

## Abstract

### Children's Perceptions of Friendliness Based on Physical Appearance in Humans and Canines

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Physical appearance serves as a window to one's character. More specifically, faces give us clues to an individual's emotional state, personality, and behavior. The present study aims to draw parallels between what existing literature reveals about the physical characteristics humans use to describe other humans and what physical characteristics children tend to use when characterizing canines. A sample of 105 children in grades pre-Kindergarten to third grade were asked to view photographs of 14 dogs differing in size, color, breed, and other physical aspects. Participants rated the dogs on a scale from very friendly to very unfriendly based on physical attributes and were then asked to elaborate on the rating of each photograph. Similarities were found in the physical characteristics used by children to characterize humans according to existing literature and canines in the current study. Humans tend to utilize facial features when characterizing other humans, and the results from the current study reveal that humans also use facial features, particularly the eyes and mouth, to characterize canines followed by the ears and tail. The results give insight into physical characteristics that may influence a child to approach an unfamiliar dog.

*Keywords:* dogs, perception, friendliness, canines



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Canines

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## CHAPTER 1: INTRODUCTION

As children, we are taught to read the social and emotional cues of others and note their physical attributes, generally facial expressions and body language. In encounters with non-humans, do we as humans automatically focus our attention on facial features and body language, or do we utilize other cues when perceiving the emotional state and character of other species?

Social referencing is the idea that humans, starting from a young age, look to others for cues in deciding what emotions and actions are appropriate. Beginning in early infancy, children look to their parents and other familiar adults for these cues about how to respond to certain situations, people, and stimuli (Walden & Ogan, 1988). Most of the time, social referencing occurs in uncertain situations where infants are presented with a novel or unfamiliar occurrence. Klinnert, Campos, Sorce, Emde & Svejda (1983) studied social referencing in six to 22 month old infants in situations with their mother and an unfamiliar toy. Their findings suggest that around ten months of age true social referencing begins, since around that time children began to look at their mothers' faces rather than simply looking to ensure their presence when presented with a novel situation or unfamiliar toy. Interestingly, fearful reactions by the parent seemed to have little effect on participants' willingness to play with the unfamiliar toy. Instead of imitating the parents' expression, Klinnert et al. (1983) suggested that the children used the parent's emotional response to interpret the event in a way that was meaningful to them, which leads us to believe that children are more cognitively aware of the meanings of emotional expressions and how to react to them than previously thought.

Research suggests that social referencing benefits social and emotional development by allowing children to determine what is appropriate in situations with people and stimuli. Therefore, it is reasonable to assume that children also reference parents and other familiar adults during encounters with animals. Hornik and Gunnar (1988) studied social referencing with 32 infants ages 12 and 18 months and their mothers in novel situations with a caged rabbit. According to their results, most of the infants seemed to be trying to summon the courage to pet the rabbit. Half of the participants touched the rabbit only after the mother approached and touched the rabbit. Results from this study suggest that infants not only gain information about how to feel and act by social referencing, but also secure information about their ability to make accurate judgments through affective sharing with mothers (Hornik & Gunnar, 1988).

As social beings, humans rely heavily on physical characteristics in everyday social interactions. Although we are taught, “Don’t judge a book by its cover,” we repeatedly ignore this warning, responding to people on the basis of their appearances (Zebrowitz & Montepare, 2008). Faces are among the most important visual stimuli, and we constantly monitor each other’s faces, paying close attention to subtle details that provide a broad range of information to an observer. When we come in contact with individuals, we monitor their faces for social information, including gestures to emotional and attentive states (Leopold & Rhodes, 2010). The ability to understand emotional information through facial expressions of others is crucial for building relationships, careers, and sometimes, even survival (Knyazev, Bocharov, Slobodskaya, & Ryabichenko, 2007). In the 19<sup>th</sup> century, Darwin suggested that human

facial expressions share much in common with those of many animals (Darwin, 1872). Thus, from an evolutionary standpoint, these nonverbal cues are the foundation of communication not only among humans, but across multiple species. In our interactions with other beings, facial cues are the essential components that keep us in tune with one another and help us to ultimately understand those around us by signaling their attention and intention.

The face is just one of many cues that a person might rely on in judging someone's character, but certain facial attributes can serve as cues to one's behavior or personality (Paunonen, Ewan, Earthy, Lefave, & Goldberg, 1999). For example, a facial cue such as a smile can be generalized as friendly, or a scowl generalized as unfriendly. A number of factors, including shape, size, and positioning of facial features, can influence the judgment of an individual's character. Even a relatively minor facial detail can "profoundly affect the perceived overall character of a person's face" (Paunonen et al., 1999, p. 578). There are several distinct facial features that are thought to have effects on observer perception, including shape and facial symmetry, size and spacing of eyes, width of the nose, fullness of the lips, hair color, skin complexion, and width of cheekbones (Paunonen et al., 1999). According to Leopold and Rhodes, (2010), the eyes serve as a particularly salient emotional cue, and also provide insight into a person's attentive state.

Beginning early in life, humans begin to observe others' faces for clues to their personality, emotions, intention and attention. The following review of literature intends to explore in detail, the specific facial features that humans tend to utilize most often when making character judgments in other humans.

## CHAPTER 2: REVIEW OF LITERATURE

At an early age, children take notice of the faces of others to gain valuable information about their surroundings. An individual's perception of another person may vary according to the size, shape, and arrangement of their facial features; but do certain features have a greater influence than others on person perception? Existing research literature related to perception based on physical appearance is outlined below.

### **Eye Gaze in Humans**

The eye region may be an important facial feature to attend to when looking for information about others' emotional state and intentions using nonverbal cues. To date, the majority of research literature on facial preference and recognition related to the eye region has utilized infants and toddlers. In their natural environment, human infants preferentially orient toward faces. Studies on infant facial preference highlight the role of the eyes in the detection and recognition of faces. When presented with various facial images, Farroni et al. (2005) found that newborns showed a preference for facial images that had darker areas around the eyes and mouth, and faces with open eyes and a direct gaze as opposed to faces with lighter areas around the eyes and mouth, closed eyes and averted gaze. A similar study found that when the eyes were occluded, newborn infants did not recognize the image as a face, which highlights the importance of the eyes in the detection and recognition of faces even from birth (Gava, Valenza, Turati & Schonon, 2008). Key, Stone, and Williams (2009) examined the effect of facial features on face perception in nine month old infants and found the eye region to be of special importance for face perception, while the mouth carried

information more relevant to communication. These findings suggest that the eyes may serve as the basic marker that activates the rest of the facial processing network in the brain. Thus, the failure to process the eyes may delay or alter the processing of the remaining face (Farroni et al., 2005; Gava et al., 2008; Key et al., 2009). The empirical evidence suggests that humans are particularly sensitive to eyes because in relation with other features, they provide a unique role in face detection (Gava et al., 2008). These data propose that infants are most attracted to stimuli appropriate for social interaction, but more specifically, the eye region, given that eye contact is the one of the strongest communicative signals (Farroni et al., 2005). Eye gaze, depending on length of time and other variables, can communicate intention, attention to an object, or signal a threat; and it is reasonable to assume that natural selection has made newborns sensitive to this signal (Farroni et al., 2005). When presented with images of unfamiliar faces with direct and averted gaze, Bayliss and Tipper (2006) found that adult participants tended to prefer faces that looked toward them, and perceived them as more trustworthy than those faces that looked away. Therefore, people find individuals who make eye contact more attractive and more trustworthy than those who do not make eye contact, but a prolonged gaze can be perceived as threatening (Bayliss & Tipper, 2006).

According to existing research literature, humans tend to be attracted to facial features most appropriate for social interaction; the eyes and mouth. The eyes seem to be particularly important, especially eyes with direct gaze, because they may be the starting point for entire facial processing.

