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Exploring Rehabilitation Programs for Aggressive Dogs: A Comparative Study of the US and Norway

by

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1. Introduction

While the use of behavior modification exercises, medication and client education is becoming the standard program when it comes to rehabilitation of aggressive dogs, there are still a varying degree of dog training tools such as prong collars, electric collars or slip leads used by professionals [1]. Moreover, while research on the use of behavioral modification medication shows a positive association between decreased aggression and increased learning during behavioral modification training there is less research on how common the use of these medications actually are, especially in countries such as Norway [2]. Thus, this survey was designed to provide a comparative analysis of the rehabilitation of aggressive dogs in Norway and the United States, countries with different cultures, legal frameworks and educational backgrounds. As the survey investigated where the dogs were obtained, what the rehabilitation programs entailed for dogs displaying aggressive behavior and the use of behavioral medication in these two substantially distinct countries. Ultimately, the goal of this survey was to comprehend the extent to which rehabilitation practices align with contemporary standards. This was achieved by studying two distinct countries and uncovering potential key aspects in various rehabilitation programs that could contribute to the improvement and harmonization in this critical aspect of canine behavior and welfare.

2. Literature Review

2.1. Aggression

2.1.1 The definition of the aggression in dogs

Dog aggression can be defined as a sequence of behavioral changes usually beginning with warning signs such as hard eyes, lip licking and growling. These can further escalate to jaw snapping, lunging and biting. Therefore, dog aggression is defined by a large variety of behaviors which range from subtle changes in facial expressions and body posture to explosive attacks, portrayed in **Figure 1**. There exists a wide range of aggression categories, these include; fear aggression, dog to dog aggression, prey aggression, resource guarding aggression, territorial aggression, owner directed aggression, inter male aggression and stranger aggression [3].

2.1.2 Aggression as a behavior

Aggression is considered as part of the normal canine behavior repertoire. Throughout both puppyhood and juvenile ages, they learn in social canine settings the appropriate sets of behaviors by observing the outcomes of their interactions with other dogs.

Figure 1 Illustration of the signs of body language that shows aggression in dogs [4].

In this way, they learn what is appropriate behavior in social settings and what are effective responses to other dogs' displaying social behavior [5]. Aggressive behavior is a part of the dog's social behavior repertoire, which can be observed in social settings such as during ritual aggression. Ritual aggression is a display of threatening behavior or posture without engaging in actual aggression, to preserve energy and decrease risk of physical alterations and injuries. Pathological aggressive behavior, defined as aggression out of context or

inappropriate for its setting, will no longer be species specific, or if it is, will not fulfill the dog´s needs or allow the dog to adapt to its environment in the long term [6]. However, humans and societies´ viewpoints on aggression might not differentiate between species appropriate ritual aggression and pathological aggression, and views behavior they do not approve of as abnormal even though it is biologicaly appropriate.

2.1.3 Types of aggression

There are several classifications of pathological aggression, which were previously classified based on preassumed environmental motivators such as territory, access to resources or fear. In recent years, research has begun to classify aggression based on the motivation (defensive or offensive) and the target of such aggressive behavior, such as strangers, dogs or owners [7, 8]. Treatment and management will vary between the different classes of aggression, and it is therefore crucial to identify the dog's behavior correctly to start individual treatment plans. Aggression displayed out of fear is a normal behavior for all species and this type of aggression should be treated as an incidental behavior, not as a habitual one. However, this type of aggressive behavior can be observed during anxiety disorders, the cause which should be identified and treated [7]. Defensive aggression occurs when the dog reads other animals or people as a threat, and is unable to escape or avoid this perceived danger. This type of aggression often occurs due to lack of socialization with other animals or people [7]. Possessive aggression is a type of behavior exhibited when other people or animals approach, to maintain or gain access to resources the dog in question perceives as valuable [9]. Aggression stemming from disease is another type of defensive aggression with moderate intensity. It is common that this type of aggression is observed when the dog is forced to do something, while in pain or discomfort. The stimulus for this behavioral type is often a wound or injury that needs veterinarian care [7]. It is suggested that more than a quarter of dogs exhibiting aggressive behavior do so due to a medical condition, including pain [10].

2.2 Genetics

2.2.1 Underlying causes of aggresion

The defining underlying cause of aggression has not yet been fully explained, however it is likely caused by several factors, including the early life experiences and genetics. Underlying causes can be behavioral (such as if they are poorly socialized or experiencing

anxiety or stress), genetics or diseases [7]. Research has furthermore mapped many canine fear and aggressive traits to single haplotypes of the GNAT3-CD36 and IGSF1 loci [11]. However, identifying the genetic background of canine aggression is difficult and while promising results have been published, no publication was capable of identifying an exact gene for canine aggression.

2.2.2 Genetics and breed

The genetic background for aggression is still a highly debated topic when discussing dangerous and aggressive dogs. Research has been conducted on the genetic background of aggression, especially focusing on the dopamine and serotonin receptors. Serotonin is produced from tryptophan and is believed to play an important role in the ethnology and treatment of mood disorders, including aggression in dogs [12]. One study conducted by León et al in 2012 found that dogs displaying aggressive behavior had lower levels of serotonin in plasma, serum and platelets across various dog breeds. However, the serotonin difference might show breed differences in serotonin levels rather than differences between aggressive and non-aggressive dogs [13].

Certain pathological behaviors can also be more prevalent in certain breeds, such as the aggressive behavior in English Cocker Spaniels, nicknamed the "rage syndrome". This idiopathic aggression found in some English Cocker Spaniels, also named "rage syndrome" describes a disorder where an otherwise healthy dog suddenly erupts in episodes of intense and extreme aggression [14]. One study had shown a genetic variety in the breed belgian malinois which can lead to increased unpredictable behavior, loss of behavioral inhibition and owner directed aggression. The belgian malinois is a dog breed actively used in law enforcement and military, where handlers have reported seizures and unpredictable behavior, such loss of behavioral inhibition including owner directed biting behavior [15]. Early studies have looked at the frequency of DAT-VNTR allele and its association with the behavior in the malinois and other dog breeds. The DAT-VNTR allele consists of 38 base-pairs, where the DAT-VNTR allele has either one or two copies of the 38-base pair sequence. A study by Lit et al. In 2013 screened 280 dogs comprising 26 breeds, and found that most breeds are predominantly homozygous for the DAT-VNTR two-tandem-repeat allele. However, it was also found that the belgian malinois showed an over-representation of the one-tandem-repeat allele, both as heterozygous and homozygous. All Belgian Malinois

exhibiting unpredictable behavior changes were found to be homozygous for the one-tandem-repeat allele. Among Belgian Malinois possessing the one-tandem-repeat allele, whether heterozygous or homozygous, an increased incidence of aggressive behavior episodes and a heightened prevalence of unresponsiveness to environmental stimuli were reported [15].

2.3 Socialization

2.3.1 The importance of socialization

Socialization of young puppies plays an important role in developing well adjusted adult dogs that displays fewer undesirable behaviors. In the context of domestic canines, socialization typically refers to the process of desensitization, wherein puppies are systemically exposed to novel experiences they are anticipated to encounter in their future, with careful attention to ensure that such exposures are pleasant [16]. Establishing positive experiences during the periods of plasticity of behavior, hereafter termed as the "sensitive" developmental periods, plays a vital role in developing well-adjusted dogs capable of effectively coping within their environment [17]. Age appropriate socialization should begin a few days after birth and continue well into adulthood. Domestic canines exposed to a wide variety of experiences, people and objects are less likely to exhibit behavioral problems as adults, such as aggression and separation anxiety [16]. Consequently, studies have shown dogs acquired from large commercial breeding establishments appear to have higher incidences of behavioral problems as adults [17].

2.3.2 The critical socialization periods in the dog's life

There are currently six defined sensitive periods during a canine´s development, from the (1) the prenatal period (from 9 week gestation period), (2) the neonatal period (from birth to 2 weeks of age), (3) the transition period (2-3 weeks of age), (4) the socialization period (3-12 weeks of age), (5) the juvenile period (12 weeks to 6 months) and finally the (6) pubertal period (7-24 months) [17]. Evidence suggests exposure to the mild stress of early handling and various tactile experiences in the neonatal period can be beneficial for puppies, and allow them to cope better with stress when exposed to it later in life [16, 18]. However, care should be taken to prevent excessive stress, as prolonged exposure to elevated levels of adrenocorticotropic hormone secretion has been associated with impaired learning capacity [18]. During the socialization period, which starts at approximately 3 weeks and last until

12 weeks of age, littermates begin to establish social bonds. It is during this period that fear responses begin to develop, leading to a heightened sensitivity towards unfamiliar sounds and novel experiences. However, as puppies mature, they gradually learn to discern that these stimuli are non-threatening in nature [16]. The capacity to habituate to a broad spectrum of stimuli devoid of fear, or the ability to swiftly overcome any fear experienced during the socialization period, plays a crucial role in the dogs ability to effectively adapt to the diverse range of stimuli encountered throughout its coexistence with humans [19]. The juvenile period will encompass the time between the end of the myelination of the cortex (around 8-12 weeks) and concurrent development of normal social behavior and the development of sexual maturity [18]. However, compared to the early socialization period, it has not been studied as thoroughly. Nonetheless, it remains a critical period wherein dogs should be exposed to a wide array of experiences that they are likely to encounter throughout their lives [16].

