Qualified "in shelter" dogs' evaluation and training to promote successful dog-human relationships

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ABSTRACT

The phenomenon of dogs' relinquishment in Italy has become a social evil, although many laws exist to regulate animal protection and lately, the act of abandonment has become criminalised (law n.189/2004, enforced by law n.201/2010). Adoption from shelters seems to be the only way to have a controlled, microchipped population of dogs, as well as limiting confinement and euthanasia. After being asked to simplify the previous Ethotest © version [13] by many shelter operators and veterinarians, the authors aimed at analyzing the effectiveness of an improved model to test dogs' behavioral aptitude matching the expectations of a hypothetical adopter. The new version improves the test feasibility by the elimination of a previous computer-based program, and by the introduction of new items such as hierarchical behavior towards food. In this study dogs housed in the sanitary shelter of L'Aquila (Abruzzo, Italy), of different age and sex, either sterilized or not, and belonging to different breeds or crossbreeds, were tested. All the dogs adopted from the shelter were monitored for one year after the adoption by both phone interviews and home visit. The study aimed at analyzing if the shelter dogs showed a good and consistent behavior after adoption in the new environment. The results demonstrated that apart from a predictable relinquishment and an unfortunate case of abuse, none of the dogs adopted showed any unwanted behaviors such as house soiling, jumping up, separation-related and aggressive behaviors; this made their stay in the family a desirable, exciting experience independently of the dog sex, age, and the family composition.

The authors stress the necessity of every shelter, together with the veterinary cares, for a professional expert at dogs' behavior who can efficaciously prevent behavioral problems, eventually train the dogs and afford the pairing with humans in a competent, qualified manner.

Keywords: Adoption; Behavioral Test; Shelter Dogs; Training

1. INTRODUCTION

All over the world the overpopulation of stray dogs is a concern due to a number of dog attacks on infants and adults [3,6]. Who is to blame for the failure of control of stray dogs? In most cases the stray dogs overpopulation results from housedogs and from irresponsible ownership [17,20]. In fact, not all the owners sterilize their dogs and, worst of all, they are allowed to roam at the time of reproduction. This results in the possibility that those dogs mate and give birth to unwanted puppies, whose final destination is the abandonment without a microchip for their identification.

In Italy, the law n. 281 regulates the capture and sterilization of stray dogs since 1991. Consequently to the enacting of this law, euthanasia of unwanted roaming dogs has been forbidden, unless it can be demonstrated that they are dangerous or incurable. This gave rise to the establishment of a multitude of long-term shelters where unattended dogs are placed in questionable conditions, waiting for an adoption that sometime never occurs. It has been estimated that the number of strays in Italy amounted to 600,000 in 2009 (source: Italian Ministry of Health, www.salute.gov.it), but the problem of unwanted dogs is a common, widespread topic all over the world with millions of abandoned dogs ending up in shelters [2].

In this study, the authors evaluated dogs' traits that are

the requisites for living together amicably with humans by simplifying the already published program Ethotest©, which was realized in order "to lay the foundations for a more flexible selection of dogs to be used as co-therapists" [13]. In fact, after several shelters in different Italian cities adopted Ethotest©, many operators released feedback asking for a revised, simplified program (hereinafter Ethotest-R). Therefore, the aim of this study was to develop a more simplified method of selection and to sponsor the need for a qualified shelter caretaker to perform in order to improve the welfare of dogs and safety of the adoptions. To analyze dogs' behavioral traits, we used the general outline of the previous Eth- otest© considering that, as proved by Hsu and Serpell [9], there are only the following few factors stable and consitent across different populations: stranger-directed fear, stranger-directed aggression, owner-directed aggression, non-social fear, dog-directed fear or aggression, trainability, and attachment.

2. MATERIALS AND METHODS

2.1. Animals

The Ethotest-R version was carried out on 32 sheltered dogs (see **Table 1**); 24 of them crossbreed and 8 belonging to the following breeds: Abruzzi's Shepherd dog, American Staffordshire Terrier, English Setter, German Shepherd, Maremma Hound, Pointer, and Siberian Husky. The dogs were housed at the small shelter of L'Aquila health department (ASL 04) where we tested all the dogs hosted. According to the Italian law for straying control, all captured dogs are microchipped before their entry to the kennel, and then lodged in isolation pens. Here, they are submitted to a blood test and checked for anti-leishmania antibodies, vaccinated and treated for parasites. After quarantine for a certain period of time, they are transferred to other pens waiting for being adopted. The pens, provided with external areas, could house several dogs together, depending on how compatible they are with each other; otherwise some subjects can be housed in isolation (*i.e.*, the American Staffordshire Terrier in our study).

