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Give a Dog a Bad Name and Hang Him: Evaluating Big, Black Dog Syndrome

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Abstract
Two studies examined human perceptions of dog personality attributes based upon exposure to pictures of dogs of select breeds. The proposed hypotheses evaluated the validity of "big, black dog syndrome"—whereby large, black dog breeds are reportedly spurned for adoption due to negatively perceived personality attributes—by assessing each dog's relative trait dominance and affiliation based upon a taxonomy drawn from the eight-factor interpersonal circumplex. Results of two separate studies indicated that among participants' ratings, breed-specific differences were more powerful predictors of interpersonal trait attributions than the color or size of the dog. In general, with the exception of the golden retriever, black labs were perceived as consistently less dominant and less hostile than other large breeds, contrary to the assumption that large, black dogs are viewed negatively.

Keywords
black dog syndrome, canines, interpersonal circumplex, personality

Introduction

Large, black dog breeds, as depicted in folklore, literature, and popular culture, have earned a consistently unpleasant reputation. In the folklore of the British Isles, a black dog was a ghostly being whose appearance was regarded as a portent of death. Perhaps drawing on this cultural stereotype, Sir Arthur Conan Doyle used the image of a black dog, with bloody eyes and frothy jowls, as his specter of horror in *The Hound of the Baskervilles*. Even in popular slang the term "black dog" is used to describe the darkest depths of depression. More recently, big, black dog breeds have been at the center of the controversy first publicized by the Associated Press ('Big black dog' syndrome leaves them homeless, 2008). According to the news stories, humane shelters reported that large, black dogs have more trouble finding homes than do other dogs—a

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phenomenon termed "big, black dog syndrome." Practical explanations for this phenomenon include the fact that large dogs can be frightening, that black dogs of all sizes and breeds are harder to photograph in the shadows of a kennel, and that the expressions of a black dog are harder to read due to the lack of facial contrast ("Contrary to ordinary": The black pearls of the dog world, 2008). Embedded within a social-perception framework, the color black has been associated with higher perceived levels of malevolence and strength in sports team players than other colors (Frank & Gilovich, 1988). Although black dog breeds are reportedly found in higher numbers in kennels and animal shelters, the evidence for this "syndrome" is anecdotal rather than empirical. The overarching goal of the current study was to assess whether human perceptions of canine interpersonal characteristics vary based upon color and size.

Personality and Pets

The study of comparative animal behavior has frequently focused on phenotypical distribution of personality traits in humans and other primates (Dingemanse & Reale, 2005). Recently, a growing body of research in animal behavior attributes behavioral characteristics that might be deemed personality to different breeds of dogs (Ley & Bennet, 2007; Jones & Gosling, 2005). In fact, there is ample evidence for the construct of animal personality traits, including strong levels of inter-observer agreement, validity in terms of predicting behaviors, and low anthropomorphism (Gosling & Vazire, 2002). Personality differences in dogs were detected and judged as accurately as those in humans by patrons of a local dog park (Goslin, Kwan, & John, 2003). Hence, personality attributions may result from very real differences in the social behavior of dogs. Some canine dispositions (playful, social, exploratory, avoidant, and aggressive) seem remarkably stable, which supports the construct of personality traits as an evolutionary factor in *Canis familiaris* (Svartberg, Tapper, Temrin, Radesater, & Thorman, 2005). Certain dispositions (self-assuredness/motivation, training focus, and amicability) may be characteristic of individual dogs and reflective of selective evolutionary pressures (Ley, Bennett, & Coleman, 2008).

The fundamental idea behind "big, black dog syndrome"—that phenotype may be linked to perceived genetic personality dispositions—has been assessed by multiple researchers. Specific phenotypes are indicators of key personality traits among dogs (Draper, 1995). For example, reactivity-surgency relates to overall size, whereas aggression-disagreeableness relates to having pointed ears.

