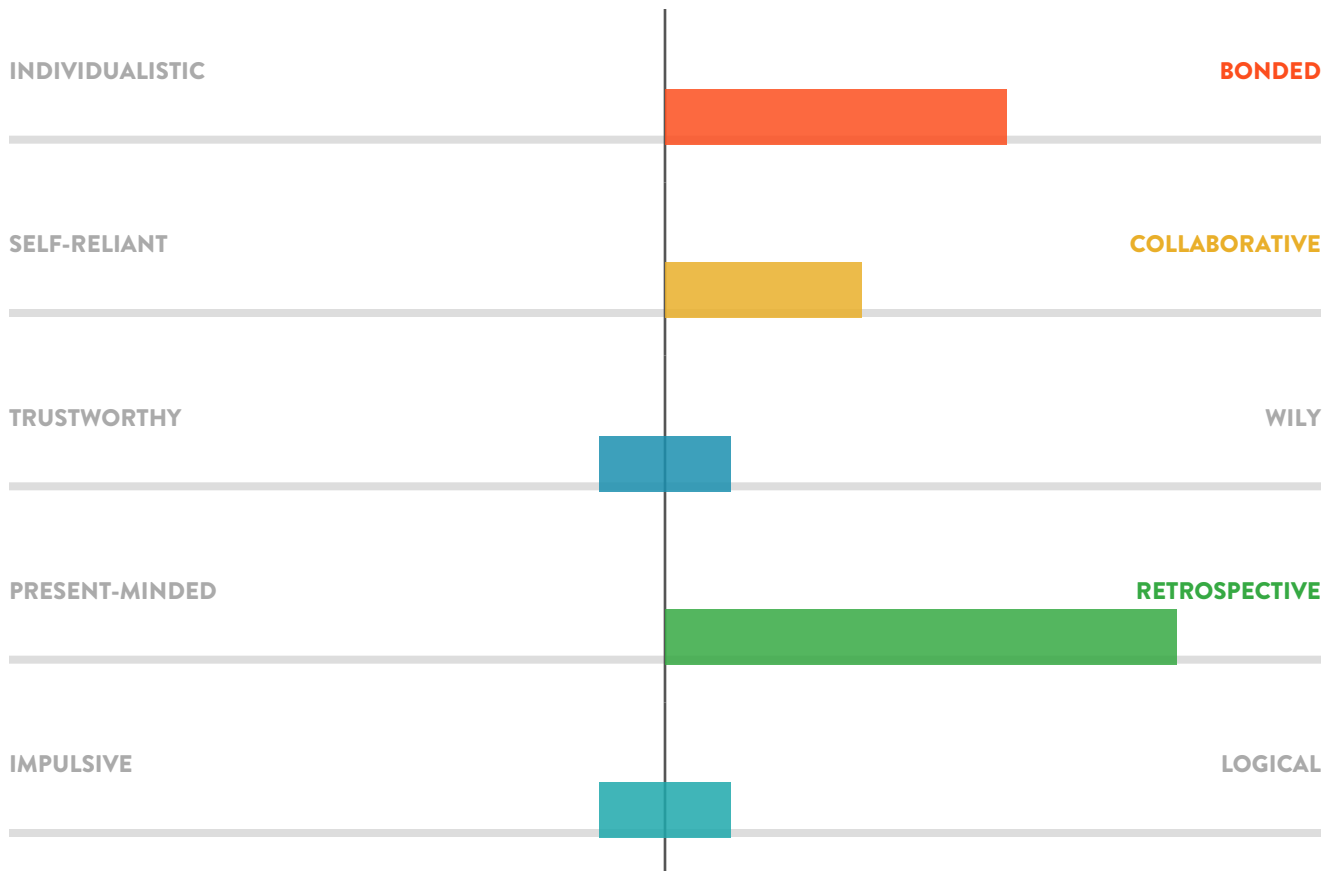
Animals use many types of cognition to survive (learning skills from others, remembering the location of food, inferring the solution to a new problem or deceiving others during competition).