## Overgeneralization

According to ethological theory, much of animal behavior is instinctive or unlearned. The ethological perspective is mainly concerned with the adaptive or survival value of unlearned behaviors like reflexes, emotional expressions, social signals, gestures, and other forms of non-verbal behavior. For example, a baby's smile tends to elicit play from the mother, while crying generally elicits caregiving from the mother. These behaviors serve adaptive functions for infants, due to their dependence upon others for survival (Lorenz & Kickert, 1981). Social impressions also "serve adaptive functions, are guided by the typically accurate perception of people's traits and are revealed by physical features associated with personal attributes such as age, sex, health, and emotional state;" although errors in judgments do occur (Montepare & Dobish, 2003, p. 238). Judgments of personality based on first impressions of appearance may or may not be accurate, but people "reliably and automatically make these inferences with little evidence for their accuracy" (Todorov, Said, Engell, & Oosterhof, 2008, p. 455). A common source of error in the judgment of personality and behavior by physical cues is the overgeneralization of perceptions in which people with certain features are thought to possess certain traits because their appearance resembles that of others with those traits (Montparte, & Dobish, 2003). For example, an extremely overweight individual may be perceived as lazy, since many people who do not get the proper amount of exercise become overweight; or a person with wrinkles may be perceived as old, or a long-time smoker. From an ethological perspective, facial appearance especially matters because "some facial qualities are so useful in guiding adaptive behavior, that even a trace of those qualities can elicit a response" (Zebrowitz,

& Montepare, 2008, p. 2). For example, babies' facial characteristics naturally elicit a nurturing response from adults. If these features are displayed by something other than a baby, they will generate the same reaction (Masip, Garrido, & Herrero, 2004).

### **Babyishness**

Konrad Lorenz was the first to note that the features of infants and children naturally evoke a nurturing response in adults (Todorov et al., 2008). Baby-like features include larger eyes, higher eyebrows, smaller nose bridges, rounder and less angular faces, thicker lips, and lower vertical placement of features, which creates a higher forehead and shorter chin (Zebrowitz, & Montepare, 2008). Lorenz even argued that non-human animals possessing these child-like traits enjoy increased human affection due to the fact that we are so "automatically moved to a nurturing state by these physical features that we respond to them even when displayed by non-human animals" (Todorov et al., 2008, p. 456). Older children and even adults with babyish features have been found to evoke the same types of automatic responses of nurturing. This theory is known as Babyface Overgeneralization (Masip et al., 2004).

Several studies have shown that facial babyishness not only influences the way people are perceived, but also the way they are treated (Montepare, & Zebrowitz, 1998, as cited in Masip et al., 2004). Baby-like features such as a larger forehead, smaller chin, larger eyes, thinner and higher set eyebrows, pug nose, shorter ears, larger lips, and chubby cheeks, have been shown to increase participants' perceptions of honesty in studies examining facial perception (Masip et al., 2004). Masip et al. (2004) presented undergraduate students with five variations of a stimulus photograph with manipulated characteristics ranging from babyish to mature at different ages, and asked

them to rate the individuals on a series of traits and behavioral tendencies. Participants judged faces with more babyish features to be more truthful, weaker, more submissive, naïve, and warmer than mature faces. The greater the facial maturity of the stimulus person, the more dishonest he or she was perceived (Masip et al., 2004).

Interested in why infants are fearful of strangers and, more specifically, if they react differently to children and adults, Brooks and Lewis (1976) exposed a number of seven to 24 month old infants to three different strangers: a child, and two adults. One of the adults was over five feet and the other was less than five feet tall. Infants tended to react more positively to unfamiliar children, and more negatively toward both unfamiliar adults (Brooks & Lewis, 1976). The infants showed an obvious differentiation between the children's faces and the adults' faces, therefore, there is evidence that face configuration and not the overall body size of the individual affects infants' perceptions. According to Babyface Overgeneralization theory, infants perceived the child-like features to be warmer, while the adult faces, including the small adult, were perceived as more threatening and dominant (Masip et al., 2004).

In a study examining aspects of the face that have an effect on perception of behavior characteristics, Paunonen et al. (1999) found that observers made rather strong references about personality and other characteristics based on a person's facial appearance when questioned about facial appearance and character. The larger the person's eyes, the more often he or she was perceived as nurturing, honest, likable, empathetic, agreeable, popular, and extraverted. Changes in the size of the eyes alone had substantial effects on the way a person was viewed by others; while changes in the mouth had little influence. Changes in the size of the eyes revealed that larger eyes led



individuals to infer that a person was nurturing, empathetic, honest, and agreeable; which is consistent with the Babyface Overgeneralization theory (Paunonen et al., 1999).

Individuals with childlike features are often passed over for mentally challenging tasks and leadership positions, but are favored for jobs that require congeniality (Zebrowitz & Montepare, 2008). Research suggests that legal verdicts can be predicted by whether or not the defendant possesses babyish features, making them more likely than mature faced peers to be exonerated when charged with intentional crimes, but more likely to be found at fault when charged with negligence (Todorov et al., 2008; Zebrowitz & Montepare, 2008). These results provide empirical evidence that specific facial features provide information to observers from which they judge a person's behavior tendencies.

### **What is Beautiful is Good**

Along with the overgeneralization of babyish features, facial attractiveness has also been found to influence social judgments, since it is one of the first bits of information that can be obtained about a person, even before initial interaction. The "What is Beautiful is Good Stereotype," is the idea that individuals with attractive faces are perceived to possess more positive characteristics than individuals with less attractive faces (Masip et al., 2004). The findings from Masip et al. (2004) not only supported babyface overgeneralization, but also found that higher ratings of perceived attractiveness were associated with higher attributions of positive qualities like warmth, intelligence, honesty, and sincerity. Similarly, attractive individuals have been found

guilty of crimes less often than non-attractive individuals, and more likely to secure jobs and attract material benefits and happiness (Dion, Bersheid, & Walster, 1972).

In a group of four to six year old children, Dion and Berscheid (1974) found a significant relationship between a child's physical attractiveness and peer perceptions of behavior and popularity. Attractive children were identified more often than unattractive children to exhibit positive social behaviors (Dion & Berscheid, 1974).

Langlois and Stephan (1977) found that when elementary school age children from three different ethnic groups were questioned about their perceptions of their peers, they responded primarily on the basis of physical attractiveness rather than ethnicity. Attractive children were liked more, and were perceived as being smarter than unattractive children. They were also rated higher on sharing and friendliness than less attractive children. These results support the "What is Beautiful is Good" stereotype (Langlois & Stephan, 1977). Among adults, college students judged attractive persons as more socially desirable, expected them to attain more prestigious occupations, and assumed that they would be more competent spouses and have happier marriages than less attractive individuals (Dion et al., 1972). Results from the study suggest not only that attractive persons possess more socially desirable personalities, but that their lives will be happier and more successful as well. These data suggest that highly attractive individuals are at a significant social advantage over individuals perceived as less attractive (Dion et al., 1972; Langlois & Stephan, 1977; Masip et al., 2004).

## Developmental Progression

Facial perception and identification using inner versus outer facial features has been argued to differ according to age. Inner facial features include the eyes, nose, and mouth, while outer facial features refer to hair, chin, and ears. Some researchers believe that young children have not developed the ability to process the configuration of faces, therefore they recognize faces by their individual features (Want, Pascalis, Coleman, & Blades, 2003). However, Turati, Cassia, Simion, and Leo (2006) found that inner and outer facial features alone provide sufficient information for even newborns to recognize faces. In recognizing unfamiliar faces, children ages 5-7 were faster and more accurate using the person's outer features (Want et al., 2003). Empirical evidence indicates that early in life, external rather than internal facial features may play a prominent, but not exclusive role in face recognition because of their high contrast, texture, and large size (Gava et al, 2008; Turati et al, 2006).

Young children seem to be inefficient at coding facial information and are more likely than older children to misclassify an unfamiliar face as being familiar if it resembles someone they know (Ellis, 1992). In a study examining familiar adults, children ages 5-11 years identified faces of familiar adults more accurately by their internal features (Wilson, Blades & Pascalis, 2007). In the course of becoming more familiar with a person, it seems that one will turn his or her focus more toward the inner facial features.