More specifically, there is evidence for genetic variance in canine behavior characteristics. Aggression, one of ten common canine behavioral traits, showed significant variation across and stability within hereditary dog lines (Van den Berg et al., 2006). Likewise, one broad personality trait—shyness-boldness—varied according to breed of dog, suggesting a genetic basis for this characteristic (Saetre et al., 2006). Selective breeding by humans is likely responsible in some dogs for canine ear and tail form, posture, hair coat, and bone structure (Mertens, 2004), some of which may underlie a dog's ability to communicate submissiveness and avoid aggressive interactions. For example, some bone structures may inhibit dogs' facial expressions. Hence human preferences for certain dog phenotypes (for example, docked tails and ears) may in fact have shaped select breeds' capacities to communicate through nonverbal cues, with profound perceptual and relational consequences.

This line of research is paralleled by research in human phenotype and attributions of personality characteristics (Paunonen, Ewan, Earthy, Lefave, & Goldberg, 2001). Specifically, larger eye size and diminutive features in adult humans (Brownlow, 2005) and classic neonate features in infants (Kelley, Vannostrand, Shiflett, & Chan, 1998) were considered more attractive, elicited greater favorability ratings, and prompted higher feelings of nurturance among raters.

Given the clear variance in canine behaviors that has emerged over time, several researchers have sought to identify the primary components of dog personality—e.g., behavioral profiles for common breeds of dogs (Hart & Hart, 1984). At the center of this research is the assumption that personality in nonhuman animals can be described using human models (Gosling & John, 1999). For example, when the Big Five-factor model of human personality was applied to companion animals across a diversity of species, the factors that emerged (e.g., bold/quiet and warm/harsh) were consistent with dimensions that overlapped the character traits of control and affiliation—two axes of the circumplex model of personality (Podberscek & Gosling, 2000). Likewise, two dimensions of personality—activity/exploration and fear/avoidance—in personality analyses can be readily applied across species (Budaev, 1998). Ample evidence exists for trait dominance (aggression) (Beaver, 1983) as well as affiliation as personality dimensions among dogs (Ley, et al., 2008; Svartberg, 2005). Together these two dimensions constitute the interpersonal circumplex, one of the most sophisticated and theoretically coherent models of personality and relational style (Henry, Schacht, & Strupp, 1986).

The Circumplex Model of Personality

A circumplex is an arrangement of codable types of interpersonal behavior around a circular figure. Eight primary personality dimensions are arranged in pielike wedges around the figure: Dominant (D), Friendly-Dominant (FD), Friendly (F), Friendly-Submissive (FS), Submissive (S), Hostile-Submissive (HS), Hostile (H), and Hostile-Dominant (HD). A major assumption of interpersonal theory is that relational behavior can be organized on two orthogonal dimensions most commonly referred to as Dominance-Submissiveness (which reflects who controls whom) and Hostility-Friendliness (which identifies the warmth of the affiliation between two people). The control/agency dimension is located vertically on a circle; the affiliation dimension is located horizontally. There has been a multitude of studies supporting the two-dimensional structure of the circumplex in adult human behavior (Kiesler, 1996) over a variety of interpersonal relationships—including parent-child, marital, and therapist-patient. The interpersonal circumplex has even received acceptance from researchers outside the interpersonal tradition as a valid measure of interpersonal patterns of relating. McCrae and Costa (1989) confirmed the underlying factor structure of the interpersonal circumplex using a comparative model of the Big Five personality dimensions. The conceptual coordinates of control and affiliation apply to broader areas of study in the social sciences and humanities such as gender, language acquisition, and social cognition (Wiggins, 1991). The interpersonal circumplex used to describe dog relational styles successfully predicted attachment between people and their companion animals (Woodward & Bauer, 2007).

Based upon the anecdotal evidence presented by the Humane Society challenging the adoptability of large, black dog breeds, a hypothesis was proposed and tested. It was theorized that participants would perceive large, black dogs in generally less favorable terms than smaller dogs and/or dogs of lighter color (white). According to Wright, Smith, Daniel, and Adkins (2007), favorability/adoptability is determined by the social traits of high friendliness and low dominance.

Study 1

The first experiment was designed to assess the impact of color (black or white) and size (large or small) on ratings of dog personality, controlling for the factor of dog breed.