Different animals rely on different cognitive strategies. Asking if a crow is more intelligent than a dolphin is like asking whether a hammer is a better tool than a saw. Each animal has strategies to solve a unique set of problems.

Just because an animal tends to use a certain strategy to solve specific problems doesn't mean he or she will always apply that strategy to all types of problems. Animals rely on a toolbox of strategies that depend on a variety of factors. Dognition gives you insight to the most significant tools that your dog will use on a daily basis to interact with you and the world.

Based on these findings, the Dognition Profile looks at five cognitive dimensions. Rather than counting correct and incorrect answers, the Dognition Profile identifies your dog's cognitive style, and the strategies he relies on to solve a variety of problems. Using this revolutionary new science, the Dognition Profile will give you an unprecedented window into the workings of Lincoln's mind and reveal his particular genius.

# COGNITIVE DIMENSION RESULTS



**EMPATHY** - Reading and responding to the emotions of others

**COMMUNICATION** - Using information from others to learn about the environment

**CUNNING** - Using information from others to avoid detection

**MEMORY** - Storing past experiences to make future choices

**REASONING** - Inferring the solution to new problems

# EMPATHY

Lincoln's empathy scores were off the charts. Empathy is the ability to feel what someone else is feeling. Humans are extremely empathetic; it is one of our best qualities. Empathy is not something we are taught; it is present even in young children, growing and strengthening as we get older.

Researchers have recently suggested that other animals also have empathy, or at least a basic form of empathy. If this is true, dogs are an ideal place to look. Humans and dogs go back thousands of years - enough time for the bond between us to develop into something special.

This is even more special because initial results suggest that small dogs like Lincoln tend to be more individualistic than large dogs. By being more on the bonded end of the scale, Lincoln certainly stands out from the small dog crowd. If most dogs are bonded to their owners, Lincoln absolutely adores you.

FIG.1



Playing and interacting with your dog like you did in the Dognition games increases your oxytocin, the hormone responsible for feelings of pleasure, bonding, and affection.



## YAWN GAME

In this game, you yawned and recorded whether Lincoln yawned in response. Yawning in dogs can be an indicator of stress, but we were measuring something different - social yawning. The rationale behind this game is that even as young children, we laugh when we see someone laughing, and we cry when we see someone in distress. Our ability to "catch" the emotions of others is called emotional contagion. A common form of emotional contagion is yawning. If you see, hear or even think about someone yawning, you will probably feel an irresistible urge to yawn.

Lincoln did not yawn in response to your yawn, but this is not surprising. Although dogs are one of the few species besides humans that contagiously yawn, there is variation among dogs. Data from several research groups shows differing results, but our preliminary data shows that only 20% of dogs yawn contagiously.

Recent studies have shown that dogs only catch yawns from humans, not other dogs.



## EYE CONTACT GAME

In this game, you timed how long Lincoln held your eye contact. Before babies can hug or speak, they use eye gaze to bond with their mothers. Research with dogs has shown that a similar phenomenon may happen with owners and dogs. Owners whose dogs stared at them for longer had significant increases in the hormone oxytocin. Oxytocin, also known as the "hug hormone," is related to feelings of bonding, pleasure and affection.

Judging by the extraordinary length of time Lincoln spent gazing soulfully into your eyes, you probably often find him staring at you for no reason. You might wonder if Lincoln is trying to tell you something, like he is hungry, needs to go to the bathroom or has an opinion on what to do over the weekend. But Lincoln may not want or need anything - he may be just hugging you with his eyes.

Dogs can even be better than aspirin. Children in a hospital reported that their pain was four times less when they played with a dog than when they spent the same time relaxing.



