CONSTRUCTION OF CHILDREN'S CANINE CARE AND WELFARE KNOWLEDGE SCALE: UNDERSTANDING THE LINK BETWEEN CHILDREN'S PERCEPTIONS OF DOGFIGHTING AND THEIR LEVEL OF CANINE CARE AND WELFARE KNOWLEDGE TO INFORM HUMANE EDUCATION INTERVENTIONS

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ABSTRACT

CONSTRUCTION OF CHILDREN'S CANINE CARE
AND WELFARE KNOWLEDGE SCALE:
UNDERSTANDING THE LINK BETWEEN CHILDREN'S PERCEPTIONS OF
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KNOWLEDGE TO INFORM HUMANE EDUCATION INTERVENTIONS

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There are more than 40,000 dog fighters in the urban centers of the United States. In Michigan, dogfighting is thriving. In Detroit, the increased prevalence of the illegal blood sport is associated with a lack of educational interventions to prevent dogfighting, animal cruelty and neglect. While there are punitive legal approaches to mediating dogfighting, this dissertation focuses on educational interventions for youth as a preventive approach to address the problem. Animal welfare and humane education can be an effective tool to increase knowledge in children about animals, to shape human perceptions regarding animals and to induce behavior change. Humane education has been employed for over hundred years, but research based interventions and evaluations are limited.

This cross-sectional study explored whether children that have a higher level of canine care and welfare knowledge (CCWK) will be more likely to perceive dogfighting as animal abuse than children with a lower level of CCWK. Should this hypothesis be proven, it suggests that incorporating an intervention regarding canine care and welfare into the public school curriculum for Michigan students is a strategy to prevent dogfighting by increasing the CCWK. To test this hypothesis, I

first proceeded with the development of the Canine Care and Welfare scale and the children's Perceptions of Dogfighting scale. Then, I explored what is the baseline level of CCWK among the study population. And finally, I investigated the associations between children's perceptions of dogfighting as animal abuse and their level of CCWK, socioeconomic status (SES), dog ownership status, race, age, sex, and prevalence of dogfighting in the community (hypotheses 3-8).

This dissertation explored these hypotheses with a sample of 504 children of the ages of 11 to 19 years old from Plymouth Educational Center and Henry Ford Academy: School for Creative Studies in Detroit, Michigan. Exploratory and confirmatory factor analyses of the Canine Care and Welfare scale revealed a second-order model Canine Care and Welfare scale with six factors to be a good fit of the data (chi-square (df=269) = 433, $p < .05$, CFI = .94, TLI = .93, RMSEA = .05) with a Cronbach's alpha of .78. Exploratory and confirmatory factor analyses of the Perceptions of Dogfighting scale indicated a single latent variable model with a single factor to best fit the data (chi-square (df = 5) = 5.58, p = .34, CFI = .99, TLI = .98, RMSEA = .02) and a Cronbach's alpha of .54. The mean (baseline) level of CCWK was 3.51, with a significant difference (p = .01) between boys (M = 3.47) and girls (M = 3.58). The most significant predictor (B = 2.32, p = .00) of children's perceptions of dogfighting as animal abuse was their level of CCWK. The second statistically significant predictor was children's age (B = -1.21, p = .00).

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CHAPTER I.
INTRODUCTION TO THE STUDY

A. Problem Statement

Youth Perceptions of Dogfighting in Detroit

"There are more than 40,000 dog fighters in the urban centers of the United States, and most residents of high crime areas are exposed to dog fighting from cradle to grave" (Kalof & Taylor, 2007, p.324). In Michigan, dogfighting is thriving and, according to a study report, the majority of ninth grade students in a public school in Pontiac, Michigan that were exposed to dogfights personally did not perceive the blood sport to be morally wrong or cruel. The International Gang Research Project collaborated with psychologists, city officials, religious leaders, former gang members, and community residents to show that dogfighting is very prominent and "a cornerstone of illicit commerce in Detroit" (Kalof & Taylor, 2007, p. 325). According to a former gang member who was involved in youth educational programs, "The increase in dog fighting seems to have come at a time when small communities lack the manpower, resources, and education to effectively combat the illegal sport" (Kalof & Taylor, 2007, p. 326).