2.3.3. How socialization affect adult behavior

According to prevailing literature, it is widely acknowledged that inadequate socialization during the crucial developmental phases of a puppy's life, as well as lack of proper socialization during the dog ´s life, are significant factors that contribute to whether the dog develops behavioral problems in later stages of life [16]. A study conducted by Casey et al. in 2014, found that attending a puppy school can reduce the likelihood of stranger-directed aggression, where puppies that attended were more likely to be more social, less aggressive and less fearful [16, 20, 21]. Moreover, rearing canines in a stimulated environment yields notable improvements in learning ability and memory, reduction in fearfulness, and enhanced capacity to cope with acute stressors [19]. Furthermore, research has found that dogs acquired from a pet shop as puppies were twice as likely to display owner-directed aggression, in comparison to those obtained from reputable breeders. They are less likely to be exposed to novel stimuli, predisposing them to the development of fear and anxiety related behaviors [22].

2.4 Dog training methods and behavioral modifications for addressing aggression

2.4.1 Components of a behavioral modification plan

The treatment and management of canine aggression lacks a universally standardized protocol. This is due to the distinct nature of each case and this is highly dependent upon the particular form of aggression displayed. A tremendous amount of individualized

characteristics must be known about each case, including historical behavioral records of the dog and meticulous examination of the situations in which aggressive behavior was observed [23]. Nevertheless, fundamental building blocks are generally found in each case, which includes management, the application of a behavioral modification plan and potentially the incorporation of behavioral medication in conjunction with the behavioral modification plan, should it be deemed necessary.

2.4.2 Foundations of dog training

Throughout history, dog training was mainly accomplished through negative reinforcement and/or positive punishment. Most methods in dog training are based on operant conditioning. In operant conditioning, the animal learns that their responses to stimuli have consequences, referred to as reinforcements. There are four types of conditional responses, two which increase the probability of repeated behavior (positive reinforcement: appearance of appetitive stimulus to increase the dogs behavior, negative reinforcement: removal of an aversive stimulus to increase the dogs behavior) and two which decreases the probability of repeated behavior (positive punishment: application of aversive stimuli to decrease a dog's behavior and negative punishment: disappearance of appetite stimulant to decrease a dog's behavior) outlined in **Figure 2** [24]. Traditional training methods have mainly made use of aversive stimuli, such as positive punishment or negative reinforcement. However, these methods may have a negative impact on animal welfare, as it is thought to cause suffering, increase the risk of health problems (due to increased levels of physiological stress) and has been found to be linked to aggression towards other dogs [25]. With the use of positive punishment in dog training, concerns regarding the stress experienced by the dogs trained in this manner have increased. As the dog experience increased stress, shown to occur with the use of positive punishment, increased anxiety can lead to an increase in unwanted behaviours [26]. The highest levels of stress were identified in dogs where the owner used a mix of both positive reinforcement and positive punishment, often referred to as “balanced training” [27]. Questions were thus raised whether the increased aggression was a result of the dog experiencing conflict and uncertainty about the owner's unpredictability [26].

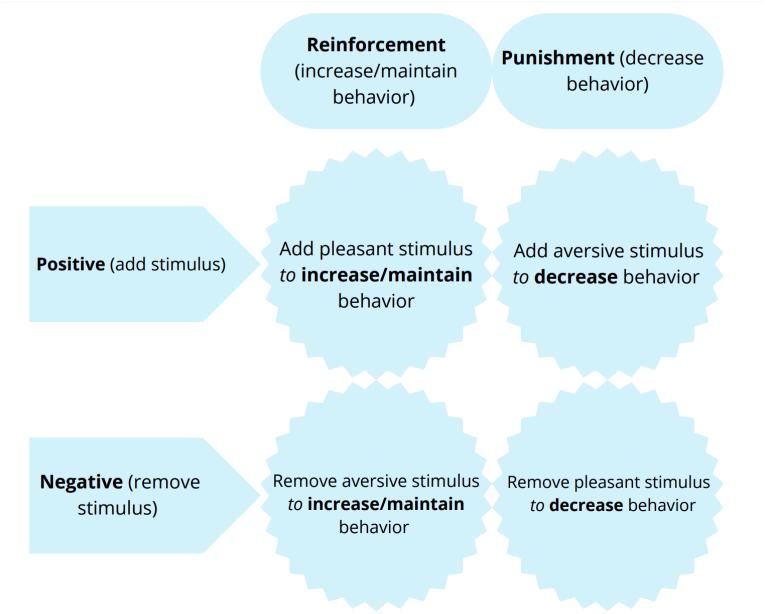

Figure 2 *Four types of conditional responses [28]*

2.4.3 Desensitization and counter-conditioning

When a dog is diagnosed with pathological behaviors, it is unlikely it can be sufficiently addressed with long lasting results without modification of the dog's behavior through learning. For most behavioral cases, part of the treatment plan will include at least some learned component and therefore will require learning leading to modification of their behavior. This is done through either operant and/or classical conditioning [23]. Counter conditioning (CC) is the most common treatment to reduce aggressive behaviors in dogs [29]. CC is the process that involves associating the distressing stimulus with a rewarding stimulus (such as food) in order to modify the emotional response [29]. CC is often combined with desensitization (DS), which is the gradual reduction of a response to a specific stimulus, by gradually exposing the dog to a distressing stimulus. This results in response substitution - which is the development and display of a desired behavior that is incompatible with the previous unwanted behavior sequence [18]. It is important for the rehabilitation program not to move too quickly as the dog might become further sensitized (i.e. more distressed by the stimulus) than desensitized [23]. In canines, the combination of CC and DS has been effective in reducing aggression towards dogs and unfamiliar people [30].

2.5 Behavioral medication

2.5.1 The application of behavioral modification medication

The use of medication for canine behavioral problems are almost always indicated to be utilized together with a behavioral modification plan, and what medication to be used will depends on the form of aggression being displayed [31]. In the United States of America and Norway, the only veterinary drugs licensed for behavioral problems in dogs are clomipramine, selegiline and dexmedetomidine. Use of other medications for behavioral treatment is considered extralabel use for dogs, and there are no behavioral medications licensed for canine aggression specifically. The use of behavioral medication should not be viewed as a "quick fix". However, they can increase the accessability to learn during the behavioral modification training, as both learning and behavioral medications relay on the same molecular changes and serotonergic neurons [2, 18]. Most of the commonly used categories of behavioral medications are the benzodiazepines (such as alprazolam, diazepam and lorazepam), tricyclic antidepressants (TCA, e.g. clomipramine, doxepin), selective serotonin reuptake inhibitors (SSRI, e.g. fluoxetine, sertraline) [32] and such as dual serotonin 2A agonist (SARI, e.g. trazodone) [18]. Less commonly used medication are monoamine oxidase inhibitors (MAO), such as selegiline. All of these medications will act by modulating the neurotransmitters serotonin, dopamine, noradrenaline and/or GABA and their metabolites [18].

2.5.2 The pharmacodynamic background

In order to recognize how behavioral medication can impact the learning abilities of dogs with pathological aggression, it is important to examine the specific neurotransmitters influenced by the treatment and elucidate their respective functions. There are 14 identified classes of serotonin receptors (5-HT). It is thought that 5-HT$_{1}$s are the primary receptors affecting mood and behavior. In a study conducted in 2010 by Rosado et al., aggressive dogs showed significantly lower serum concentrations of 5-HT when compared to non-aggressive dogs. The lowest 5-HT concentrations were found in dogs displaying defensive forms of aggression [33]. While SSRIs are selective in blocking the reuptake of 5-HT$_{1}$ in the presynaptic neuron, TCAs have a differing effect by blocking the reuptake of both serotonin and noradrenaline [18]. Noradrenaline has been hypothesized to affect moods, functional reward systems and arousal.

In veterinary practice, amitriptyline emerges as the preeminent TCA most administered. As described above, TCAs act by variably blocking the presynaptic reuptake of the neurotransmitters serotonin and norepinephrine, where amitriptyline is a particularly potent blocker of serotonin, and has less effect on the norepinephrine reuptake [34]. The antidepressant effect of TCAs is largely attributed to their act on the presynaptic neuron [18, 35]. TCAs have been shown to be extremely helpful in the treatment of both canine and feline conditions arising from anxiety, including separation anxiety, generalized anxiety (both of which may be a precursor for aggressive behaviors), and compulsive behaviors such as compulsive grooming and acral lick dermatitis [35]. The SSRIs are derivatives of the TCAs. Fluoxetine, a SSRI, exhibits efficacy in addressing pathological aggression, separation anxiety, and obsessive-compulsive disorders by specifically obstructing the reuptake of 5-HT1A neurotransmitters into the presynaptic neurons [35]. SSRIs, particularly fluoxetine, is commonly used to reduce impulsivity and reactivity and in certain manifestations of anxiety and fear [32]. They possess the capacity to enhance learning and acquisition of behavior changes through behavior modification, by utilizing the same second-messenger systems and transcription pathways employed in cellular and molecular learning pathways [2, 18]. Nevertheless, there is a lack of control studies in the use of behavioral medication in veterinary medicine, with limited evidence-based support for the majority of utilized medications. Consequently, a full understanding of the effects and potential side effects resulting from the administration of these medications remain elusive.