This small regional shelter is unique in the Italian scenario, because a qualified staff efficaciously cares for the dogs. The dogs are fed on commercial dog food, pens are cleaned more than once a day, and a qualified veterinarian who cares for the animals' healthiness periodically visits all dogs. The veterinarian is available whenever an emergency arises. For any other needs, namely ethological and physiological needs, there is a technician qualified in Animals' Protection and Welfare (one of the Authors-hereinafter Operator 1); this Operator assists the dogs by monitoring temperament and social interaction

Table 1. Characteristic of the dogs subjected to Ethotest-R.

ID n.	Name	Breed	Age	Sex	Size	Time in shelter
1	Ada	Mix	10 m	♀ spayed	M	6 m
2	Bella	Mix	8 y	♀ spayed	M	2,5 y
3	Biancone	Abruzzi Shepherd	11 y	♂ neutered	M	5 y
4	Bobo	Mix	10 m	♂ intact	M	6 m
5	Bracco	Pointer	6 y	♂ intact	M	5 y
6	Didi	Mix	3 y	♀ spayed	L	2,5 y
7	Eva	English Setter	4 y	♀ spayed	M	2 y
8	Frank	Mix	8 y	♂ intact	M	4 y
9	Gilda	Mix	8 m	♀ spayed	M	3 m
10	Gregorio	Mix	10 y	♂ neutered	G	1 y
11	Grethel	Mix	2 y	♀ spayed	L	2 y
12	Hansel	Mix	2 y	♂ intact	L	2 y
13	Jack	Am. Staff. Terrier	7 y	♂ intact	L	1 y
14	Jamaica	Mix	3 y	♀ spayed	L	2,5 y
15	Lana	Siberian Husky	5 y	♀ spayed	L	2 y
16	Leon	Mix	5 m	♂ intact	L	3 m
17	Liz	Mix	6 m	♀ intact	M	3 m
18	Louise	Mix	4 y	♀ spayed	M	3,5 y
19	Lupizza	German Shep.	8 y	♀ spayed	L	1 y
20	Manolo	Maremma Hound	9 y	♂ neutered	M	5 y
21	Mitzy	Mix	3 y	♀ spayed	L	3 y
22	Nina	Mix	7 y	♀ spayed	M	6 y
23	Olguita	English Setter	3 y	♀ spayed	M	5 m
24	Petra	Mix	3 y	♀ spayed	L	2,5 y
25	Ripa	Mix	4 y	♀ spayed	M	3,5 y
26	Salvo	Mix	2 y	♂ intact	L	1, 5 y
27	Secco	Mix	5 y	♂ intact	S	3 y
28	Snoopy	Mix	5 m	♀ intact	M	2 m
29	Thelma	Mix	4 y	♀ spayed	M	3,5 y
30	Tom	Mix	5 y	♂ neutered	L	3 y
31	Trilly	Mix	2 y	♀ spayed	M	2 y
32	Ugo	Mix	6 y	♂ intact	M	6 m

Abbreviation: S, small; M, medium; L, large; G, giant.

of incoming animals and by deciding group composition, housing, and time and occurrence of motor and social activity (inter and intra-species).

In the morning, all the dogs are allowed to exercise for nearly one hour in a wide area of more than thousand square meters, which is adjacent to the external pens; the dogs can stay in this area in compatible groups. The dogs submitted to the simplified program of Ethotest-R stayed at the shelter at least 2 months before being tested. Their ages ranged from 5 months (dog #16) to 11 years old (dog #3).

