ANIMAL SHELTER DOGS: FACTORS PREDICTING ADOPTION VERSUS EUTHANASIA

A Dissertation by

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The following faculty have examined the final copy of this dissertation for form and content, and recommended that it be accepted in partial fulfillment of the requirement for the degree of Doctor of Philosophy, with a major in Psychology.

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ABSTRACT

Each year millions of dogs enter animal shelters across the U.S.; subsequently well over a million are euthanized (American Humane, 2010). Only a limited number of independent studies have investigated reasons for relinquishment of dogs to animal shelters; empirical literature on predictors of adoption versus euthanasia is even scarcer. The primary aim of this study was to use a data-driven approach to identify dog characteristics that contribute to adoption. In turn, the results can be used in subsequent theory building on owner--dog attraction. Data were comprised of all the dogs entering and exiting a Midwestern shelter in 2007. The variable contributing the most variance (17%) to whether a dog was adopted or euthanized was owner's reason for relinquishment. Having too many animals (18%) was the most frequently cited reason, followed by moving (12%). A discriminant analysis revealed that purebred status had the biggest influence relative to six other variables used to predict whether dogs were adopted or euthanized; it accounted for 29% of the variance of the discriminant function, which in turn accounted for 7.8% of the variance. In descending order of importance, the other predictors of adoption were smallness, being a stray, youth, not having a primarily black coat, medium hair, and being female. Additional findings and implications for shelter and community policy are presented.

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CHAPTER 1

INTRODUCTION

Each year millions of dogs enter animal shelters across the United States, demonstrating a fissure in the bond between pet and relinquisher; subsequently well over a million are euthanized (American Humane, 2010). Compared to relinquishers, current owners are more attached to their canines, as evidenced by more commonly "strongly agreeing" that the pet is part of the family and by having its picture displayed (Kline & Bibbo, 2009; Patronek, Glickman, Beck, McCabe, & Ecker, 1996). In his qualitative study of current pet owners, Ramirez's (2006) participants explicitly or implicitly conveyed appreciation for the consolation and companionship provided by their canine. Both genders tended to snuggle with their dogs and characterize them as a "best friend"; women were more prone to view them as "eternal children" whereas men, a "workout partner" (p. 384). Further, pet ownership serves as a protective factor in terms of adverse health effects after a spouse's death (Baun, Oetting, & Bergstrom, 1991). Given the mutualistic relationship between dog and owner, it is beneficial to further explore the variables that initiate an adoption pairing in order to potentially circumvent future relinquishment.

Only a limited number of independent studies have investigated reasons for relinquishment of dogs to animal shelters, and most of the data were collected well over a decade ago. Empirical literature on predictors of adoption versus euthanasia of animal shelter dogs is even scarcer. This study aimed to enhance the existing animal shelter literature in the following ways:

1) Identify dog characteristics that predict adoption versus euthanasia, to provide a foundation for subsequent theory building pertaining to adopter attraction.

2) On an applied level, being cognizant of the characteristics of adoptable dogs may shape shelter policy. In order to reduce future relinquishment and utilize shelter resources effectively, dogs may be selected to be put on the adoption floor if they embody desirable characteristics; alternatively, strategies may be implemented to induce favorability of the "underdogs".

Relinquishment

It is important to note that several articles by the National Council on Pet Population Study & Policy (NCPPSP; Kass, New, Scarlett, & Salman, 2001; New et al., 1999; New et al., 2000, Salman et al., 1998; Scarlett, Salman, New, & Kass, 1999) are cited within this paper. When information from the articles overlapped, the primary source, Salman et al. (1998), was cited. In 1995 the NCPPSP began its year-long data collection process from 12 animal shelters. Shelters with "no-kill" policies or those routinely abstaining from euthanasia were excluded. There were 71 reasons cited by owners for renouncing their pet; interviewers could code up to five, which were recorded arbitrarily rather than ranked by importance (Salman et al., 1998). Results from some variables such as age and length of ownership were displayed categorically and exclude the mean and median; unfortunately the categories are not mutually exclusive, rendering accuracy impossible.

Relinquishment for Euthanasia.

Owner relinquishment for euthanasia is relatively prevalent at animal shelters, demonstrating that many citizens utilize animal shelters rather than their veterinarian for this service. Salman et al.'s (1998) study demonstrated that euthanasia for either illness or old age

were two of the top five reasons for relinquishment. Seventeen percent of Patronek, Glickman, & Moyer's (1995) sample surrendered their dogs for euthanasia whereas Kass et al. (2001) found that almost a quarter of owners specifically requested euthanasia. While breeds' frequency in the population was not controlled for, the following breeds were most apt to be euthanized at their owner's request because of behavioral problems: German Shepherds, Cocker Spaniels, Staffordshire Terriers, Labrador Retrievers, Chihuahuas, Chow Chows, and Rottweilers (Kass et al., 2001). One strength of the study is that owners were allowed to list co-occurring behavioral patterns. Aggression towards humans and other animals, such as via chasing, biting or killing, were most commonly cited; being disobedient, barking excessively, and escaping were noted to a lesser extent. Most euthanasia requests were contingent on the animal's health; only 16% of the requests were behavior related and the median age of euthanized dogs was 10.4 years.

Relinquishment: Owner Issues & Dog Characteristics.

Using the NCPPSP data, the top reason cited for relinquishment was changing residences (Salman et al., 1998). New et al. (1999) examined movers specifically and found that they tended to report, on average, 2.2 additional reasons for relinquishment; the majority owned their dog for fewer than two years. Excluding euthanasia requests, landlord-related issues, cost, not having enough time for the pet, inadequate housing set-up, having too many animals in the household, owner illness, and having other personal problems were among the top eight reasons for renouncement (Salman et al., 1998). Some of these "personal problems" delved into by other researchers include family allergies, conflict between the pet and child, death of the owner, illness, pregnancy, lack of time, divorce, and the desire to travel (DiGiacomo, Arluke, & Patronek, 1998; Scarlett et al., 1999). Posage, Bartlett, & Thomas's (1998) study illustrated that

the primary reason for relinquishment (40%) reported by owners was "Do not want", without any specification.

Behavioral problems such as biting, aggression, escaping, soiling in the house, destructiveness, and disobedience were among the NCPPSP's top 17 reasons for relinquishment (Salman et al., 1998). Others have found these and related behaviors such as chewing, hyperactivity, and acting afraid to be the primary risk factors in relinquishment, as opposed to housing or relocation issues (DiGiacomo et al., 1998; Miller, Staats, Partlo, & Rada, 1996; Patronek et al., 1996). It should be noted that other than for hyperactivity, most owners reported that these problem behaviors occurred rarely or never within the month prior to relinquishment; this may convey unrealistic expectations of dog behavior, or alternatively, that relinquishers tried to minimize reporting of behavioral problems to facilitate adoption (Salman, et al., 1998).

