
# HUGO

DOGNITION REPORT - MARCH 09, 2019

Dognition®

## 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. Hugo 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 Hugo showed accomplished social skills and solid independent problem solving. Rather than being a specialist with a single expertise, Hugo is a generalist. While others focus on the proverbial tree, Hugo 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.

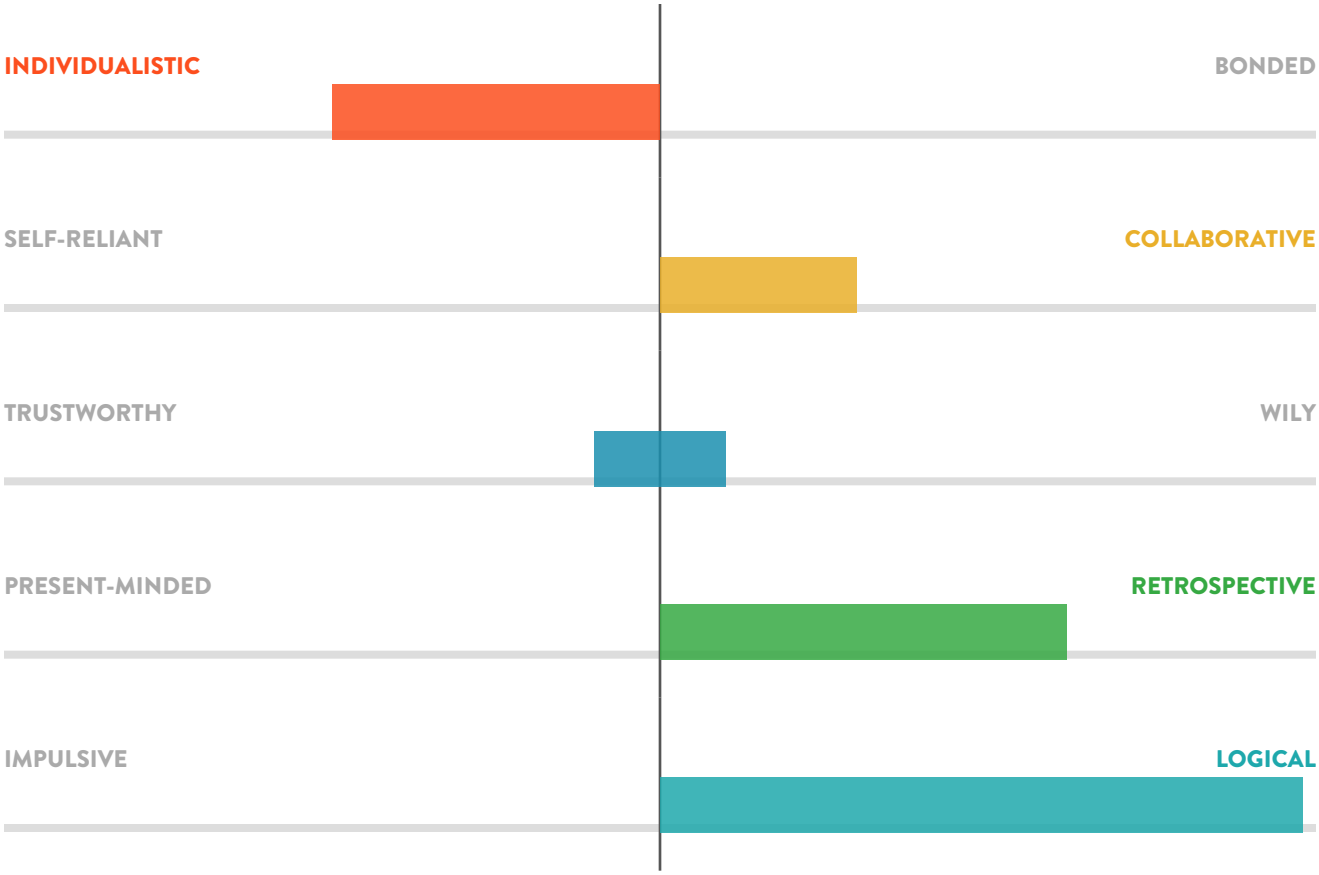
There has recently been a revolution in how we think about intelligence. The Dognition Profile is based on this cutting-edge field called cognitive science. Cognition is the study of how the mind works and draws on many scientific disciplines, from psychology to computer science to neuroscience.