2.2. Establishment of the Evaluation Grid

In order to design a scheme for evaluating the behavioral components of each dog, we only considered the indicators that are required to a dog for living with humans in a satisfactory companionship; we explored a few dimensions of dogs' temperament, by referring to the temperament traits described by Jones and Goslin [10]. The schematic version of Ethotest-R is given in **Table 2**. While Test A was carried out by the Operator 1 only, the sections B,C, and D were designed to analyze three major behavioral traits (fearfulness, aggressiveness, trainability) by two Operators: Operator 1, well known to the dogs and a second Operator, stranger to the dogs, as a control; this second Operator changed from an evaluation to another because he/she became rapidly known after their first entry. In order to differently load the different sections (the items of section C were indeed judged as more critical than B and D), the total scores of the different items were multiplied for a coefficient that was different from one section to another. For the same reason, the coefficient was always higher for Operators 2. The authors supervised the stranger Operators in order to make his/her help consistent with the action to be taken, from time to time. When both the Operators were needed, they worked together (*i.e.* opening the fence together, enter together, etc).

Test A

The first screening was focused on the dog *aggressiveness/sociability*. This Test was highly selective because it analyzed the aggression component in order to clearly separate the dogs on the basis of a qualitative measurement. According to such hypothesis, the second item A2 has been centered on the component sociability in another qualitative assay. Test A was used to immediately eliminate dogs that failed items 1 and 2 (the total amount of dog's responses must be two). The Operator 1 only has carried out this first measurement; indeed, if the dogs behaved aggressively or fearfully towards the first Operator, then we assumed that they would behave even worse with unknown people.

Test B

Test B measured the *fearfulness* as a tract of the dog temperament. This Test was carried out by the Operator 1, together with the Operator 2 (the latter did not carry out item B3). It analyzed the boldness of the dog towards the Operators when they opened the gate of the fence and walked in. It also evaluated the fearful behavior of each dog and how they reacted in very unfamiliar places such as the entrance of the building, the corridors, and the veterinary's ambulatory, surgery, and office. The coefficients used for the evaluations were 1.2 for the familiar person and 1.5 for the stranger.

Test C

Test C evaluated other dog's individual differences associated to *aggressiveness/submissiveness*. For example, in an open field, the Operator 1 carried out the encounter with a conspecific for the analysis of inter-dog aggressiveness (C1), followed by the introduction of a novel, unpredictable stimulus (C2), such as blowing a trumpet or producing other unusual noises. Operator 1 also carried out a new item, not previously considered in Ethotest ©, *i.e.* the hierarchical behavior as regard to food (C3). This investigation was done to determine the dogs' social position compared with their pen companions (pack), or to the Operator (leader). Conversely, both the Operators 1 and 2 in items C4 and 5 carried out the study on dog suitability with human contact, such as patting, manipulation (which can emphasize a dominant temperament), and *jumping* on people. In order to predict a successful adoption, the dog's coefficient score had to be higher than in Test B-namely 1.5 for the Operator 1 and 2.0 for the Operator 2.

Test D

Test D considered the *responsiveness to training and play* of the dogs by evaluating their skills and their interests in learning different commands and behave confidently with humans. Dogs were examined twice, by both the Operators, in the external fence and in the lane way that enters the enclosure. Walking on a leash (D1), sit down! (D2), and lie down! (D3) were scored due to their attractiveness on future owners. Playing with the Operators (D4) was chosen to study the disposition of the dog to interact friendly with humans, which is difficult to find in long-term housed animals but expected to be attractive to visitors. The Operators' coefficient assigned for this analysis was the lowest (1.0 and 1.2) because, apart from the advantage to possess these skills, it is not difficult for any equilibrate dog to gain them by education.

2.3. Classification of the Dogs and Cut-Off Value

At the end of the tests, the previous program utilized two logical operators (IF and AND: the program is provided as supplementary data at doi: 10.1016/j.applanim.

Table 2. Ethotest-R.

TEST A – Aggressiveness/sociability				
ID animal	age	gender	size	breed
item Component	Variable	Behavior description		Scores
A1 Aggressiveness towards people	Operator 1 enters the enclosure	• the dog snarls or threatens the operator		0
		• the dog approaches the operator in a friendly manner		1
A2 Sociability/diffidence		• the dog runs away avoiding the operator's touch		0
		• the dog allows the operator to touch him/her		1
				Total must be 2