Human perceptions and cultural beliefs about animals are closely associated with our behaviors toward them or what constitutes a set of public attitudes or culturally acceptable uses of them depending on the species (Maust-Mohl, Fraser & Morrison, 2012). Furthermore, sustained progress in animal welfare is strongly associated with changes in human perceptions that lead to changes in human values and consequently behaviors and laws toward animals (Serpell, 2008).

Historical analyses of human perceptions toward animals suggest that even though attitudes change over time, they might persist and be hard to change even if they have ceased to be culturally relevant.

Animal welfare and humane education appear to be major tools used to shape human perceptions toward animals. Humane education aims to raise awareness and increase knowledge about animals as well as shape human perceptions regarding animals in order to improve attitudes and behaviors toward them. Humane education and related educational interventions have been employed to educate children for more than one hundred years (Serpell, 2008). However, the research linking humane education and animal care and welfare knowledge in children to how they perceive the treatment of animals has not been used to develop educational interventions or to evaluate their effectiveness. Thus, there is a need to develop reliable and valid methods to assess animal care and welfare knowledge and its relation to how children perceive the treatment of animals. Understanding the link between children's perceptions of dogfighting as animal abuse and their level of canine care and welfare knowledge will inform humane education interventions as well as short and long term evaluations.

The lack of research linking animal care and welfare knowledge to children's perceptions of animal abuse is particularly evident in the canine care and welfare literature and in the literature regarding children's perceptions about fighting dogs and dogfighting. No literature was found that measures children's canine care and welfare knowledge or children's perceptions of dogfighting. Additionally, there is no

data that relates children's perceptions of dogfighting to their canine care and welfare knowledge. Therefore, the purpose of this research is to further the scientific knowledge in this area by exploring the relationship between children's perceptions of dogfighting and their knowledge about canine care and welfare.

B. Purpose and Importance of the Study

The purpose of my dissertation research is to investigate the relationship between children's perceptions of dogfighting and their levels of canine care and welfare knowledge to inform humane education interventions and evaluations. I hypothesize that children's perceptions of dogfighting as animal abuse are positively related to children's canine care and welfare knowledge levels. To that end I propose to: (a) assess the level of canine care and welfare knowledge and perceptions regarding dogfighting as animal abuse among children in Plymouth Educational Center and in Henry Ford Academy: School For Creative Studies in Detroit, Michigan; (b) explore whether the level of children's canine care and welfare knowledge is positively associated with children's perceptions regarding dogfighting as animal abuse; and, finally, (c) explore the extent to which children's perceptions of dogfighting as animal abuse are associated to their level of CCWK, socioeconomic status, dog ownership status, race, age, sex, and prevalence of dogfighting in the community.

One of the most tragic uses of domesticated animals is the practice of pitting dogs against each other in fights to the death, for monetary gain and human entertainment. Dogfighting is considered to be part of the gang culture and thus has been linked to guns, violence, human aggression, poverty and crime (Randour,

2004). Furthermore, there is a mounting body of literature regarding the close association between animal abuse and dogfighting, and crimes of human concern such as illegal gambling, drug trafficking, spousal and child abuse, rape, and homicide (Akrow, 2011; Arbour, Signal & Taylor, 2009; Ascione, Weber & Wood, 1997; Frick, O'Brien, Wootton & McBurnett, 1994; Grier, 1999; Gullone, 2011; Randour, 2004; Siebert, 2010; Urbina, 2010). This social issue is worth exploring and preventing not just in order to protect animals, but to prevent behaviors that are highly associated with risks and crimes of human concern. In order to create safe and humane communities for both humans and animals, we need to explore the importance of canine care and welfare literacy skills education as a mediating factor in the prevention of violent behaviors in the form of dogfighting.

Detroit is a city facing major issues in crime, violence, and dogfighting. Thus, this study takes place in an urban center where interventions to address these issues are much needed.

C. Assumptions and Limitations

For the purposes of this study, the following assumptions were made:

1. The Canine Care and Welfare survey is an instrument that accurately assesses children's CCWK and their perceptions of dogfighting.
2. My study population is representative of the youth population in Detroit metro and Detroit proper areas.
3. Participants were trustworthy and conscientious in giving their responses to this questionnaire.