Methods

Participants

Seven hundred and ninety-five participants (602 women, 193 men, mean age 19.07, age range 18-48) were recruited from an introductory psychology course at Ball State University. Ethnic background was as follows: 4.4% African-American, 88.8% Caucasian, and 6.8% other.

Materials

The dogs depicted were a large, white standard poodle, a large, black standard poodle, a small, black toy poodle, and a small, white toy poodle (see Figure 1).

Each picture was matched in composition to a standard show stance—dog facing the left, with the animal standing on four spread legs and his/her head held up. Perceived interpersonal style was assessed using eight taxonomical trait-descriptive terms of personality as proposed by Wiggins (1979)—Assured/Dominant (dominant), Arrogant/Calculating (hostile dominant), Cold-hearted (hostile), Aloof/Introverted (hostile submissive), Unassured/Submissive (submissive), Unassuming/Ingenuous (friendly-submissive), Warm/Agreeable (friendly), and Gregarious/Extroverted (friendly-dominant). Each of the four dog pictures was evaluated on each of the eight personality dimmensions as described above. Responses were reported on a four-point Likert-style scale (1-4) with responses of 1 indicating "not at all" (the respondent perceived the pictured dog as manifesting low levels of this trait), 2 indicating "somewhat," 3 indicating "moderately so," and 4 indicating "very much so" (the respondent perceived the pictured dog as manifesting high levels of this trait).

Procedure

The respondents viewed and evaluated the perceived interpersonal style of a poodle depicted in a series of four photographs—each selected to represent one variable in the above hypothesis. All participants were asked to rate each of the four photographs on all eight dimensions of the interpersonal circumplex. The order of photo presentation was determined randomly rather than counterbalanced, since the results of an earlier pilot study using the same four photographs demonstrated no significant effects for order on any of the circumplex octants. In Study 1, the large, white poodle was presented first, the large, black poodle was presented second, the small, black poodle was presented third, and the small, white poodle was presented fourth.

Figure 1. Sample photos used in Study One.

Results

Repeated measures MANOVAs using listwise deletion were performed on the two independent variables color (black/white) and size (standard/toy). The means and standard deviations for all values reported below can be found in Table 1.

Table 1. Means and Standard Deviations for Circumplex Trait Categories across Levels of Poodle Size and Color Variations

	Black poodle		White poodle	
	Large	Small	Large	Small
Octant*	M *(SD)*	M *(SD)*	M *(SD)*	M *(SD)*
D	2.88 (.99)	2.51 (1.11)	3.08 (.92)	2.92 (1.08)
HD	2.60 (1.04)	2.48 (1.08)	2.80 (.99)	2.80 (1.08)
H	1.96 (.98)	2.00 (1.00)	1.93 (.92)	2.34 (1.08)
HS	2.00 (.89)	2.03 (.93)	1.86 (.91)	2.13 (1.00)
S	2.00 (.92)	2.01 (.94)	1.64 (.84)	1.81 (.88)
FS	1.97 (.83)	1.98 (.86)	1.81 (.84)	1.89 (.85)
F	2.54 (.88)	2.50 (.94)	2.57 (.86)	2.24 (1.00)
FD	2.62 (.94)	2.56 (.98)	2.82 (.93)	2.54 (1.04)

* Cirumplex octant labels are indicated as follows: D=dominant, HD=hostile-dominant, H=hostile, HS=hostile-submissive, S=submissive, FS=friendly-submissive, F=friendly, FD=friendly-dominant.

The results of each analysis (and trends in the respective means of each group across octants) can be found in Table 2 (reporting the effects for color) and Table 3 (reporting the effects for size). Calculated effect sizes using partial eta-squared suggests that, when applicable, significant effects are relatively small.

According to the results, there was a significant main effect for dog color and size on perceived dominance across the photos. In general, the white dogs received higher dominance ratings than black dogs. And, as predicted, the large dogs were reportedly perceived as more dominant than the small dogs. There were also significant simple effects for color (controlling for size)—with black dogs being rated as less dominant than white dogs regardless of whether they were large or small—and size (controlling for color), with large dogs being rated as more dominant than small dogs regardless of whether they were black or white.