Holding unrealistic expectations of pet behavior is a risk factor for relinquishment (Kidd, Kidd, & George, 1992; Patronek et al., 1996). When abdicators are allowed to list up to five reasons for relinquishing their dog, 14% of abdicators include this factor (Scarlett et al., 1999). However, unrealistic beliefs are not associated with any of the following variables: dog breed or sex, owner's educational level, amount of foresight before acquiring the pet, or household size (Patronek et al., 1996). Expectations of dog behavior and diligence with training might vary cross-culturally; in a study conducted in the Czech Republic, only 9.5% of owners surrendered their pet due to behavioral problems (Nemcova & Novak, 2003).

Arkow & Dow (1984) conducted one of the earliest cross-site studies of pet relinquishment; similar to the aforementioned studies, "lifestyle changes" such as marital separation or moving were prime reasons for relinquishment, followed by behavioral issues.

Already having too many animals and the current pet being too much of an investment in terms of time and responsibility were each cited as the principal reason by 12% of relinquishers. Later, Miller et al. (1996) discovered that when dogs were over two years of age, the main reason for abdication was relocation rather than behavioral problems. Given the brevity of the bonding process, if a dog is young and relatively new to the household, it is likely to be the first pet relinquished by the family when the household is pet-congested or there are landlord restrictions (Shore, Petersen, & Douglas, 2003).

Additional Relinquishment Research.

In addition to the aforementioned reasons for relinquishment, empirical research documents canine physical characteristics that serve as potential risk factors for relinquishment: age, sex, size, being sexually intact, and being of mixed descent (Arkow & Dow, 1984; Miller et al., 1996; Nemcova & Novak, 2003; New et al., 1999; New et al., 2000; Patronek et al., 1995; Patronek et al., 1996; Posage et al., 1998; Salman et al., 1998). Owner-related information such as demographic characteristics, reason for acquisition, initial dog cost, expectations of dog behavior, duration of ownership, attachment, utilization of obedience training, and veterinary expenditure have also been studied in relation to relinquishment (Arkow & Dow, 1984; Kass et al., 2001; Kidd et al., 1992; Miller et al., 1996; Neidhart & Boyd, 2002; New et al., 2000; Patronek et al., 1996; Posage et al., 1998; Salman et al., 1998). Further, qualitative studies have emphasized relinquisher accounts of the factors leading up to abdication, prevention efforts, and the emotional aftermath of pet relinquishment (DiGiacomo, et al., 1998; Shore, et al., 2003). The examination of adoption outcomes as a function of owner reason for relinquishment has not been well researched, but is worthwhile in order to evaluate the influence of owner reports on dog

outcomes. Lepper, Kass, & Hart (2002) found that dogs relinquished due to cost or owner relocation had more positive outcomes than strays, who were in turn less likely to be euthanized than dogs with health or behavioral problems.

Typical Shelter Outcomes & Resources

Wenstrup & Dowidchuk (1999) conducted a study involving 186 shelters from 42 states. They found that 53% of shelter dogs were strays and 43% were owner relinquished. The average dog inhabited the shelter 9.5 days before being euthanized (52%), adopted (32%), or redeemed (13%). Patronek et al.'s (1995) research resulted in almost the exact stray and owner relinquishment figures, but the outcome of their study was slightly more favorable, as 3% more of non-euthanasia requested relinquishments ended in adoption or redemption, although 19% of adoptions were ultimately unsuccessful. Dogs' length of stay at a shelter varies culturally. In a rural and urban shelter in the Czech Republic, adopted dogs stayed an average of 53 and 85 days, respectively (Nemcova & Novak, 2003).

While most owners assume their dog will be adopted (DiGiacomo et al., 1998; Kass et al., 2001), Wenstrup & Dowidchuk (1999) discovered that 48% percent of dogs (strays and owner relinquished) deemed adoptable by staff were euthanized. Unadoptable criteria included behavioral issues (40%), a "no criteria" category, undefined by the authors (28%), and dog health problems (26%). When prompted, 75% of shelters admitted that they lack clear criteria for assessment. Over a third of dog euthanasia was attributed to lack of shelter space rather than behavioral or health problems. Given limited shelter resources, being able to accurately pinpoint qualities that actuate adoption may facilitate positive outcomes for more dogs.

Adoption

Empirically based research on adoption has not been nearly as prolific as the relinquishment research, but retroactive qualitative studies on adopter attraction, literature on predictors of animal shelter outcomes, and interviews that identify favorable dog characteristics do exist. Ramirez (2006) conducted a small qualitative study of 26 middle-class dog owners who recalled how they chose their dog. There were individual differences among adopters in terms of their primary selection criteria: physical characteristics, personality, or being drawn to a particular animal. Men were likely to choose a dog based on physical characteristics, whereas women who initially had a particular set of physical criteria in mind were more apt than men to end up forgoing looks for personality. He also discovered that participant and dog sex tended to be congruent; even when the opposite was true, owners interpreted dog behavior in relation to how they perceived themselves gender-wise. For instance, a man might emphasize his female dog's propensity for physical activity whereas a female might construe her male dog's behavior as nurturing. In 1999, Nemcova & Novak (2003) studied both a rural and urban Czech Republic animal shelter for eight months. Participants were surveyed about what attributes primarily drew them to their dog; respondents from both shelters tended to list appearance first (34%). The urban shelter then chose personality, size, age, and finally, "other". Given the limited amount of research on dog physical characteristics that predict adoption, and that particular attributes may be favored cross-culturally, while perhaps not directly comparable, the aforementioned study was included in this paper, as was research conducted by Wells & Hepper (1992) in Northern Ireland.

While the aforementioned survey research is interesting, it is also beneficial to assess the characteristics that differ between adopted and euthanized dogs since we tend to unknowingly generate reasons for our decisions -- in this case, what dog to adopt -- that are inaccurate and largely based on unconscious factors (Wilson, 2002). Lepper et al. (2002) retroactively examined the physical characteristics of adopted dogs at a municipal animal shelter between 1994 and 1995 and discovered that sexually altered dogs were preferred to unaltered animals, and when intact, females were chosen over males. Reproductive status is not a factor in regions that mandate sterilization before adoption. Alternatively, Nemcova & Novak (2003) determined that dog sex was not an important predictor. A negative linear relationship was discovered between dogs' age and propensity for adoption (Lepper et al., 2002), similar to Nemcova & Novak's (2003) finding that the majority of adopted dogs were two years old or younger. When compared to a logistic regression reference group of dogs with black and tan coats, adopted dogs tended to have red, tricolor, merle, or gray coats, whereas brindle and black dogs were less frequently adopted (Lepper et al., 2002). Similarly, Posage et al. (1998) found having a primarily black coat and being large in size were variables associated with euthanasia; however large dogs tended to be black. Wells and Hepper (1992) tracked the outcomes of dogs entering a shelter in Northern Ireland during one month and found dissimilar results (N = 273 dogs total); black and white coats were most prevalent among adopted dogs (52%), followed by yellow (40%), solid black (38%), gold (36%), and finally black and tan (25%). Results were not reported as inferentially reliable, but some cell frequencies were too low to be included in the contingency table analysis. Once I categorized the yellow and gold groups together, the results became statistically

significant; 17% of the variance in whether a dog was purchased was accounted for by coat color.