*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 Hugo'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

Hugo seems individualistic when it comes to the two empathy games you played. Empathy refers to something very specific - the ability to feel what someone else is feeling. It does not measure love, attachment, or any other of the hundred ways that Hugo shows his devotion to you.

You may be interested to know: initial results seem to suggest that small dogs like Hugo are generally more individualistic than large dogs.

Being individualistic is something to be proud of. Perhaps you've noticed that Hugo is excellent at self-entertaining, or is better at solving problems on his own. However his independence asserts itself, it's all part of Hugo's cognitive style.

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 Hugo 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.

Hugo 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

You know Hugo loves you; you can see it in his eyes. Judging from the way Hugo held your eye contact in this game, you may occasionally find him staring at you meaningfully. You might wonder if Hugo 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.

Research with dogs has shown that owners whose dogs stared at them for longer periods of time experienced significant increases in the hormone oxytocin. Oxytocin, also known as the "hug hormone," is related to feelings of bonding, pleasure and affection.

If you find Hugo staring at you for no reason, he probably doesn't 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.

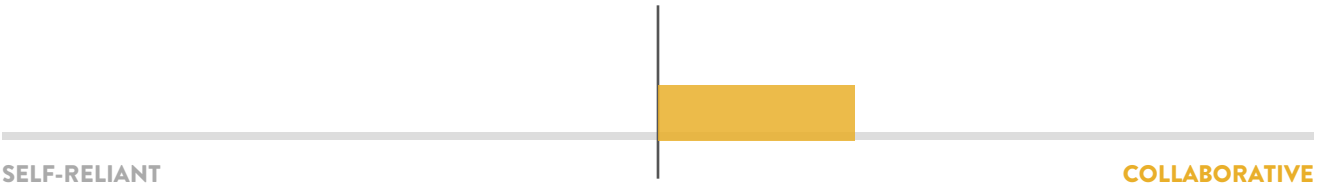
# COMMUNICATION

Hugo's performance was highly collaborative. You probably notice that Hugo 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 Hugo pays close attention to your gestures and what you are trying to communicate.

Hugo 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. Hugo's behavior in the Communication games demonstrated exactly why the dog and human relationship is so special.

FIG.2




## ARM POINTING

Although the pointing game may have seemed simple, the skills it requires are quite specialized. Dogs are one of the only animals that rely on human gestures - but even among dogs there is variation. Some dogs are more like infants and rely heavily on our communicative gestures, while other dogs are more like chimpanzees and try to solve problems on their own without our help. Hugo seems to use a mixed strategy. Because Hugo could see food in both places, he didn't really need your help, but occasionally chose to follow your gestures anyway.

By no means did Hugo do badly on this game; in fact, he developed quite a clever strategy. He developed a right or left side bias, meaning when he didn't know which side was correct, he went to one side every time. This is pretty clever, because 50% of the time he was correct.

# FOOT POINTING

Just like in the hand pointing game, Hugo thought he had better cover all his bases by sometimes choosing the treat you pointed at and sometimes striking out on his own.

Hugo probably does not see you point with your foot very often, so this game was a way of seeing how flexibly Hugo can read new gestures. Giving animals a new version of a problem they have seen before is a common tactic used to reveal what strategy they are using to solve a problem.

Although Hugo did not follow you every time, he may have sensed your communicative intent, and would probably not need much practice to start using a range of new gestures.

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

In the Cunning games, you placed a treat in front of Hugo and let him know not to take the treat. You then showed Hugo three different attentional states -- watching, turning your back, and covering your eyes.

In order to be at either end of this cognitive dimension, trustworthy or wily, Hugo must show that he can tell when you are looking, and use this information when deciding when to go for the treat. In this case, Hugo's decision did not change no matter which attentional state you presented; he waited roughly the same amount of time in each trial.

This doesn't mean that Hugo can't be trusted, it just shows us that there are other internal factors influencing Hugo's decision.