On hostile-dominance there were significant main effects for color and size, with white dogs and large dogs rated as more hostile-dominant than black dogs or smaller dogs, respectively. These results were upheld by simple effects analysis for color, but not for size. Regardless of size, black dogs were consistently evaluated by participants as less hostile-dominant than white dogs. For black dogs, however, large dogs were rated as more hostile-dominant than small dogs.

For the octant hostility, there were significant main effects for both color and size, with white dogs being evaluated as more hostile than black dogs and

Table 2. Effects of Color on Personality Attributions for Dogs

	Main effect for color (white vs. black dogs)			Simple effect for color (large dogs only)		Simple effect for color (small dogs only)	
	F	η^2	***directionality of means***[β]	***F***	η^2	***F***	η^2
Octant[α]							
D (n = 765)	53.09**	.12	W>B	26.20**	.03	90.23**	.11
HD (n = 754)	37.82**	.12	W>B	24.88**	.03	54.00**	.11
H (n = 760)	35.54**	.09	W>B	.81	.00	69.21**	.08
HS (n = 748)	10.41**	.03	B>W	12.63**	.02	6.76*	.01
S (n = 752)	55.30**	.13	B>W	98.30**	.12	26.89**	.04
FS (n = 743)	13.73**	.04	B>W	24.03**	.03	6.36*	.010
F (n = 758)	23.38**	.06	B>W	.68	.00	90.23**	.06
FD (n = 752)	14.21**	.04	W>B	26.33**	.03	.37	.00

* $p < .01$
** $p < .001$
[α] Cirumplex octant labels are indicated as follows: D=dominant, HD=hostile-dominant, H=hostile, HS=hostile-submissive, S=submissive, FS=friendly-submissive, F=friendly, FD=friendly-dominant.
[β] Directionality of between-group differences across octants is indicated by the abbreviations W=white dog and B=black dog.

Table 3. Effects of Size on Personality Attributions for Dogs

	Main effect for size (large vs. small)			Simple effect for size (white dogs only)		Simple effect for size (black dogs only)	
	F	η^2	***directionality of means***[β]	***F***	η^2	***F***	η^2
Octant[α]							
D (n = 765)	37.22***	.09	L>S	15.01***	.02	68.95***	.08
HD (n = 754)	3.52*	.01	L>S	0.01	.00	6.84**	.01
H (n = 760)	43.98***	.10	S>L	86.57***	.10	.80	.00
HS (n = 748)	22.02***	.06	L>S	44.07***	.06	.62	.00
S (n = 752)	12.07***	.03	S>L	23.67***	.03	.03	.00
FS (n = 743)	3.21*	.01	S>L	6.41*	.01	.04	.00
F (n = 758)	34.21***	.06	L>S	68.19***	.08	1.16	.00
FD (n = 752)	24.57***	.06	L>S	49.21***	.06	2.13	.00

* $p < .05$
** $p < .01$
*** $p < .001$
[α] Cirumplex octant labels are indicated as follows: D=dominant, HD=hostile-dominant, H=hostile, HS=hostile-submissive, S=submissive, FS=friendly-submissive, F=friendly, FD=friendly-dominant.
[β] Directionality of between-group differences across octants are indicated by the abbreviations L=large dog and S=small dog.

small dogs rated as more hostile than large dogs. Again, controlling for size, a simple effects analysis revealed these results to be true for small dogs (but not large dogs). And controlling for color, these results were true for white dogs (but not black dogs). Hence, for the small poodle only, the black dog was rated as less hostile than the white dog and, for the white poodle, the small dog was rated as more hostile than the black dog.

For hostile-submissive, there were significant main effects for both color and size, with black dogs rated as more hostile-submissive than white dogs and large dogs rated more hostile-submissive than small dogs. A simple effects analysis on size found black dogs regardless of size to be perceived as more hostile-submissive than white dogs. A second simple effects analysis on color revealed that for white dogs, the small dog was reportedly perceived as more hostile-submissive than the large dog.