Purebreds tend to have more positive shelter outcomes than mixed breeds, controlling for their frequency in the shelter. Lepper et al. (2002) found that purebreds were 1.4 times more likely to be adopted than mixed breeds and Patronek et al. (1995) reported mixed breeds were 1.8 times as likely to be euthanized as purebreds; 20% of purebreds were redeemed by breed specific advocacy groups. Purebred strays were more apt to be reclaimed by their owners than mixed strays, and in timelier manner (Patronek et al., 1995). Further, the literature shows an interaction between dog sex and breed in predicting euthanasia; males of a mixed breed were at greater risk for euthanasia than females of a mixed breed, but there was no sex effect for purebreds (Patronek et al, 1995). These finding may be indicative of public preferences for purebreds and/or staff perceptions thereof. Wells & Hepper (1992) selected a diverse, randomly selected sample (N = 89) of Northern Ireland residents to survey about pet acquisition. Fifty-three percent declared that the best way to acquire a dog is through a breeder, whereas 31% named the local Prevention of Cruelty to Animals shelter. The least preferred avenue of acquisition was a pet store, conveying a preference for small breeders over animals originating from puppy mills.

There are mixed results about whether specific breeds are preferred over others. In a logistic regression analysis that assigned large companion breeds as the comparison group, "Lapdogs", conceptualized as "non-hunting breeds less than 16" tall at the shoulder" (p. 39), "Giant Companions" (e.g. Great Danes), Ratters, Cocker Spaniels, Sporting breeds, and Terriers that were not classified within any other category tended to have higher rates of adoption, whereas Staffordshire Terriers and fighting breeds were more apt to be euthanized than the

reference group (Lepper et al., 2002). Patronek et al. (1995) categorized individual breeds into their American Kennel Club (AKC) groups and determined that a significant relationship between group and shelter outcome did *not* exist. Similarly, Wells & Hepper (1992) calculated breed favoritism by dividing each breed's adoption frequency by the number of dogs of that breed entering the facility during the course of one month (N = 273 dogs total); the order of breed adoption frequency is as follows: Spaniel (64%), Labrador Retriever (49%), Collie (42%), German Shepherd (33%), Rottweiler (33%), Staffordshire Terrier (33%) , Terrier (25%), Jack Russell Terrier (18%), and Pit Bull (0%). The authors reported the results of the contingency table analysis as not statistically significant; however given that multiple cells had frequencies too low for analysis, I categorized the Jack Russell Terriers with the other Terriers, and the Rottweilers, Pit Bulls, and Staffordshire Terriers into one group, as they are all considered aggressive or fighting breeds. The results became statistically significant; breed predicted 25% of the variance in whether a dog was purchased or not.

Experimental research has been conducted regarding "adoptable" dog characteristics. Researchers (Wells & Hepper, 1992) counterbalanced photographs of dogs that were congruent on all characteristics except the manipulated feature, presented the photos to a random and diverse South Belfast sample, and found statistically reliable preferences for long hair (63%) over short, a blonde coat (65%) over black, the dog positioned at the front of its cage (73%) rather than the back, not barking (73%), and with a toy (95%). Additionally being "unwanted", or owner relinquished rather, was preferable (85%) to being a stray.

The public's preference for owner relinquished dogs was congruent with the local shelter's data; controlling for the incoming frequencies, owner relinquished dogs were more than

twice as likely to be adopted as stray dogs. However, when the same researchers conducted observations of stray and unwanted dogs' behavior at the shelter, there were no differences on any of the variables studied: responsiveness to an unfamiliar human approaching their cage, responsiveness to a new toy, and how long they took to consume their food. Most dogs became more at ease with new individuals and ate faster as their shelter duration increased. Given the similar behavior of stray and owner relinquished canines, researchers did not differentiate between the groups when assessing sleeping behavior; sleeping, resting, and wakefulness habits did not change over time (Wells & Hepper, 1992).

In the U.S., studies that explore the relationship between type of relinquisher and outcome are scarce, and when they have been conducted, have produced results contrary to Wells and Hepper's (1992) findings. For example, Notaro (2004) examined the outcomes of dogs relinquished by their owners, the public (strays), and animal control officers at one Midwestern shelter. He found that dogs brought in by animal control comprised over half of the euthanasias. Stray animals had the highest adoption rates, although owner requested euthanasia wasn't controlled for. Patronek et al. (1995) likewise discovered that stray dogs had better outcomes than those relinquished by their owners given that over half of strays were reclaimed. Stray dogs over one year of age had much greater odds of being reclaimed than those under one year old, signifying the strengthened bond over time between owner and pet. Further, controlling for the stray hold period wherein owners can claim their lost pets, dogs brought in by animal control took longer to adopt than those relinquished by their owners or the public. It was speculated that the animal control dogs have more health and behavioral problems (Notaro, 2004).

More recent studies, wherein researchers manipulated a particular dog characteristic or multiple attributes, illustrate that the following dog characteristics are rated favorably by participants: Being small, young, and familiar-looking (Kline, 2009; Triebenbacher & Cauthen, 2009). In essence familiarity "breeds" liking, tantamount to the research with human faces, attraction to faces similar to one's own, and other familiar stimuli (Brooks-Gunn & Lewis, 1981; Halberstadt & Rhodes, 2000; Harmon-Jones & Allen, 2001; Moreland & Beach, 1992; Zajonc, 2001). The underlying mechanism, typically referred to in the aforementioned studies, is that unfamiliarity can be risky and evolutionarily disadvantageous whereas youth and smallness are perceived as less risky. When asked to rate the adoptability of dogs who differed in size, age, and the circumstances that brought the canines to the shelter, college students rated small, young dogs as most adoptable (Kline, 2009). Triebenbacher & Cauthen (2009) found similar results upon sampling children between the ages of four and eight. Dogs' mouths, tails, ears, coat length and color were varied. Child age served as a mediator between dog characteristics and friendliness ratings, but on average children viewed small dogs and those resembling dogs they're acquainted with as the friendliest. Essentially they perceived these dogs as the safest. The results are noteworthy given that it is not uncommon for children to influence adoption decisions (DiGiacomo et al., 1998). The aforementioned survey research (Kline, 2009; Triebenbacher & Cauthen 2009) is congruent with Posage et al.'s (1998) finding that small owner relinquished dogs put up for adoption have more favorable outcomes than their larger counterparts. Another explanation for small dog favoritism is ecological; large dog ownership has been associated with housing-related issues (Shore et al., 2003). However, this factor likely doesn't pertain to studies involving young children, who do not live independently.