TEST B – Fearfulness				
item Component	Variable	Behavior description	Scores Operator 1	Operator 2
B1 Enterprise	Attempts of the dog to go out once the gate of the fence is open	• the dog does not go out	0	0
		• the dog goes out by itself	1	1
		• the dog goes out only when called	2	2
B2 Sociability II	When the operator enters the fence the dog:	• runs away	0	0
		• rushes near the operator	1	1
		• crouches or goes hesitantly	2	2
		• wags the tail and/or licks the operator's hands	3	3
B3 Fearfulness to a strange situation	The dog is free to entry a new room	• the dog does not enter	0	
		• the dog enters the room cautiously and/or sniffs continuously	1	
		• the dog enters in a self-assured manner	2	
B4 Confidence towards operators	The dog enters a new room with the operator	• the dog does not enter, except when drawn	0	0
		• the dog enters only when called	1	1
		• the dog enters together with the operator	2	2
B5 Sociability towards unknown people	Outdoor: a new person is approaching	• the dog runs far away	–1	–1
		• the dog goes far/or jumps on people	0	0
		• the dog approaches only when called	1	1
		• the dog approaches wagging the tail	2	2
		Operator's coefficient	1.2	1.5
		Total		

TEST C – Aggressiveness/submissiveness and jumping				
item Component	Variable	Description	Scores Operator 1	Operator 2
C1 Aggressiveness toward other dogs	In a open field (the exercise area) the dog meets a conspecific, *i.e.* an unknown dog approaching the fence from the outside	• the dog runs away or threatens the other dog	0	
		• the dog approaches with hostile, dominant aptitude	2	
		• the dog approaches with appeasement signals	1	
C2 Fearfulness	Introduction of a strong noise stimulus (trumpet)	• the dog barks or snarls	–1	
		• the dog runs away frightened	0	
		• the dog pays attention but does not run away	1	
		• the dog stays calmly	2	
C3 Alimentary behavior	While the dog is eating, another dog approaches the bowl	• the dog snarls and/or attacks the other dog	0	
		• the dog eats voraciously	1	
		• the dog eats quietly or it goes away	2	
	While the dog is eating, the operator approaches the bowl with her hand	• the dog snarls	–1	
		• the dog eats voracious	0	
		• the dog eats quietly	1	
		• it goes away	2	
C4 Aptitude to be handled	The operator gently pat the dog	• the dog runs away or becomes restless and jumps on the operator	0	0
		• the dog allows the manipulation and wags its tail	1	1
	Harsher manipulation: the operator restrains the dog with the arms on dog's back and pushes the dog to the ground	• the dog rebels or runs away	0	0
		• the dog does not react to the domination of the operator	1	1
C5 Jumping	How many time the dog jumps on the operator	• > 3	0	0
		• < 3	1	1
		• never	2	2
		Operator's coefficient	1.5	2
		Total		

TEST D – Responsiveness to training and play

item	Component	Variable	Description	Scores Operator 1	Operator 2
D1	Walking on a leash	Walking with the operator	• the dog does not walk on a leash • the dog draws • the dog draws sometime • the dog walks correctly on a leash	-1 0 1 2	-1 0 1 2
		Changing direction	• the dog does not execute • the dog executes only when called • the dog executes • the dog executes with some distractions	0 1 2 3	0 1 2 3
D2	Sit down!	How many times the operator repeats the command	• the dog does not execute • > 5 • < 5 • once	0 1 2 3	0 1 2 3
D3	Lie down!	How many times the operator repeats the command	• the dog does not execute • > 5 • < 5 • once	0 1 2 3	0 1 2 3
D4	Play	With other dogs	• the dog does not play • the dog plays gladly	0 1	
		With the operator (tennis ball, squeezable toys)	• the dog runs frightened • the dog shows no interested • the dog plays by himself • the dog plays with the operator	-1 0 1 2	-1 0 1 2
			Operator's coefficient	1	1.2
			Total		

2005.04.006), which needed the use of a computer to per-form the selection. The logical operators were omitted in this new simplified program; moreover, the scores obtained by each dog in tests B, C, and D were not submitted to an independent evaluation, but they were considered on the whole, and the cut-off necessary value to consider the dog for adoption was "more or equal to 40", being the final score the resulting total score of the operator 1 multiplied for its relative coefficient plus the evaluation of the operators 2 multiplied for its relative coefficient (intra-test confidence). The dogs that did not reach the total score of 40 were considered unsuitable for adoption; the subjects in the range 40-50 were considered fully adoptable dog and in the range more than 50 highly recommended dogs for adoption.