Results for the octant submissive resulted in main effects for both color and size, with black dogs rated as significantly more submissive than white dogs and small dogs rated significantly more submissive than large dogs. Controlling for size, a simple effects analysis revealed that for both large and small dogs, the black poodle was perceived as more submissive than the white poodle, but for the white poodle only, the small dog was reportedly perceived as more submissive than the large dog.

On the octant friendly-submissive there were again significant main effects for size and color. The black poodles were rated by participants as significantly more friendly-submissive than the white poodles. Likewise, the small poodles were rated as significantly more friendly-submissive than the large poodles. In a simple effects analysis for color these results were upheld for both the large and small poodles, with black poodles rated as more friendly-submissive than white poodles, regardless of size. Likewise, controlling for color, there was a simple effect for size for the white dogs only, with the small, white poodle rated as more friendly-submissive than the large, white poodle.

Analyses on the octant friendly resulted in significant main effects for both color and size, with black dogs rated as more friendly by participants than white dogs and large dogs rated as more friendly than small dogs. Simple effects analyses revealed that, controlling for size, there was a simple effect for color for the small dogs only, such that small, black poodles were perceived as more friendly than small, white poodles. A second analysis resulted in a simple effect for size for the white dogs, with the large, white poodle being rated as significantly more friendly than the small, white poodle.

Finally, for the octant friendly-dominant, there were significant main effects for both color and size, with white dogs being rated as more friendly-dominant than black dogs and large dogs rated as more friendly-dominant than small

dogs. There were also simple effects for both color—large, black dogs were perceived as significantly more friendly-dominant than large, white dogs—and size: large, white dogs were perceived as significantly more friendly-dominant than small, white dogs.

Discussion

Given the nature of these findings, it is clear that the phenomenon of black dog syndrome, if it exists, is not a simple formula of color and size. Review of the pattern of means, in general, suggests there would appear to be more positive perceptions (lower dominance/higher submission and greater friendliness/lower hostility) of the black poodles (regardless of size) and of the large, white poodle in comparison to the small, white poodle, although the effect sizes are relatively small. As such, a more comprehensive examination of human attitudes toward dogs of varying size, color, and breed may cast better light on the topic. Study 2 was devised to develop a deeper understanding of the attributional process in assessing companion-animal personality traits across dog breeds with special consideration to the role of color in breed specificity.

Study 2

Participants in Study 1 did not consistently attribute more favorable personality attributes to the small, white dog as predicted; thus, the researchers explored the confounding effects of breed on dog personality ratings. If black dog syndrome is indeed a valid phenomenon, it was expected in Study 2 that participants would rate the image of a large, black dog breed (a black lab) as more hostile, more dominant, less friendly, and less submissive than the dogs in other photos. However, if black dog syndrome is simply an artifact of attributes associated with typically large, black dog breeds rather than size or color (alone or in interaction), we would expect to see significant variance in the dog personality attributions across photos of different dog breeds. In sum, it was predicted that participants would report a difference in perception of personality attributes by breed of dog, with large, black dog breeds being rated as more hostile and more dominant than other breeds. To test this hypothesis, analyses of human perceptions of personality attributes, again using Wiggins's (1979) taxonomy, were performed across different pictures of dog breeds.

Methods

Participants

Four hundred twelve participants (252 women, 160 men; mean age 19.5, age range 18-35) were recruited from an introductory psychology course at Ball State University. Ethnic background was as follows: 2.5% African-American, 94% Caucasian, and 3.5% other. Sixty-six percent of the population reported currently keeping a dog, while 89% reported being raised with a dog sometime during childhood. The breakdown of dog breed for current companion animals was as follows: poodle-6.4%; pit bull-6%; Rottweiler-3.6%; Border collie-3.4%; German shepherd-1.9%; Labrador retriever-1.4%; boxer-1.2%, with the remainder of the population reporting that their canine companions were other or mixed-breed dogs. Participants received partial course credit for their participation.