Posage et al.'s (1998) study, conducted at a private Humane Society in Lansing, Michigan, is unique relative to the aforementioned adoption studies. The shelter only accepts owner relinquished animals, and the study included only dogs put on the adoption floor. Data were collected from 1993 to 1996. Successfully adopted breeds were Terrier, Hound, Toy, and then Non-Sporting breeds. Females and mixed breeds fared better than their counterparts. White, gray, and gold coats tended to be conducive to adoption, which the authors attribute to their distinctiveness and shared variance with small dog size; large, black dogs were less frequently adopted. We do not know the weight of each variable contributing to shelter outcome, which is what the present study aimed to address.

The goal of the present study was to provide a more systematic model of predictors of dog adoption versus euthanasia, and strengthen the sparse literature in the following ways: Previous studies such as Patronek et al.'s (1995) and Posage et al.'s (1998) estimated body weight based on AKC breed category rather than using concrete data in continuous form. Some researchers (Lepper et al., 2002; Nemcova & Novak, 2003) refrained from sampling during the summer, and as previously reported, Wells & Hepper (1992) tracked shelter dogs for only a month, whereas the present study includes an entire year's worth of data. Further, Lepper et al. (2002) conducted their study at a municipal, rather than privately funded shelter, so their results might not generalize to non-governmental entities. Posage et al.'s (1998) study is limited in only including owner relinquished dogs over four months of age, and even more specifically, those that made it to the adoption floor. The present study was inclusive of strays and those deemed unadoptable by shelter staff. Variables are controlled for that other authors overlooked; for example, Notaro (2004) didn't filter out cases of owner requested euthanasia when conducting

his outcome statistics. Further, while Wells & Hepper's (1992) and Nemcova & Novak's (2003) findings are interesting, physical characteristics that predict adoption might vary cross-culturally; as previously discussed, the authors of the former study drew two conclusions that are suspect due to having expected cell frequencies too low to include in a chi-square analysis. This study also intended to illuminate whether particular breeds are favored over others (Lepper et al., 2002; Patronek et al., 1995; Posage et al., 1998) and if preferences or reasons for relinquishment have changed over time. Given the recent studies that demonstrate preference for small, young dogs (Kline, 2009; Triebenbacher & Cauthen, 2009), I hypothesized that Toy breeds, who have neonatal-like features such as small bodies, round eyes, and small noses, which convey a cute appearance, would have the highest adoption rates. Research on humans across the lifespan demonstrates that "babyfaces" are perceived as warmer, dependent, and naïve, or in other words, safe, and in need of care-taking (Zebrowitz & Montepare, 1992). Using an empirical, data driven approach, the present study contributed to theory building on owner--dog attraction.

Hypotheses

1. Compared to euthanized dogs, adopted dogs will be more likely to be strays rather than owner relinquished, have short rather than medium hair, primarily have non-black coats, be purebreds, younger, smaller in weight, and female.
2. Pure black dogs will have a higher euthanasia rate than black dogs with a non-solid color pattern (e.g. spotted, tricolored).
3. Coat pattern (solid, bicolor, tricolor, tick, brindle, spotted) will have a significant but small effect on dog adoption.

4. There will be a relationship between primary coat color and shelter outcome; black dogs will have a higher euthanasia rate than dogs of other colors.
5. AKC class will predict shelter outcome. Specifically Toy breeds will have the highest adoption relative to euthanasia rate, whereas mixed breeds will tend to have similar adoption and euthanasia rates.
6. Owners' reason for relinquishment will partially predict whether dogs are adopted or euthanized.

CHAPTER 2

METHODS

Data were acquired from a private, non-profit, open-admissions shelter located in a Midwestern county populated with over 480,000 individuals. PetPoint is the database system utilized by this and other animal shelters throughout the country. Data were comprised of all the dogs entering and exiting the shelter in 2007 and subsequently analyzed by the author through PASW (formerly SPSS). At the point of relinquishment, staff determined whether dogs were strays, as defined as "found or abandoned animals in custody of the relinquisher for fewer than 30 days", or owner relinquished, by verbally asking individuals a series of questions pertaining to ownership. A contract was signed by relinquishers of both stray and owned animals regarding their ownership status. Only owners were asked why they were relinquishing their pet. Dogs placed on the adoption floor had a card next to their cage that informed interested parties whether they were strays or owner relinquished, which is pertinent to the present study as I examined whether this variable is related to dog outcome. The admissions/intake staff performed a brief exam to determine physical characteristics such as sex, age, weight, coat characteristics, perceived primary and secondary breed (if applicable), and health issues; these variables and others such as reason for relinquishment were created by the shelter and entered into PetPoint. There was no time limit for how long adoptable animals could stay on the adoption floor. As long as they were considered "happy and healthy" and the shelter wasn't at capacity, they remained eligible for adoption.

Unless otherwise noted, given the purpose of this study, dogs recorded as being specifically brought in for clinic services such as to be sexually altered, vaccinated, or cremated,

were excluded from analyses, as were cases of dogs dead on arrival and owner requests for euthanasia. Dogs who were previously adopted and then returned to the shelter were included. When analyses were performed to predict adoption versus euthanasia, the adoption category incorporated reclaimed strays as well as those transferred to other rescue groups, with the assumption that they would eventually be adopted. Age, body weight, and color pattern each contained between 5 and 8% missing values. PASW's Missing at Random (MRA) test indicated that the missing values for body weight and age were not random. Continuous variables were tested for skewness and kurtosis given their usage in discriminant analyses. Two body weight data entry errors (over 300 pounds) were deleted. In some analyses all potentially adoptable dogs were included, whereas in others, only those over one year of age qualified; Table 1 illustrates statistical information for both groups' continuous variables. Despite kurtosis, age was not transformed given its mild influence[1] and because it would have been difficult to interpret in the discriminant analyses. When it was clear that missing values were labeled incorrectly after cross-referencing variables with each other, the values were converted to the correct format. For instance, rather than being left as missing data, the outcome of dogs dead on arrival were recoded as such. If the secondary breed was missing data, I assumed the dog was perceived by staff as *likely* to be purebred. Using the primary breed information I was able to categorize the purebreds into their AKC groups: Sporting, Terrier, Herding, Working, Non-Sporting, Hound, and Toy. Poodles were excluded from AKC analysis since they fall into both the Toy and Non-Sporting categories and their frequency was low (N = 18). Individual breeds were categorized given that particular groups tend to share behaviors and physical characteristics. Given the plethora of

[1] When the first discriminant analysis was run using a log transformation of the age variable, prediction increased by two percent.

individual breed labels (N = 154), breeds were included up until the cumulative total reached 96.5%, or each breed had at least 10 cases (74 breeds). The remaining breeds were excluded from the analysis involving AKC classification. Mixed breeds remained coded as such.

