

# The Effect of a Social Enrichment Programme on the Behaviour of Dogs from a Private Shelter

Silvana POPESCU<sup>1</sup>, Cristin BORDA<sup>1</sup>, Cristina EL MAHDY<sup>2\*</sup>, Eva-Andrea LAZAR<sup>1</sup>, Anamaria BLAGA PETREAN<sup>1</sup>, Ioana-Diana CÂMPEAN<sup>1</sup>, Marina SPINU<sup>1</sup>

<sup>1</sup>*Faculty of Veterinary Medicine, University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania*

<sup>2</sup>*Faculty of Animal Science and Biotechnologies University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania*

\*corresponding author: [cristina.hegedus@usamvcluj.ro](mailto:cristina.hegedus@usamvcluj.ro)

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## Abstract:

The aim of this study was the behavior assessment of dogs housed in a private shelter, before and after implementing an intensive social enrichment programme. Using an assessment protocol of provoked and unprovoked behavior, a range of behavioral indicators was recorded in 20 dogs housed for more than two years in the shelter. The data collected was used for computing a quality of life score (QL). After the implementation of the social enrichment programme, 75% of the studied dogs received higher QL scores compared with the initial assessment. At that stage, also a slight increasing in the proportion of the dogs' positive indicators was seen. No significant difference was recorded when compared the results obtained by the two assessors. The higher QL scores obtained after the enrichment programme prove that such a programme has positive effects on the behavior and on the life quality of shelter dogs.

**Keywords:** dog behaviour, quality of life score, social enrichment

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## Introduction

In the light of recent research, the literature recognizes the importance of socialization programmes in sheltered dogs. The implementation of these programmes can reduce the negative effects of sheltering by improving their life quality and decreasing unwanted behaviors and it can increase the chances for adoption of these animals. The behavioral repertoire of the individual subjected to such programmes is improved by encouraging the expression of species specific manifestations, by preventing, reducing or eliminating the abnormal behavioral patterns such as stereotypes, and also by increasing the ability of the animal to cope with new situations (Wells, 2004). Those dogs that have a better physical and psychological condition are easier to care for and

give for adoption and they have a better welfare (Moesta *et al.*, 2015).

Among the most frequently used methods that had good results in the human-dog interaction are petting, grooming, playing (using toys) or walking the animals outside the pen (Kiddie and Collins, 2014; Normando *et al.*, 2009).

Previous research show, also, that the time spent in the shelter influences the dogs' behavior (Wells *et al.*, 2002; Wells, 2004). When they are sheltered for longer times, these programmes can provide appropriate stimuli to encourage learning and to prevent boring.

The aim of this study was the behavioral assessment of the dogs in a private shelter before and after implementing an intensive socialization programme. The hypothesis of the research was

that an intensive socialization programme implemented for the dogs sheltered for a long time can lead to the improvement of the life quality and the behavior of these animals showed not only toward the person who does the socialization but also toward foreign assessors.

### Materials and methods

The study was performed in a private dog shelter in Romania owned by an animal protection association (non-governmental organization). The animals selected (a total number of 20 dogs) were sheltered for more than two years and none had any documented health problem at the start of the study. There were also excluded the old animals and those showing aggressiveness toward the assessors.

The behavior of the selected animals was assessed by direct observation at the beginning of the study (assessment I) and after finishing the socialization period (assessment II). The assessment was performed based on a number of 43 behavioral indicators that indicate negative and positive emotional states (both provoked and unprovoked behavioral reactions). The behavioral characteristics were recorded using a binary system 1/0, where 1 has meant the occurrence of a given behavior and 0 has meant its absence, in a given time period, during the assessment that was done. The ethogramme used, proposed first by Kiddie and Collins (2014), was adapted to the conditions in the shelter. Thus, the characteristics not shown by the dogs, both because the design of the shelter and because of other objective reasons, were excluded from the original ethogramme.

The first assessment of the dogs' behavior was made by only one assessor (A1), and the second assessment was performed by two assessors of which one was already familiar for the dogs (A1) and the second one was unknown (A2). Both the assessors were trained to use the assessment protocol in a previous study performed in 10 dogs kept in similar conditions with those included in the present study. The training of the assessors was made until an intra- and inter-assessor agreement of 89% was achieved.

Both the initial assessment (before the beginning of the socialization programme) and the final one were performed in similar conditions.