Herba et al. (2008) studied the impact of familiarity on facial expression recognition and found that children demonstrated an advantage over adults in recognizing emotions displayed by unfamiliar persons. A possible explanation for this

finding may be that a familiar face is distracting, and instead of focusing on the emotional information provided, the child may focus more on the facial familiarity. This finding indicates that familiarity of a person may influence emotion processing, and may interfere with children's ability to recognize emotion in facial expressions (Herba et al., 2008).

According to research literature, infants and young children tend to utilize outer facial features such as the hair, ears, and chin, to recognize and interpret faces. Around middle childhood, there seems to be a shift toward the use of inner facial features such as the eyes, nose, and mouth, in facial recognition and perception. This developmental trend may support Piaget's Theory of Cognitive Development (1977), which states that during development, children are capable of different levels of thinking and understanding. For example, between the ages of two and six years, children are capable of preoperational thought. Children in the preoperational stage of development do not yet understand concrete logic, are not able to manipulate information mentally, and are unable to take on another's point of view. Around age seven until age eleven, children shift into the concrete operational stage of cognitive development, in which they gain a better understanding of mental operations such as thinking logically about concrete events, but still have difficulty understanding abstract concepts (Piaget, 1977). These cognitive stages may help to explain the developmental trend in moving from using outer facial features in early childhood to using inner facial features in middle childhood.

Empirical evidence demonstrates that humans generally utilize certain facial characteristics and features to gain insight into the character and behavior of other

humans. Due to the frequent use and reliability of nonverbal communication in human-human interactions, this natural tendency can likely be observed in relations with other species. Consequently, one may hypothesize that humans draw clues from these same physical characteristics in non-humans when judging character, friendliness, or approachability.

### **Human Interpretation of Animal Behavior**

Research studies investigating humans' ability to interpret animal behavior have been almost exclusively conducted with adult participants (Bahlig-Pieren & Turner, 1999; Feaver, Mendl, & Bateson, 1986; Molnar, Pongracz, Doka, & Miklosi, 2006; Pongracz, Molnar, & Miklosi, 2006; Tami & Gallagher, 2009). Limited research has utilized child participants and their ability to interpret animal behavior.

Bahlig-Pierren and Turner (1999), Feaver et al. (1986), and Pongracz et al. (2006) examined the ability of adults to interpret animal behavior but failed to specifically ask participants to indicate the physical characteristics that contributed to their overall rating of the animals' behavior. Tami and Gallagher (2009) however, asked participants to classify the behavior of dogs shown in video clips, rating each using adjectives such as friendly and aggressive. Their findings suggested that tail movements were the most common cues used to interpret dog behavior, followed by muzzle related cues. Participants noted visible teeth as a sign of aggression and defensiveness, posture or body position as a sign of confidence, and the positioning of the ears as cues for play, submission, and fear (Tami & Gallagher, 2009).

To date, limited research studies have focused exclusively on children's ability to interpret animal behavior. No known studies have specifically explored any parallels

that may exist between human interpretation of “friendly” facial characteristics in other humans and “friendly” facial characteristics in canines.

Howard and Vick (2010) investigated social and emotional responses of preschool children during encounters with two robot animal toys (one furry and one metallic), insects, and a dog. The results of the study revealed that children’s touch patterns (to self, the stimuli, and to others), facial expression, posture, and social referencing rates all differed according to the attributes of the stimuli. The dog and the mammal-like robot evoked more positive responses like touch, expressions, and proximity, and the insects received the most negative responses (negative self touch and facial expression). The metallic robot dog received the fewest positive comments of all the stimuli, which implies that specific characteristics (facial features such as eyes and mouth), and predictable movement rather than size or nature of the stimuli influenced responses by participants. Howard and Vick (2010) suggested that fluffy mammalian stimuli elicited the most psychological comments and positive interactions. Participants made frequent comments about the metallic robot’s body, flashing eyes, lack of mouth, and mechanical movement, which received more negative responses than the furry robot. The results of the study suggest that the most important features seem to be fluffiness, size, facial features (especially eyes and mouth), tails, and general movement (Howard & Vick, 2010).

Object categorization aids humans in survival and helps us make sense of and predictions about the environment (Winsiewski & Medin, 1991, as cited in Vidic & Haaf, 2004). Vidac and Haaf (2004) and Spencer, Quinn, Johnson, and Karmiloff-Smith (1997) have focused on infant categorization of animals and specific body parts that

may hold privileged status when doing so. Quinn and Eimas (1996) examined infant categorization of cats and dogs focusing on the features used most often, concluding that infants use the face as the primary feature to distinguish cats from dogs. Using a similar method, Vidic and Haaf (2004) hypothesized that infants would also use the torso when categorizing the animals. Their findings were in contrast with those of Quinn and Eimas (1996), who found no evidence that the face or head holds any privileged status in infants' differentiation of cats and dogs. Their findings suggest that the torso is used in infants' categorization of cats and dogs. In another categorization study utilizing both infants and adults, Spencer et al. (1997) showed photographs of cats, dogs, and cat-dog hybrids (cat head on a dog body and dog head on a cat body) during four separate experiments where viewing time was adjusted. The results suggest that timing is an important factor in categorization since when processing time was short, both infants and adults focused only on the head and face information. When timing was lengthened, participants looked to the torso region only after utilizing cues from the head and facial characteristics. Spencer et al. (1997) concluded that human infants and adults use both face and torso information in categorization, but suggest a "face first" approach, where the torso is looked to only if viewing time allows. It may be possible that humans possess an innate mechanism that automatically focuses their attention to the facial information in the stimuli, since the "face first" approach is already so prevalent in infancy (Spencer et al., 1997).

Non-verbal communication is a common language, understood across a number of species. Existing literature on human-human interaction implies that children characterize people based on certain aspects of their facial features and physical

appearance. Unfortunately, existing literature of this kind is limited for human-canine relations; therefore, further research is necessary in order to make generalizations about what makes a child more likely to characterize a dog as friendly or safe, and ultimately approach an unfamiliar dog.

### **Purpose of the Current Study**

Pet ownership is quite common in the United States. Thirty-seven percent of U.S. households have at least one dog and 32.4% have at least one cat (American Veterinary Medical Association, 2007), therefore, it may be prudent to better understand children's abilities to interpret and act accordingly to animal cues, both verbal and nonverbal. From nips to bites to actual attacks, dog bites are a serious problem. According to the American Veterinary Medical Association (2007), 800,000 dog bite victims seek medical attention each year, and countless others go untreated. The number of recorded dog bite injuries is significantly higher in children than adults. It may be likely that dogs are more inclined to bite if disturbed when eating or sleeping, sick or tired, or feel threatened in some way, but what physical characteristics or behavioral cues may provide insight into "unprovoked" dog bites? A child may approach a dog that appears to be "friendly" but be quite surprised when the dog growls or snaps. The severity of dog bites can range from relatively minor to very traumatic, leaving unnecessary physical and psychological scars. With further insight into the ways that children use physical features to characterize the behavior of dogs, many dog bites and other negative experiences with canines can likely be prevented. Therefore, the purpose of this research study is to investigate the physical characteristics of dogs



that children use to evaluate friendliness or approachability using the following research questions.

1. a) What are the physical attributes most frequently used to characterize dogs?  
b) What characteristics do children use to classify dogs as more friendly versus those used to classify dogs as less friendly?  
c) Are there similarities between the attributes children use to characterize canines as friendly or unfriendly and the physical attributes identified in the research literature to characterize humans?
2. Are there developmental differences in the physical attributes children use to judge “friendliness” in canines?
3. Are there gender differences in the physical attributes children use to judge “friendliness” in canines?