3 Objectives

The main goal of this study was to investigate and compare the most common rehabilitation strategies practiced for aggressive dogs in the United States and Norway, with the aim of gaining in-depth insights into the similarities, differences and potential best practices in rehabilitating aggressive dogs between these two countries. To be able to investigate the most common rehabilitation programs in the two nations, a survey was conducted around three main objectives; (1) Accessing the prevalence of aggressive tendencies in dogs based on their origin and age of acquisition; (2) Comparing training methods and if certain behavioral modification techniques were employed by dog owners, with the secondary aim of comparing their effectiveness in rehabilitating aggressive dogs in the United States and Norway; and finally, (3) investigating the use of behavioral medication, with the type of drug and the frequency of its use and how it differs between the two nations being prioritised.

4 Materials and methods

4.1 Study design and data collection

The study employed a comparative design in the form of a questionnaire to investigate and compare the rehabilitation of aggressive dogs in the United States and Norway. By adopting a comparative approach, it aimed to identify and examine the similarities and differences in the rehabilitation strategies and practices utilized in these two countries. To achieve the objective of this study, an online questionnaire was designed with the online platform "SurveyMonkey", and answered by individuals who have owned or have previously owned aggressive dogs in either formentioned country. The survey was sent to selected individuals to assess the comprehensibility and clarity of the questions, and adjustments were made based on the feedback.

4.2 Study participants

The survey participants were owners, aged 18 and above, who have owned or had previously owned aggressive dogs, and have their current residence either in the United States of America or in Norway. Only owners owning dogs displaying aggression were eligible to participate in the study. For the scope survey, the definition of aggression used was clearly defined as "a wide variety of behaviors ranging from subtle body postures and facial expressions to explosive attacks, that is not appropriate for the situation it was observed in." [36]. The URL link to the survey was shared in multiple dog training, dog owning and dog groups specific for owners with aggressive dogs, on various social media platforms. Data was collected from August 19th 2022 until February 19th 2023. The participants had to decide whether their dog was within the definition of having pathological aggression and the latter could complete the questionnaire for as many dogs as they wished.

4.3 Analyses of the survey data

For the statistical analysis of this study, IBM SPSS statistics (hereafter shortened to SPSS) was used. IBM SPSS is an advanced statistical software program designed for statistical analysis, data management and data visualization [37]. To start analyzing the data, a new file was made, where each question in the questionnaire was written down in a column in the variable view tab. In the "values" row, each answer to all questions were given a number and these corresponded to the possible answers. After inputting in the results of the questionnaire, the number of participants originating from the two countries was determined.

By using the ”analyze” function in SPSS statistics, the populations of participants from the United States and Norway were categorised, which was, in turn, used for further analyzing the differences and similarities betweeen the two populations.

After the manual input of the survey data into the SPSS statistics program, by filtering the responses by the place of residency, analysis of the responses by respondents living in the United States was started. By “Selecting Cases”, and choosing the “If Conditions are Satisfied” options, the filter variable method was chosen to include only the respondents with the value “residency = 2.0” (indicating the USA). After applying the filter, frequency distributions were run on the questions of interest. This was done through the “Analyze” menu, where by choosing “Descriptive Statistics” and then “Frequencies” were selected. After removing the filter, descriptive analysis was conducted on all responses, with the aim to discern general trends and similarities within both populations. For certain questions, such as age of acquisition of the dog and the commencement age of aggressive onset, the mean age was taken. By choosing the “Descriptives” in the “Descriptive Statistics” menu, and selecting the variables whose mean and standard deveiation were required, “Mean” and “Standard deviation” in the “Options” button in the “Descriptives” dialog box was chosen to be included.

With the usage of the “Cross-Tabulation” function in SPSS, contingency tables were created which enabled the description of interactions between two categorical variables. In the “Crosstabs” section, following the “Descriptive Statistics” section, the variables intended to analyzed were transferred to the “Rows” panel. Subsequently, the variable desired to be cross-tabulated was moved to the “Column” panel. In the cross-tabulation table, by opening the “Statistics” table, the Chi-Square test was conducted to help determine if there is a significant association between the two categorical variables. Finally, a table with an overview of all questions and their responses was produced and, divided by the location of the participant. This was produced in the “Crosstabs” section where each question in the survey was transferred to the “Column” panel, and the question of residency was moved to the “Row” panel. This was done for easier digestability of the overachieving results.

5 Results

Based on the previously explained statistical analysis, it was found that the valid percent of participants from Norway was 65.22%, while the participants from the United States of America was of 34.78% Total replies received by questionnaire was at 92.

Questions regarding the age and by where the dog was acquired from, were inquired in the survey, in order to determine if there are any trends and noticeable differences between the populations. Results were that 50% of the populated survey obtained their dog above 8 weeks of age (as shown in **Figure 3**), which is in accordance to general recommendations. In **Figure 4**, a pie chart illustrates that breeders where the main source of acquisition overall.

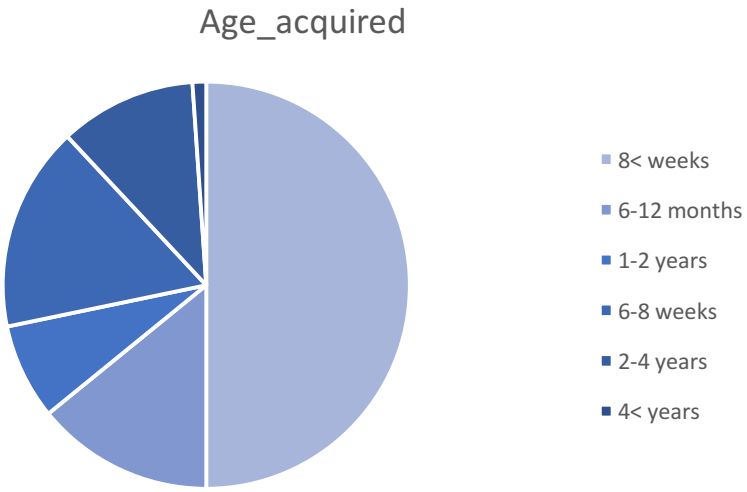

Figure 3 *Total distribution of dog acquisition ages in the survey*

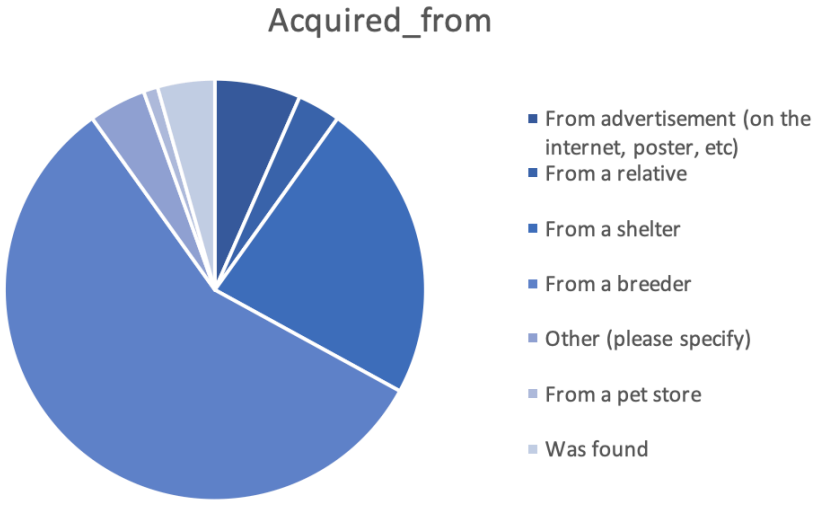

Figure 4 *Sources of dog acquisition in the study population*

To investigate the relationship between age and origin of acquirance, a cross-tabulate of the questions in SPSS statistics were made. Greater part of respondents acquired their dog from a breeder, above 8 weeks of age. Respondents acquiring their dog from the shelther obtained them at an adolescent age of 6-12 months.

To gauge the extent of the different aggression types, respondens were presented with a single-choice question of what type of aggression their dog displayed, followed by a Likert scale where they could rate their level of agreement with various statements assessing the presence of various forms of aggression exhibited by the dog. Fear aggression was found to be the most commonly reported form of aggression, followed by dog-directed aggression then stranger-directed aggression, illustrated by a bar chart in **Figure 5**.