2.4 Adoption and Follow-Up

Before adoption the Operator 1 always interviewed the aspiring owners to determine if the dog met their expectation. The questioning was made in an informal way, by asking the adopters about their experience with dog, the time they could have spent with the pet, and their lifestyle and dog's eventual arrangement. In some cases, the owners were asked to come back to the shelter to socialize with the desired dog; in these cases, a training class was given to them, educating the adopters to a safe and aware relationship with the animal. It consisted of a general instruction about dog needs (behavioral,

dietary, and veterinary) and then the explanation of dog postural and vocal signals, the effect of reinforcement and punishment on dog's learning, walking with a lash, sit!, stay!, and how to avoid house soiling.

After the adoptions were successful, to determine if Ethotest-R would predict a consistent behavior of the dogs in the family environment, the necessity of a follow-up was considered. To this aim, the Operator 1 carried out a home visit two weeks after the adoption (when possible) and always bi-monthly information by phone call for a total of at least five surveys. The follow-up addressed, with a yes/no Test, nasty habits that Christensen and colleagues [3] demonstrated to be unwanted at home, such as: house soiling, jumping up, separation-related behavior, and aggressive behavior of any type (**Table 3**). We intentionally omitted barking as an unwanted trait because this behavior is often welcomed by Italian dog owners (although not for the neighborhood) against criminal offenses both in urban and countryside realities.

This interview has been taken by phone call every two months during the first year post-adoption by Operator 1. It focused on a few nasty habits showed by the adopted dog including separation related behavior (3) and aggressiveness of any type (4).

3. RESULTS

The results of dogs' evaluation are given in **Table 4**.

Table 3. Follow up questionnaire.

	Nasty habits	yes	no
1	House soiling		
2	Jumping up		
3	Object chewing		
	Agitation before being left alone		
	Stranger-directed aggression		
4	Owner-directed aggression		
	Dog-directed aggression		

After being submitted to the Test A, nine dogs out of the original group of 32 were rejected and did not progress to the subsequent items for the insufficient pass mark in Test A; this failure was never ascribable to aggressive behavior but to their fearfulness, due to the lack of socialization with humans in the critical period of their life [7]. In the next B, C, and D Tests, being the minimum requested score equal to 40, were rejected four dogs (dogs #1, 14, 16, 31), that presented low score mainly in the socialization items C3 (alimentary behavior) and C4 (aptitude to be handled). In the group that we considered to be a sufficient pass mark, (*i.e.* from 40 to 50) there were only two dogs (dogs #8, 26); then, in a

Table 4. Results.

Nr.	Dog	TEST A	TEST B	TEST C	TEST D	TOTAL scores	Adoptability
3	Biancone	1	/	/	/	1	Not suitable
4	Bobo	1	/	/	/	1	"
11	Grethel	1	/	/	/	1	"
12	Hansel	1	/	/	/	1	"
18	Louise	1	/	/	/	1	"
24	Petra	1	/	/	/	1	"
25	Ripa	1	/	/	/	1	"
29	Thelma	1	/	/	/	1	"
32	Ufo	1	/	/	/	1	"
1	Ada	2	3.9	21	2	28.9	"
16	Leon	2	8.7	15	5	30.7	"
31	Trilly	2	9.9	21	4	36.9	"
14	Jamaica	2	15.6	18.5	5	39.6	"
26	Salvo	2	17.4	19.5	8,2	47.1	Suitable
8	Frank	2	11.1	21	15.4	49.5	"
28	Snoopy	2	11.4	21.5	15.4	50.4	"
17	Liz	2	15	21.5	12.6	51.1	"
13	Jack	2	21	10.2	18.6	51.8	"
21	Mitzy	2	12.6	21.5	18.4	54.5	"
2	Bella	2	21.6	16.5	15.4	55.5	"
10	Gregorio	2	21.6	15	19.2	57.8	"
20	Manolo	2	19.5	21.5	17.2	60.2	"
15	Lana	2	21.3	23	14.2	60.5	"
7	Eva	2	19.5	23	16.2	60.7	"
27	Secco	2	21.6	24.5	16.4	64.5	"
6	Didi	2	21	18	24	65	"
19	Lupizza	2	21	19.5	24	66.5	"
23	Olguita	2	29.7	18	20.8	70.5	"
9	Gilda	2	24.3	21	24.8	72.1	"
5	Bracco	2	25.8	20	24.8	72.6	"
30	Tom	2	24	23	24	73	"
22	Nina	2	22.5	22.5	27.4	74.4	"

