



BELLA

DOGNITION REPORT - DECEMBER 02, 2020



AN ACCOMPLISHED PROBLEM SOLVER WITH GREAT COMMUNICATION SKILLS, AN ACE HAS EVERYTHING THAT MAKES DOGS SPECIAL, AND A LITTLE MORE BESIDES.

Bella is the dog with it all. An accomplished problem solver with great communication skills, Bella has everything that makes dogs special, and a little more besides. The only downside to having a dog as gifted as Bella is that sometimes she may be too smart for her own good. She may occasionally try to get away with things she shouldn't and then rely on her soulful gaze and an ingratiating nuzzle to win you over. There isn't much that escapes an Ace like Bella, and you can feel lucky to have such a talented dog as part of your pack.



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:

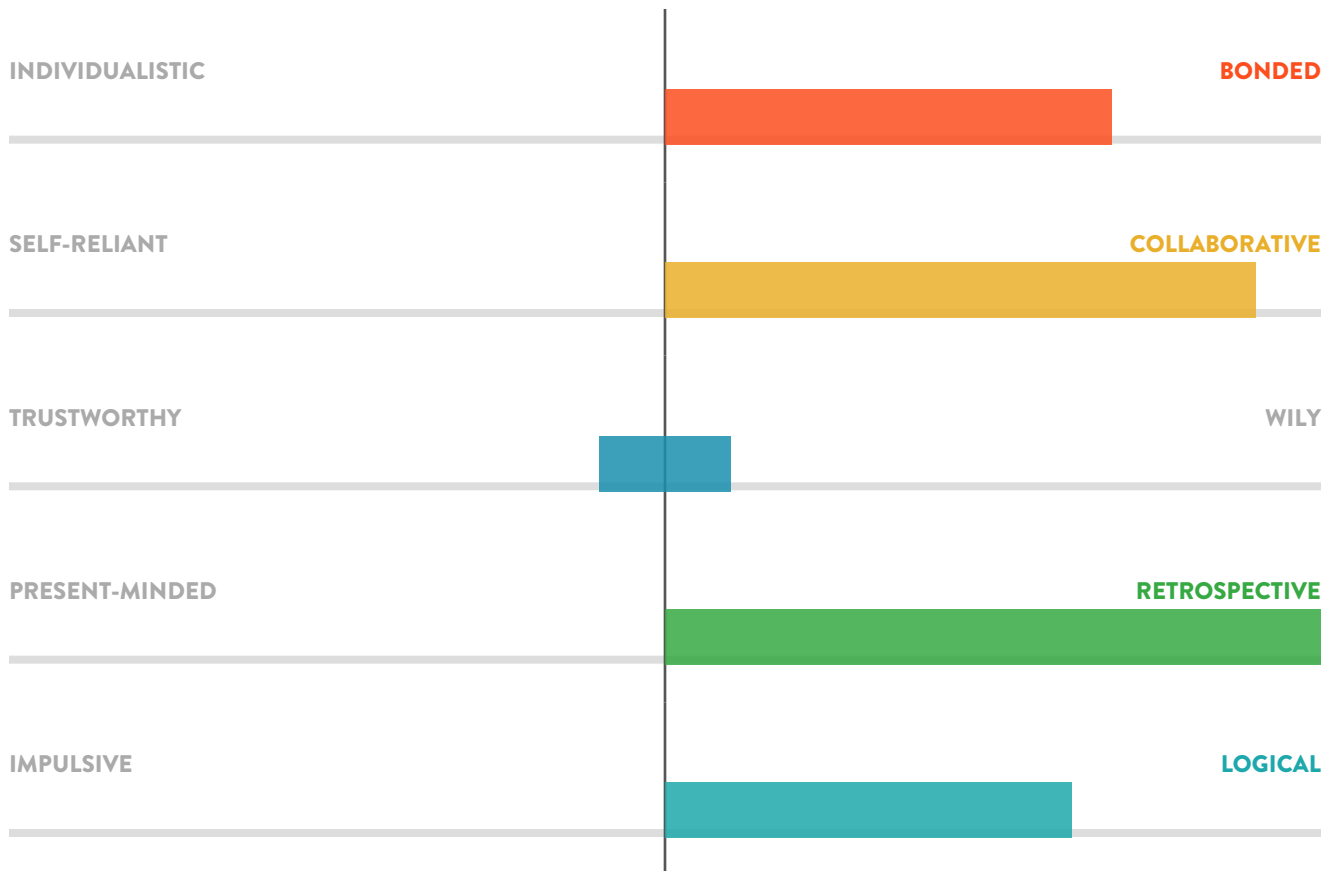
Animals use many types of cognition to survive (learning skills from others, remembering the location of food, inferring the solution to a new problem or deceiving others during competition).