The intensive socialization programme was carried on during eight weeks and the assessor

A1 did it. In the first three weeks, the programme was performed in two days per week, and in the following five weeks in four days per week. This programme was done in the morning, between 8 a.m. and 11 a.m. and it involved direct human interaction with the animals, during seven minutes per animal (three minutes of petting and four minutes of grooming using a brush).

The results of the ethogramme were used to calculate a Life Quality score (LQ score) according to the method proposed by Kiddie and Collins (2014).

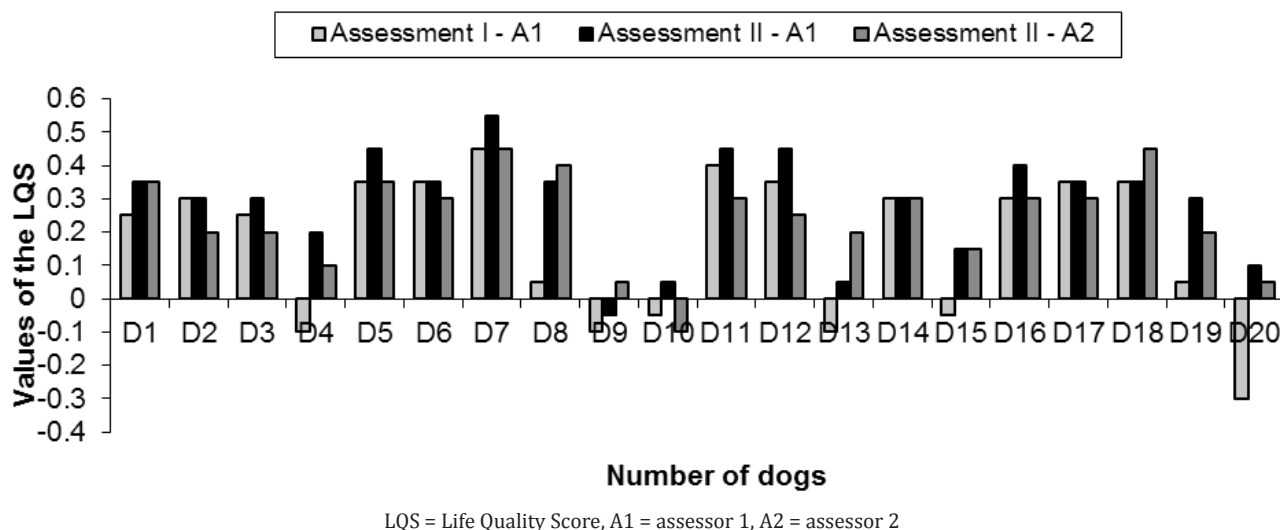
The data obtained were statistically processed using the SPSS programme, version 17. For the comparison of results, the Mann-Whitney test was used. The differences were considered significant if  $P < 0.05$ .

### Results and Discussion

The LQ scores that were obtained in the two assessments are presented in figure 1. During the first assessment (performed before applying the socialization programme) a mean LQ score of 0.17 was obtained, ranging between -0.3 and 0.45. The analysis of the results showed that 60% of the assessed dogs had higher LQ scores than the mean value. Six animals (D4, D9, D10, D13, D15 and D20) had negative scores.

The main score obtained by A1 in the final assessment was 0.2875. This value represents an increase with 0.1175 of the score obtained by the same assessor in the initial assessment, the difference having no statistical significance ( $P > 0.05$ ). This increase sustains the first part of the hypothesis, that a behavioral enrichment programme can have a positive influence on the life quality of animals kept in shelters and improves the behavior displayed toward a familiar assessor.

Out of the 20 dogs that were included in the study, an increase of the LQ score was recorded in 15 (75%) between the two assessments. Only one animal (D9) had a negative LQ score at the final assessment, thus, between the two assessments performed by A1, the negative LQ scores decreased by 25%. The mean score (0.477) obtained by Kiddie and Collins (2015) in England for dogs sheltered for a long time, subjected to a socialization programme during six days is higher than the mean score obtained in our study by A1 after performing the socialization programme. Yet, the same authors (Kiddie and Collins, 2014)