My study has several limitations:

1. The specific study population might represent only the system dynamics of Plymouth Educational Center and Henry Ford Academy: School For Creative Studies in Detroit. Thus, the results of this study might not necessarily reflect the broader US population or areas that represent a different system and societal dynamics.
2. Parents and youth involved in dogfighting might not want to participate in fear of legal issues and thus there might be a bias on the study population recruited. It is possible that if the parents or legal guardians were involved in dogfighting, they probably did not give permission to their children to participate. Likewise, it is possible that youth who were involved in dogfighting did not opt to participate. Due to these reasons there might be bias on the study population recruited.

D. Definition of Terms

The following terms are defined in the context in which they are used in this study.

Dogfighting

Forsyth and Evans (1998, p.203) describe a dogfight as follows:

In a dogfight, two dogs are put into a square pit, which measures twelve, sixteen, or twenty feet on each side. The dogs fight until one is declared the winner. There are two handlers and one referee in the pit with the dogs. Spectators surround the pit, the sides of which are wooden and three to four feet high. The dogfight begins when the referee tells the handlers to pit their dogs, at which time the dogs are released.

Once the fight begins the spectators place bets with one another on which dog will win.

There are several categories of dogfighters: professional, street and mid-level fighters (Gibson, 2005). The dogs that are used for dogfighting are commonly described as pit bulls. In case of the pit bull type of dogs, they are not only victims of abuse by dogmen, but they are also victims of "looks-specific" discrimination fostered by public attitudes where some morphological traits are considered to correlate with vicious behaviors (Irizarry, n.d).

Perception

According to Cherry (n.d., para. 3):

Perception is our sensory experience of the world around us and involves both the recognition of environmental stimuli and actions in response to these stimuli. Through the perceptual process, we gain information about properties and elements of the environment that are critical to our survival. Perception not only creates our experience of the world around us; it allows us to act within our environment.

Animal Welfare

The terms animal welfare and quality of life (QOL) in animals are used interchangeably. Additionally there are several definitions of animal welfare and QOL (Hewson, 2003a, 2003b). Thus, several attempts to define animal welfare are provided. Animal welfare is perceived as the protection of the health and well-being of animals. The underlying concept is that animals under human care should not

suffer. Based on the definition given by Fraser (2008), it is a multidimensional construct that incorporates the three categories of body, mind and nature. The term animal welfare addresses the issue of what we consider important components of care that need to be provided for animals to have a good QOL (Bekoff & Meaney, 1998).

According to McMillan (2000), good QOL depends on the balance between pleasant and unpleasant experiences. Thus, when the animal has more pleasant than unpleasant experiences, it has an acceptable welfare. Pleasant experiences include; joy, play, social companionship, mental stimulation, physical contact, gustatory sensation, play, nurturing young, and sexual activity (McMillan, 2000). McMillan explains that when assessing welfare, it is highly important to take into consideration whether the animals feel that they have control over unpleasant experiences such as fear, anxiety, boredom, loneliness, frustration, anger, pain, thirst, hunger, cough, dizziness, full bladder, constipation, nausea and pruritus.

According to "The Five Freedoms" (Farm Animal Welfare Council, n.d.), in order for an animal to have good welfare, it has to fulfill the following: (1) freedom from hunger and thirst; (2) freedom from physical and thermal discomfort; (3) freedom from pain, and injury; (4) freedom from fear and distress; and (5) freedom to express normal and anticipated species behavior (Farm Animal Welfare Council, 2009, n.d.). The Five Freedoms are used in this study to define CCWK. They are also used as key factors in developing the CCWK scale used in this study.