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

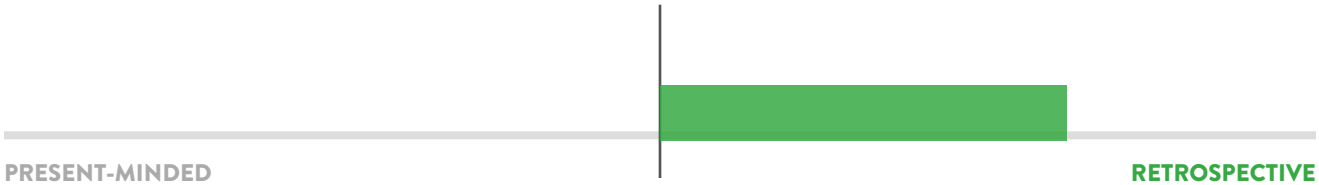
Hugo has an amazing working memory, which is a type of memory that allows your dog to keep information in mind for a few minutes and mentally manipulate it. This may sound simple, but working memory is crucial for any kind of problem-solving. In humans, working memory has been found to correlate with 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, Hugo 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 Hugo is an avid fetch player, you've probably noticed that no stick or ball escapes for long. Hugo skillfully searching for an object that has briefly disappeared is a perfect example of him using his working memory to solve a problem.

For Hugo, 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

Hugo was clearly trying hard to figure this one out. When he saw you hide the treat under one cup but point to the other cup, he wanted to use the information you were giving him, but he also knew what he saw. Rather than choose one strategy, he switched back and forth between the two, which shows impressive flexibility.

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

Although Hugo did occasionally go to where the treat was hidden, rather than where you showed him you hid the treat, it is unlikely Hugo could smell the food. If Hugo relied on smell alone he would have found the food each time.

This is completely normal. 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. However, in similar studies, 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 look at their first choice, they cannot localize the food to a specific cup from a distance of 6 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

This game was a perfect demonstration of Hugo's excellent working memory.  After you hid the treat Hugo had to retain the information for up to two and a half minutes before making a choice.

This skill comes in handy in the wild. Feral dogs tend to be endurance hunters, slowly wearing down their prey. During the chase, the prey may not always be in direct sight, and feral dogs have to remember where their prey was last seen and predict where they might reappear.

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

You can be very proud. Hugo just aced the most difficult games in the Assessment. Reasoning is the ability to solve a problem when you can't see the answer and have to imagine the solution. Unlike learning through trial and error, which doesn't necessarily require much understanding, reasoning requires that you truly understand the problem and the phenomena behind the problem.

A Sherlock Holmes among dogs, Hugo was able to solve the mystery by imagining different solutions and choosing the one that made the most sense. This leads to a lot of flexibility. He can solve a new version of a problem he has seen before, and spontaneously solve new problems he has never seen before. This is a sign of true genius.

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.

# INFERENTIAL REASONING GAME

Congratulations - when playing the most difficult game in the most difficult dimension, Hugo's performance was masterful. When you showed Hugo the empty cup, you were providing indirect information on where the treat was - he had to make an inference that because that cup was empty, the treat must be in the other cup.

This ability to infer by exclusion is problematic for most dogs because they are often confused by conflicting social cues. By lifting up the empty cup, you were actually drawing attention to it, and some dogs prefer to choose this cup even though it was empty. The fact that Hugo was able to control this impulse shows an impressive ability to make inferences.

What is even more impressive is that Hugo was so collaborative in the Communication dimension. It seems that Hugo knows exactly when to use your gestures to make decisions and when to make decisions on his own.

Ravens and crows have been shown to have incredible reasoning abilities that surpass dogs, and even rival some human children. But when it comes to being our best friends, dogs still take the cup.

# PHYSICAL REASONING GAME

In this game, Hugo demonstrated an excellent understanding of a fundamental property of the physical world - that one solid object cannot pass through another solid object.

Hugo had to infer that a piece of paper on an angle meant that a treat was hidden behind it. This talent would come in handy in the wild, since animals often have to keep track of objects that become hidden. To find these objects, animals have to maintain a representation of the object and predict where it might appear.

Humans intuitively understand basic physical phenomena like the solidity principle - it looks like Hugo does too.

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 Hugo'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 Hugo very easily. Download and email or print Hugo'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 Hugo 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 Hugo 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 Hugo thinks and sees the world.

- Tips and activities prepared for Hugo from canine training experts based on how Hugo 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 Hugo's strategies compare.

At the same time, by contributing to Dognition you and Hugo 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.

Woof!

The Dognition Team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