**Figure 1.** The LQ scores obtained by the two assessors in the two assessments

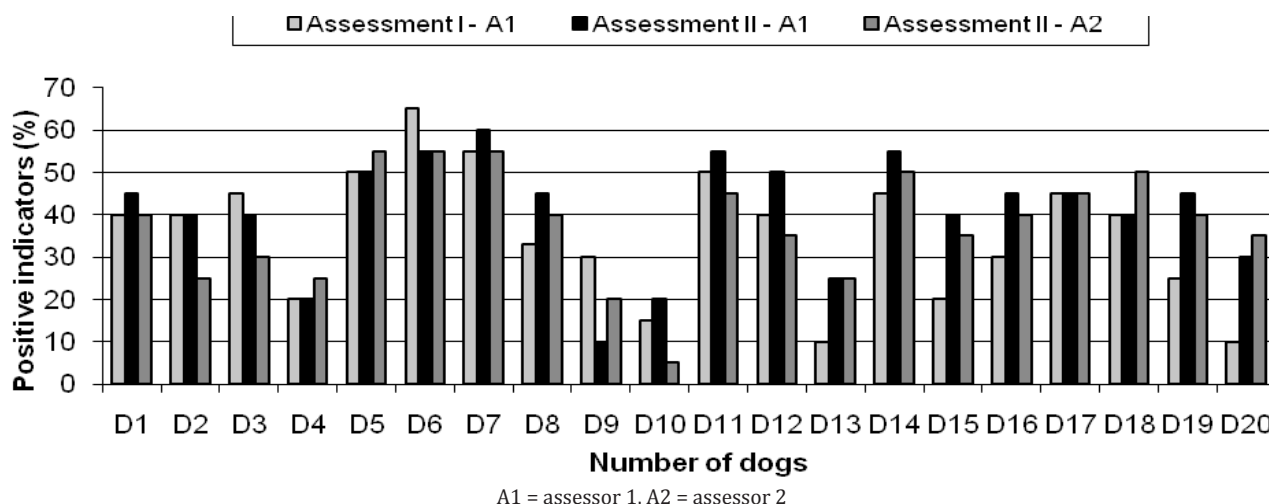
suggest that the LQ score was developed as an indicator meant to monitor the life quality of the animals over time. Thus, it can be considered that a comparison between the two groups of animals in different countries, kept in different conditions is not an appropriate use for the LQ score, even if the authors of the original study use it to compare the mean scores obtained in several different studied groups of dogs. The lower scores obtained in our study could indicate the presence of chronic stress in the dogs or it could be the expression of possible traumas experienced by the animal before entering in the shelter. The dogs in a shelter can be exposed to chronic stress, because several stress factors such as social isolation, changes of the environment, excessive noises, physical restrictions (Hennessy *et al.*, 1997; Tuber *et al.*, 1999). In some situations, the dogs can be housed in precarious conditions, overcrowded boxes and they can have limited contact with humans (Barrera *et al.*, 2008). In addition, for some dogs it is possible to be exposed to several traumatic situations, abuse and neglect (De Palma *et al.*, 2005).

In that shelter where the present study was performed, the housing conditions were adequate and in conformity with the legal regulations in force. In addition, the boxes were not overcrowded. For example, in the box where six animals were housed, the surface of the kennel was six meters long and eight meters wide, resulting 6 m<sup>2</sup> surface per animal. In these conditions, the

conclusion, which can be drawn, is that insufficient socialization for prolonged periods of time, before starting the intensive socialization programme, could have been one of the causes for the lower LQ scores obtained. Even if an increase of the LQ score was noted between the two assessments performed by A1, this is not enough to align the obtained LQ scores to the level recorded by Kiddie and Collins (2014, 2015). Continuing of the socialization programme after finishing this study could lead to a continuous improving of the LQ score.

There were no statistically significant differences ( $P > 0.05$ ) between the two assessors for the LQ score. The mean LQ score recorded by the second assessor (A2) was 0.24, namely it was lower with 0.475 than that obtained by A1 in the final assessment. In the assessment performed by A2, half (50%) of the assessed animals had higher scores than the mean value. The maximum value for the LQ score obtained by the A2 was 0.45, recorded for D7 and D18, and the minimum of -0.1 were obtained for D10 (Figure 1). Only one animal had negative score. The values obtained by A2 for the LQ score seem to sustain the hypothesis according to which the effects of an intensive socialization programme lead to improvements in the dogs' behavior both toward the familiar assessor and toward an unknown one.