## CHAPTER 3: METHOD

### Sample

The sample for the current study was a convenience sample (N=105) of children in pre-kindergarten through 3<sup>rd</sup> grade enrolled in an independent school in a mid-size southeastern U.S. city. Fifty-three percent were male (N=56), and forty-seven percent were female (N=49). Participant composition by grade was as follows: Pre-K = 10; Kindergarten = 22; 1<sup>st</sup> Grade = 21; 2<sup>nd</sup> Grade = 22; 3<sup>rd</sup> Grade = 30. Participants ranged in age from 49 months to 110 months with a mean age of 6 years and 11 months.

Of the 105 participants, 82 (78%) lived in homes with pets, and 23 (22%) did not. Sixty-one children had a dog at home, 21 had a cat at home, 13 had a fish, and 4 had another type of animal, such as a horse, small mammal, or reptile. Eight participants (8%) had previously experienced a traumatic event involving a dog.

Participants were divided into two developmental groups according to Piaget's Theory of Cognitive Development. Group one participants (49-83 months of age, mean=68.94 months) (N = 53) were considered to be capable of preoperational thought, while participants in group two (84-110 months of age, mean=97.37 months) (N = 52) were emerging or capable of concrete operational thought.

### Method and Instruments

The research protocol for the current study was approved by the University and Medical Center Internal Review Board prior to initiation (see Appendix A). Parents of participants were asked to complete an informed consent document (see Appendix B) and demographic survey about their child and household pet characteristics (see Appendix C for survey).

Participants were individually interviewed in a separate area outside their regular classroom. The interviews ranged from 10-25 minutes in length. Each participant was shown the Canine Friendliness Rating Scale (Triebenbacher, 2009) and the interviewer explained that the participant was to rate the dog in each of the fourteen photographs along the continuum: 1=very friendly, 2=friendly, 3=both friendly and unfriendly, 4=unfriendly, 5=very unfriendly (see Appendix D). One half of the sample used the reverse scale for scoring to account for any bias in the order of ratings. Each participant was then presented with fourteen color photographs of canines, one at a time. Participants were allowed to touch or hold the photographs if they so desired. After rating each photo using the Canine Friendliness Rating Scale, the interviewer then probed the participant by asking, "What about this dog makes him/her seem (child's rating)?" The child was then asked, "If you were to meet the dog in this picture, would you pet him/her?" Dogs that were clearly male or female were referred to as such, while those less obvious were alternated between male and female during the interview.















The canine photographs utilized in the current study consisted of seven pure breed and seven mixed breed dogs with variations of fur, ears, mouth, muzzle, tail, position, and size. The Canine Friendliness Rating scale (Triebenbacher, 2009) used in this study was adapted from Wong-Baker FACES Pain Rating Scale (1996/2001).

## CHAPTER 4: RESULTS

Statistical analyses using SPSS were conducted to determine the most frequently reported attributes, and any developmental, gender, or additional patterns related to participant ratings. A frequency table indicated the physical attributes used most often to characterize dogs in the current study. Independent samples t-test identified any differences, while Spearman's Rho was used to examine any relationships between physical characteristics and rank. Since previous research on human-human interaction has shown that facial attributes are used to make judgments of character, the most frequently used attributes in the current study were compared with existing research literature to identify similarities. Developmental and gender differences were analyzed using independent samples t-test. Table 1 presents the mean rating for each dog photograph used in the current study. Ratings and narrative comments for each dog can be found in Appendices E, F, G.

### **1. a) What are the most frequently reported physical attributes used to characterize dogs?**

A line graph illustrated an apparent break in the means between 1.28 and 2.0, therefore the top four attributes were considered to be the most frequently reported in characterizing the dogs in the current study. The four physical attributes indicated most frequently by participants as factors that contributed to their overall rating of the dog in each picture were mouth (mean = 5.00, s.d. = 3.48), eyes (mean = 3.32, s.d. = 3.36), tail (mean = 2.19, s.d. = 2.59), and ears (mean = 2.04, s.d. = 2.58).

Table 1 <i>Mean rating of dogs</i>			
Dog I.D.	Breed	Mean Score	Standard Deviation
14	 mixed	1.27	.69
6	 mixed	1.54	.82
4	 mixed	1.55	.80
9	 pure	1.81	1.02
2	 mixed	2.0	.83
11	 pure	2.01	.92
8	 mixed	2.11	.95
12	 mixed	2.21	1.15
1	 pure	2.32	.98
7	 pure	2.32	1.11
13	 pure	2.67	1.28
10	 mixed	2.84	1.31
5	 pure	2.85	1.02
3	 pure	3.59	1.17

**1. b) What characteristics do children use to classify dogs as more friendly versus those used to classify dogs as less friendly?**

Due to the fact that none of the mean scores of the 14 dogs in the current study reflected unfriendly or very unfriendly, the dogs were divided into three groups according to their mean score and rank. Dogs considered “less friendly” received on average, between mixed and unfriendly ratings. The top four ranked and the bottom four ranked dogs were compared to examine any differences in physical attributes that were highlighted for dogs ranked as more friendly and those characterized as less friendly.

An independent samples t-test concluded that when comparing the four highest rated and the four lowest rated dogs, ears were significantly different among the two groups ( $t = 4.07$ ,  $df = 6$ ,  $p = .007$ ). This finding indicates that ears were mentioned more often when participants characterized dogs as more friendly. Fur length approached significance, suggesting that the length of fur was indicated as a physical attribute that contributed to lower or less friendly ratings ( $t = -2.33$ ,  $df = 6$ ,  $p = .058$ ).

Using Spearman’s rho, a correlation ( $-.629$ ,  $p = .016$ ) was identified between the indication of ears as a factor in determining a dog’s character and the overall ranking of the 14 dogs. The more often participants indicated ears as a factor in characterizing the dog, the friendlier it was perceived to be, and the higher it was ranked. The length of the dogs’ fur approached significance ( $.525$ ,  $p = .054$ ) using Spearman’s rho, indicating that the more often fur length was selected as an attribute that contributed to participants’ overall rating of the dog, the less friendly the dog was perceived to be, thus the lower it was ranked.

**1. c) Are there similarities between the attributes children use to characterize canines as friendly or unfriendly and the physical attributes identified in the research literature to characterize humans?**

As noted above, the four physical attributes were most frequently identified by participants as factors that contributed to their overall rating of the dog in each picture included the mouth, eyes, tail, and ears. The findings of the current study are consistent with research literature involving humans, which suggests that humans most often use facial features when characterizing and reading the cues of other humans.

Participants in the current study indicated the mouth most frequently when asked which factors contributed to their rating of the dogs. In human-human interaction, Key et al. (2009) found the mouth to carry information more relevant to communication rather than character or emotional state.

**2. Are there developmental differences in which physical features children use to judge “friendliness” in canines?**

Independent samples t-tests revealed that body position ( $t = 2.13$ ,  $df = 103$ ,  $p = .036$ ), body size ( $t = -3.41$ ,  $df = 103$ ,  $p = .001$ ), and fur texture ( $t = -2.42$ ,  $df = 103$ ,  $p = .017$ ) were significantly different among the two developmental groups. Group one, preoperational thinkers (mean 1.72, s.d. = 2.76) indicated body position more often than Group two (mean = .83, s.d. = 1.22), concrete operational thinkers. Concrete operational thinkers (mean .85, s.d. = 1.45) identified body size more often than Preoperational thinkers (mean = .13, s.d. = .48). Group two’s concrete operational thinkers (mean = 1.08, s.d. = 1.66) also indicated fur texture more often than

Preoperational thinkers in group one (mean = .42, s.d. = 1.1) when characterizing the dogs in the current study.

An independent samples t-test also acknowledged that mouth ( $t = 1.81$ ,  $df = 103$ ,  $p = .073$ ), tail ( $t = 1.74$ ,  $df = 103$ ,  $p = .084$ ), and feet ( $t = 1.97$ ,  $df = 103$ ,  $p = .051$ ) approached significance when differences were observed among the developmental groups. Group one (mean = 5.60, s.d. = 3.85) identified the mouth or muzzle area more often than group two (mean = 4.38, s.d. = 2.97) and group one (mean = 2.62, s.d. = 3.12) also indicated the tail more often than group two (mean = 1.75, s.d. = 1.71). Feet were indicated by group one (mean = .38, s.d. = .84) more often than group two (mean = .12, s.d. = .47).