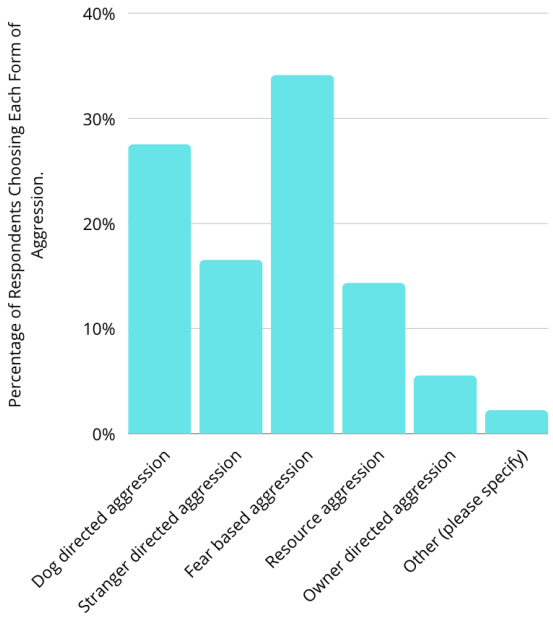

Figure 5 *Distribution of aggression forms reported by survey respondents*

In SPSS cross-tabulation table, it is noted that majority of the dogs in the surveyed population developed fear-aggression while obtained above 8 weeks of age, followed by the age group of 6-8 weeks of age, where in this age group majority developed dog-directed aggression. This cross-tabulation was made to investigate any possible correlation between the age of acquirance and the type of aggression. Respondants where further quiered regarding the gender of their dog(s). Of the 92 total participants, 65.2% indicated that their dog was a male, whereas 34.8% answered that their dog was a female.

When inquired whether their dog has attended puppy- or any type of group training classes, the bar chart in **Figure 6** portrays that majority of Norwegian respondents had participated in classes compared to the respondants from the United States. This question was posed to evaluate if there is any notably differences between the two populations, and whether this might impact the frequency of aggression cases.

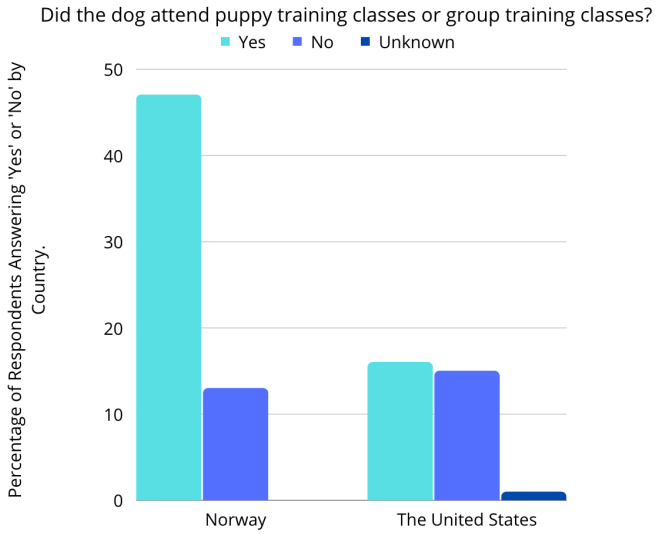

Figure 6 *Distribution of puppy class attendance among respondants from Norway and the United States*

To investigate the utilization of professional help among the respondants, questions regarding their engagement with professional dog trainers, canine behavioralists and veterinary behavioralists were made, which is visualized in **Figure 7**. Furthermore, questions in the survey was asked to determine where respondants found professional help (shown in **Figure 8**), and to gauge the percieved effectiveness of the training in managing their dogs´ aggression. To assess the potential association between the use of training tools and the type of professional help, the participants were further asked whether any dog training tools were used during the rehabilitation programe. Similar questions were made to investigate the implementation of desensitization and counter-conditioning, and the changes observed after the use of dog training tools, portrayed in **Figure 9** and **Figure 10** respectively. Majority of the respondents did not use any form of training tools. Those who did use training tools in their rehabilitation program, 13% reported a decrease in aggression after its implementation, followed by 9.8% that reported no change in aggression.

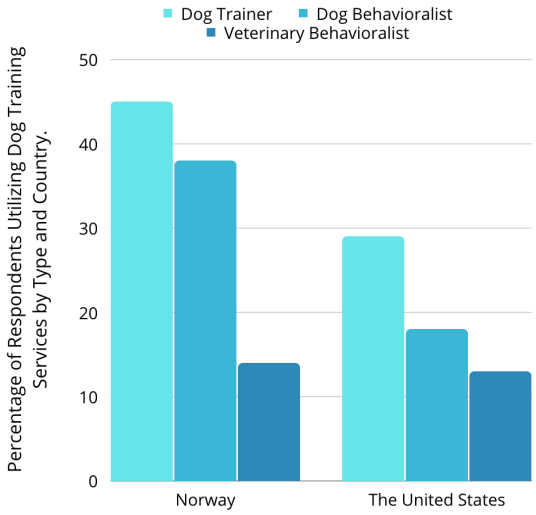

Figure 7 *Utilization of dog trainers, dog behavioralists and veterinary behavioralists by respondents from Norway and the United States*

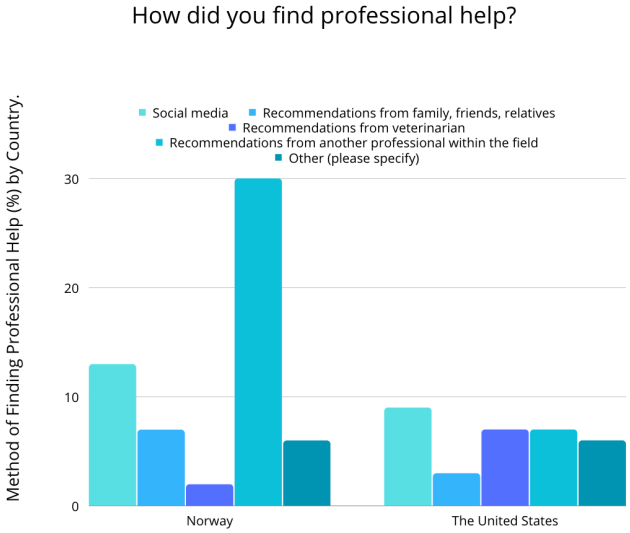

Figure 8 *Sources of professional help for dog aggression reported by respondants from Norway and the United States*

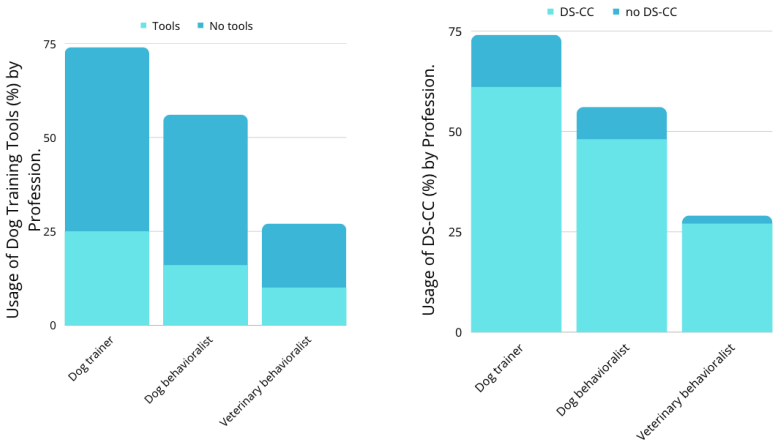

Figure 9 *Comparison of dog training tools usage and implementation of desensitization and counter-conditioning (DS-CC) across respondents engaging with dog trainers, canine behavioralists, and veterinary behavioralists*

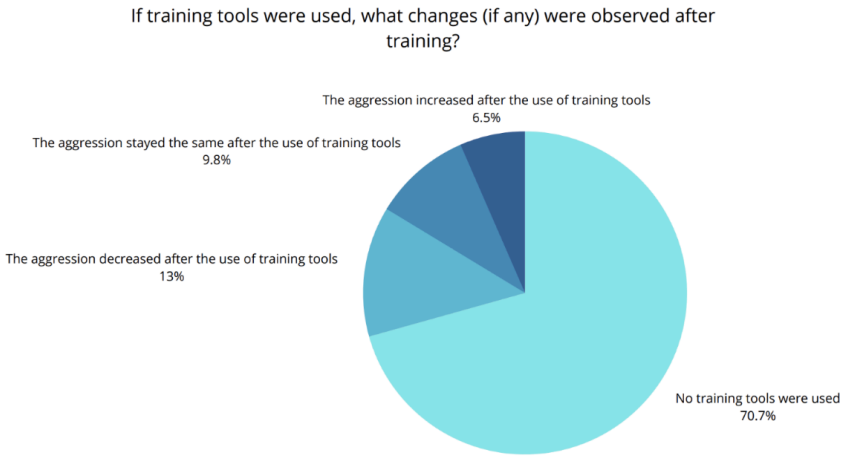

Figure 10 *Perceive changes in dog behavior following the use of dog training tools, as reported by respondents*

To quantify the frequency of medication usage for aggressive dogs in the two countries, respondents were requested to answer whether or not psycoactive medications was applied, and, in case of confirmaiton, what type of medication was prescribed. In **Figure 11**, it is evident that respondents from the United States demonstrated a twofold higher frequency in applying behavioral medication compared to the Norwegian participants.

