



*Original Contribution*

## **DETERMINING THE TYPE OF NERVOUS SYSTEM IN YOUNG PUPPIES, REGARDING THEIR PROPER EDUCATION, SOCIALIZING, AND FUTURE BEHAVIOR FORMATION**

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### **ABSTRACT**

We studied the behaviour of 24 young puppies of the Labrador, Boxer and German Shepherd breeds, by using a bait test, in order to determine the type of nervous system, and depending on that to apply the most appropriate training, socializing, and behaviour formation. We proved that the used test was quick, easy to perform, convenient to set up, and not stressful for the subjects as it complied with the requirements for humane treatment of animals. According to our results, Labradors were most courageous and stable, followed by the Boxers and the German Shepherds.

**Key words:** dog, behaviour, neural system, training, socialization

### **INTRODUCTION**

The dog is perhaps the first animal species to be domesticated by man. Even today dogs are actively used for many social purposes and that is why they are so popular. Dogs have various jobs nowadays: border guards, messengers, hunters, crime investigators, customs inspectors, ore seekers, child caretakers, disabled people assistants, healers (dogs can accurately detect a person's emotions), odorologists, etc. (1, 2, 3).

The issue of determining the type of nervous system in puppies, as a part of their socialization (adaptation to the environment between the 3<sup>rd</sup> week and 3<sup>rd</sup> month of life), with regard to the formation of their future behavior, has been examined by many researchers (4, 5). The way a dog adapts to its environment is of great significance, as it reflects on its overall behaviour later (6).

Research performed so far proves that in many cases animal-human contacts are unsuccessful (7, 8). This is one of the many reasons there are stray dogs, which are often abandoned by their owners, who could not use the dogs for

the purpose they intended (9). In this relation, the influence of the dog's nervous system has an important role on the animal's socializing and the following appropriate training, which undoubtedly affects its overall behavior formation (10, 11, 12, 13, 14). For humans, Hippocrates established four primary nervous system types: sanguine, choleric, phlegmatic, and melancholic. Similarly (15) determines four basic types of nervous systems in dogs:

- L- strong, balanced, leader type, corresponding to the human sanguine type;
- F- strong, quickly learning, yet easily irritable and more unstable, corresponding to the human choleric type;
- G- weak, insensitive, slower, and passive nervous system, corresponding to the human phlegmatic type;
- A- weak, unbalanced, indifferent, passive, yet prone to having a bad temper nervous system, corresponding to the human melancholic type.

A number of authors (16, 17) have performed studies, according to which socialization is fastest and easiest in dogs with the L and F nervous systems.

The question arises, which of the available tests of determining the nervous system type is the most useful with regard to the dogs' proper socialization, training, and future behaviour formation. By correctly establishing the nervous system type of young dogs, they can

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be saved from numerous stressful or unexpected situations in the process of their training, having in mind the purposes they are intended for. **This is an expression of humane treatment and the ensuring of the dogs' welfare** (18, 19).

As we already mentioned, there are several tests used to determine the nervous system type of a dog (tests of Toman, Quennec, Breteau etc.).

In this relation, we found only scarce data on the application of another similar test, denoted "bait test." Therefore, we aimed at establishing nervous system types and their influence on the behaviour of young puppies during their socialization period through this test, in order to ensure their appropriate training and behaviour formation.

## MATERIALS AND METHODS

The experiment was performed in September 2008, with duration of 3 days. We picked 24 puppies (privately owned) at the age of 7 months of 3 breeds: Labrador, German Shepherd, and Boxer, 8 animals of each. The dogs of these three breeds are employed in various social roles – as guards, rescue dogs, odorologists, companions, and sometimes as hunters (16).

During testing, the puppies were separated from the litter and the mother, and returned to them afterwards. The application of the "bait test" required an empty and unfamiliar to the puppies room, with an area of 10 m<sup>2</sup>, in which they were tested twice for 15 minutes.

Having in mind the dog is an achromatic animal, i.e. they only see in black and white, we used a white napkin attached to the end of a wire as the bait, placed in the middle of the room. The wire could make the napkin move around the floor **/situation A/**.

Afterwards, we introduced a puppy figurine (again in the centre of the room) with about the same size as the tested puppies **/situation B/**. The two tests were performed one right after the other by a person unfamiliar to the animals.

We observed the behavioural reactions (fear, irritability, vocalization, aggression, curiosity) of the puppies through the methods of **observation** and **chronometry**. We accented on the breed, rather than the sex of the puppies. For the sake of convenience, we numbered the puppies as follows:

- **Labrador** - №1, №2, №3, №4, №5, №6, №7, №8;

- **German Shepherd** - №9, №10, №11, №12, №13, №14, №15, №16;

- **Boxer** - №17, №18, №19, №20, №21, №22, №23, №24.