In general, preoperational thinkers tended to designate body position, feet, mouth, and tail as factors in judging friendliness in the current study more often than emerging and concrete operational thinkers. Body size and fur texture, however, were indicated more often among participants in group two, or emerging and concrete operational thinkers than among preoperational thinkers in group one.

### **3. Are there gender differences in the physical attributes children use judge “friendliness” in canines?**

Gender differences were found in only three of the fourteen physical attributes used to characterize the dogs in the current study. Fur texture ( $t = -3.06$ ,  $df = 103$ ,  $p = .003$ ) was the only characteristic found to have significant gender differences.

Females (mean = 1.18, s.d. = 1.89) tended to report fur texture as a factor in determining a dog's friendliness more often than males (mean = .36, s.d. = 6.72).

Gender differences in participant responses that approached significance were teeth (t



= 1.93,  $df = 103$ ,  $p = .057$ ) and nose ( $t = -1.86$ ,  $df = 103$ ,  $p = .066$ ). Males (mean = .80, s.d. = 1.05) identified teeth more often than females (mean = .47, s.d. = .65), and females (mean = .57, s.d. = 1.12) identified nose more often than males (mean = .25, s.d. = .61) when determining the character of the dogs pictured.

## CHAPTER 5: DISCUSSION

In this discussion, each research question will be addressed. In addition, the discussion will focus on previous experiences with canines, breed bias, and stereotypes including babyishness and attractiveness as they relate to the current study.

### **1. a) What are the physical attributes most frequently used to characterize dogs?**

The physical attributes that children used most frequently to characterize the dogs in the current study were mouth, eyes, tail, and ears. Aside from the tail which will be discussed below, these findings support the hypothesis that humans draw clues from similar physical attributes when characterizing dogs and when characterizing humans. Eyes appear to be an especially important feature in judging both humans and dogs, which suggests that information drawn from the eyes is crucial in judging character or intention and attention in others, even dogs (Farroni et. al., 2005, Gava et. al., 2008, Key et. al., 2009).

Children may draw upon what they've been told by their parents, which may or not have anything to do with social referencing. Starting from a young age, humans look to others for cues to determine what emotions and actions are appropriate, and how to respond in novel situations (Walden & Ogan, 1988). Novel situations with dogs are likely ones in which young children will reference a parent or other adult to learn what to look for and how to act. Parents will often coach children on how to approach novel stimuli, and it is possible that parents socialize children and dogs in very much the same way they do with other humans, likely incorporating nonhuman characteristics such as the tail and positioning of the ears.

It may be plausible that participants compared the faces on the rating scale which served as a visual tool (Triebenbacher, 2009), and associated the dogs' facial expression with the expression of the face on the rating scale. If a dog appeared to be smiling, participants may have felt compelled to match the dog's mouth with that pictured on the rating scale. It is possible that participants may have mistaken happy as friendly, and given a dog that appeared to have a big smile a rating of "very friendly" and vice versa.

Often, it is believed that a dog's tail signifies its emotional state. Many people may agree that if a dog wags its tail that it is happy or friendly and a tucked or pointed tail signifies fear or possible attack (Tami & Gallagher, 2009). Canine tails may appear to give clear information about some dogs' emotional state, but could also be a sketchy indicator. Participants in the current study who indicated the tail as a factor contributing to their rating of the dogs might have received similar information regarding the tail and the emotional state of canines, which may have lead them to include the tail as an attribute that contributing to their canine rating.

In a study by Tami and Gallagher (2009), adults noted that the positioning of the ears served as cues for play, submission, and fear. Qualitative comments from the current study seem to follow a similar standard. The majority of the qualitative comments concerning the dogs' ears included positioning terms like "up", "perky", "down", or "back," and comments about the size of the ears. The overall consensus of most participants seemed to be that if the ears were "up" or "perky," the dog seemed friendly and alert. If the ears appeared to be "down" or "back," in many cases, the dog gave off a less friendly vibe to participants.

The results of the current study are also consistent with the findings of Howard and Vick (2010), in which the most important features of the animals based on interactions and participant comments, tended to be facial features (eyes and mouth), tail, fur texture, and general movement.

**1. b) What characteristics do children use to classify dogs as very friendly versus those used to classify dogs as less friendly?**

Participants in the current study tended to associate the ears with more friendliness and fur texture with less friendliness. The qualitative comments given about ears generally concluded that ears that appeared to be standing or alert signified friendliness or playfulness. Otherwise, there is no logical explanation for the association of ears with more friendly rankings and fur texture with less friendly rankings, therefore it is only appropriate to explore these findings in future research.

**1. c) Are there similarities between the attributes children use to characterize canines as friendly or unfriendly and the physical attributes identified in the research literature to characterize humans?**

Participants in the current study tended to use facial characteristics (mouth, eyes, and ears) as well as tail and body position to evaluate the character of the dogs in the 14 pictures. This finding is somewhat consistent with Tami and Gallagher (2009), in which adult participants relied mainly on the tail for interpreting canine behavior as well as muzzle cues, teeth, body position, and ears. Teeth, in this case were a sign of aggression and defensiveness, body position a sign of confidence, and ears displaying cues for play, submission and fear (Tami & Gallagher, 2009).

According to research literature, humans generally look to facial features of other humans, particularly the eyes, to provide important emotional cues and give insight to one's attentive state (Leopold & Rhodes, 2010). In studies with human infants, researchers have found time and again that infants naturally orient toward faces. Farroni et. al. (2005) studied infants' reactions to facial images, revealing that infants preferred faces with darker areas around the eyes and mouth as well as faces with open eyes and a direct gaze. When eyes were occluded from the image, infants did not recognize the image as a face.

According to Todorov et al, (2008), information in the mouth region is diagnostic for identification of happy expressions and information from the eye region is diagnostic for angry expressions. The mouth was noted more than any other physical attribute when characterizing the dogs pictured in the current study, but when comparing the current results and research literature, the mouth was most often used to interpret signals of communication instead of detecting emotions, intention and attention (Key et al., 2009). Research literature and the results from current study highlight the eyes as a salient feature in detecting emotional state, intention and attention in both humans and dogs. Eye gaze is particularly important in human-human encounters, and according to the qualitative comments from the current study, children tended to prefer dogs that looked toward them (Bayliss & Tipper, 2006). The current findings may also be an extension of the fact that during the socialization process, children are taught to make eye contact and learn to read the facial cues of other humans.

It has been suggested that the eyes may serve as a marker that activates the network in the brain that is responsible for face processing, and that failure to process

the eyes may alter the processing of the remaining face (Farroni et al., 2005; Gava et al., 2008; Key et al., 2009). Ultimately, humans tend to be more sensitive to physical features that are appropriate for social interaction, particularly the eyes, given that eye contact is one of the most powerful communicative signals (Farroni et al., 2005).

Although parallels were found between humans and canines in the indication of eyes and nose, there is an obvious difference in the stature of humans and dogs, therefore a comparison with humans may not exactly parallel dogs. For example, use of the tail and ears to characterize dogs would not parallel humans. According to Spencer et al. (1997), humans tend to use a face first approach in categorizing cats and dogs and only look to the torso for identification information when additional time is allowed. It may be possible that natural selection or an innate mechanism automatically focuses our attention to faces. The human face and canine face are similar in configuration, but certain features may also be more prominent in one species or the other. Stature differences may be explored in future research to examine how different species are categorized according to their stature. For example, one may not use a face first approach when observing a giraffe due to its unique body structure, and may therefore utilize very different physical attributes in characterization.