Materials

The same four-point, Likert-type interpersonal evaluation materials described in Study 1 were used. Photographs of 13 of the most popular dog breeds were evaluated. Because they provided a match on either size or color in comparison to our prototypical large, black dog—the black lab—8 of the 13 dog breeds were selected for further analyses of the proposed hypotheses (this list indicates the order in which photos were presented—Border collie, boxer, German shepherd, golden retriever, black lab, pit bull, standard poodle, and Rottweiler). Smaller dogs of varied colors (e.g., Yorkshire terrier, dachshund, Chihuahua, etc.) were eliminated from further analysis in order to reduce the risk of alpha inflation. Whenever possible, pictures were matched for common background features, picture size, clarity and orientation, and pose of dog (for example: all breeds were presented with the tail down and the dog looking in the direction of the camera). Ear position was a notable exception in the attempt to standardize the photos—some of the dogs had their ears hanging down, while others had docked and pointed ears. Another uncontrolled variant was the degree to which the dog's mouth was open; in some of the photos the mouth was open with the tongue partially extended; in others the mouth was completely closed.

Procedure

The respondents viewed a series of the photographs of the dogs and rated each on the interpersonal circumplex scale. All the participants rated each of the dog breeds on all the circumplex octants. Reported means and standard deviations can be found in Table 3. The order for presentation of the different dog

breed photos was determined using random assignment methods (each breed was given a number, 1 to 13, and assigned an order in the study based upon the occurrence of that value within a random number table). The pilot analyses performed for Study 1 suggested that any order effects for the dog photographs would be very small to negligible; thus counterbalancing was not performed due to the extraordinarily large number of possible variations of order.

Results

A repeated measures MANOVA was performed to assess the effects of dog breed on perceived personality attributions. Across participants there were significant effects for perceptions of personality by dog breed on all eight of the circumplex octants (see Table 4).

Partial eta squared analyses indicated that the effect size for breed on perceived dog interpersonal style was quite large (≈1). For dominance $F(1, 404) = 1506.9$, $p < .001$, $\eta^2 = .97$; for hostile-dominance $F(1, 400) = 697.7$, $p < .001$, $\eta^2 = .93$; for hostile $F(1, 398) = 565.2$, $p < .001$, $\eta^2 = .92$; for hostile-submissive $F(1, 383) = 535.9$, $p < .001$, $\eta^2 = .92$; for submissive $F(1, 381) = 1507$, $p < .001$, $\eta^2 = .92$; for friendly-submissive $F(1, 383) = 622.4$, $p < .001$, $\eta^2 = .93$; for friendly $F(1, 404) = 1819.5$, $p < .001$, $\eta^2 = .97$; and for friendly-dominant $F(1, 393) = 1316.1$, $p < .001$, $\eta^2 = .96$. Thus, across octants, dogs of different breeds were perceived differently by participants.

To assess the hypothesized effects of black dog syndrome, a series of planned contrasts compared the perceived interpersonal traits of the black lab (a classic large, black dog) to the seven other breeds of dog (Border collie, boxer, German shepherd, golden retriever, pit bull, standard poodle, and a Rottweiler) (see Table 5).

In making the planned contrasts, pairwise deletion rules were applied to all planned contrasts, and the final sample size was N = 412. Consistent with the hypothesis, the black lab was perceived as significantly less dominant ($t = 2.86$, $p < .005$), more hostile ($t = -3.02$, $p < .003$), less friendly ($t = 4.36$, $p < .001$), and less friendly-dominant ($t = 3.77$, $p < .001$) than the large, light-colored golden retriever—a dog of similar phenotype except for its lighter color. In comparison to the small, black Border collie, the black lab was perceived only as significantly more friendly-dominant ($t = -1.83$, $p < .001$). However, comparisons to other large dog breeds revealed that color or size may not be consistent predictors of perceived favorability (low dominance/high submissiveness, low hostility/high friendliness). In fact, participants' perceived personality ratings appeared to be influenced more by their internalized stereotypes of breed than of color or size of dog breed. Specifically, the black lab was perceived as