The test environment was set up in accordance with the normative requirements for protection and humane treatment of test animals, as well as with zoohygienic standards established for this category of dogs.

## RESULTS AND DISCUSSION

The obtained results are described in **table 1**.

- **Puppies № 1 /male/, №4 /female/, and №8 /male/ in situation A** demonstrated a calm, trusting and curious demeanor. From the moment they saw the white napkin, they calmly approached it, without uttering any sound. The puppies pushed, sniffed, and examined the napkin. They did not exhibit any fear, even when we used the wire to move the napkin around. They demonstrated the same behaviour during **situation B** as well. They were not afraid of the figurine and stayed calm, even played with it, which led us to determine these puppies as being of the **type L** nervous system. These animals are even-tempered, calm, friendly, and loyal – true leaders. They are not easily frightened, and their training is easy, fast and active. They are very suitable for companions and guards.

- **Puppies № 2 /female/ and №6 /female/ in situation A** first hesitated for about 2 minutes (stood still and whimpered). Over the next few minutes, however, they moved slowly and carefully towards the napkin and started sniffing it once they reached it. This went on for about 10 minutes, and afterwards the puppies were trying to bite it, though they could not. During the last 3 minutes the puppies were calm and were not alarmed even when the napkin moved. They seemed to be indifferent to it.

**In situation B** they started approaching the figurine from the very beginning, and tried to topple it when they reached, i.e. they tried to play with it without exhibiting any fear. Playing continued for 9 minutes, after which the puppies succeeded in toppling the figurine, which startled and scared them, as demonstrated by the fact they retreated 1 metre backwards. Two minutes later they approached the figurine again and resumed playing with it.

Based on the observed behavioural reactions, we concluded that the puppies were unbalanced, yet in certain situation they could exhibit "strength of spirit," calmness and stable reactions. Therefore, they exhibited a strong but unstable character, which led us to determine they have a **type F (choleric)** nervous system. In these cases, training is longer and more demanding, yet the acquired behavior is stable and these dogs can be

good and loyal companions and excellent odorologists.

- **Puppies №3 /male/, №5 /male/, and №7 /female/ in situation A** stood still and watched the white napkin during the first 5 minutes. Their behaviour remained the same over the next 2 minutes. They would approach the napkin slowly and calmly, yet they retreated when it moved (a gesture of fear). During the last minutes they followed the moving napkin and did not exhibit any signs of distress (did not whimper and were not stressed). They exhibited the same behaviour in **situation B**, and that led us to conclude they had a **type F (choleric)** temperament type. They did not exhibit irritability, yet they were also not as courageous as the type L sanguine type.

- **Puppy №9 /female/ in situation A** stood still and observed the napkin during the first 4 minutes, after which the animal would slowly approach and sniff it. When it moved, the puppy exhibited curiosity and tried to follow it. This went on for 8 minutes. During the last 3 minutes, the puppy was perfectly calm and confident. Its attention was fixed at the napkin.

**In situation B**, the puppy unexpectedly started whimpering from the very beginning, yet moved towards the figurine. It circumvented it at first, whimpering (an expression of distress), and this lasted for 5 minutes. In the remaining time the puppy calmed down and tried to topple the figurine. The overall behavior led us to classify it as having a **type F** nervous system. We did not observe irritability, but we also didn't see the self-confidence of puppies №1 and №4 for example.

- **Puppy №10 /female/ and №11 /male/ in situation A** exhibited slight irritability during the first 3 minutes – they stood still and whimpered. Afterwards, they calmed down and played with the napkin (moving or not) in the remaining time. They were calm but not very confident.

**In situation B** they exhibited a clear instability – they were startled during the first 2 minutes and would afterwards rush towards the figurine with the intent of toppling it. They were not irritable, but they were also not quite adequate in their reactions. They were calm or distressed, but not aggressive. Apparently, both puppies were afraid, or perhaps too cautious in the presence of a figurine that looks like a dog. Therefore we could conclude that these animals experienced difficulties with their interspecies socialization, which, without proper training can cause problems with their communication with other dogs (unprovoked aggression, untimely barking, distress, etc.). We concluded that both puppies

belonged to the weaker **type G (phlegmatic)** nervous system.

- **Puppies №12 /male/ and №14 /male/ in the beginning of situation A** did not pay any attention to the static napkin. This continued until it was moved, in which case both puppies approached it slowly, sniffed it, and tried to bite it (curiosity and instability).