## **2. Are there developmental differences in which physical attributes children use to judge “friendliness” in canines?**

According to existing literature related to human perception and recognition of facial features among other humans, researchers have noted a developmental trend. Up until around age 7, children tend to use outer facial features (i.e. hair and ears) due to their high contrast, texture, and large size to recognize and identify others instead of using

inner features (Turati et al., 2006; Gava et al., 2008). The findings of the current study are somewhat consistent with this developmental trend. In the current study, Preoperational thinkers classified as Group one (4-6 years old) identified body position, mouth, tail, and feet considerably more than concrete operational thinkers in group two (ages 7-9). Body position, tail, and feet may be considered outer facial features according to the developmental trend described by Turati et al. (2006) and Gava et al. (2008). Concrete operational thinkers in group two (ages 7-9) indicated body size and fur texture much more often than Preoperational thinkers in group one (ages 4-6). These results do not seem to fit the inner to outer developmental trend since fur texture and body size are likely considered outer features. Thus, humans may not follow the same developmental trend when characterizing dogs and characterizing other humans.

While most participants provided specific physical characteristics that contributed to their rating of the dogs, older participants did so with considerably more detail than participants in the younger group. Participants in group one generally indicated one to two physical attributes when prompted, while participants in group two noted from three to five or more that contributed to their overall rating of the dogs.

### **3. Are there gender differences in the physical attributes children use to judge “friendliness” in canines?**

The results of the current study suggest that females tend to indicate fur texture as contributing to their overall rating of a dog's character more often than males. Males, however, specified teeth and more often than females, and females noted nose more often than males. A logical basis for these differences cannot be explained using the

resources available. Due to a lack of logical reasoning or explanation for this significance, it is only appropriate to explore these differences in future research.

### **Previous Experiences**

Many of the narrative comments contributed by participants demonstrate that children recalled previous experiences directly or indirectly with similar dogs. Often, participants would comment that someone they knew, usually a family member, owned a dog like the one pictured. If their particular experience with a similar dog was positive, participants were more likely to characterize the dog as friendly. The limited variation along the rating scale continuum may be due in part to the fact that this particular sample has had mostly positive interactions with dogs. Only eight participants had experienced a traumatic event involving a dog.

Previous experiences with dogs can determine a person's perception of the overall species. Fear of canines often develops when an individual has little contact with dogs, or has experienced a traumatic event with a dog. Some individuals, especially children may develop a fear of dogs due to continuous warnings from adults (Doogan & Thomas, 1992). Fearing canines will likely cause one to characterize a dog as unfriendly by simple categorization alone, making specific physical attributes invalid. For example, if a child is fearful of dogs, certain characteristic such as the eyes, mouth, or tail may not be important factors in judging the dog's friendliness because the child automatically assumes that the dog is unfriendly only on the basis that it is a dog and he or she is afraid of them. This bias may be important to consider when examining perceptions of canines. Due to the majority of participants having a dog in the home, analyses between dog and non-dog owners were not performed.



## Breed

There seemed to be no bias toward or against pure breed or mixed breed canines in the current study. Participants only named three of the pure breed dogs by their specific breed. Thirty-six participants included the name of a breed in their qualitative comments about the dogs. Often, the breed mentioned by participants was incorrect, but the dog appeared to have some similar characteristics to the breed that was mentioned. For example, the pug was often called a “bulldog” because of its flattened, dark muzzle and muscular build. The mixed breed dog in picture four was often mistaken for a Chihuahua because of its rather large ears. Misconceptions are not uncommon among dog breeds, and may also lead to biased perceptions of character.

Misconceptions are very common among dog breeds, and there is some negative bias toward certain breeds, particularly Pit Bull, Rottweiler, Doberman pinscher, and other large, strong working breeds. Some breeds, like Pit Bull and Rottweiler are viewed in a negative light due to misconceptions and the extreme influence of mass media (Zaidman, & Arps, 2011). No potentially “controversial” dogs such as those previously mentioned were included in the photos to avoid specific breed bias based on the popular media. It may be possible that parents of the participants in the current study have expressed dog breed bias in their homes, which may have in turn skewed the participants’ perception of the dogs used in this study in either a negative or a positive way. Social referencing may also play into these misconceptions as children may copy or exemplify the same or similar emotions and reactions to certain breeds of dogs as their parents have in previous encounters. These influences may

have caused the participants in the current study to contribute biased ratings of the dogs, according to some of the participant comments. (Example: “Mom said those types of dogs are unfriendly.”) It is possible that biased ratings due to breed bias and misconceptions may have produced skewed results about which characteristics contributed to more friendly and less friendly ratings, but no systematic data was collected to support this assumption.

### **Stereotypes and Overgeneralization**

In the review of literature, overgeneralization was a common theme in characterizing other humans. It is possible that participant perceptions in current study followed the “What is Beautiful is Good” Stereotype and the “Babyface Overgeneralization Effect.” Individuals may perceive others to be honest, innocent, trustworthy, naïve, or more friendly if they display baby-like facial features. Dogs often possess babyish features such as large, round eyes, sometimes referred to as “puppy dog eyes,” and a large round nose, and large forehead that may automatically trigger a nurturing response, even in children. These features may lead participants to perceive a dog as non-threatening if they experience the natural instinct to nurture it due to the childlike features it possessed. (Todorov et. al., 2008). For example, the dog rated “most friendly” in the current study had extremely large eyes and appeared to be a puppy.

Another overgeneralization that has been found to occur quite often is the idea that when a person is beautiful or attractive, he or she also possesses positive qualities like warmth, intelligence, honesty, and sincerity. Systematic data were not collected about attractiveness in the current study, but many of the narrative comments reflect

perceptions of attractiveness. (Example: “She is really pretty.”) If a child perceives a dog to be more attractive, he or she may be more likely to attribute positive personality characteristics to it. During socialization at an early age, children learn to apply this stereotype. As in the study by Dion and Berscheid (1974), research suggests that attractive children are more popular, are perceived as smarter, friendlier, and are more likely to exhibit more positive social behaviors than their less attractive peers. As a result, if a child finds a particular dog attractive, he or she is less likely to feel threatened by it because its mere attractiveness conveys the possession of positive qualities.

### **Limitations and Future Research**

Throughout the current study, a number of limitations were noted. The homogenous sample included very few children that have experienced a negative interaction with a dog, which may account for the limited variation along the continuum. The current study could be replicated with a more diverse child population and include a parent or caregiver component to compare with child ratings. For example, cultural transmissions of values and beliefs related to dogs may influence ratings. It may also be possible that younger children associated the faces shown on the Canine Friendliness Rating Scale with those shown in the pictures of dogs, and assumed that if their facial expression matched that of those on the scale, that they must possess that particular level of friendliness. It may be helpful to utilize an alternative tool in order to account for this bias. A final limitation in the current study is that the order of attributes mentioned by children in the interviews was not recorded. In future research, the order of characteristics indicated would be helpful in determining the most popular physical attributes not only by frequency but by rank.

Future research is needed to examine the likeliness that the personality of a perceiver may influence their judgment of another individual. Knyazev et al. (2007) found that personality traits such as anxiety and aggressiveness may systematically influence the way people perceive facial expressions of other people, particularly exaggerating hostile intentions in others, which could have a serious impact on everyday interactions. Additional research may help us to better understand why some personalities may be associated with biases in perception of emotional facial expressions. If this perception bias is likely in human-human relations, then it is likely for perception bias to occur in human-canine interactions as well.

### **Conclusion**

This study represents the first attempt to draw parallels between the physical attributes children use to judge character in humans and in canines. The results clearly indicate that the eyes and mouth are used to judge character in both species, but does not account for the differences in the stature of the two species. Despite its limitations, the current study provides insight into the features that children use to judge a dog's friendliness or approachability. These findings may be useful in the development of training tools to help children learn to successfully interact with canines and to prevent "unprovoked" dog bites in the future.