TABLE 1

DESCRIPTIVE STATISTICS OF CONTINUOUS VARIABLES USED IN THE DISCRIMINANT ANALYSES

	M	*SD*	Skew	Kurtosis	*N*
Age in Years	2.0	2.5	2.16	5.24	6405
Body Weight (lbs)	31.0	22.8	.92	.57	6405
1 year +					
Age in Years	3.5	2.8	1.6	2.7	3290
Body Weight (lbs)	40.5	23.9	.57	.06	3290

TABLE 2

GLOSSARY OF TERMS

Potentially adoptable	Not brought in specifically for clinic services, not dead, not requested by the owner to be euthanized.
Primary color	The dog's main coat color, as identified by shelter staff. Other colors were not documented.
Black dog	A dog whose primary color is black.
Pure black	Black is the primary coat color and solid is the coat pattern.
Merle	Solid base color such as red, brown, or black, with lighter blue, gray, or reddish patches, which produces a speckled color pattern.
Tick	A color pattern comprised of flecks or spots of color in white areas.
Brindle	A striped look; black or other dark colors are set on a light base coat.
Adult dog	One year of age or older.

CHAPTER 3

RESULTS

Descriptive Statistics

Of the incoming 7,602 dogs, 39.3% were strays admitted by the public, 36.6% were owner relinquished (for adoption), 8.3% were returned adoptions, 4.6% were cremated, 3.3% were owner requests for euthanasia, 4.5% were transferred in by either animal control or the Kansas Animal Health Department, and the remaining 3% were dead on arrival, abandoned, or brought in for clinic services and were excluded from subsequent analysis. Table 3 shows the primary reasons for relinquishment of owner relinquished animals, excluding owner requests for euthanasia. Having too many animals was reported as the primary reason for relinquishment (17.7%), followed by moving (11.6%). Stray animals were excluded from this analysis given that they do not have owners, and thus the reason for their potential abandonment is unknown.

TABLE 3

PRIMARY REASONS FOR OWNER RELINQUISHMENT

Reason	Percent	Frequency
Too Many Animals	17.7	660
Moving	11.6	435
Not Enough Time	6.7	252
Cannot Afford	5.8	215
Health of Animals	5.0	186
Inadequate Housing/Yard	4.7	176
Landlord	4.1	153

TABLE 3 (CONT.)

Aggression towards people or animals	3.7	138
Health of Owner	3.3	122
Unrealistic Expectations	2.9	108
Too Active	2.9	107
Total	68.4	2552

The outcomes of potentially adoptable dogs (e.g. not dead, no owner requests for euthanasia) were as follows: 46.4% were adopted, 46.4% were euthanized, 6% (strays) were returned to their owners, and 1.1% were transferred to a breed specific rescue group. Of the euthanized animals, 66% were euthanized due to behavior, 31% for medical reasons, and 2% were coded as due to limited space. Of the adopted animals, 84% were adopted at the facility, 2% were adopted at a special event, 2% were taken in by a breed specific rescue group, 10% were reclaimed strays, and lastly, 1% were surrendered by their owners and then reclaimed.

Dog sex was evenly split: 50.5% of all potentially adoptable dogs were male and 49.5% were female. Of the dogs one year of age or older (51.6%), 52% were male. While 84% of the shelter population was a mix of some sort, the most common primary breeds were Labrador Retriever (18.1%), Pit Bull Terrier (9.9%), Shepherd (7.4%), German Shepherd (3.6%), Border Collie (3.5%), and Terrier (3.2%). Purebreds accounted for 16% of the shelter population. The most predominant primary coat color was black (44.2%), followed by white (14.4%) and tan (14%). A bicolor coat pattern was the most prolific (51.1%), followed by tricolor (25.9%), solid (14.9%), brindle (5.8%), and merle (1.4%). Seventy-four percent of dogs had short coats, 23% medium, and the remainder were long-haired or had missing values for hair type.

Outcome Predictors

A discriminant analysis evaluated whether the following were predictors of adoption versus euthanasia: Being a stray rather than owner relinquished, having short rather than medium hair, primary coat color (black vs. non-black), purebred vs. mixed descent, sex, body weight, and age. Only dogs one year of age or older were included in the analysis to avoid confounding age and body weight. The overall Wilks's lambda was significant, $\Lambda = .92$, $\chi^2(7, N = 2705) = 218.76$, $p < .001$, indicating that the discriminate function could differentiate among the two outcome groups. The canonical correlation was .28, conveying 7.8% of the variance of the scores on the discriminant function were accounted for by differences between adoption and euthanasia groups. Table 4 illustrates the group means, the correlations between the predictors and the discriminant function, and the standardized weights. Based on these coefficients, being pure vs. mixed breed had the strongest relationship with the discriminant function, closely followed by body weight and relinquisher; dog sex had the weakest relationship with outcome. When trying to predict group membership, 61% of the dogs in the sample were classified correctly. To assess how well the classification procedure would predict using a new sample, 61% of the dogs were accurately classified using the leave-one-out technique, which is 11% greater than chance.

TABLE 4

DOGS ONE YEAR OF AGE AND OLDER: GROUP CENTROIDS, STANDARDIZED COEFFICIENTS, AND CORRELATIONS OF PREDICTOR VARIABLES WITH THE DISCRIMINANT FUNCTION

	Correlation coefficients with discriminant function	Standardized coefficients for discriminant function
Predictors		
Pure vs. Mixed	.54	.63
Body Weight	.52	.42
Owned vs. Stray	-.46	-.47
Age	.30	.42
Black vs. Not	.21	.20
Hair Length	-.20	-.24
Sex	.12	.15
Group Centroids		
Adoption	-.34	
Euthanasia	.25	

A second discriminant analysis was performed that included dogs younger than one year of age, rather than restricting criteria to one year of age and older. The overall Wilks's lambda was significant, $\Lambda = .90$, $\chi^2(7, N = 5339) = 558.76$, $p < .001$, indicating that the discriminate function could differentiate among the two outcome groups. The canonical correlation was .32, conveying 10.2% of the variance of the scores on the discriminant function were accounted for by differences between adoption and euthanasia groups. Table 5 illustrates the group means, the correlations between the predictors and the discriminant function, and the standardized weights. Based on these coefficients, body weight had the strongest relationship with the discriminant

function, closely followed by age. Having a black coat or not had the weakest relationship with outcome. When trying to predict group membership, 65% of the dogs in the sample were classified correctly. To assess how well the classification procedure would predict using a new sample, 65% of the dogs were accurately classified using the leave-one-out technique, or 15% better than chance.