Animal Cruelty/Animal Abuse and Neglect

According to the American Society for the Prevention of Cruelty to Animals (ASPCA), the definition of animal cruelty is complicated as the term is defined differently in each state (ASPCA Professional, n.d.). The term animal cruelty encompasses all offenses against animals and it includes, but is not limited to, animal abuse, animal fighting, abandonment, animal neglect and practicing veterinary medicine without a license. It is important to add that the term animal as defined by law differs depending on the state (ASPCA Professional, n.d.). From a legal perspective, it is important to distinguish the terms of intentional acts of cruelty versus neglect, which is defined as the failure to provide and satisfy basic animal care and welfare needs (ASPCA Professional, n.d.) Thus, in the case of intentional abuse, the animal is being harmed on purpose. However, in the case of neglect the animal is being harmed unintentionally due to lack of education and awareness regarding basic animal welfare and care necessities. Similarly the concept of "malicious injury" or "intentional infliction of pain and suffering" (Favre, 2008, p.146) versus negligent behaviors toward animals are distinguished causes of action for the legal system as well (Favre, 2008). The definition of what is considered an illegal act under anticruelty laws has to do with the social or cultural acceptability of the action.

CHAPTER II.
LITERATURE REVIEW

This chapter contains a review of literature on topics pertinent to the study. The following topics are discussed:

1. Importance of humane education in shaping perceptions and studies on canine care and welfare practices
2. Studies regarding adult and youth perceptions of dogfighting, pit bulls, status dogs and canine cruelty
3. Theories that explore how family and environment influence children's perceptions and behaviors
4. The link between animal abuse and human violence
5. Dogfighting in the context of deviance and perceptions that justify abuse

A. Importance of Humane Education in Shaping Perceptions and Studies on Canine Care and Welfare Practices

Serpell (2008) acknowledged the importance of humane education in influencing human perceptions regarding animal care and welfare. He also pointed out the lack of research and absence of evaluation of outcomes of current humane education programs. The author argued that animal welfare assessment and human perceptions are interrelated. Animal welfare assessment involves a combination of measures that address: (a) animal-by-animal-based measures of welfare (behavioral and physiologic indicators); (b) environmental parameters of welfare that reflect the Five Freedoms (Farm Animal Welfare Council, n.d.); and (c) human perceptions, attitudes and behaviors. In this study and survey questionnaire, I included the environmental parameters and human attitudes and

behaviors. Serpell (2008, p.24) summarized the environmental parameters that potentially affect animal welfare and are based on the Five Freedoms (Farm Animal Welfare Council, 2009, n.d.) as follows:

- Space available per animal
- Availability and frequency of access to food, water and shelter
- Ability to engage in "high value" behavior patterns (e.g. dust-bathing in poultry, rooting in pigs, swimming in mink, etc.)
- General levels of environmental hygiene
- Exposure to extreme temperatures or weather conditions
- Exposure to fear-evoking situations
- Obvious physical hazards likely to cause injury or death (e.g. unsafe housing or flooring, badly designed harnesses, excessively heavy loads, traffic, etc.)
- Prevalence of aggression or "bullying" by other animals
- Prevalence of rough or coercive handling or overt cruelty by humans (e.g. shouting, slapping, hitting, kicking, beating, prodding, etc.)

Serpell (2008) argued that measuring human attitudes, perceptions and behaviors toward animals as well as changes that occur over time and in different socioeconomic and cultural contexts are the most meaningful assessments of progress in animal welfare. This can be accomplished either by direct observations or by surveys. Serpell also argued that by measuring people's attitudes and values, we can to some extent predict behaviors. He acknowledged that there is a need to

develop quantitative measures of human attitudes and values in order to evaluate educational interventions in the area of animal welfare, as well as national and global progress in regard to attitudes and values toward animal welfare issues over time.

Serpell (2008, p. 25) summarized certain critical to address questions inquiring the respondents' about the following:

- Age, sex, income, educational level, urban/suburban/rural background, religious affiliation and religious observance
- Current and childhood involvement with animals and animal-related activities (e.g. pet keeping, hunting, farming, fishing, etc.)
- Emotional and/or empathic responses to different categories of animals (e.g. food animals, draft animals, wild animals, companion animals, etc.)
- Perceptions of animals' instrumental, material, or "utility" value
- Approval/disapproval of various consumptive and non-consumptive uses of animals
- Worldviews—i.e. culturally-transmitted values and beliefs pertaining to particular animals and animal uses