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## APPENDIX A: IRB APPROVAL



University and Medical Center Institutional Review Board  
East Carolina University • Brody School of Medicine  
600 Moyer Boulevard • Old Health Sciences Library, Room 1L-09 • Greenville, NC 27834  
Office 252-744-2914 • Fax 252-744-2284 • [www.ecu.edu/irb](http://www.ecu.edu/irb)  
Chair and Director of Biomedical IRB: L. Wiley Nifong, MD  
Chair and Director of Behavioral and Social Science IRB: Susan L. McCammon, PhD

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TO: Sandra Triebenbacher, PhD, Dept of CDFR, ECU—177 Rivers Building  
FROM: UMCIRB *wn*  
DATE: May 21, 2009  
RE: Expedited Category Research Study  
TITLE: “Children’s Perceptions of a Dog’s Friendliness Based on Physical Appearance”

**UMCIRB #09-0402**

This research study has undergone review and approval using expedited review on 5.19.09. This research study is eligible for review under an expedited category because it is a research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.) The Chairperson (or designee) deemed this **unfunded study no more than minimal risk** requiring a continuing review in **12 months**. Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The investigator must adhere to all reporting requirements for this study.

The above referenced research study has been given approval for the period of **5.19.09 to 5.18.10**. The approval includes the following items:

- Internal Processing Form
- Informed Consent
- Parent Survey
- Letter to Parents (dated 4.14.09)
- Letter of Support (dated 4.6.09)
- Sample Photos
- COI Disclosure Form (dated 4.14.09)

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

**The UMCIRB applies 45 CFR 46, Subparts A-D, to all research reviewed by the UMCIRB regardless of the funding source. 21 CFR 50 and 21 CFR 56 are applied to all research studies under the Food and Drug Administration regulation. The UMCIRB follows applicable International Conference on Harmonisation Good Clinical Practice guidelines.**

## APPENDIX B : INFORMED CONSENT

### CONSENT DOCUMENT

Title of Research Study: Children's Perceptions of a Dog's Friendliness Based On Physical Appearance

Principal Investigator: Sandra Triebenbacher, Ph.D.

Institution: East Carolina University

Address: Department of Child Development and Family Relations, 133 Rivers West

Telephone #: 328-1336

### PURPOSE AND PROCEDURES

The purpose of this research study is to explore children's perceptions of a dog's friendliness based on physical appearance.

Participation in this research study involves parents completing a short written survey and children completing a short interview (10-15 minutes in length.)

### POTENTIAL RISKS AND DISCOMFORTS

There are minimal anticipated risks from participation in this research study.

### POTENTIAL BENEFITS

There may be no personal benefit from your / your child's participation but the knowledge gained from this study will help researchers better understand children's perceptions of a dog's friendliness and why children may approach some dogs and not others.

### SUBJECT PRIVACY AND CONFIDENTIALITY OF RECORDS

Your privacy and confidentiality will be maintained by the use of participant numbers instead of names and no identifying information will be associated with any published results.

### COSTS OF PARTICIPATION & COMPENSATION

Participation in this study involves neither costs nor compensation.

### VOLUNTARY PARTICIPATION

Participating in this study is voluntary. If you / your child decide not to be in this study after it has already started, you may stop at any time for any reason without penalty.

Version date:

- 1 -

\_\_\_\_\_  
Participant's initials

**PERSONS TO CONTACT WITH QUESTIONS**

The investigators will be available to answer any questions concerning this research, now or in the future. You may contact the investigators, Dr. Sandra Triebenbacher at 328-1336 (days) or 321-3467 (nights and weekends). If you have questions about your rights as a research subject, you may call the Chair of the University and Medical Center Institutional Review Board at phone number 252-744-2914 (days). If you would like to report objections to this research study, you may call the ECU Director of Research Compliance at phone number 252-328-9473 (for research studies conducted through ECU).

**CONSENT TO PARTICIPATE**

**Title of research study:** Children's Perceptions of a Dog's Friendliness Based On Physical Appearance

I have read all of the above information, asked questions and have received satisfactory answers in areas I did not understand. (A copy of this signed and dated consent form will be given to the person signing this form as the participant or as the participant's authorized representative.)

---

 Participant's Name

(PRINT)

Signature

Date

Time

If applicable:


---

 Guardian's Name

(PRINT)

Signature

Date

Time

**PERSON ADMINISTERING CONSENT:** I have conducted the consent process and orally reviewed the contents of the consent document. I believe the participant understands the research.

---

 Person Obtaining consent (PRINT)

Signature

Date

---

 Principal Investigator's (PRINT)

Signature

Date

Version date:

- 2 -

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 Participant's initials



**APPENDIX C: PARENT SURVEY**

**Parent Survey**

“Children’s Perceptions of a Dog’s Friendliness Based on Physical Appearance”

Child’s Name: \_\_\_\_\_

Child’s Teacher: \_\_\_\_\_

Child’s Birth Date: \_\_\_\_\_

Pets in your family:

1. type of pet \_\_\_\_\_, breed \_\_\_\_\_, name \_\_\_\_\_, approx. age \_\_\_\_\_

2. type of pet \_\_\_\_\_, breed \_\_\_\_\_, name \_\_\_\_\_, approx. age \_\_\_\_\_

3. type of pet \_\_\_\_\_, breed \_\_\_\_\_, name \_\_\_\_\_, approx. age \_\_\_\_\_

4. type of pet \_\_\_\_\_, breed \_\_\_\_\_, name \_\_\_\_\_, approx. age \_\_\_\_\_

5. type of pet \_\_\_\_\_, breed \_\_\_\_\_, name \_\_\_\_\_, approx. age \_\_\_\_\_

6. type of pet \_\_\_\_\_, breed \_\_\_\_\_, name \_\_\_\_\_, approx. age \_\_\_\_\_

Some children have had a negative / traumatic experience with a dog. If your child has had such an experience, please describe.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Would participation in this project upset your child in any way? \_\_\_\_\_yes \_\_\_\_\_ no

Please describe any special considerations for your child during the interview

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you for your time!

\_\_\_\_\_

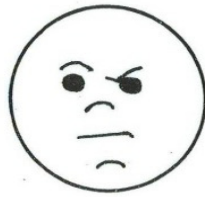
## APPENDIX D: CANINE FRIENDLINESS RATING SCALE



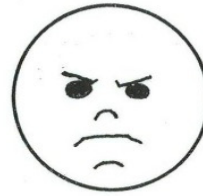
Very Friendly



Friendly



Both friendly  
and unfriendly



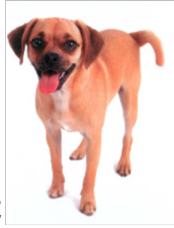
Unfriendly



Very  
unfriendly

*Canine Friendliness Rating Scale (Triebenbacher, 2009)*

## APPENDIX E: DOGS RATED “VERY FRIENDLY”



*Picture 14*

The mixed breed dog in picture 14 was rated as “very friendly,” with the highest mean rating of all 14 pictures (Mean rating = 1.27; s.d. = .69). Eighty-five percent of participants specifically mentioned the tongue, mouth, or muzzle as specific characteristics that made this dog appear to be the rating they had selected; 29% specifically mentioned the tail, and 28% noted the eyes. Twenty-five percent of participants would pet the dog in picture 14 (n = 100). More qualitative comments were stated about the mouth/muzzle, eyes, and tail, than all other characteristics of the dog in picture 14. Participants indicated that the dog’s mouth appeared to be “smiling” and the “tongue was sticking out.” Participants indicated that the eyes seemed to be “bulging” or “wide open,” or “looking at you.” Participants also noted that the tail was “wagging” and “curled.”



*Picture 6*

Participants rated the mixed breed dog in picture 6 as “very friendly” (Mean = 1.54; s.d. = .82). Fifty-three percent of participants noted the mouth or muzzle, 33% mentioned the tail, and 28% noted that the ears contributed to their rating of the dog in picture 6. Ninety percent of participants would pet this dog (n = 95). The mouth/muzzle, ears, and fur tended to get more qualitative comments than other

physical characteristics of the dog pictured. Some examples of qualitative comments made on the mouth/muzzle by participants include, “smiling,” “mouth is open,” “teeth are not long,” and “tongue is sticking out.” Participants made comments on the dog’s ears such as, “floppy,” “flat,” and “sideways.” The dog’s fur generated comments around the color, and texture, such as “orange” and “puffy.”