Results after dogs' evaluation with Ethotest-R (ordered per score).

higher position there were all the other dogs (15 dogs), with scores higher than 50 and even 70, that possessed characteristics of obedience and reliability, and certainly suitable for adoption. After the dogs were judged, twenty-two passed the Test program. Of them, only 12 were adopted, including one dog in a range considered below the cutoff for adoption (dog #16). While in their new family environment, the behavior of those dogs was recorded during the next 12 months. The history of the adopted dogs (alphabetically listed) and the results of the follow-up interviews are summarized in **Table 5**. No restriction was foreseen for adoption (*i.e.* experienced or inexperienced owner, presence or absence of children). The decision to commit or not each dog and to train the owners was exclusively related to the expertise and judgment of the authors. A mandatory training before adoption was considered essential for the owners of dogs #7, 13, 16, and 28. In the case of dog #16 the adopter assured that she could have followed the mandatory training class at home with an expert trainer and because of the distance, the home visit was not possible.

4. DISCUSSION

This study aimed at giving to adult dog the chance to be successfully housed and at suggesting to shelter managers the possibility to introduce, or at least to consult, a qualified dog-expert whose work, differently from the sanitary rule of the veterinarian, can help in the placement of the animals.

Being in touch with several shelters in Italy that used a previous program [13] we were solicited to simplify the Test, making it more suitable for a day-by-day selection of shelter dogs. In this study, any dog was known and selected by a qualified Operator, whose expertise was in the field of animal welfare, training, and behavioral education of both owners and dogs. The Ethotest-R program showed a better feasibility than the previous Test: in fact, this version could be daily accomplished in the shelter environment, provided that the dog-expert Operators could dispose of external and unknown places where to carry out all the items. We did not repeat the Test to analyze the consistency of dogs' behavior: we found that, given that the animal behavior and human interaction is affected by many conditions, the repetition of the Test a few months later could have been very difficult and useless for our purpose. The results were indeed validated by asking the owners about dog's behavior in the new environment; the follow-up is in fact a useful tool to understand the evolution of the animal's personality [22]. Differently from other authors [3], in our study the follow-up results demonstrated that Ethotest-R could be evaluated as a suitable adoption Test; although only 32 dogs were evaluated (all the dogs housed in that shelter), the sensitivity of the Test (the proportion of true positives that are correctly identified [23]) was 100%, *i.e.* every adopted dog was reported as behaving well by their owners that responded to the Operator 1 interviews. The follow-up focused on items that have been demonstrated to be the primary reason for returning a dog to a shelter, *i.e.* behavioral problems

Table 5. Follow-up of twelve dogs (ordered by dogs' ID number) one-year post-adoption.

ID n.	Dog's name	Sex	Scores	Adopter's Family	Presence of children	Previous dog/s ownership	Dog housing	Follow up
2	Bella	F s	55.5	Woman with a dog	-	Yes	Home	N
5	Bracco	M	72.6	Young man	-	Yes	Garden	N
9	Gilda	F s	72.1					N
7	Eva	F s	60.7	Separated woman	2 teenagers	No	Home	N
8	Frank	M	49.5	Family	-	No	Home	N
13	Jack [§]	M n	51.8	Man	-	Yes	Home	N
16	Leon *	M	30.7	Young woman	-	No	Home	N
17	Liz	F	51.1	Family	2	No	Home	N
19	Lupizza	F s	66.5	Family	-	Yes	Garden	N
23	Olguita	F s	70.5	Family	1	Yes	Home	N
26	Salvo	M	47.1	Family	3	Yes	Home	N
28	Snoopy	F s	50.4	Family	2	No	Home	N

The table represents the dogs adopted from the ASL 04 shelter after their evaluation. It underlines sex, total score obtained, adopter's family situation and experience with dogs, and home/garden arrangement. In the last columns there are the results of the interviews taken during one-year of ownership in relation to dog's nasty habits (house soiling, jumping up, separation anxiety, and aggression). Sex: F = female; M = male; s = spayed; n= neutered. Follow up: N= negative for all the nasty habits. [§]confiscated; *relinquished.

[2,5,6,14,19,26]. No noisy habits were registered during one-year follow-up, first of all the aggressive behavior.