Residency * On_drugs Crosstabulation

Count

		On_drugs		
		Yes	No	Total
Residency	Norway	6	54	60
	United States of America	16	16	32
Total		22	70	92

Figure 11 *Cross-Tabulation of the Usage of Pharmaceutical Drugs for Aggressive Behavior Management among Respondants from Norway and the United States from SPSS Statistics*

Majority of respondants, illustrated in the **Figure 12** pie chart, had been prescribed fluoxetine for their aggressive dog. However, in total, 76% of all respondants had not applied any psychoactive drugs, which is discerned in **Figure 11**.

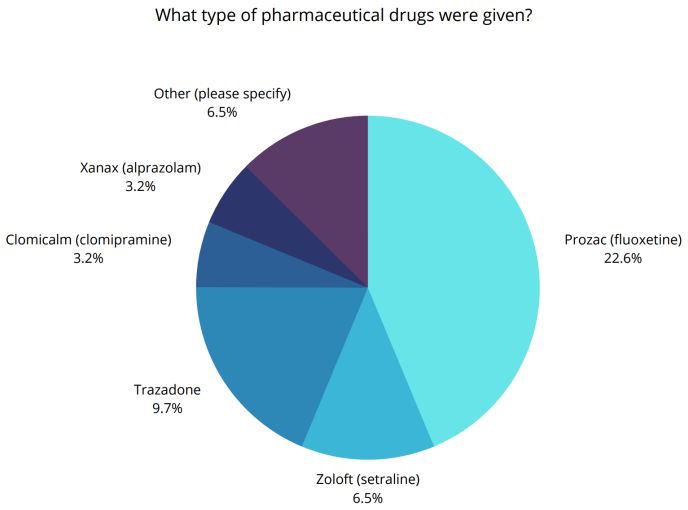

Figure 12 *Distribution of the Most Frequently Prescribed Pharmaceutical Drugs for Aggressive Behavior Management in Dogs*

In this survey, one of the main objectives was to examine the relationship between the private veterinarian consultants and canine aggression. Therefore, participants were asked whether they sought veterinary consultation upon observing the onset of aggressive behavior in their dogs. A question in the survey inquired whether their dog was neutered, where results are portrayed between the two countries in **Figure 13**, and if they were neutered due to their aggressive behavior, and subsequently who recommended the neutering (illustrated in **Figure 14**). The survey also dvelved into respondents percieved changes in their dogs´ behavior subsequent to neutering as a response to aggression, decipted in **Figure 15**.

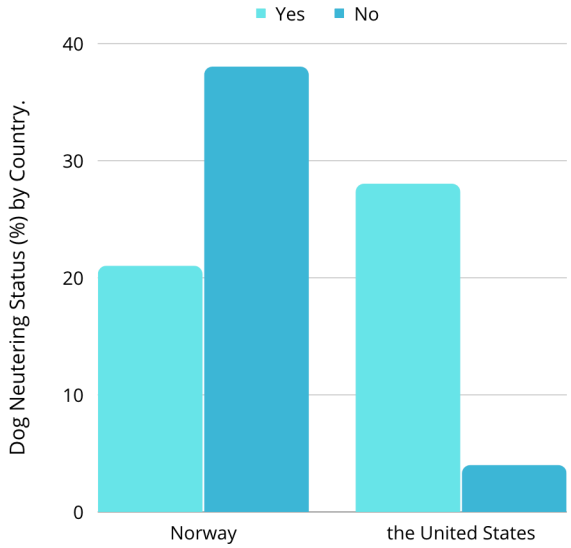

Figure 13 *Comparison of Neutering Status of Dogs Among Respondents from Norway and the United States*

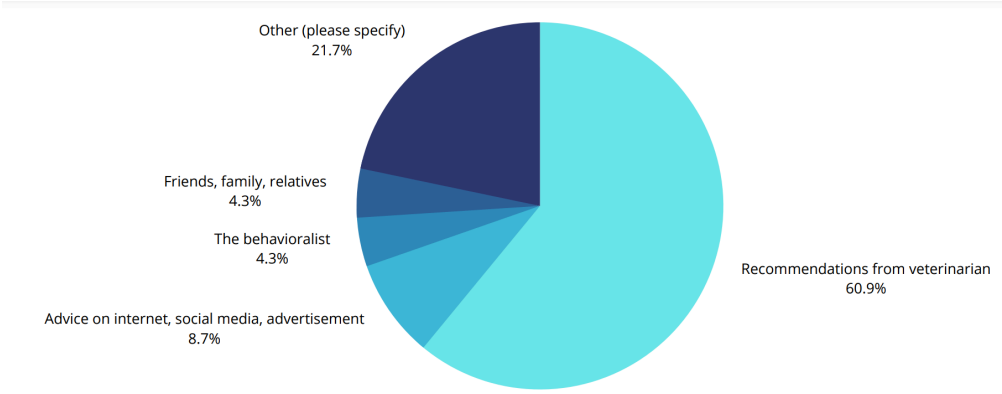

Figure 14 *Sources of Recommendations for Neutering Dogs Following the Onset of Aggressive Behavior*

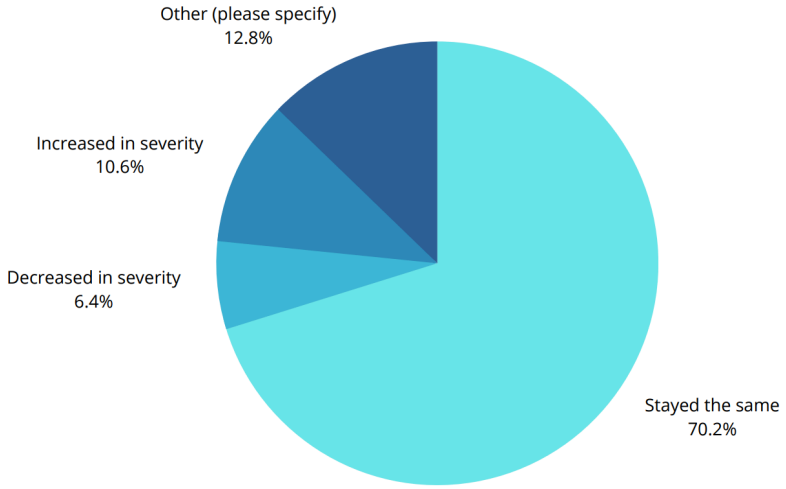

Figure 15 *Perceived Changes in Dog Aggression After Neutering, as Reported by Respondents*

Finally, respondents were inquired about the current state of their dog; whether they are still with the owner, has been rehomed or if they have been euthanized. If non were applicable, they could answer ”none of the above” option. As seen in **Figure 16**, there is a noticable difference between Norway and the United States with respect to euthanasia due to the dogs aggressive behavior.

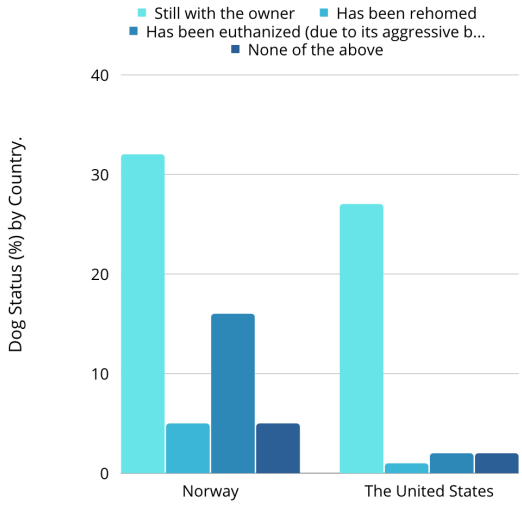

Figure 16 *Distribution of Current Status of Dogs, Categorized by Respondents from Norway and the United States*

6 Discussion

6.1 Breed identification and classification

One of the survey inquiries pertained to the pedigree of the respondants dogs, of whether they owned a purebred or mixed breed dog. The analysis involved categorizing the breeds into the AKC seven breed categories, leading to the identification of the herding group as the most prevalent category among the reported breeds in this survey.