Serpell (2008) argued that dogs and humans need to be socialized to each other at an early age in order to develop positive relationships later in life. There is evidence that childhood pet ownership influences perceptions toward animals and concerns for a wide array of animal welfare issues. It is well known that dogs exhibit an "inexhaustible willingness to form and sustain partnerships with

humans" (Hart, 1995, p.67). However, a dog's ability to develop and sustain positive partnerships with humans is dependent on a successful period of socialization during the dog's critical period of social development. This crucial socialization period occurs between two and sixteen weeks of age (Coppinger & Coppinger, 2002). A similar process of children's socialization to dogs and pets in general is proposed to provide adaptation not only to living with animals, but also as the key to promoting the development of the trait of human kindness (Grier, 1999). Thus, it is important to expose children to animals and provide education regarding animal care and welfare that would ensure positive animal-child interactions and strengthen the human-animal bond. The concepts regarding childhood canine ownership and demographics from Serpell (2008), Coppinger & Coppinger, (2002), Grier (1999) and Hart (1995) were all taken into consideration for the development of Questionnaire 3, which focuses on demographics and dog ownership.

According to the Association of Professional Humane Educators (APHE), humane education in the United States is currently threatened. This appears to be related to the struggling economy, overspecialization, slow maturation dates, no mandates, and competition for limited resources (APHE, 2011).

Beyond the topic of humane education, there is a small but very interesting body of literature assessing how owner and student beliefs relate with behaviors toward canine care and welfare. Even though the survey and scale questions for my study were mainly influenced by the fundamental concepts of the Five Freedoms (Farm Animal Welfare Council, 2009), the following literature was essential in

identifying components of animal care and welfare that were included in the Canine Care and Welfare scale (Questionnaire 1 of the survey), and the Perceptions of Dogfighting scale (Questionnaire 2 of the survey). Thus, the work of Fielding (2010) and Shore, Douglas and Riley (2005) are analyzed below.

Fielding (2010) conducted a study that aimed to identify perceptions regarding canine care and welfare and to classify levels of existent dog care. He collected surveys from students at the College of rhe Bahamas who were dog owners or whose family owned a dog. The study population consisted of students at the age of 18 years old and older. Participation was voluntary and 477 students completed confidential questionnaires. Furthermore, cultural influences on perception of canine care and welfare were taken into consideration. Four levels of canine care were identified as follows (Fielding, 2010, p.15):

> *With essential care, the owner provides for the basic physical needs of the pet; with standard care, the owner provides care and attention usually associated with pet ownership; with enriched care, the owner provides attention, activities and/or resources that create a more stimulating environment for the pet and with luxury care the owner provides indulgences that may be superfluous, extravagant, or expensive.*

Furthermore, questions pertaining to household-dog interaction were based on some concepts from the HITS@inventory developed by Sherin, Sinacore, Li, Zitter and Shakil (as cited in Fielding, 2010, p.15).

Additionally, the questionnaire included questions pertaining to breeds and specifically pit bulls due to their association to animal abuse and neglect. Another important component of the questionnaire focused on reasons for dog ownership. Based on the study results, mixed breed dogs (potcakes) and pit bulls did not receive all components of basic canine care such as food, water and shelter, while pure breeds and small dogs had much better care. Descriptive statistics, chi-square, and Fisher's exact test were used for data analysis. Furthermore, based on logistic regression, the type of dog was a statistically significant component of provision of basic canine care. Pit bulls in this study were found to be associated with abusive ownership, caregivers that were at risk of being victims of abuse, and ownership for dogfighting and making profit (Fielding, 2010).

Shore et al. (2005) developed a survey instrument that aimed to identify pet owner attitudes and behaviors of pet care that contributed to at least acceptable welfare. This instrument included separate questions to identify behaviors associated with canine and feline welfare. Furthermore this questionnaire included initially eight categories that reflect basic concepts of the Five Freedoms (Farm Animal Welfare Council, n.d.): (1) food; (2) shelter; (3) health care; (4) mental stimulation and play; (5) contact with humans and lack of isolation; (6) safety; (7) freedom from fear and abuse; and (8) other (e.g., willingness to seek advice regarding the pet). These eight categories were used by Shore et al. (2005) as guides in brainstorming sessions with graduate students, along with review of the relevant

literature to develop survey questions that sought to identify potentially beneficial pet owner behaviors for canine and feline welfare.