*Picture 4*

The mixed breed dog in picture 4 was also rated as “very friendly” (Mean = 1.55; s.d. = .80). Sixty percent of participants specifically noted the tongue, mouth, muzzle, 29% noted the ears, and 22% of participants specifically mentioned the eyes when asked which characteristics contributed to their rating of the dog in picture four. Ninety percent of participants would pet the dog in picture 4 ( $n = 95$ ). The qualitative comments contributed by participants generally included those pertaining to the mouth/muzzle, ears, and the dog’s emotional state. Participants also noted that the dog appeared to be “smiling,” “showing teeth,” and “panting.” According to participants, the dog’s ears were “big,” and “sticking up.” The dog in picture four appeared to be generally “happy” to participants, while some indicated that the dog appeared to be “sad.”





*Picture 9*

The dog is picture 9, a pure breed, and was also rated “very friendly” (Mean = 1.81; s.d. = 1.02). When asked which characteristics contributed to their rating of the dog in picture 9, the mouth and muzzle were noted by 35% of participants, ears by 18%, and tail was mentioned by 16% of participants. Ninety-three percent of participants indicated they would pet the dog in picture 9 (n = 98). According to qualitative comments by participants, body position and mouth/muzzle were indicated more than others. Participants also made additional comments as to whether or not the dog in picture nine appeared to be friendly or not. Some examples of qualitative comments given by participants include, “smiling,” “slobbery,” “sitting,” and “big.”

## APPENDIX F: DOGS RATED “FRIENDLY”



*Picture 2*

Participants rated the mixed breed dog in picture 2 as “friendly” (Mean = 2.0; s.d. = .83). Forty-one percent of participants said that the mouth/muzzle contributed to their rating of the dog in picture 2, while 18% noted the ears, and 16% indicated the body position (sitting). Eighty-two percent of participants would pet the dog in picture 2 (n = 86). Body position, mouth/muzzle, ears and tail were also given the largest numbers of qualitative comments by participants. Examples of participant comments include, “smiling,” “open mouth,” “dark color,” “little,” “sitting,” “perky” and “floppy” ears, and “straight, and wagging” tail.



*Picture 11*

The dog in picture 11 was a pure breed, and was rated “friendly” (Mean = 2.01; s.d. = .92). The specific physical characteristics noted by participants were the mouth/muzzle (26%) and the eyes (26%). Eighty-six percent of participants would pet the pure breed dog shown in picture 11. Fur, mouth/muzzle, and eyes were the most commented characteristic by participants for the dog in picture 11. Qualitative comments included, “smiling,” “not growling,” “brown spots on fur,” “soft,” “furry,” “fluffy,” “looking up,” and “staring.”



*Picture 8*

The mixed breed dog in picture 8 was rated “friendly” (Mean = 2.11; s.d. = .95). When asked the specific characteristics that contributed to their rating, participants noted the mouth/muzzle (35%), eyes (30%), sitting body position (19%), fur color (18%), and ears (18%). Eighty-eight percent of participants indicated that they would pet the dog shown in picture 8 (n = 92). Qualitative comments for the dog in picture 8 generally pertained to the mouth, body position, and fur. Some examples of participant comments were “smiling,” “teeth not out,” “sitting,” “big,” and generally included the color of the dog’s fur.



*Picture 12*

Participants rated the mixed breed dog in picture 12 as “friendly” (Mean = 2.21; s.d. = 1.15). When asked to indicate the specific characteristics that contributed to their rating, participants noted the mouth muzzle (38%), eyes (30%), and ears (27%). Eighty-five participants (81 %) would pet the dog in picture 12. Participants included qualitative comments mostly pertaining to the dog’s mouth/muzzle, fur and ears. Often, participants noted that the dog appeared to have a “beard” and was “smiling.” Attention

was paid to the color and “soft,” “puffy” texture of the fur, as well as the ears, which were said to be “droopy,” “floppy,” and “folded.”



*Picture 1*

Picture 1 contained a pure breed dog, which participants rated as “friendly” (Mean = 2.32; s.d. = .98). Participants named the mouth/muzzle (26%) and the eyes (26%), when asked to indicate the characteristics that contributed to their rating of the dog in the picture. Eighty percent of participants would pet the dog in picture 1 (n = 84). Participants included additional comments more often concerning the dog’s mouth/muzzle, body position and tail. The mouth was considered “frowny” or “sad.” The tail received comments such as “tangly,” “curly,” “wagging,” and “twirled.” Some examples of participant comments about the dog’s body were “puffed up,” “standing,” and “short/small.”



*Picture 7*

The pure breed dog in picture 7 was rated by participants as “friendly” (Mean = 2.32; s.d. = 1.11). When participants were asked to name the characteristics that contributed to their overall rating of the dog, 29% mentioned the mouth/muzzle, 28% noted the length of the fur, and 22% noted the dog’s eyes. Eighty-two participants (78%) indicated they would pet the dog in picture 7. Qualitative comments were given more often about the mouth/muzzle, fur, and body position of the dog in picture 7.

Participants described the mouth/muzzle as “smiling/grinning” and containing a “mustache.” The “yellow” and “black and white” color and the “soft,” “fluffy” texture of the fur were often mentioned. The dog was also described as “standing” and “short.”



*Picture 13*

Participants rated the pure breed dog in picture 13 as “friendly” (Mean = 2.67; s.d. = 1.28). The mouth/muzzle (39%), tail (24%), and eyes (22%) were noted by participants as contributing to their overall rating of the dog in picture 13. Sixty-eight participants (65%) said that they would pet the dog in picture 13. The dog’s fur, mouth/muzzle, and tail were mentioned most often in participants’ qualitative comments. The color and especially the texture of the fur were noted, as well as the “curly,” “wagging” tail. According to some participants, the mouth/muzzle appeared to be “smiling,” while others thought it to be “frowning” or “growling.”



*Picture 10*

The dog in picture 10, a mixed breed, and was also rated “friendly” (Mean = 2.84; s.d. = 1.31). Participants noted that the eyes (31%), mouth/muzzle (26%), fur color (24%), and tail (19%), contributed to their overall rating of the dog. Eighty percent (n = 84) of participants would pet the dog in picture 10. Participants tended to include qualitative comments mostly about the dog’s mouth, eyes, and fur. The mouth/muzzle was indicated to appear “friendly,” “happy,” and “smiling,” while the eyes were described

as “scary,” “glaring,” and “looking at me.” The texture, and especially the black color of the fur were commented on often.



*Picture 5*

Picture 5 contained a pure breed dog that was rated by participants as “friendly” (Mean = 2.85; s.d. = 1.02). Twenty-nine percent of participants noted the mouth/muzzle, and 17% noted the eyes when asked which specific characteristics contributed to their rating of the dog. Sixty-nine participants (66%) would pet the dog in picture 5. Qualitative comments offered by participants tended to focus on the dog’s body position, mouth, and tail. The dog was often noted to be “standing” and “big.” “Smiling,” “ready to bite,” and “mouth closed” were some examples of comments about the mouth/muzzle. The tail was described as “curly,” “little,” and “sideways.”

## APPENDIX G: DOGS RATED “BOTH FRIENDLY AND UNFRIENDLY”



*Picture 3*

The dog in picture 3, a pure breed, and was rated both “friendly” and “unfriendly” by participants (Mean = 3.59; s.d. = 1.17). The dog’s fur was noted as a “friendly” characteristic, while the mouth/teeth were noted as “unfriendly” characteristics. The tail was described by some children as cute and friendly, while others thought it to be scary. Forty-two percent of participants would pet this dog, 45% would not pet this dog, and 13% were unsure whether or not they would pet the dog in picture 3. The mouth, body position, and fur were the characteristic that received the most qualitative comments by participants for picture 3. Examples of comments related to the mouth/muzzle include “teeth are showing,” “smiling,” “growling,” “open mouth,” and “may bite.” The “fluffy,” “soft” texture of the fur was noted as well as the “big” body size.