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 she 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 Bella's mind and reveal her 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

Bella'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 Bella tend to be more individualistic than large dogs. By being more on the bonded end of the scale, Bella certainly stands out from the small dog crowd. If most dogs are bonded to their owners, Bella 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

It is quite impressive that, during a limited amount of time, Bella yawned when you yawned. Humans 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. Contagious yawning is related to empathy scores in adults.

If Bella could take a human empathy test, she would probably score quite high! So far, only a few species besides humans have been shown to contagiously yawn. Although dogs may yawn when they are stressed, they also yawn socially. Contagious yawning has been seen in dogs, but not all dogs yawn. It looks like Bella is one of the empathetic ones.

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



EYE CONTACT GAME

In this game, you timed how long Bella 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 Bella spent gazing soulfully into your eyes, you probably often find her staring at you for no reason. You might wonder if Bella is trying to tell you something, like she is hungry, needs to go to the bathroom or has an opinion on what to do over the weekend. But Bella may not want or need anything - she may be just hugging you with her 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.



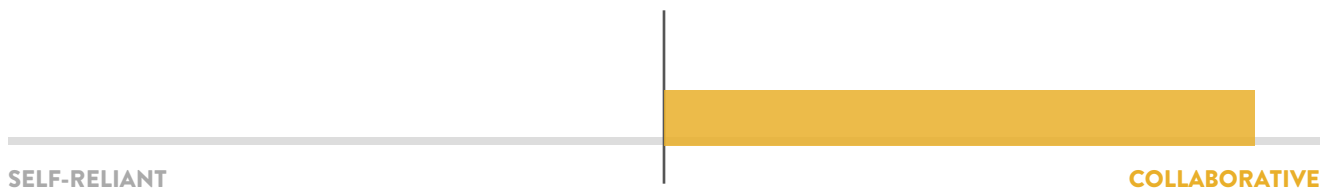
COMMUNICATION

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

Bella 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. Bella'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 Bella 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. Bella did so well in this game that her 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, Bella relies on your communicative gestures to solve all sorts of problems she 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

You probably don't usually point things out with your foot, so this was one way to see if Bella could read a gesture she has seen infrequently or not at all. If Bella is good at solving a problem but can't solve a new version of it, then she probably learned to solve the original problem through lots of practice. For example, perhaps in the previous game she was just following the motion of your hand without understanding your communicative intentions. If Bella can also solve the new problem, then she probably understands enough to spontaneously solve a range of related problems.

Not only could Bella follow your point, she also responded to a more unusual gesture - when you pointed with your foot. This suggests that Bella has a flexible understanding of the communicative nature of human gestures - a talent you can be proud of, since this is also what children do.

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 Bella and let her know not to take the treat. You then showed Bella 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, Bella must show that she can tell when you are looking, and use this information when deciding when to go for the treat. In this case, Bella's decision did not change no matter which attentional state you presented; she waited roughly the same amount of time in each trial.

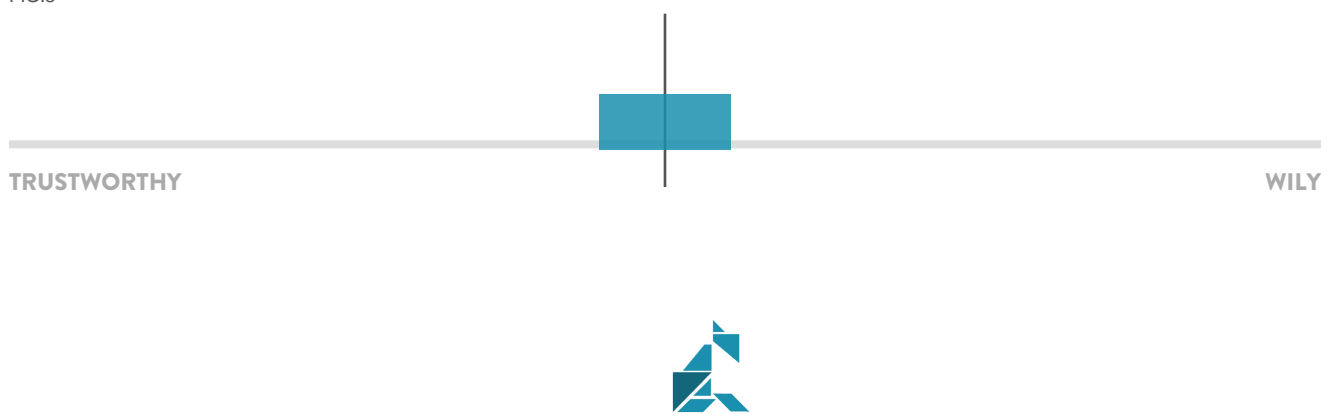
This doesn't mean that Bella can't be trusted, it just shows us that there are other internal factors influencing Bella's decision.