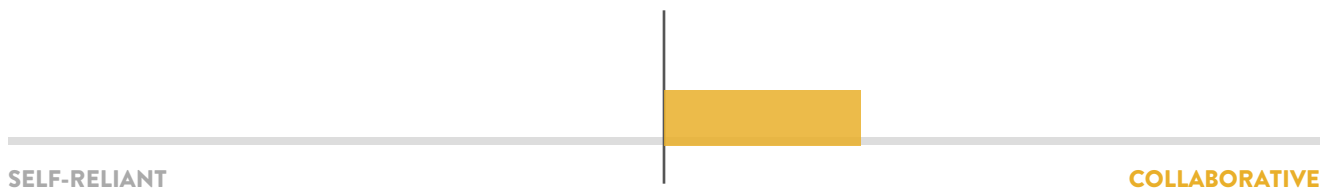
# COMMUNICATION

Lincoln's performance was highly collaborative. You probably notice that Lincoln can read you like a book. Maybe he seems to know where you are going before you do. Maybe he can tell where to find a lost ball just by you glancing in the right direction. However his talent expresses itself, you can be sure that Lincoln pays close attention to your gestures and what you are trying to communicate.

Lincoln is remarkably like a human infant, who start reading communicative gestures at around nine months old. This ability is the foundation for all forms of culture and communication, including language.

Communication is the basis of many relationships, including our relationship with dogs. Lincoln's behavior in the Communication games demonstrated exactly why the dog and human relationship is so special.

FIG.2



## ARM POINTING

You probably don't take much notice when Lincoln effortlessly uses your pointing gesture in all sorts of situations, from finding a toy to figuring out which direction to go next. But this is a remarkable skill. Lincoln did so well in this game that his skills are similar to those of a human infant. At around nine months old, infants begin paying attention to what people are trying to communicate when they point. Infants also begin pointing things out to people. Whether infants point to their favorite toy or watch you point to a bird, they are beginning to build core communication skills. Just like an infant, Lincoln relies on your communicative gestures to solve all sorts of problems he probably could not solve alone.

Did you know that, on average, dogs can start following a human point as young as 6 weeks old?



## FOOT POINTING

Although Lincoln effortlessly followed you almost every time when you pointed with your hand, he did not follow you when you pointed with your foot. Since you probably do not usually point with your foot, this game was simply testing how flexibly Lincoln uses your communicative gestures.

Since Lincoln was so good at following your hand point, perhaps he could use this skill in a new context with a new gesture. It looks like Lincoln clearly prefers to follow you when you point with your hand, so remember this when you are trying to communicate with him.

Many dogs tend to ignore unintentional cues from humans. The most effective way to communicate is to call the dog's name, make eye contact, then point and look in the direction of the object.





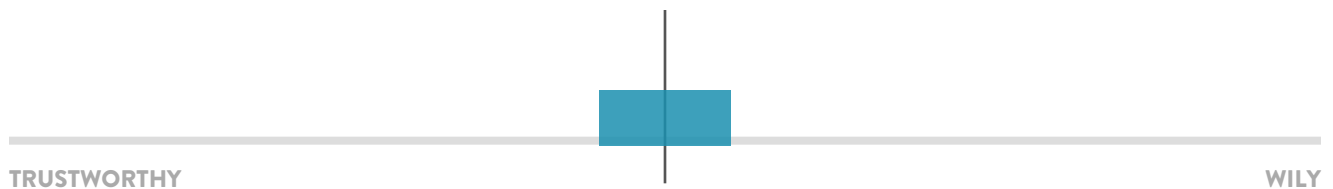
# CUNNING

Lincoln scores as trustworthy in this game since he does not use your social information when deciding whether to take advantage of you. When you put the treat down in front of Lincoln and said 'No,' you then presented him with different attentional states. In the first condition, you were watching Lincoln directly. In the second condition you covered your eyes, and in the final condition you turned your back.

A wily dog would have waited until you could not see before they took the treat. In contrast, Lincoln was more likely to take the treat when you were looking at him than if you had your back turned. This may seem a little audacious, but, in fact, it actually makes him trustworthy because he does not use your social information to deceive you.

This is especially impressive because in the Communication dimension, Lincoln showed he can easily and flexibly read your gestures. But when given the chance, he won't use this knowledge against you.