Table 4. Means and Standard Deviations for Circumplex Trait Categories across Dog Breeds

	Collie		Boxer		Shepherd		Retriever		Lab		Pit bull		Poodle		Rottweiler	
Oct.	***M***	***(SD)***	***M***	***(SD)***	***M)***	***(SD)***	***M***	***(SD)***	***M***	***(SD)***	***M***	***(SD)***	***M***	***(SD)***	***M***	***(SD)***
D	2.39	(.90)	3.03	(.99)	3.21	(.92)	2.50	(.94)	2.40	(.91)	3.62	(.75)	2.04	(.99)	3.47	(.79)
HD	1.85	(.83)	2.47	(1.03)	2.41	(1.03)	1.77	(.90)	1.82	(.89)	3.17	(.99)	2.14	(1.07)	2.89	(1.05)
H	1.32	(.60)	1.91	(.93)	1.67	(.86)	1.30	(.66)	1.39	(.69)	2.75	(1.05)	1.64	(.86)	2.46	(1.08)
HS	1.57	(.75)	1.90	(.84)	1.70	(.84)	1.58	(.78)	1.64	(.76)	1.26	(1.11)	1.87	(.87)	2.03	(1.00)
S	1.78	(.78)	1.74	(.85)	1.71	(.88)	1.90	(.87)	1.96	(.85)	1.65	(.96)	2.04	(.92)	1.72	(.89)
FS	1.96	(.84)	1.87	(.82)	1.90	(.91)	1.97	(.91)	2.03	(.85)	1.83	(.94)	2.01	(.90)	1.86	(.89)
F	3.22	(.78)	2.46	(.89)	2.90	(.90)	3.47	(.75)	3.29	(.79)	1.88	(.86)	2.78	(.83)	2.22	(.92)
FD	3.05	(.87)	2.57	(.91)	2.91	(.93)	3.28	(.87)	3.13	(.85)	2.24	(.98)	2.71	(.88)	2.40	(.97)

[α] Cirumplex octant labels are indicated as follows: D=dominant, HD=hostile-dominant, H=hostile, HS=hostile-submissive, S=submissive, FS=friendly-submissive, F=friendly, FD=friendly-dominant

Table 5. Planned Contrasts for Circumplex Trait Categories between Black Lab Dog and Selected Dog Breeds

	Collie	Boxer	Shepherd	Retriever	Pit Bull	Poodle	Rottweiler
	t	*t*	*t*	*t*	*t*	*t*	*t*
Octant[α]							
D	-1.00	12.77**	17.84**	2.86*	24.27**	-6.28**	22.41**
HD	.58	12.39**	12.33**	-1.17	23.27**	5.20**	19.69**
H	-1.90	10.84**	6.94**	-3.02*	24.10**	5.39**	20.13**
HS	-1.89	5.52**	1.36	-1.45	8.56**	4.73**	7.09**
S	-4.16	-4.99**	-6.18**	-1.11	-5.62**	1.48	-4.62**
FS	-1.85	-3.24**	-3.38**	-1.49	-3.55**	-0.24	-3.82**
F	-1.85	-16.65**	-8.62**	4.36**	-26.51**	-10.25**	-20.15**
FD	-1.83	-11.17**	-4.83**	3.77**	-14.43**	-8.13**	-12.83**

* $p < .005$

** $p < .001$

[α] Cirumplex octant labels are indicated as follows: D=dominant, HD=hostile-dominant, H=hostile, HS=hostile-submissive, S=submissive, FS=friendly-submissive, F=friendly, FD= friendly-dominant

demonstrating significantly more friendliness and less hostility than the white standard poodle. Likewise, the black lab was perceived as less hostile, more friendly, less dominant, and more submissive than the brown pit bull, the brindled boxer, the sable German shepherd and the black-and-tan Rottweiler. Thus, the hypothesized effects for black dog syndrome were not consistently upheld when the black lab was compared to other dog breeds of varying colors.