**In situation B** the animal did not exhibit any fear of the figurine, but did not approach it right away. They tried to topple it and became irritable when they couldn't (scratched and whimpered). They exhibited this behavior throughout the rest of the test. This led us to conclude they had a **type G** nervous system (curious but unstable, slightly afraid and irritable). These animals need longer and more intense training to achieve good results.

- **Puppy №13 /female/ in both situation A and B** exhibited behaviour that led us to determine it had a **type A** nervous system. It stood still, whimpering and slightly shaking, and did not approach the napkin or the figurine. This behaviour was asocial and a sign of difficult adaptation to the environment, which would surely lead to problems in the dog's training – it would be long, hard and demanding. The puppy would often exhibit fear, low confidence, and distress.

- **Puppies №15 /male/ and №16 /female/ in situation A** during the first 3 minutes were calm and observed their surroundings (curiosity). Afterwards, they headed towards the napkin confidently and started examining it (touching and pushing it). When it started moving, the puppies followed it confidently. They exhibited a calm, confident, stable, and curious behavior.

**In situation B**, the young animals approached the figurine confidently, without whimpering, and played with it. We determined they had a **type L** nervous system because they exhibited good self-confidence, lack of fear, stability and curiosity. This suggests easy training, good results and unproblematic formation of desired behaviour.

- **Puppies №17 /male/, №20 /female/, №21 /male/, and №24 /male/** exhibited interesting behavior in both experimental situations. In **situation A**, during the first 3 minutes the puppies did not show any interest in the napkin, but approached it afterwards and barked in an irritated manner when it moved. The exhibited interest, curiosity and a bit of fear (they never touched it).

**In situation B**, the puppies immediately approached the figurine and circled around it,

curious. They were calm and touched it with their paws. They demonstrated confidence. Their behaviour was such that we could not easily establish their nervous system type. We observed both confidence (proving good interspecies socialization) and fear. Therefore, we had to agree with the conclusion of Vastrade (18) that sometimes puppies exhibit the features of two nervous system types. We determined the animals had **a mixed nervous system of the L and F types**. These mixed types should not be a problem in training, which should be easy even if a little more intense (due to the choleric traits). In any case, the formation of the intended behaviour should be successful.

- Puppies №18 /female/, №19 /male/, №22 /male/, and №23 /male/ also exhibited interesting behaviour in both situations. During the first 3 minutes the puppies were indifferent towards the napkin. They remained calm even

when it started moving and did not pay much attention to it. During the last 2 minutes, however, when the napkin was not moving, the puppies approached it and sniffed it, but their reactions were slowed down.

In situation B, the young animals headed towards the figurine from the beginning and tried to play with it. They remained perfectly calm all the time, did not whimper, and played with the new object, exhibiting curiosity.

The behavior of these puppies puzzled us, as the confidence, lack of fear, and curiosity led us to classify them as a type L nervous system. However, their indifference and calm reactions in situation A determined them as the F type. This fact weighed in favour of a final classification of **type F**. These dogs are suitable for companions. They are easy to train but take longer to develop the desired behaviour.

**Table 1.** Classification of puppies' temperament types through testing

Puppy №	Temperament (nervous system) types				
	L	F	G	A	mixed
1	+				
2		+			
3		+			
4	+				
5		+			6
7		+			
8	+				
9		+			
10			+		
11			+		
12			+		
13				+	14
15	+				
16	+				
17					+
18		+			
19		+			
20					+
21					+
22		+			
23		+			
24					+

## CONCLUSIONS

Based on our test results, we could make the following conclusions:

1. The application of the bait test allows for accurate establishment of a dog's nervous system type, with regard to its socialization, training, and formation of a specific future behavior. It is fast and easy to perform, and does not generate stress situations (as proved by the observed behavior), in compliance with the requirements for humane treatment of animals.

2. According to our results on the breed specifics of behaviour, we have observed that **Labradors were the most courageous, stable and calm (types L and F), followed by the Boxers (types L and mixed, with L as dominant) and the German Shepherds (types F and G)**, and that contradicts the conclusions of others (3, 8).

We should point out that our results agree with the results of (14). Even though German Shepherds are determined as more stable (3, 8), levelheaded and braver than the Boxers, our current study proved the opposite.

Our research in this direction will continue by using other test forms to determine the nervous system types of dogs. We believe that such studies are necessary. They are needed because the dog is one of the most popular fauna representatives, especially in modern times. Their training, depending on the type of nervous system, as well as the formation of future behavior, is of greater significance not only for the dog itself, but mostly for its human owners.

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