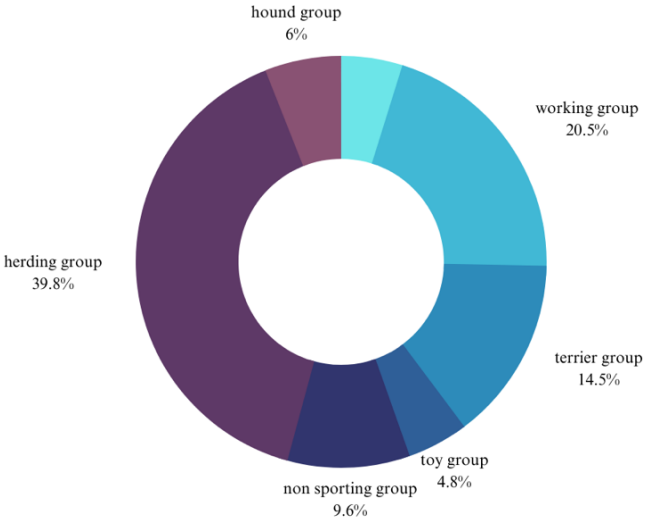

Figure 17 *Distribution of dog breeds among respondents, categorized by the American Kennel Club seven Breed categories, with the Jerding Group being found as the most prevalent category*

One question in the survey asked the respondents whether or not their dog was a purebred, mixed breed or a purpose mixed breed dog. 75% of the surveyed population answered that their dog was a purebred, 22.8% answered that their dog was a mixed breed and only 2.2% said that their dog was a purpose mixed breed dog. Purpose mixed breed dogs, otherwise referred to as “designer dog breeds”, were in the context of this survey defined as canines originating from the deliberate mating of two purebred parenteral generations, symbolized as “P”, with the specific intention of creating a “F1” generation of offspring exhibiting crossbreed characteristics. To be noted for subsequent discussions, the classification of a dog as a purebred does not inherently guarantee that they originate from a breeding program that implements health testing of the parents and proper socialization programs of the litters, a topic which will be examined in a subsequent section.

Regarding the question on whether the respondents dog was a purebred or a mixed breed dog, they were further prompted to write down what type of breed their dog was. If their dog was a mixed breed dog, the respondent was asked to write down what breeds they believed their dog were composed of. The german shepherd was found to be the most prevalent breed, followed by the border collie. All identified dog breeds were then classified into seven

distinct breed categories, where majority of the dog breeds were categorized into the herding group, pictured in **Figure 17**. The breed categories were described in accordance with the seven recognized taxonomy groups established by the American Kennel Club. These breed divisions encompass the ´Working´, ´Herding´, ´Sporting´, ´Non-sporting´, ´Hound´, ´Toy´ and ´Terrier´ groups. The ensuing results revealed a notable prevalence of dog breeds associated with the ´Herding group´, which includes the breeds german shepherd, border collie, smooth collie, belgian malinois and the australian cattle dog. The ´Working group´, constituting the second largest breed group in the survey, comprises breeds such as the rottweiler, akita, dobberman and the cane corso. Whereas the american staffordshire bull terrier faces a breed ban in Norway, the United States defers breed-specific legislation to individual states [38, 39]. This demarcation indicates that the respondents from the United States of America exclusively account for the ownership of the american staffordshire bull terrier, which ranks as the third most frequently cited canine breed within the surveyed population.

6.1.1 Breed categories and aggression

While the ´Herding breed´ group represents the largest population in the survey, the prevalence and form of aggression towards different targets has been shown to differ between breeds [40]. While 34,1% of survey respondents indicated occurrence of fear originated aggression, breeds classified within the ´Herding group´, notably the border collie and the german shepherd, exhibited a higher prevalence of fear aggression in comparison to the other reported breeds. Meanwhile, the ´Working breeds´, including the rottweiler, american staffordshire bull terrier and the american pit bull terrier, as well as more primitive breeds like the akita and shiba inu, were notably reported to display dog directed aggression. Furthermore, breeds identified within the survey as displaying dog-directed aggression (namely, the german shepherd, rottweiler, the american pit bull, australian cattle dog and dachshund) correspond with the breeds noted as showing heightened aggressiveness towards unfamiliar dogs, reported by the study Duffy et al [40]. In a review done by Judith K. Blackshaw in 1991, who investigated various forms of aggression in dogs and their corresponding methods of treatment, it was noted that certain dog breeds had a higher reported frequency of human directed attacks. The preeminent breeds in this report were the bull terrier, followed by the german shepherd and cattle dog breeds such as the australian cattle dog and its mixes, then subsequently the terrier group [41]. It is worth to note that although these breeds did not score

high on owner directed aggression, the results by this survey indicate a notable inclination for heightened stranger directed aggression in breeds such as the german shepherd, australian cattle dog, and other members of the herding group.

6.2 The influence of gender on aggressve behavior

In the surveyed population, 65.2% of the dogs displaying aggressive behavior were denoted as male, while 34.8% were female. It is important to note here that the majority of the respondent's dogs are males, which corresponds to current known literrature, that has shown evidence of higher occurence of aggressive behavior problems in male canines compaired to their female counterpart [42, 43].

6.2.1 The association between neutering and aggression

While 35,6% respondents from Norway reported their dogs were neutered and 64,4% said their dogs were intact, 87,5% of respondants from the United states answered that their dogs were desexed while only 12,5% answered that their dogs were intact, depicted in **Figure 13**. This is, however, unsuprising, as desexing of canines in Norway is soley legal when a medical indication can be documented [44]. One reason for permitting neutering in Norway is due to the rooted belief that post surgical reduction of aggression might occur, thus providing an indication for undertaking the procedure. Meanwhile, in the United States, routine desexing is still done across several states, as there is still a common belief that desexing promotes health benefits, population control and modification of unwated behavior such as urination marking, roaming and mounting. However, there is a current debate whether or not desexing affects aggression in dogs. Subsequently, after following the assessment of whether the respondents´ dogs were intact or neutered, follow up questions were made as to whether or not the dog underwent neutering due to the onset of aggressive behaviors. 14,1% of the respondants noted that their dogs were neutered after the onset of aggressive behaviors. While 70,2% reported that the aggression did not decrease or increase in intensity on the subsequent question of whether the dog showed any change in its aggressive behavior after desexing, 6,4% noted the aggression decreased in severity, while 10,6% reported that the aggression rather increased in severity. **Figure 15** portrays that for the dogs that were already neutered, for reasons unrelated to its aggression, 72.7% of respondants noted no change in the intensity of aggression, while 9% noted an increase in severity. However, while there is available more scientific literature discussing the behavioral effects of neutering in male dogs, showing evidence of decreased male dog

directed aggression in gonadectomized males, there is also relitvely new evidence that there are no significant alteration of aggressive behavior after gonadectomy, which was likewise discovered in this survey [43, 45, 46]. Rather, a significant majority of respondants indicated an absence of discernable alterations in severity of the aggressive behavior, where only a limited number of participants reported an escalation in severity. Furthermore, participants were asked upon whose recommendation was the neutering performed, in the cases in which they confirmed their dogs were neutered, where the results are shown in **Figure 14**. 60,9% answered that they got recommendations from an official veterinarian and 8,7% answered that they got recommendations from internet or social media. The remaining participants replied that they got their recommendations from a behavioralist or family and friends respectively (**Figure 14**). As discussions arise whether or not desexing is a valid option for rehabilitation of aggressive behavior in canines, the results of this survey shows it is still a common belief among veterinarians to recommend desexing as a treatment option for aggressive dogs, where research shows it might no longer be valid.

6.3 Sources of dog acquisition

As portrayed in **Figure 4**, the majority of the respondants from Norway acquired their dogs from a dog breeder (76,7%), compared to the United States where majority adopted their dogs from a shelter (54,8%). Besides the breeder, majority got a dog from various shelters in Norway (6,7%), while a few acquired their canines from friends, family or relatives or through advertisement (8,3%). The second largest source of canines in the United States was from a breeder (19,4%), followed by advertisement. By running descriptive statistics on the age of acquirance in SPSS statistics, results found the average mean to be an estimation of 8 weeks of age. Subsequent age of acquirance was between 6-8 weeks of age, then 6-12 months' years of age, seen in **Figure 3**. Furthermore, survey results show the most common age from the shelter is between 6-12 months of age, followed by dogs over 8 weeks of age. By performing a Chi-Square test in SPSS, a possible relationship between origin and age of origin for the population in this survey was identified ($P<0,005$). However, due to the low population sample, further investigations is necessary to determine the significance of this association.

6.3.1 Comparing dog acquisition patterns

It is important to emphasis that this survey did not investigate whether the breeders were considered serious breeders, where rigorous health tests and structured socialization were implemented. Therefore, the study inquired whether canines displaying aggressive behavior depends on where they were acquired from in these two different countries, as well as whether a higher incidence of reported aggressive behavior is associated with canines acquired at an earlier age. Altough previous research had found higher prevalence of aggression related behavioral disorders in dogs obtained at an early age, specifically before 8 weeks of age, this survey reveals a higher frequency of aggression in dogs acquired even within the recommended age, which is above 8 weeks of age. The National Database of Shelter Animals Count' states that there are 1,295 shelters in their national metrics in the United States as of 2023 [22, 47]. This is a drastic count difference compared to Norway, which has only have 13 registered animal shelters, the majority of which are primarily focused on rehoming cats [48]. Moreover, more recent research has shown that adoption rates are slowly rising across the US, were 61% of the dogs in 2023 got adopted out of shelters across the nation [47, 49]. This is reflected in this survey, as majority of respondants from the United States acquired their dog from shelters, while their Norwegian counterpart acquired their dogs in a much higher degree from breeders. A high portion of the dogs relinquished to shelters are at the age of adolescence, as an increase of problematic behaviors starts at the age of 6 months of age [50, 51]. Nevertheless, New et al.´s research indicates a diminishing risk of dog reliquishment with advancing age, specifically from 6 months to 3 years, which stands in contrast to this survey´s results, where majority of the survey respondents adopted a shelter dog within this age group [52].