You can be a proud parent here - Bella is an extremely obedient dog. When you put the treat in front of her, it did not matter if you were looking or not; Bella waited patiently until you released her before she took the treat.

You might wonder what effect training has on this dimension. Cognition is not a product of nature or nurture. It is a combination of both. Just because dogs have been trained not to take a treat when their owners tell them not to, does not mean those dogs will never take a treat, especially when the odds are in their favor. In fact, many well-trained dogs are not above sneaking a delicious morsel off the coffee table if they see their owners are not paying attention.

In fact, from Bella's performance during the Communication dimension, we know that she is excellent at reading your gestures. Bella is a rare dog who not only obeys your command, she also wants to please you so much that she will resist temptation - whether you are paying attention or not.

FIG.3



MEMORY

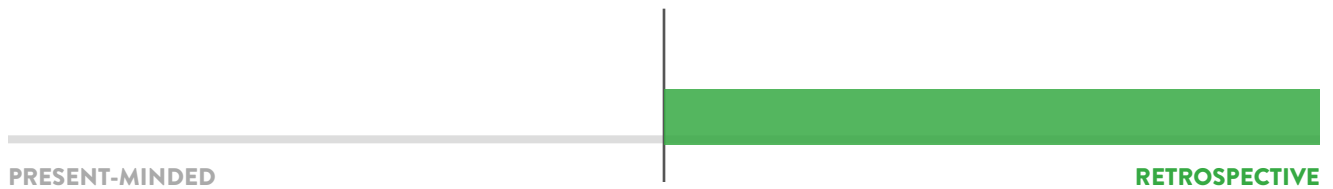
Bella has an amazing working memory, which is a type of memory that allows your dog to keep information in mind for a few minutes and mentally manipulate it. This may sound simple, but working memory is crucial for any kind of problem-solving. In humans, working memory has been found to correlate with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

For Bella, 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, Bella saw you put the treat under one cup, but point to the other cup. Bella preferred to rely on the information in her working memory rather than what you pointed to. Even though you gave Bella misleading information, she remembered where the treat was and chose to ignore you. This shows an independent thinker; you should be aware that in other situations Bella might not listen to you if she 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

Bella's performance in this game was extraordinary. She used his sense of smell to find the treat, rather than her memory. This may seem obvious, since dogs are famous for their sense of smell. However, half a dozen research groups have conducted many tests similar to this one and found that since dogs are not allowed to inspect both cups before they make their choice, dogs do not rely on their sense of smell to find the food. 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.

Bella seems to be one of the rare dogs that has such a strong sense of smell that she can detect the food where most dogs cannot. Perhaps Bella could consider a career with the narcotics department of your local police force. Until then, don't bother hiding the treat bag from Bella. She knows exactly where it is at all times.



DELAYED CUP GAME

This game was a perfect demonstration of Bella's excellent working memory. After you hid the treat Bella 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. Bella 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, Bella 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. She can solve a new version of a problem she has seen before, and spontaneously solve new problems she 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.



INFERENCE REASONING GAME

Congratulations - when playing the most difficult game in the most difficult dimension, Bella's performance was masterful. When you showed Bella the empty cup, you were providing indirect information on where the treat was - she 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 Bella was able to control this impulse shows an impressive ability to make inferences.

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

Bella did seem to understand the principle of solidity - that one solid object cannot pass through another - at least some of the time.

Although this might have seemed like a simple game, it was actually quite complicated. First, Bella had to infer that you hid a treat (since Bella didn't actually see you hide it). Then she 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. It is impressive that Bella figured out the answer as often as she did.

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

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 Bella's Dognition Profile and gaining fresh perspective on how she sees the world!

You can fill your friends in on what you've discovered about Bella very easily. Download and email or print Bella'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 Bella 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 Bella 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 Bella thinks and sees the world.
- Tips and activities prepared for Bella from canine training experts based on how Bella 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 Bella's strategies compare.

At the same time, by contributing to Dognition you and Bella 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



Dognition

See the World Through Your Dog's Eyes

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