Furthermore, the authors included the Lexington Attachment to Pets Scale (LAPS) to assess the relationship between pet care and welfare as it relates to owner attachment to their animal (Johnson, Garrity, & Stallones, 1992, as cited at Shore et al., 2005). According to the authors, the definition of four levels of care was very beneficial in organizing owner behavior questions contributing to canine and feline welfare. Furthermore these questions were validated by comparing owner attachment scales to owner behaviors. The comparison between level of attachment and owner behaviors indicated that less attached pet owners were more likely to provide essential or basic levels of care. However, owners that were highly attached to their pet were more likely to provide higher levels of care. The authors argued that attachment scores were not advised to be used as surrogate measures of an owner's adequacy regarding the level of pet care.

B. Studies Regarding Adult and Youth Perceptions of Dogfighting, Pit Bulls, Status Dogs and Canine Cruelty

The available literature regarding children's perceptions of fighting dogs, dog abuse, neglect and welfare is limited. There are few studies exploring the perceptions of youth and status dogs (Hughes, Maher & Lawson, 2011). The majority of current literature explores adult human perceptions of fighting dogs, pit bulls, and of dogs, but here again, the literature on perceptions of dog abuse, cruelty and welfare is limited. The current methodological approaches that have been used

to examine the perceptions regarding fighting dogs and pit bulls include qualitative and quantitative methods.

More specifically, Twining, Arluke and Patronek (2000) conducted an ethnographic study involving semi-structured interviews with 28 pit bull owners. The study population consisted of pit bull adopters located through shelters in large eastern Massachusetts cities. The majority of subjects were Caucasian, of ages ranging between 20 and 50 years old. The study population was from both lower and middle income classes. The research questions sought to understand reasons for choosing to adopt pit bulls, focusing in particular on the way in which this breed's stigma affected dog ownership. Based on their results, the stigma associated with pit bulls is based on perceptions regarding the breed's unpredictable and vicious nature (Twining et al., 2000). A similar study aiming to identify perceptions about pit bulls was conducted in the Bahamas by Burrows and Fielding (2005).

Burrows and Fielding (2005) conducted a study to identify people's perceptions regarding pit bulls and pit bull ownership. Their study population consisted of 375 college students and library users from the Bahamas. Respondents were classified based on age, dog ownership and gender. Since this was a convenience sample, the authors felt that the results might not represent the wider population. Furthermore, participants were classified by dog owners, non-dog owners and pit bull owners. For data analysis, binary logistic regression and linear by linear associations were used to find associations. A four-point Likert scale was used in the survey to assess perceptions.

Based on the study results, pit bulls were the most commonly owned dogs for this socio-cultural context and study population. Age, sex and dog owning status influenced perceptions about pit bulls. The majority of pit bull owners were males and below 19 years of age. The majority of pit bull owner respondents held the owners responsible for their dog's behavior. Furthermore, 45.8% of pit bull owners thought it is acceptable to keep them as guard dogs. By comparison, only 14% of the other two groups combined agreed with this statement. Additionally 45.8% of pit bull owners strongly disagreed with the statement that "pit bulls are vicious by nature and no kind of treatment will make them safe dogs," while only 20.2% of the other two groups strongly disagreed with this statement. When respondents were asked about banning pit bulls, there were several interesting conclusions. Based on the study's results and data analysis, it appeared that the positive response in wanting pit bulls banned was associated with perceiving them as "naturally vicious." However, only 4.2% of pit bull owners agreed compared to 14.3% of dog owners (of 105 respondents) and 19.1% of non-dog-owners (241 respondents).

Based on these findings Burrows and Fielding (2005) suggested that attitudes might be influenced by other parameters in addition to media. This is in contrast to the finding of Cohen and Richardson (2002) who suggest that media is the only influence that shapes perceptions regarding pit bulls. The authors concluded that people in the Bahamas exhibited a lack of knowledge and understanding about canine welfare and care and responsible dog ownership. Burrows and Fielding (2005) argued that this lack of knowledge might be associated