FIG.3



When it comes to begging, dogs prefer to be sure you're paying attention. In one study, dogs preferred to beg from a person who was looking at them rather than someone wearing dark sunglasses.



# MEMORY

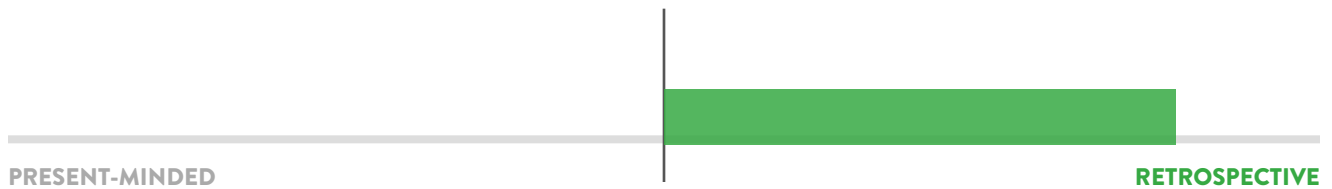
Lincoln has an amazing working memory, which is a type of memory that allows your dog to keep information in mind for a few minutes and mentally manipulate it. This may sound simple, but working memory is crucial for any kind of problem-solving. In humans, working memory has been found to correlate with skills in learning, math, reading, and language. Researchers have even found some evidence that in children, working memory is more predictive of academic success than IQ.

In these memory games, Lincoln had to understand that the treat continued to exist, even though it had disappeared from view. In the wild, this ability is essential. Animals have to keep track of mates, predators, and prey that might disappear momentarily behind a bush or a rock.

If Lincoln is an avid fetch player, you've probably noticed that no stick or ball escapes for long. Lincoln skillfully searching for an object that has briefly disappeared is a perfect example of him using his working memory to solve a problem.

For Lincoln, out of sight is definitely not out of mind.

FIG.4



Most dogs can remember their mothers even if they haven't seen them for two years. However, they can't remember their brothers and sisters after a similar separation.



## MEMORY VERSUS POINTING

In this game, Lincoln saw you put the treat under one cup, but point to the other cup. Lincoln preferred to rely on the information in his working memory rather than what you pointed to. Even though you gave Lincoln misleading information, he remembered where the treat was and chose to ignore you. This shows an independent thinker; you should be aware that in other situations Lincoln might not listen to you if he thinks you are wrong.

Despite being genetically similar, dogs and wolves make opposite choices in this game. This difference may be behind why we love dogs so much.



## MEMORY VERSUS SMELL

Since dogs have such a keen sense of smell, you may have been surprised that after you switched the cups, Lincoln used his memory over his sense of smell. He went to where he remembered seeing the treat hidden, rather than sniffing out where the treat was.

Because a dog's nose can sniff everything from narcotics to cancer, whenever we run a study where we hide a treat under one of two cups, the first question people always ask is, "Can't my dog just smell the food under the cup?" It was certainly our first question, but extensive research by half a dozen independent research groups has concluded that dogs do not rely on their sense of smell to find the food in these games.

If dogs were using smell, they would go directly to the cup with the hidden food. In fact, these studies found that dogs only choose the correct cup around half the time - which means they are guessing. Dogs do have an excellent sense of smell and can probably detect food if allowed to sniff both cups before choosing. But when you study their first choice, they cannot localize the food to a specific cup from a distance of six feet away.

One study found that to successfully track a person's direction of travel, tracking dogs need at least five sequential footsteps.



## DELAYED CUP GAME

Working memory is critical for animals that are endurance hunters such as wolves or feral dogs. Endurance hunters chase after prey for long periods of time, slowly wearing them out. During that long chase the prey may not always be in direct sight, so the hunter would have to remember where its prey was last seen.

Just like his ancestors, Lincoln had to remember the location of the target for different amounts of time. Although the modern world has many distractions, it looks like Lincoln did perfectly on delays up to 1 minute and 30 seconds. However, when faced with a delay of 2 minutes and longer, Lincoln had a little more trouble remembering. There is no shame in this, since during the longer delays you probably also had trouble remembering the location of the treat.