Unfortunately, the dogs kept in some shelters experience low levels of human interaction, despite the proofs that such interactions have a



**Figure 2.** Proportion of positive indicators within the two assessments of the studied dogs

positive effect on the animals (Wells, 2004). This fact is reported also by the personnel of the animal protection associations within the county where our study was performed, and, taking into account the limited resources they administer (these associations functioning based on funds from donations), it could be assumed that it is a national problem. The main concerns of the administrators of the studied shelter regarding the dogs kept there were the lack of the volunteers and the inconstant activity of these within the shelter. This way the permanent personnel, being in low numbers, do not always succeed to perform a satisfying level of socialization with the dogs, the main activities being the cleaning of the shelter, feeding the dogs and veterinary assistance for the animals in need. Thus, even if the caregivers of the association are aware of the importance of socialization, because of the lack of time and resources this is not constantly achieved.

Tuber *et al.* (1999) show that the grooming sessions of the animals are an adequate way to socialize with the dogs and help reducing the stress level showed by these animals. Petting of the animals was demonstrated too having beneficial effects on both the physiological and behavioral stress responses in dogs (Hennessy *et al.*, 1998). These two activities proved to be beneficial on the studied animals as the results of the second assessment suggested. The continuation of the study could be realised using the same method in other private or public shelters too.

For five dogs, A2 obtained higher LQ scores than A1 in the final assessment (Figure 1). This aspect is explained by the fact that A2, even if recorded during the assessment a variable percentage of positive indicators, the prevalence of the negative indicators was lower or equal with that obtained by A1 (Figure 2). This result can occur due to the observation of the same negative behavior repeatedly, aspect that is not quantified in the LQ score, only the presence or absence of a given indicator being recorded. This could have been the explanation of the fact that, for some animals, A1 recorded lower percentages of positive indicators during the second assessment comparing with the first one.

In the first assessment the maximum percentage of positive indicators (65%) observed was recorded in D6 and the maximum percentage of negative indicators (40%) in D9 and D20. The minimum percentage of positive indicators (10%) was observed in the animals noted as D13 and D20, and the minimum percentage of negative indicators (0%) was observed in D16 (Figure 3). The mean percentage of positive indicators after the first assessment was 32.25%, more than half of the dogs (55%) exceeding this value. The mean percentage of negative indicators was 18.25%, half of the assessed animals (50%) recording a lower percentage. Kiddie and Collins (2014; 2015) obtain a percentage of 2% negative LQ scores, comparing with the 30% obtained in the first stage of our study. These results suggest a higher prevalence of behavioral disorders in the dogs assessed in our

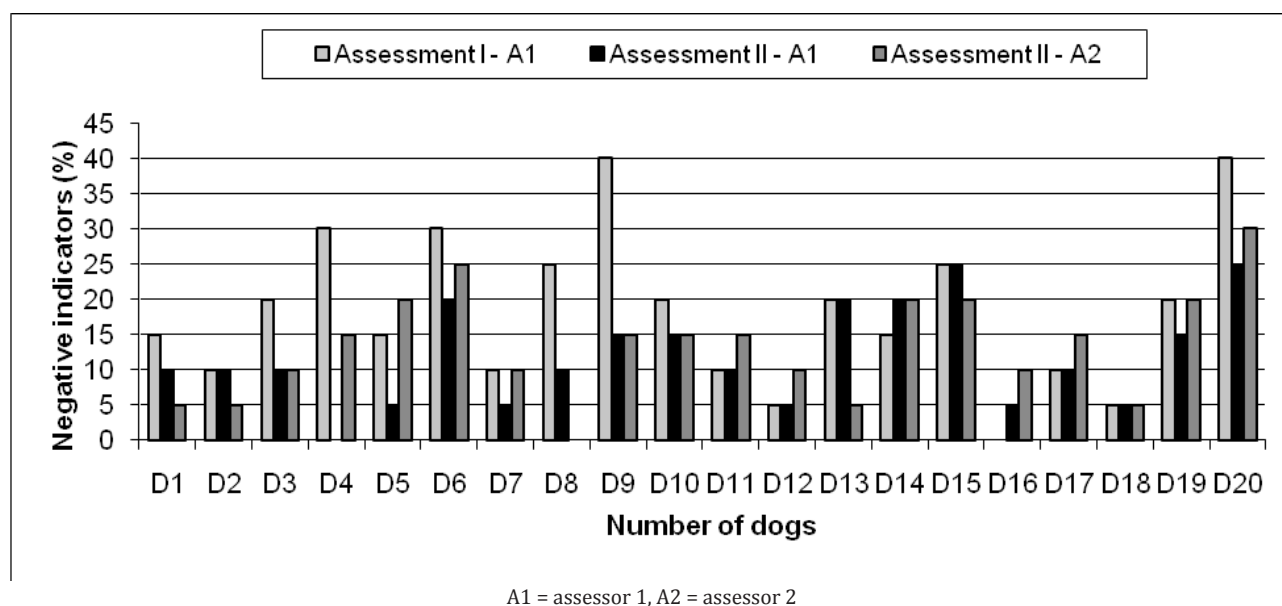
study. The presence of these behavioral disorders could be the cause for which part of the assessed dogs were sheltered for a long period and were not relocated through the adoption programs of the association.