6.3.2 The connection between origin and aggression onset age

By cross tabulating the age of acquirance with age of onset of aggression, the aim was to determine whether there is correlation between what age the dog was acquired and the onset of aggressive behaviours. The survey results describe the average age of onset of aggressive behavior starts at approximately 6-8 months of age (61,7%), and span out until 12-18 months of age (28,3%). However, analysis showed that regardless of age of acquirance, the most common age of onset of aggressive behaviors starts at 6-8 months. While dogs acquired at above 8 weeks of age have higher incidence fear related aggressive behavioral problems, the survey shows dogs aqcuired at 6-8 weeks of age tends to have a higher incidence of dog directed aggression, followed by fear aggression. These results might be due to the lesser or

lack of socialization with littermates, leading to poorer developed social behavior repertoire with unfamiliar dogs. However, as the majority of the surveyed population acquired their dog above 8 weeks of age, further investigations need to be performed to study this correlation. As portrayed by bar charts in **Figure 6**, 68,5% answered yes to the question of whether or not they had participated in puppy classes with their dog, while 31,5% answered no. 78,3% of respondants from Norway answered yes while only 50% of respondants from the United States answered the same. However, cross tabulating this question with the onset of aggression and type of aggression still reflects that the average age, where respondants observe signs of aggression, starts at 6-8 months of age, even with respondants that participated in puppy classes. Furthermore, the type of aggression shows even if the dog participated in puppy classes, they still scored high on both fear responsive and dog directed aggression [51].

6.4 Use and sources of professional help

The most commonly used professional help in both Norway and the United States was the usage of a professional dog trainer (80,43%), follwed by the use of an animal behavioralist (60,87%) and the least used professional help in both nations were Veterinary Behavioralists (29,35%) as shown in **Figure 7**. An animal behavioralist is, in this survey, defined as a person who has an advanced collegee degree concerning animal behavior [53]. Meanwhile, a Veterinary Behavioralist is defined as a veterinarian who is specialized in the medical management of behavioral problems in animal health [54]. This survey reports no major difference between the usage of professional help between the two participating countries. There can be several factors contributing to a larger demand for a dog trainer for addressing canines with aggressive issues, including higher availability, cost-effectiveness, better accessabily, and a potential lack of awareness regarding alternative professional assistance options.

22,4% of the Norwegians and 28,1% of the respondants from the United States answered that they found professional help through social media platforms, such as Facebook, Instagram and Youtube, as noted in **Figure 8**. There might be a potential risk associated with the lack of knowledge regarding dog behavior modification training. The general public may encounter difficulty in identifying appropriate dog training methods on social media, and consequently rather opt for professional help based on information they gathered through

these platforms. Nontheless, a significant proportion of survey respondents who had utilized the services of a professional dog trainer reported they had found the training to be beneficial and effective in mitigating issues related to the aggression. However, while the most cited source from the United States were through social media (28,1%), the most cited source of professional help from Norway derived from recommendations within their respective field (51,7%), for example recommendations from fellow veterinary coworkers or fellow dog trainers. While these practices can be valuable in increasing the trust and understanding in the community, there is a high risk of potential bias. By obtaining recommendations from within the same professional network that might share the same ideas and practices, it can inadvertanly reinforce prevailing and outdated practices when it comes to rehabilitation. Furthermore, it can potentially lead to a limited exposure to alternative, and potentially more effective, and ethically diverse methods in behavioral modification of aggressive dogs [55, 56].

6.4.1 Rehabilitation: The use of desensitization and counter-conditioning

When examining the application of desensitization and counter-conditing (DS-CC) as a rehabilitative strategy for aggressive dogs of the survey respondents, findings from this survey reveal a higher prevalence of its utilization in the United States (87,5%) in contrast to Norway (75,0%). Moreover, majority of the participants using DS-CC in their rehabilitation program found the training to be beneficial (50,55%). All categories of professional service reported the incorporation of DS-CC within their rehabilitation programs. However, when examining the extent of DS-CC integration, noteworthy differences emerge between the categories of professional assistance. Specifically, among the 29,35% who reported to have sought help from a veterinary behavioralist, only 2.17% indicated the absence of DS-CC implementation in their program. In contrast however, within the population of 80,43% respondants that acquired a professional dog trainer, 14,13% indicated the exclusion of DS-CC from their program, illustrated **Figure 9**. A veterinary behavioralist is more likely to possess information regarding current research on rehabilitation of aggressive dogs. Consequently, they may exhibit a higher probability of implementing rehabilitation techniques, such as desensitization and counter-conditioning, into their rehabilitation programs. Comparatively, dog trainers are not universially required to have any specific qualifications or certifications to declare themselves as such, and therefore inclusion of rehabilitative techniques DS-CC in their rehabilitation programs may vary. Furthermore, survey results present a positive relationship between owner experience

and the use of desensitization and counter-conditioning. Majority of the survey population engaged with canine-related services, confirmed their utilization of DS-CC in the process of rehabilitating their aggressive dogs. Notably, a higher percentage of individuals that possessed prior experience as dog owners expressed a lower tendency towards the adoption of DS-CC (69,7%) compared to participants that answered they had engaged in professional canine services (80%). There is little research available on the potential barriers of the application of positive training methods and the implimentation of DS-CC in rehabilitation programs by owners, even though research has shown its effectiveness in case of dog and human directed aggression [55]. Research conducted by Zazie Todd in 2018 illustrates a possible relationship between a lack of knowledge and the high risk of obtaining poor quality information available to dog owners and the method of training [56]. These survey results show a similar inclination. Owners reported that those working with canine related services are more likely to be implementing DS-CC in their rehabilitation programs in comparison to owners working in non-related services or lacking prior dog experience. This survey reflects a positive relationship between the implementation of DS-CC and better rehabilitation results were likewise reported in the study performed by Dinwoodie et al. in 2021, that found an association between the implementation of DS-CC and treatment of overall aggression [57].

6.4.2 Training tools and techniques in Norway versus in the United States

Among the Norwegian survey participants, 21,67% indicated an affirmative stance regarding the utilization of dog training tools. In contrast, 43,75% from the US expressed a similar agreement. Overall, the prevailing sentiment among the surveyed individuals (70,65%) replied ’no’ towards the inclusion of training tools in their rehabilitation programs. Dog training tools were defined in the survey to be any usage of prong collars, electronic collars, slip leads or similar, meant to deliver positive punishment during training. However, it is important to note both the usage of prong collars and electronic collars are prohibited in Norway by the Norwegian Food and Safety Authority, compared to the United States, where their use is permitted. In Norway, these training tools are thought to increase stress, fear and aggression in dogs, and can strengthen existing behavioral problems, therefore leading to an officially ban [44]. However, the use of other training tools such as a slip lead or shaking cans to create an unpleasant noise is not under any official ban in Norway. Through the survey results, it is shown that the professional help that made use of dog training tools in their rehabilitation programs the most were professional dog trainers. Moreover, among the

30 respondants, 13% reported that they observed a decrease in the aggression after implementing training tools in their rehabilitation program, whereas 9,78% noted no observed discernable alterations, as decipted in **Figure 10**. In contrast, 6,52% observed an increase in aggressive behaviors subsequent to the introduction of training tools. It is important to note that a reported decrease in aggression may not be a true decrease in aggressive behavior, but rather a change in how the behavior is expressed. If a rehabilitation program does not prioritize the modification of underlying emotions, the dog in question does not feel better about its triggers, and the potential catalyst for the aggressive behavior remains unchanged. However, with the use of positive punishment, the outward expression of aggressive behaviors including growling, baring teeth, barking and tail carriage might be decreased, and thus owners may report it as a decrease in aggressive behavior. Rather, the dog is still feeling conflict with regards to its triggers. It will however, not show as expressive outward behaviors as it has learned a punishment might be followed by its display. Therefore, the dog will rather show less warning signs before an attack than before, and thus the dog is now more unpredictable [58, 59].