TABLE 5

ALL POTENTIALLY ADOPTABLE DOGS: GROUP CENTROIDS, STANDARDIZED COEFFICIENTS, AND CORRELATIONS OF PREDICTOR VARIABLES WITH THE DISCRIMINANT FUNCTION

	Correlation coefficients with discriminant function	Standardized coefficients for discriminant function
Predictors		
Body Weight	.75	.64
Age	.59	.57
Owned vs. Stray	-.20	-.22
Pure vs. Mixed	.19	.40
Sex	.14	.14
Hair Length	-.14	-.21
Black vs. Not	.10	.12
Group Centroids		
Adoption	-.31	
Euthanasia	.35	

Following the discriminant analyses, a two-way chi-square analysis determined that dogs under one year of age (56.8%) were more likely to get adopted than adult dogs (43.2%), Pearson $\chi^2(1, N = 6602) = 225, p < .01$, Phi Coefficient = .18. Further, a two-way chi-square analysis

including dogs of all ages confirmed a small effect for black dogs (48.5%) being more prone to euthanasia than non-black dogs (44.8%), Pearson $\chi^2(1, N = 6794) = 9.08$, $p < .01$, Phi Coefficient = .04. A follow-up analysis was conducted to assess whether pure black dogs are less likely to be adopted than black dogs with a different color pattern such as tricolored or spotted. While pure black dogs were more prone to euthanasia (51.2%) than other dogs with primarily black coats (47.8%), the results were not statistically significant, Pearson $\chi^2(1, N = 2983) = 1.75$, $p = .19$. When dogs under one year of age were filtered out, a two-way chi-square analysis revealed that the effect size of dog color increased, Pearson $\chi^2(1, N = 3405) = 20.07$, $p < .001$, Phi Coefficient = .08; whereas only 38.1% of black dogs over one year of age were adopted, 61.9% of non-black dog had positive outcomes.

When an independent-samples *t* test was conducted to assess body weight differences between potentially adoptable black and non-black dogs, the result was not statistically significant nor was the effect size more than negligible, $t(6261) = .02$, $p = .99$. When dogs under one year old were filtered out, the relationship became statistically significant, $t(3123) = 4.84$, $p < .001$. Black dogs ($M = 42.79$, $SD = 22.77$) weighed more than non-black dogs ($M = 38.76$, $SD = 24.64$). The 95% confidence interval for the difference in means ranged from 2.39 to 5.66 pounds. The eta square index indicated that less than 1% of the variance of the weight variable was accounted for by dog color.

An additional chi-square analysis was performed to further examine the relationship between primary coat color and outcome (adoption vs. euthanasia). Table 6 depicts the statistically significant relationship, Pearson $\chi^2(8, N = 6572) = 38.43$, $p < .001$, Contingency

Coefficient = .08. Grey, blond, and chocolate had the highest adoption rates, and orange dogs the lowest, although the latter group's frequency was relatively small.

TABLE 6

RELATIONSHIP BETWEEN PRIMARY COAT COLOR AND SHELTER OUTCOME

Coat Color	Adopted	Euthanized	Frequency
Grey	64.3%	35.7%	115
Blond	63%	37%	184
Chocolate	62.4%	37.6%	311
White	55.4%	44.6%	975
Brown	53.9%	46.1%	482
Tan	53.7%	46.3%	948
Black	51.5%	48.5%	3006
Red	51.4%	48.6%	469
Orange	36.6%	63.4%	82
Total	53.5%	46.5%	6572

A two-way chi-square analysis was implemented to decipher whether coat pattern (solid, bicolor, tricolor, tick, brindle, spotted) influences adoption. As criteria for entering the analysis, each pattern had expected cell frequencies of at least 10. Coat pattern and shelter outcome were found to be statistically significant, Pearson $\chi^2(6, N = 6733) = 36.77$, $p < .001$, Contingency Coefficient = .07. Dogs with merle, tricolored, and tick patterns had the highest adoption rates. Table 7 depicts the results.

TABLE 7

RELATIONSHIP BETWEEN COAT PATTERN AND SHELTER OUTCOME

Coat Color	Adopted	Euthanized	Frequency
Merle	63.9%	36.1%	97
Tricolor	58%	42%	1746
Tick	56%	44%	25
Solid	54.8%	45.2%	1004
Bicolor	51.9%	48.1%	3448
Spotted	47.6%	52.4%	21
Brindle	44.1%	55.9%	392
Total	53.6%	46.4%	6733

A two-way chi-square analysis was conducted to determine whether dogs of particular AKC classifications are favored for adoption over others. There was a significant association between AKC breed classification and adoption, Pearson $\chi^2(7, N = 6722) = 56., p < .001$. The Contingency Coefficient illustrates that 9.2% of the variance in dog outcome was accounted for by breed classification. As conveyed in Table 8, Toy breeds had the most favorable outcome; 73% were adopted, followed by Hounds, Sporting, Non-Sporting, Working, Terrier, Mixed, and Herding groups. The Herding category was the only one more prone to euthanasia than adoption, albeit slightly. The adoption rate across groups was 53.4%.

TABLE 8

RELATIONSHIP BETWEEN AKC CLASSIFICATION AND SHELTER OUTCOME

Breed	Adopted	Euthanized	Frequency
Toy	73.3%	26.7%	150
Hound	66.9%	33.1%	151
Sporting	64.3%	35.7%	238
Non-Sporting	64.1%	35.9%	64
Working	56.5%	43.5%	154
Terrier	55.6%	44.4%	198
Mixed	51.8%	48.2%	5648
Herding	48.7%	51.3%	119
Total	53.4%	46.6%	6722

A two-way chi-square analysis was used to determine whether the most frequent 11 reasons for owner relinquishment (Table 3) are related to adoption versus euthanasia, once again excluding cases of owner requests for euthanasia. Reasons were classified into the following three categories: owner issues, pet health, and pet behavior (e.g. aggression and hyperactivity). There was a statistically significant relationship between reason for relinquishment and dog outcome, Pearson $\chi^2(2, N = 2415) = 73.09$, $p < .001$. The Contingency Coefficient indicates that 17% of the variance in dog outcome was accounted for by owner reason for relinquishment. Dogs whose owners reported relinquishing them for personal issues such as moving or having too many pets had better outcomes than when behavioral or health problems were ascribed.