The research papers indicate major differences between the behavior of dogs with owners and stray ones. The main majority of stray animals are taken in public or private shelters. The main aim of the shelters is to facilitate the quickest possible relocation of the animals, but for many of them the shelter becomes their permanent living environment (Barrera *et al.*, 2010). The same authors demonstrate that comparing with the dogs with owners, the dogs in shelters display more frequently fear associated behaviors (tail lowered and ears in ventro-caudal position, low body posture). As regards socialization behavior, both the dogs with owners and those without manifest the intention of socializing with people, but the stray dogs stay more time around the assessor, which could suggest their increased need to interact with humans. Wells and Hepper (2000) report that some behavioral problems complained of by the adopters could be caused by the stressing environment in the shelters, namely fear, hyper-reactivity and excessive barking. Aggressiveness is also an important factor that leads to failure in establishing a relationship between the animal and a possible adopter (Serpell and Jagoe, 1995).

Gács *et al.* (2001) demonstrate that the animals housed in shelters can develop attachment toward unknown people relatively quickly. Because of this, it was considered that the implementation of an intensive socialization programme could lead to the improvement of the animals' behavior.

The maximum percentage of the positive indicators (60%) observed by A1 in the second assessment was recorded in D7, and the maximum percentage of negative indicators (25%) in the dogs D15 and D20 (Figure 3). The mean percentage of positive indicators obtained by A1 in the second assessment was higher with 5.5% than the mean value of the positive indicators obtained in the first assessment. The mean percentage of the negative indicators obtained by A1 was of 12%, more than half (60%) of the animals having a lower percentage. Comparing with the mean value of the same indicators in the first assessment performed by A1, a 6.25% lowering was recorded in the second assessment.

In the assessment performed by A2 the maximum percentages of the positive indicators (55%) were recorded in D5, D6 and D7, and the maximum percentage of the negative indicators (30%) for D20. The minimum percentage of the positive indicators (5%) was noted in the animal D10 and the minimum percentage of the negative indicators (0%) was observed in D8 (Figure 2 and Figure 3).



**Figure 3.** Proportion of negative indicators within the two assessments of the studied dogs

**Table 1.** The prevalence of negative behavioral indicators and the significance of difference between assessments

Behavioral indicators	% of dogs			P value	
	A1		A2	A1 Assessment I - II	A1- A2
	Assessment I	Assessment II	Assessment II		
<b>Unprovoked negative behavior</b>					
Repeatedly pacing in the pen	45	20	15	0.096	0.681
Repeatedly jumping on the kennel wall	5	0	10	0.317	0.152
Tail chasing	0	0	0		1.000
Circling	0	0	0		1.000
Repeatedly display playing position	5	0	0	0.317	1.000
Excessive drinking	0	0	5	1.000	0.317
Panting	45	30	40	0.333	0.513
Apathy	5	0	0	0.317	1.000
Escape attempt	0	0	0	1.000	1.000
Hiding	10	15	25	0.637	0.435
Chewing bars	0	0	0	1.000	1.000
Low posture	20	20	25	1.000	0.708
Coprophagy	0	0	0	1.000	1.000
Lifting a front leg	0	0	0	1.000	1.000
Standing	65	65	40	1.000	0.118
Sniffing a surface/nose on a surface	10	5	20	0.553	0.157
Whining	5	15	15	0.298	1.000
Aggressiveness toward other dogs	10	0	0	0.152	1.000
Startling	30	0	0	0.009	1.000
Box walking without exploring environment	10	10	10	1.000	1.000
<b>Provoked negative behavior</b>					
Oral behaviors, abnormal movements	50	20	30	0.050	0.471
Ambivalent posture	45	35	30	0.524	0.739
Aggressiveness	5	5	5	1.000	1.000

