Fear and Aggression in German Shepherd, Boxer and Rottweiler Dogs

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Abstract
As a result of long-term active fear, variable moods can occur – howling, whimpering, crying, tremor, tics, manias, depressions, etc. It is now acknowledged that fear and aggression are closely related. It is also known that the different dog breeds manifest a various extent of fear and aggression. The study aimed to provide answers to two questions - classification of factors invoking fear and aggression according to their significance and which of investigated dog breeds – German Shepherd, Rottweiler or Boxer is the most resistant to fear and aggression episodes? The exclusion of all factors on the rearing of three breeds of dogs / they complied with the norms / found that the causes of fear aggressive conditions are listed as follows - first of fear and aggression depend on the temperament of the dog and on the second place of the breed origin, growing conditions and the associated level of primary and secondary socialization. Fear aggressive manifestations occur at least in dogs with sanguine and choleric temperament. Representatives of the breed "Boxer" and "German Shepherd" are at the same level on the manifestations of fear and aggression. Rottweiler breed is in third place in this direction.

Keywords: aggression, breed, dogs, fear

1. Introduction

It is known that the dog is the first animal, being the most attached to man. This is due to the well-known fact that it fulfils various tasks, is of both economic (work) and social (companion animal) importance.

Fear and aggression in dogs are two emotional states [1] associated with specific behavioural activities resulting to the undesirable outcomes and sometimes, with lethal outcome for injured dogs or people. It has been proven that these conditions are related [2]. Aggression is an emotional behavioural response of the animal to the feeling of fear. Aggression without apparent cause is already a patho-ethological disorder [3], often of fatal outcome. Our research team is the first to use the term patho-ethological – coming from patho-ethology – the science that investigates the pathological behavioural disorders in dogs and animals in general [4].

Fear is an emotional state, always caused by a specific and clear reason, when the dog feels that it is unable to apply an established behavioural...
activity in a certain situation. As a result of long-term active fear, variable moods can occur – howling, whimpering, crying, tremor, tics, manias, depressions, etc. It is now acknowledged that fear and aggression are closely related [5].

It is no coincidence that stray dog populations are distinguished by their fear-aggression conditions. This is mostly humans’ fault [6] because people treat stray dogs differently, in accordance with their value systems [7]. Some people have a correct approach, while others do not [8]. The latter often exhibit cruelty towards these animals, which thus become fearful, untrusting and aggressive. This phenomenon naturally rebounds back upon humans again [9, 10]. We cannot deny that the number of cases of people bitten by aggressive stray dogs has not been reduced over the last few years, on the contrary – it has increased [11, 12].

Similar phenomena are observed in domestic dogs with an unclassified (unknown) nervous system type, due to which the owner has an incorrect approach towards them. This is how the animals could develop fear-aggressive behavioural activities, which affect their overall behaviour [13]. It is also known that the different dog breeds manifest a various extent of fear and aggression. In the available literature, data on these problems are rather few [14]. In this study, we investigated three breeds – German shepherd, Boxer and Rottweiler, as they are among the most commonly reared dogs for work and second, there are controversial data about their resistance to fear and aggression [15]. In terms of anatomical structure – body size, bone and muscular system – they are also fairly similar.

The study aimed to provide answers to two issues:
1. Classification of factors invoking fear and aggression according to their significance;
2. Which of investigated dog breeds – German Shepherd, Rottweiler or Boxer is the most resistant to fear and aggression episodes?

2. Materials and methods

The behaviour of 60 male dogs from the German Shepherd (n=20), Boxer (n=20) and Rottweiler (n=20) breeds aged 2 to 4 years was followed out for 2 months (May and June). The dogs were housed in dog farms and used for work. The following research methods were applied:

1. Complete veterinary hygienic evaluation using check-lists;
2. The test of Toman– fifth variant for dog temperament typing [16];
3. Observation – determination of the duration of six behavioural activities: feeding, drinking, curiosity, vocalisation, fear, aggression. The observation was repeated five times, each of 2-hour duration, every other day by means of video camera);
4. Mirror test of Breto – evaluation of the seven behavioural activities on a 4 – point scale (0, 1, 2, 3 points). The observation was repeated five times, each of 2-hour duration, every other day by means of video camera) [17].

3. Results and discussion

The veterinary-hygienic evaluation of the three dog breeding farms [18] proved that there were no deviations from the proper raising of the examined dogs.

The three farms were sufficiently distant (4–7 km) from populated areas, railroads, roads, other farms, etc.

The animals were kept single within individual cubicles with an area of 3.5 m2 in accordance with the normative requirements. All three kennels met the veterinary medical requirements. This was easily explicable because they bred dogs for the needs of the Police – service dogs used in odourology.