In these kinds of memory games, most cats quickly start to forget where an object is after only 10 seconds, while most dogs are still able to show success for up to 4 minutes.

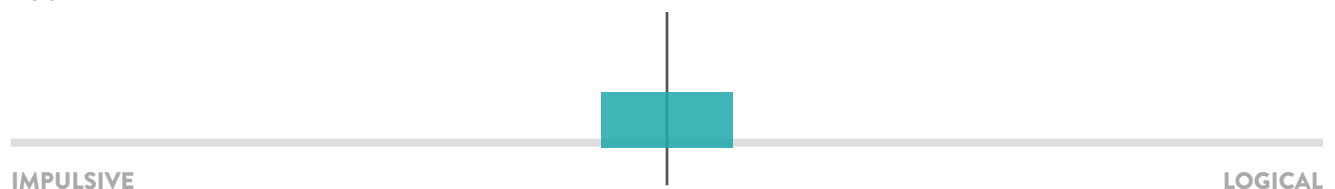


# REASONING

Lincoln shows solid reasoning skills in one or both of the games. This is impressive, since the games in this dimension were the most difficult of the Assessment. Reasoning is the ability to solve a problem when you can't see the answer and have to imagine the solution.

Lincoln was somewhere in between logical and impulsive. It seems that sometimes he uses his powers of deduction, but sometimes he prefers to make decisions on the fly.

FIG.5



Some studies show dogs are better at solving complex puzzles when humans are not around. When humans are around, dogs look to us for help rather than solving it themselves.



## INFERENCE REASONING GAME

In this game, you presented Lincoln with a problem and provided some, but not all of the information needed to solve it. When you showed Lincoln the empty cup he had to infer that the treat must be in the other cup.

This is not as easy as it sounds because Lincoln was also attracted to the empty cup, for the simple reason that you touched it. It looks like Lincoln switched back and forth between strategies in this game, sometimes making an inference and choosing the correct cup, and sometimes relying on your social cues. Either way, this shows impressive flexibility.



## PHYSICAL REASONING GAME

Lincoln seemed to have a difficult time figuring this one out. This is not surprising, since the game was actually quite complicated. First, Lincoln had to infer that you hid a treat (since Lincoln didn't actually see you hide it). Then he had to understand enough of the physical world to infer that a piece of paper at an angle indicated that the treat was hidden behind it. Lincoln seems to be more present-minded, living more in the moment, rather than getting caught up in the details.

Even though many dogs may struggle with physical properties like gravity, this doesn't stop them from thoroughly enjoying a game of fetch.





## NEXT STEPS

We hope you've enjoyed reading Lincoln's Dognition Profile and gaining fresh perspective on how he sees the world!

You can fill your friends in on what you've discovered about Lincoln very easily. Download and email or print Lincoln's profile report any time from your portal.

Of course, these five cognitive dimensions are only part of the picture; the magic of your relationship with Lincoln is how you spend your time together. To that end, a Dognition membership gives you on-going games and tips that will help provide even more insight into what makes Lincoln tick and how to act on that information.

As a member, each month you'll receive:

- A new game that will shed light on another aspect of how Lincoln thinks and sees the world.
- Tips and activities prepared for Lincoln from canine training experts based on how Lincoln sees the world.
- Exclusive offers from Dognition partners, including brands such as Kong and Purina ONE.
- New findings about how all dogs think and how Lincoln's strategies compare.

At the same time, by contributing to Dognition you and Lincoln are helping to build the world's knowledge about all dogs. This allows us to tackle fresh questions -- how do certain breeds think compared to others? To what extent do memory skills decline by age? Are female dogs any more empathic than male dogs? And many more!

What questions would you like answered? We'd love any feedback on that or anything else related to Dognition. Contact us any time at [hello@dognition.com](mailto:hello@dognition.com).

Woof!

The Dognition Team



Dognition

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