P &lt; 0.05 – the difference is statistically significant

**Table 2.** The prevalence of positive behavioral indicators and the significance of difference between assessments

Behavioral indicators	% of dogs			P value	
	A1		A2	A1	A1- A2
	Assessment I	Assessment II	Assessment II	Assessment I - II	
<b>Unprovoked positive behavior</b>					
High level of activity	30	35	30	0.739	0.739
Grooming	5	10	15	0.553	0.637
Alert	80	95	90	0.157	0.553
Scanning the environment	95	90	80	0.553	0.382
Exploring environment	25	25	40	1.000	0.317
Adopting playing position	5	0	10	0.317	0.152
Ears up	60	50	80	0.530	0.050
High body position	50	65	45	0.343	0.209
Spending time in the front part of the box	65	65	55	1.000	0.524
Grunting	15	10	0	0.637	0.152
Laying down	50	40	35	0.435	0.747
Playing with objects	0	0	10	1.000	0.152
Playing with other dogs	30	30	25	1.000	0.727
Licking other dogs' face	0	10	0	0.152	0.152
Tail wagging	60	85	65	0.080	1.000
Shaking	0	5	5	0.317	1.000
<b>Provoked positive behavior</b>					
Tail wagging	65	80	80	0.294	1.000
Laying down	0	15	15	0.075	1.000
Initiating physical contact	65	80	65	0.294	0.294
Shaking	5	25	5	0.080	0.080

P < 0.05 – the difference is statistically significant

The mean percentage of the positive indicators obtained by A2 in the second assessment was of 37.5%, more than half of the dogs (55%) exceeding this value (the same percentage than that recorded by A1) (Figure 2). This mean value is lower with

3.25% than the mean of the positive indicators obtained by A1 in the second assessment. The mean percentage of the negative indicators recorded by A2 was 13.5%, less than half of the animals (45%) showed a lower percentage (Figure 3). This value

is 1.5% higher than the mean value obtained by the A1 in the second assessment.

Out of the 43 indicators analysed (23 negative and 20 positive), six (tail chasing, circling, escape attempt, chewing bars, coprophagy and lifting a front leg) were not observed in none of the 20 assessed dogs, irrespective the evaluation phase or the assessor (Tables 2 and 3). These indicators were associated in previous studies with high levels of stress or precarious housing conditions (Beerda *et al.*, 1999; Stephen and Ledger, 2005). Moreover, two of these indicators, namely tail chasing and circling are considered stereotypic behavioral disorders (Hecht and Horowitz, 2015). The absence of these in the range of behaviours displayed by the studied animals can suggest the fact that these dogs are housed in such conditions that did not trigger the occurrence of behavioural stereotypes. In addition, the absence of these may imply that the management practices applied in the shelter have a beneficial effect preventing negative behaviors that are documented in the literature being associated with stress.

For the majority of the negative and positive indicators observed in the studied dogs no significant differences were recorded comparing the results obtained by A1 in the two assessments and by A1 and A2 in the second assessment (Tables 1 and 2). For only two negative behavioral indicators (startling and oral behaviors, abnormal movements) the differences were statistically significant ( $P < 0.05$ ) when the results obtained by A1 were compared between the two assessments.

These indicators were associated in previous research with a high stress levels (Beerda *et al.*, 1998; Hiby *et al.*, 2006). The fact that in our study these indicators have a statistically significant decrease, suggests that the socialization programme had the desired effect. The aim of an intensive socialization programme with the dogs in a shelter should always be the encouragement of the behavioral traits wanted, desired by the adopters, increasing the chances for the dogs to be adopted and also the possibility of the caregivers to work with them as long as they are kept in the shelter (Moesta *et al.*, 2015).

## Conclusion

The higher QL scores obtained after the enrichment programme are proof that such a pro-

gramme has positive effects on the behavior and on the quality of life of shelter dogs.

The hereby study represents the first attempt in this field, in our country. Carrying these researches on is justified from a national and international scientific reporting stand point, as well as for finding some practical methods of solving the stray dogs' problem in Romania, taking into account the veterinarian and humanitarian professional ethics and the wellbeing of these animals which depend on us.

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