6.5 Application of medication: Norway versus the United States

In the survey results, a notable variance in the utilization of medication is observed acrosss the surveyed nations. While only 10% from the Norwegian survey respondants report that they have used behavioral medication, 50% reported its usage from the US, where the results can be noted in **Figure 11**. Overall, only 23,9% respond that they have used psycoactive drugs, meaning the majority (76%) of the respondants have not used behavioral modification drugs. The most reported drug was fluoxetine, at 22.6%. Subsequent to fluoxetine was trazadone, at 9,7%, followed by setraline. Out of the 19,57% that was reported as being euthanized due to their aggressive behavior, only 27,8% reported being on behavioral medication compared to the other 72,2% that reported not to have been on any medication. Moreover, it is important to take notice of the results that show the overwealming majority of the Norwegian respondants reported their dog underwent behavioral euthanasia, with a percentage of 27,6%. This is in stark comparison to the respondants from the US, where only 6,3% reported behavioral euthanasia, which can be noted in **Figure 16**. The Norwegian respondants were furthermore the least reported to have been using behavioral modification drugs. While there have not been studies performed yet on the activity of usage of pharmaceutical drugs for behavioral disorders in dogs in Norway, this survey reflects a low application of behavioral pharmaceuticals in Norway, compared to the US. This study did

not conduct research on the possible barriers for the utilization of behavioral medications in aggressive dogs in Norway when compared to the US. However, it can be considered that the lack of knowledge and the stigma of psycoactive medications within the general public might stop dog owners from accessing these rehabilitation options. Moreover, although the majority of the respondents indicated that they had consulted a veterinarian following the onset of their dog´s aggressive behavior (39,6%), most of the owners in this survey reported to have found professional help through other channels rather than being referred by their veterinarian, which reflects the same results found by Karen A. Van Haaften et al.in 2020 [60]. While 50% of the respondants from the US reported use of psycoactive drugs, limited knowledge among dog owners and dog trainers regarding the use of such drugs for managing aggression in dogs might hinder a higher application of medication for rehabilitation.

6.5.1 The relative lack of pharmaceutical intervention

While research shows a positive correlation between use of behavioral modification drugs and treatment of aggressive behavior, this survey still shows lack of use in rehabilitation programs [61, 62, 63]. Even when the owners reported to have made an appointment for an evaluation of their dog´s aggressive behavior (39,6%), majority of the respondants have not used drugs for managing their dogs´ aggression (73,9%). It appears that veterinarians are not inclined to recommend the use of drugs for aggressive behavior, even when owners arrive at the clinic specifically for issues related to aggression. This survey´s results show higher application of psyoactive drugs in dogs living in the US when compared to dogs in Norway, where one of the reasons might be due to the fact that while 86 veterinary behavioralist diplomats are found in America, there are no veterinary behavioralist diplomats in Norway [64]. While veterinary behavioralists have extensive education about psycothropic drugs and their uses, they furthermore are able to hold conferences and courses to teach veterinarians about behavior and rehabilitation programs, making it more easily accessable when compared to Norway. Survey results hereby indicate that there is a need to increase dog owner´s awareness with regards to rehabilitation options and treatment plants, and to increase the knowledge about psycotrophic drugs among general practitioner veterinarians.

7 Abstract in English

This TDK presents a comparative questionnaire analysis of rehabilitation programs for aggressive dogs in the United States and Norway. This study is based on research data obtained from an online questionnaire distributed across various social media platforms, targeting individuals who own(ed) aggressive dog(s). The primary objective of this TDK is to identify similarities and differences in the approaches taken in the United States and Norway toward rehabilitating aggressive dogs. Through 25 questions, a total of 60 respondents from Norway and 32 from the United States participated.

The findings of this comparative study showed several significant patterns and distinctions between the two countries. Notably, rehabilitation programs in the United States reported a higher frequency of incorporating pharmaceutical interventions to manage aggression, while Norway relied more on non-pharmacological methods such as behavioral modification training. Regarding dog acquisition practices, the survey results found that the United States primarily sources dogs from shelters, whereas acquiring dogs from breeders is more common in Norway. The analysis conducted in this TDK reveals a similar age of onset of aggression and similar breeds, irrespective of acquisition.

The study also shed light on training methods, showing different approaches. Dog owners in the United States employed aversive techniques and tools more frequently in their rehabilitation programs, while Norway favored positive reinforcement methods. Further research in this field has the potential to lead the way for the development of a standardized, universal rehabilitation program for aggressive dogs, promoting more effective and humane rehabilitation practices that benefit both dogs and their human companions.

8 Abstract in Hungarian

A TDK dolgozat egy összehasonlító kérdőíves elemzést mutat be az agresszív kutyák lehetséges rehabilitációs programjairól az Egyesült Államokban és Norvégiában. Vizsgálatra kerültek a legfontosabb szempontok, mint a speciális rehabilitációs módszerek, a pszichoaktív szerek használata, valamint a kutyák előélete. A tanulmány online kérdőívből nyert kutatási adatokon alapul, mely különféle közösségi média platformokon került kiküldésre. A TDK elsődleges célja, hogy azonosítsa a hasonlóságokat és a különbségeket az Egyesült Államok és Norvégia területén az agresszív kutyák rehabilitációjával kapcsolatos megközelítésekben. 25 kérdésen keresztül összesen 60 norvég és 32 amerikai válaszadó vett részt, értékes betekintést nyújtva saját gyakorlatukba.

Az összehasonlító tanulmány eredményei számos jelentős mintát és különbséget mutattak a két ország között. Az Egyesült Államokban a rehabilitációs programok gyakrabban számoltak be gyógyszeres beavatkozásokról az agresszió kezelésére, míg Norvégia inkább olyan – nem gyógyszeres – módszerekre támaszkodott, mint a viselkedésmódosító tréning. A kutyák előéletét illetően megállapításaim szerint az Egyesült Államokban elsősorban menhelyről fogadják be a kutyákat, míg Norvégiában a legelterjedtebb a kutyák tenyésztőktől való beszerzése. A dolgozatban végzett elemzés azonban az agresszió megjelenésének mintáján hasonló korú és fajtájú kutyák előfordulását tárja fel, függetlenül a beszerzés helyétől.

A tanulmány a képzési módszereket is vizsgálta, különböző megközelítéseket mutatva be. Az Egyesült Államokban a kutyatulajdonosok gyakrabban alkalmaztak averzív technikákat és eszközöket rehabilitációs programjaik során, míg Norvégia a pozitív megerősítő módszereket részesítette előnyben. A tanulmányból kiderül, mennyire hangsúlyos ezen terület felmérésének fontossága, hiszen lényeges eredmények tárultak fel az agresszív kutyák rehabilitációs programjainak kidolgozásával és értékelésével kapcsolatban. Az eredmények betekintést nyújtanak abba, hogy a rehabilitációs programok hogyan növelhetik hatékonyságukat pszichoaktív szerek beépítésével, a viselkedésmódosító tréning megfelelő formáinak alkalmazásával, valamint a leendő kutyatulajdonosok oktatásával a jó hírű kutyatenyésztők felismerésében, a hatékony kutyakiképzési technikákban és a szakmai segítség forrásaiban. További kutatások utat mutathatnak az agresszív kutyák standardizált rehabilitációs programjának kidolgozásában, elősegítve a hatékonyabb és humánusabb rehabilitációs gyakorlatokat, amelyek a kutyák és embertársaik számára egyaránt előnyösek.

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Thesis progress report for veterinary students

Name of student: Nora Elizabeth Mørk

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Name and title of the supervisor: dr. Kiss Annamária, departmental veterinarian, PhD student

Department: Department of Labratory Animal Science and Animal Protection

Thesis title: Exploring Rehabilitation Programs for Aggressive Dogs: A Comparative Study of the US and Norway

Consultation – 1st semester

Timing				Topic / Remarks of the supervisor	Signature of the supervisor
	year	month	day		
1.	2023.	03.	01.	Discussion of the topic and content requirements of the TDK thesis	
2.	2023.	03.	09.	Introduction, checking and discussing the writing of objectives	
3.	2023.	06.	23.	The process of finding resources, using useful websites and books	
4.	2023.	07.	04.	Discussing how to make the literature background and how to make the questionarre	
5.	2023.	08.	26.	Improving and discussing the literature review	

Grade achieved at the end of the first semester: 5

Consultation – 2nd semester

Timing				Topic / Remarks of the supervisor	Signature of the supervisor
	year	month	day		
1.	2023.	09.	16.	Finalization of the literature review, preparation of material and methods	
2.	2023.	09.	29.	Material and methods chapter check and discussion	

3.	2023.	10.	07.	Discussion of the preparation of results and conclusions	
4.	2023.	10.	14.	Discussion of the summary of the thesis, preparation of the bibliography (Zotero use)	
5.	2023.	10.	22.	Finalization of the thesis, exact placement of figures, correction of captions, checking bibliography	

Grade achieved at the end of the second semester: 5

The thesis meets the requirements of the Study and Examination Rules of the University and the Guide to Thesis Writing.

I accept the thesis and found suitable to defence,

.....
signature of the supervisor

Signature of the student: .....

Signature of the secretary of the department: .....

Date of handing the thesis in..... .....

DECLARATION

I hereby declare that the thesis entitled: Exploring Rehabilitation Programs for Aggressive Dogs: A Comparative Study of the US and Norway.

is identical in terms of content and formal requirements to the TDK research paper submitted in 2023 (year).

Date: 05.11.2023

Nora Elisabeth Mørk

Student name and signature