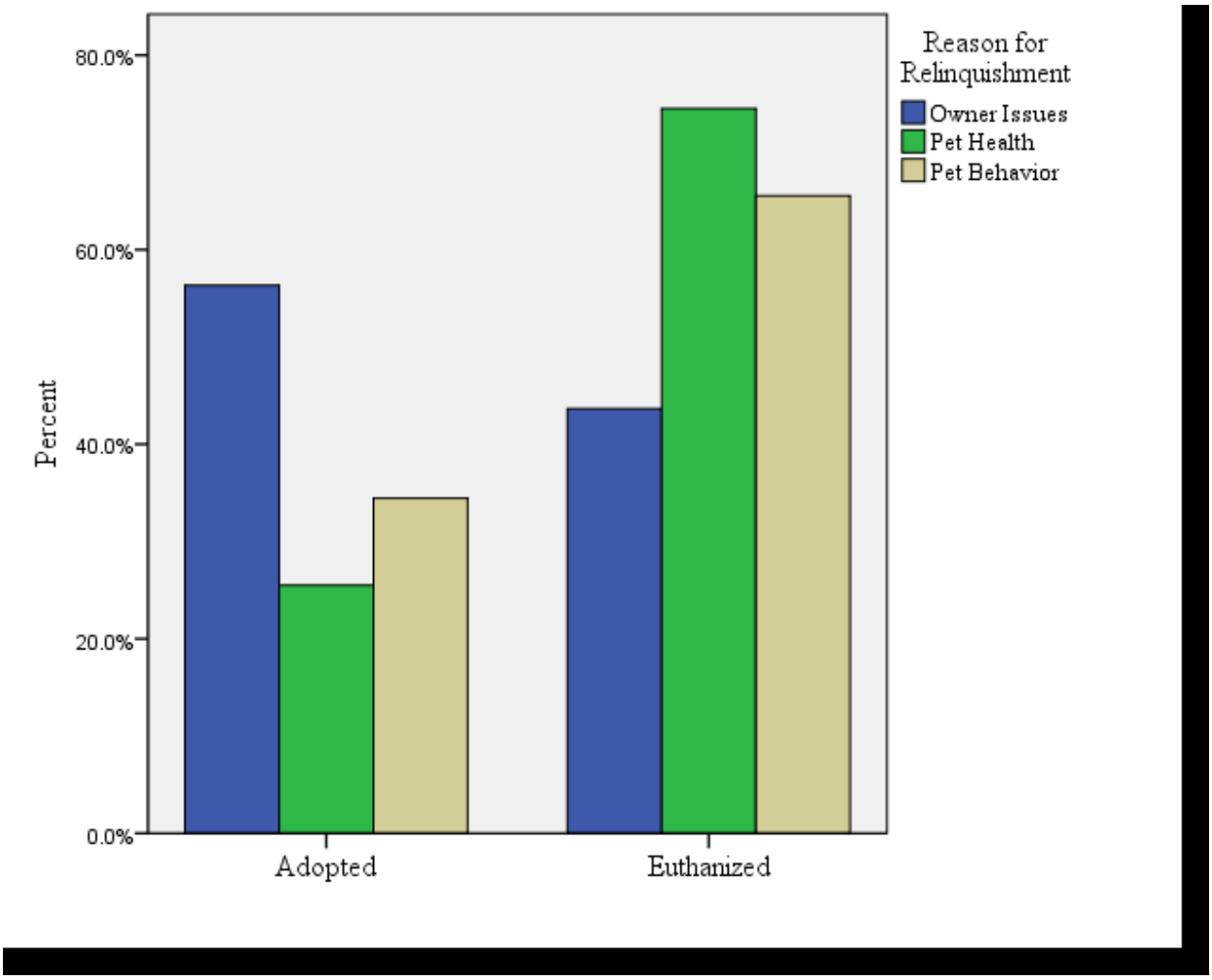

Figure 1. Relationship between owner reason for relinquishment and dog outcome.

CHAPTER 4

DISCUSSION

The primary aim of this study was to use a data driven approach to identify dog characteristics that contribute to adoption. Puppies (under 1 year old) were more likely to be adopted than older dogs. Toy and Hound breeds had particularly optimal outcomes, as did dogs with grey, blond, merle, chocolate, and tricolored coats, and those who were surrendered because of owner personal problems. Adult dogs who were adopted tended to be purebreds, small, young, strays, not black, medium-haired, and female.

Specifically the discriminant analysis that only included adult dogs revealed that perceived purebred status was the variable that had the biggest influence relative to six other variables used to predict whether dogs were adopted or euthanized; it accounted for 29% of the variance of the discriminant function, which in turn accounted for 7.8% of the variance. While 7.8% is recognizably a small effect, it is important to keep in mind that real world data consisting of 2705 dogs was examined, rather than a psychological construct. In descending order of importance, the other predictors of adoption besides being purebred were smallness, being a stray, youth, not having a primarily black coat, medium hair, and being female. To expound on these results, body weight had the second largest correlation (.52) with the discriminant function (adoption vs. euthanasia); congruent with past research (Kline, 2009; Lepper et al. 2002; Nemcova & Novak, 2003; Posage et al., 1998; & Triebenbacher & Cauthen, 2009), being small and young is favorable to adoption, even after controlling for age by only including dogs who were at least one year old and thus had likely achieved full body weight. The second discriminant analysis demonstrated that including puppies led both the body weight and age

variables to supersede the importance of being of purebred vs. mixed descent when predicting outcome. Similarly a follow-up chi-square analysis revealed that puppies (57%) were more likely to get adopted than adult dogs (43%); eighteen percent of the variance in outcome was determined by age. Contrary to the black dog – large size relationship purported by Posage et al. (1998), there was only a negligible weight difference of four pounds between black and non-black adult dogs. Not having a black coat was mildly correlated (.22) with adoption.

While the discriminant analysis uncovered that strays were more likely to be adopted than owner relinquished animals (r = -.46), this may be because 11% of potentially adoptable strays were reclaimed by their owners. This study cannot address whether staff and/or adopters have more positive perceptions of owner relinquished animals. The stray reclaim rate was much lower than the 50% documented in Patronek et al.'s (1995) study, illustrating potential attachment and ecological differences between the populations under study. Finally, dog sex – being female -- had the smallest relationship (r = .12) with outcome. Despite that dog behavior is more a function of breed and owner treatment than sex, these results corroborate comments mentioned in Ramirez's (2006) study in which gender stereotypes were used to interpret and explain dog behavior (e.g. aggressive male).

Breed contributed over 9% of the variance to shelter outcome. As predicted, Toy breeds, who tend to have neonatal-like features and are small in size, had the highest adoption rate (73%), followed by Hounds (67%). These results are similar to studies conducted by Posage et al. (1998) and Lepper et al. (2002), although contrary to Patronek et al.'s (1995) finding that no relationship exists between AKC classification and shelter outcome. The fact that the Sporting group had a higher adoption rate than the Terriers supports Wells & Hepper's (1992) results.

Second to the Herding group, Mixed breeds were the least likely to be adopted in the present study.

Owning purebred dogs to demonstrate or improve social status, perhaps if only realized via positive associations toward them, may not be as prevalent as in the past, but still appears to exist (Derr, 1997). Analyses that examine the relationship between coat color, pattern, and shelter outcome also reveal a relationship with AKC classification. Merle dogs, which had the highest adoption rates (64%) compared to dogs of other colors, also tend to be purebreds. Their genetic characteristics such as blue eyes and coloring on the paw pads and nose add to their uniqueness, a cultural quality valued by Americans. An additional distinct characteristic promoting adoption was medium hair length, similar to Wells & Hepper's (1992) finding that long hair was preferred over short in manipulated photos. The present study's findings were similar to Lepper et al's (2002) results on physical coat characteristics that promote (grey, tricolor, merle) or impede (brindle, black) adoption, although whereas having a red coat was a protective factor in their study, dogs with this coat color had the lowest adoption rates relative to dogs of other colors.