General Discussion

The intent of this study was to examine the impact of dog color and size on human perceptions of eight personality dimensions as depicted in pictures of different dog breeds. In Study 1, the phenomenon of black dog syndrome was evaluated by having participants rate pictures of black and white poodles of two different sizes. The results were contradictory to the hypotheses, which suggested that small, white dogs would be perceived more favorably than large, black dogs. In fact, in terms of friendliness and submissiveness, participants in general demonstrated a preference for the larger standard poodle and the black poodles to the smaller white toy poodle. It remains possible that the preference for the larger standard poodle is simply an artifact of negative "yappy" stereotypes of the toy poodle breed. Hence, in Study 2, the effects of

breed, which can impact canine appearance, were examined more closely to determine how breed phenotype might impact human personality attributions of dogs. The results of Study 2 revealed that, although the prototypical large, black dog (a black lab) was perceived as significantly more hostile, less friendly, and less friendly-dominant than its golden retriever counterpart, the black lab was not perceived similarly in comparisons to other large dogs of varying colors and breeds. The reported effect sizes were quite large (ranging from .92 to .97), and the results suggested that certain dog breeds have less positive personality stereotypes associated with their images—standard poodle, pit bull, German shepherd, boxer, and Rottweiler—regardless of color.

In addition, an analysis of differences in perceptions of personality between the black lab and a smaller breed (Border collie) of the same color revealed a significant difference only on the dimension of friendly-dominance (the black lab being higher on that trait than the Border collie). In sum, the greatest variance in trait attributes was accounted for by breed, with specimens associated with guard duties or fighting (for example, pit bull, German shepherd, boxer, and Rottweiler) receiving the least favorable ratings in terms of interpersonal disposition (high hostility/low friendliness, high dominance/low submissiveness).

There were several clear limits to the generalizability of this study. First, it utilized pictures of dogs rather than requiring participants to interact with the actual dog breeds. Hence, significant differences in perceived personality were possibly artifacts of the attributional biases of the subjects rather than any real differences between the dogs. No assumptions can be made about the dogs' true personality traits from this study. In addition, although every effort was made to utilize pictures of dogs posed in identical ways, matching the pictures exactly in terms of composition and dog positioning was difficult. Subtle nonverbals that were difficult to control, such as pose of the dog, level of perceived eye contact, and different backgrounds may have influenced participants' perceptions of the dogs' personality traits as much as the size, color, general appearance, age, and breed of the dog.

With respect to statistical analyses, the high number of planned comparisons embodied by this study may well have resulted in alpha inflation—increasing the chances of a type I error, or detecting a significant difference when one does not really exist, although this issue can always be addressed by using a more stringent alpha. Note, however, that almost all the findings in Studies 1 and 2 were significant at $p < .001$. Future work would benefit from an experimental design assessing the innate personality characteristics of a smaller, select number of dog breeds in dyadic interaction with human participants.

In sum, the current study casts doubt upon the anecdotal evidence for the theory of "big, black dog syndrome." It is plausible that the high rate of euthanasia among black dog breeds in shelters is a consequence of the representativeness heuristic or the base rate fallacy (Bar-Hillel, 1980). There are simply more big, black dogs in the population (due to the fact that black dog breeds, such as labs, can have an average of five to ten puppies in a litter whereas the average dog litter is six, and smaller dogs tend to have smaller litter sizes). As a consequence, more large, black dogs are found at animal shelters, and more are euthanized after failing to be adopted (Nash, 2008).

The results of the current study would suggest that dog breed is an important predictor of personality attributions made by humans. Future research should focus on the relative contributions of this variable in the process of companion animal attachment for dogs, and possibly other species of companion animal. Furthermore, replication of this study using puppies instead of adult dogs may control for the effects of size and adult phenotype differences and reveal whether breed-specific attributional biases exist for very young canines. Such findings might well account for high rates of relinquished or abandoned pets among specific breeds and could become a foundation for educational interventions among prospective companion animal adopters.

Notes

1. Participants were informed that they could skip or decline to answer any items that made them feel uncomfortable; thus, the sample size varies across analyses according to the number of respondents to each item.

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