The kennels’ structure featured all necessary elements for the proper development of the animals – a kitchen, a separate walking space with an area of 60 m2 and sea sand floor cover, individual cubicles situated in a straight-line single row, with southern orientation, and an infirmary.

The building materials for the cubicles and the rest of the structural elements of the kennels had a low heat-conduction capacity, which suggested excellent heat insulation properties and the ability to easily achieve an optimal microclimate.

Drinkable water was always available from special heavy vessels (so that they would not topple) made of stainless steel and with rounded edge (so that the animals would not hurt themselves).

Feeding was dry and twice a day (morning and evening) with dry food.
The hygiene condition was excellent, with manure products being stored within a special cesspit, periodically cleaned with specially-designated devices. All veterinary medical activities (inoculations, parasite removal, etc.) were conducted in a timely manner.

In accordance with the veterinary medical evaluation, we could conclude the animals’ welfare was ensured in all aspects. Using the Toman method, we established that the dogs from the three studied breeds were distributed as described in Table 1.

### Table 1. Distribution of the dogs according to their nervous system types

<table>
<thead>
<tr>
<th>Nervous system type</th>
<th>German Shepherd %</th>
<th>Boxer %</th>
<th>Rottweiler %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanguine type L</td>
<td>12</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Choleric type F</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Phlegmatic type G</td>
<td>3</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Melancholic type A</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

We have noticed that the highest number of representatives of the strong sanguine type L nervous system (temperament) was observed in the German Shepherd breed (12%). They were followed by the Boxer breed with 10%, and the Rottweiler with 9%. The highest number of choleric dogs (strong unbalanced type F) was found among the Rottweiler breed, which also exhibited the presence of the weak and unbalanced type A (1%). Melancholic individuals are the hardest to socialize and they often develop fear and aggression.

It was also established that fear and aggression depended mostly on:
1. The dog’s temperament;
2. Its breed;
3. The rearing conditions and the related extents of primary and secondary socialization.

The grounds for this statement are the results we received. The highest number of sanguine (strong and balanced) nervous system types was observed in the German Shepherd breed, and to a lesser extent among the Boxer breed. It is very important to show that the results from Table 2 cannot be processed by statistical analysis /dispersion indices and test of significance/, because of the small number of the studied animals. So at this step of the study we do not want and in the same time we cannot pretend for statistical significance of the presented results. However we will analyse the results, because this is an initial projected step of in a planned ongoing study programme. This fact will give us a doubtless opportunity, our future data to be added with suitable statistical processing and persuasiveness. Nevertheless, our next set of data from the study indicates that both breeds are on the same level with regard to fear-aggressive behaviour. Tracing the seven behavioural activities via the Breto method (Table 2) and through observation, we established that the dogs of the Rottweiler breed were most susceptible to fear-aggression conditions. This breed exhibited the greatest occurrence of fear-aggressive conditions (6 points), whereas the score for the German Shepherd and Boxer breeds was 4.

### Table 2. Extent of occurrence of specific behavioural activities in dogs of the three studied breeds

<table>
<thead>
<tr>
<th>Dog breeds</th>
<th>Feeding (score)</th>
<th>Drinking (score)</th>
<th>Curiosity (score)</th>
<th>Vocalisation (score)</th>
<th>Fear (score)</th>
<th>Aggression (score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>German Shepherd</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Boxer</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Rottweiler</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
We consider this to be logical, since the representatives of the sanguine strong balanced type L here are the fewest (9%). Furthermore, it was only among the Rottweiler breed that we found the presence of the weak and imbalanced melancholic type A temperament (1%). These are the co-called “asocial” animals. According to our specific studies (as already mentioned) the breeds German Shepherd and Boxer have an equal standing with regard to fear-aggressive behaviours. This result contradicts the findings of some authors [19, 20], according to which the German Shepherd was the most stable and balanced with regard to fear and aggression, i.e. they exhibit them much more rarely when compared to the other two studied breeds. The quoted ethologists believed that the Boxer breed was more susceptible to fear-aggressive behaviours. Our data, however, disproved the findings of Queinnec (1996) [17] only partially because we cannot claim for results’ significance merely on the grounds of this particular study, due to the low number of examined dogs. This is why we plan ahead and further studies in this matter are pending. Only when we receive a significant sample will we be able to formulate more accurate and clear conclusions.

Quoted ethologists suggest that dogs from Boxer breed are with more fear-aggressive behaviour activities

4. Conclusions

Fear and aggression depend on temperament and breed of the dog, rear conditions and the level of primary and secondary socialization. German Shepherd and Boxer have equal standing of fear-aggressive behaviours. This fact is contradictory, because there are results (mentioned above), which show that dogs of Boxer breed develop more fear-aggressive conditions.

Presented data are not statistically significant (that was mentioned above), but there will be another studies which will allow us to be more categorical for this actual scientific problematic

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