After age (puppy vs. adult), the variable contributing the most variance (17%) to whether a dog was adopted or euthanized was owner's reason from relinquishment. Similar to Lepper et al.'s (2002) results, dogs who were relinquished for owner personal reasons such as having too many pets, moving, time constraints, cost, etc. had better outcomes than dogs relinquished primarily for behavioral reasons, who fared better than dogs whose owners reported canine health issues. Intuitively this finding is unsurprising given that remedying health problems can be

expensive for the shelter and owners. Owner requests for euthanasia were controlled for, which avoids confounds associated with including extremely unhealthy animals.

Implications

Theoretically there appears to be support for attraction to neonatal features and also to uniqueness. On an applied level, if shelter staff are aware that particular characteristics such as youth, AKC classification, and owner reason for relinquishment have moderate predictive ability in terms of outcome, they can be more conscious of their decision-making process to put animals that fit one or more of these characteristics on the adoption floor in order to conserve shelter resources. It is possible that staff intuitively hypothesize which dogs are most adoptable and that findings may be a reflection of a combination of the public's preferences, the staff's, and the staff's perception of the public, although literature on animal shelters indicates that staff display a variety of dogs at any given time. Future research could specifically explore attitudes and decision-making processes of shelter workers.

If shelters are cognizant of characteristics of "underdogs" and desire to increase their adoptability, measures such as public campaigns could be drafted to promote at-risk groups. For instance "smallness" or "purebred" could be disassociated from "elite", and "female" from "well-behaved". If mixed breeds tend to be healthier, this aspect could be emphasized to adopters as well as the mass public to combat some of the preferences towards purebreds, particularly amongst male adopters, who tend to base their selection on physical characteristics rather than personality (Ramirez, 2006). Following suggestions by Tuber et al. (1999), shelters could invest more resources into conditioning at-risk dogs to obey basic commands (thereby reducing shelter stress to both staff and dog), teaching owners these commands and the importance of daily

routine so behavior generalizes outside the shelter, and administering training in a room similar to a home environment. These tactics may facilitate adoption, strengthen the bond between owner and dog, and prevent adopters from returning their dog due to behavioral problems. It has also been suggested that if a dog is trained in a particular trick, such as to jump through a hoop, a photo on the cage illustrating the maneuver may enhance its desirability (Tuber et al., 1999). Further, after pairing adopters and adoptees together based on a good personality and lifestyle match, suggestions could be made by staff to reframe a potentially irritating dog behavior such as high energy, into a positive, attachment-inducing homage.

When examining the descriptive statistics of outcomes of potentially adoptable dogs (e.g. not dead, no owner requests for euthanasia) who were euthanized, one must keep in mind that at the time of this study the shelter was at capacity at least eight months that year, but only 2% were coded as being euthanized due to limited space (personal communication, February 12, 2010). While 66% were entered as euthanized due to behavior and 31% for medical reasons, dogs who were pulled for space were categorized into the category they best fit into, even if the problem was very minor.

The following findings illustrate a need to address dog overpopulation at the community level: The primary reason cited for relinquishing one's pet was that there were too many animals comprising the household, the shelter was routinely at capacity, and there was a high puppy frequency (47%). These results may illustrate that greater monetary investment go into sterilization education, free or low-cost spay/neuter programs, and policy initiatives, relative to education addressing behavioral problems, which tend to improve after sterilization. Shelter policy specifies that when sexually intact strays enter the shelter and are later returned to their

owners, they do not have to be fixed since they are not owned by the shelter; upon being offered this service, which tends to be less expensive than a typical veterinarian fee, most decline (personal communication, February 11, 2010). While these owners might later make a vet appointment to fix their pets, it is possible that these owners are contributors to pet overpopulation, as their pets have already been running loose. Modification of shelter policy could have an effect on dog overpopulation whereas a mandatory city-wide spay/neuter policy, while perhaps unpopular from a civil rights and small business (e.g. breeders) perspective, has the potential to produce even larger effects. A series of cities, including Albuquerque, N.M., have begun to restrict the sale of domestic animals. Shelter euthanasia rates have reportedly decreased by 35% and adoptions have increased 23% in Albuquerque since the ban in 2006 (Dube, 2010). Given the relationship between dog size and relinquishment and adoption, advocating for policies at the community level that restrict landlords from denying housing to tenants on the basis of canine size or from charging them exorbitantly for pet rent may be conducive to the human—dog relationship. Similarly, Wenstrup & Dowidchuk (1999) encourage shelters to think broader than sterilization and owner education to include coordination amongst community agencies and to increase shelter advertising when tackling animal issues such as adoption facilitation. For instance there could be future investment in transporting animals to shelters in regions of the country not operating at full capacity since only 1% of dogs were transferred to a rescue group; presumably some of these animals were transferred locally. To increase shelter funding, Notaro (2004) suggests having animal control compensate humane societies for the services they provide, such as allowing animals to be transferred to their facilities.

Conclusions

It is important to reiterate that the predictors included in the first discriminant analysis only explained 7.8% of the variance in dog outcome. One variable that would have been beneficial to examine is whether animals that are intact are disproportionately euthanized. If they are, controlling for other variables such as behavior and health problems, this might provide insight as to how limited resources guide outcomes, as the onsite veterinarians' time is a resource. Unfortunately the data set didn't distinguish between animals' reproductive status entering vs. leaving the shelter; adopted animals could have been labeled as neutered/spayed since it is required for adoption, despite entering the shelter intact. Returned dogs were entered as separate cases, so some dogs, by default, went into an analysis multiple times; fortunately being returned was not a frequent occurrence.

This study does not address adopter characteristics that facilitate adoption, such as adopter personality, motivation to acquire a pet, and socioeconomic status. Similarly regarding the relinquishment--outcome relationship, perhaps some dogs such as purebreds had better adoption outcomes as a function of good pet ownership. Dogs were coded as purebred vs. mixed based on the shelter staff's judgment of their primary and secondary breed. Despite staff knowledge, it is possible that some dogs were coded incorrectly. This does not appear to be a serious concern given that the relationship between health issues and breed was not assessed, and it can be argued that *perception* of purebred status, indicated on the cage information cards, is of prime importance.

Only the primary reason for relinquishment was reported and analyzed in relation to adoption, and as with previous studies, how serious this behavior was to the owners was not

assessed. DiGiacomo et al. (1998) discovered that reasons initially reported for relinquishment weren't necessarily congruent with responses during follow-up questioning; as with most self-report research this incongruence could be a product of memory distortion, social desirability, cognitive dissonance reduction, and/or a script that's not necessarily accurate but reflects a response of what is most consciously salient at the time. Future research might explore what relinquishers mean specifically when they cite "unrealistic expectations" as a primary reason for relinquishment. While the focus of this study is adoption, improving the likelihood of long-term pet retention requires knowledge about adopter expectations in order to better educate owners prior to adoption what "normal" pet behavior entails, such as activity level, particularly in relation to breed.

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