Despite the professional expertise, two dogs (*i.e.*, #13 and 16) were not efficaciously paired with their owners. The first was victim of mistreatments and confiscated, the latter was a predictable case of relinquishment, being a dog not suitable for adoption (total score below the cutoff value); he left the shelter just before his owner completed the mandatory training . Dog #13, a dog that could have been forced to become aggressive towards humans by the bad treatment he suffered, did not show any sign of aggression, rather a form of depression in the new situation. Although it has been demonstrated that the ability to execute basal commands significantly reduces the likelihood of relinquishment [5,14,16,21,24,25], promoting a "successful human-dog bond", this was not the fate of dog #13.

Apart from these cases, from our study it seems that people were more attracted by educated dogs that is, in conclusion, that dog's behavior is more important to a potential adopter than the dog's physical appearance. Every positively judged dog fulfilled the owner's expectation after adoption: there was no difference found between entire or neutered pets, and also the factor of gender was not found significant [4,16,18]. In our trial, not even inexperienced (first-time) owners had problems with their dog (e.g. dog #7) despite our knowing that this situation could present a risk. In our study, some families had children or teenagers and, even if children are often victims of aggressive dog behavior associated with biting [1,11], not one of the adopted dog showed aggressive behavior towards humans and particularly towards children. In other studies male dogs have been ranked as more dangerous than females by their owners [8], but this occurrence was denied by our results as well as by Kobelt *et al.* [12].

We believe that the caregiver's expertise (in this case, Operator 1) can make the difference between a successful adoption or not, and that the adopter's training pre-ownership is mandatory. Moreover, if the worries about dog aggression towards humans and particularly children make sometimes difficult for people the appropriate breed and age choice, the possibility to talk with a professional expert can drive away doubts and fears, for example by overcoming the damaging concept that a fully developed dog will not be suitable for adoption as much that the behavior that a puppy will exhibit at the adult age is unpredictable. It appears however actually clear that there is a constant, lively demand of reliable methods to easily and successfully pair humans and dogs, for the need to adopt consistently behaving dogs. The Ethotest-R method could be a good example of dog selection, provided that the Operator selecting and ranking

the animals is an authoritative expert of theoretical and practical management of dogs. This professional rule could be equivalent to that of a veterinary technician or to a companion animals' ethologist. These individuals should absolutely know the animals they want to test, *i.e.* they could not be people employed for food administration and pen cleaning. They also need to know the theoretical and practical aspects of inter-dog and dog-human interaction. In our case, the Operator was a doctor in Animal Welfare and Protection, with a three-year degree that is consistent with the veterinary technician role of other European and American countries. Obviously, the possibility to have an expert integrated in the shelter staff can shorten Ethotest-R since the uselessness to carry out the Test A.

5. CONCLUSIONS

The prejudice existing against mature dogs makes the adoption from shelters more difficult. How to persuade people to choose an unattractive, sometimes depressed, adult sheltered dog? What strategy could tip the scales in favor of a new trend in adoptions? How to offer to those unwanted dog the possibility to a better life, far from these prisons? We think that different strategies should be undertaken:

- to enact regional laws forcing the owners to report the birth of puppies from their bitches: in our country, the relinquishment of dogs adopted from shelter is not as frequent as expected. Any dog adopted from a shelter can, in fact, be traced by his/her microchips. On the contrary, it is extremely difficult to afford the problem of abandoned dogs born from family's bitches; in some cases, they are abandoned far away or given as a present. Frequently puppies are appreciated until they became a demanding task but, when they no longer suit their owners' needs, they are relinquished without any remorse;

- to give those shelter dogs a challenging, interesting environment to live; we know, indeed, how the devastating, depressing environment, in which abandoned or stray dogs are forced to live can permanently invalidate their temperament [25], when it lacks the appropriate physical, psychological and human enrichment;

- to give sheltered dogs an economical value, which can prevent the recurrence to the shelter; (a no-cost dog can be easily replaced by other no-cost dogs);

- to accomplish a basal training by a qualified behavioral caretaker that could help the dog to become more attractive or, at least, to dispose of a easy, pratical Test to perform a safe selection.

Moreover, it should be stressed that customer satisfaction relies not only on a distant Test; the human factor

(knowledge and practice) is always behind it and it seems to have become more and more indispensable to efficaciously pair humans with dogs.

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