with people being more prone to stereotype dogs based on their reputation and not on facts. I thus argue that these conclusions reflect attitudes about pit bulls that depend on animal care and welfare knowledge of the study respondent. Consequently, I added concepts of the following questions from the Burrows and Fielding study to my questionnaire (Burrows & Fielding, 2005): "All pit bulls are naturally vicious; A pit bull's behavior depends on the owner's treatment of the dog; Pit bulls should be banned; All pit bulls are vicious by nature and no kind of treatment (whether good or bad) will make them safe dogs" (p.143). However, I substituted the term "pit bull" with the term "fighting dog." Furthermore, I included variables such as age, sex and dog ownership in my study as well to identify potential associations. Based on this study's results, it was culturally acceptable to use pit bulls as guard dogs and for owned dogs to roam free. This belief is in conflict with the view in the US, where allowing an owned dog to free roam in the community is illegal. Thus, perceptions about what constitutes acceptable canine ownership behavior and what are acceptable principles of canine welfare and care might vary depending on the culture, subculture and context.

An important component of both dogfighting and pit bull ownership in urban centers is the concept of "status dogs" for youth (Hughes et al., 2011). According to Hughes et al. (2011), the term "status dogs" refers to certain types of dogs and breeds that have been labeled as "dangerous" due to their use in dogfighting. Furthermore, the label "dangerous" also refers to youths and their peers on the

streets who often exhibit antisocial behaviors with dogs and are involved in dogfighting, gangs and crime.

Dogfighting has been associated with many socially maladaptive activities, including use of guns, gang membership, drug and other illegal activities in Michigan (Kalof & Taylor, 2007). Thus, the concept of status dogs and urban area youth and gangs are highly relevant to this study. A very important study by Hughes et al. (2011) provides the first comprehensive systematic review on status dogs and links between youth antisocial behavior and dog cruelty and neglect. This study provides a review of the publicly available quantitative data sets on the problem in the UK, based on data from NGOs and statutory authorities. The most important aspect of this research is the in-depth qualitative evidence from the fieldwork undertaken with young people associated with the status dog issue.

These are seven case studies of individuals selected for their involvement within the status dog problem and in particular with dog fighting, canine cruelty, and breeding of fighting dogs as well as gang involvement. These case studies explored the attitudes and experiences of young status dog owners. The authors conducted informal interviews with gatekeepers from various backgrounds, including people involved in criminal subcultures, and semi-structured qualitative interviews with young status dog owners. The study population was very difficult to access. Thirteen young people were contacted and eventually seven gave semi-structured, single and group as well as face-to-face and phone interviews. Purposive and snowball sampling were used. The participants were two females and five

males and their ages ranged from 15 to 22 years old. The investigators admitted that gaining access to these underground circles was not easy due to fear and distrust of the youth toward the system and the concept of "one looks after 'one's own', including 'your' dog versus other dogs" (Hughes et al., 2011, p. 26). The relationship between these young people and their dogs is controversial. Dogs exchange hands very quickly, and the majority of pit bulls are under two years old. Dogs were acquired from Facebook or backyard breeders. They were acquired before the age of six weeks and youth perceived that taking responsibility for the dogs was giving them status. Blue (gray) and red (tan) pit bulls were perceived as very desirable.

In contrary to the pit bull stereotype of canine aggression, these dog owners felt their dogs offered loyalty, companionship and protection. Furthermore, youth thought that they shared personality traits with their dogs, like being unpredictable and having no respect for the other. These young people admitted that the amount of money involved in dogfighting is important. A very significant finding of this study was the recognition that there is lack of animal care and welfare education from home, school and community centers. Furthermore, these young people did not seem to have positive role models about responsible dog ownership in their environment. These authors concluded that there are quite a few myths and misinformation about dog care that could lead to neglect (Hughes et al., 2011).

This study offers an important perspective of the youth and street dogfighting that are very common in urban centers in the UK and the US. The study provides

proof and acknowledgement regarding the lack of education and awareness regarding animal care and welfare among youth. Furthermore, it is the first document acknowledging the involvement of women in dogfighting. Another significant component is the age of the participants. For the purpose of my study, it was important to include the voices of adolescents because they seem to be the age group that is at risk of being involved in dogfighting and deviant behaviors (Gibson, 2005; Hughes et al., 2011). Additionally, adolescents are able to provide accurate and reliable self-reports (Brener, Billy & Grandy, 2003).

Burley (2008) explored dogfighting in young people of low income class. The author argued that dogfighting and the relationship of youth with fighting dogs should be seen in terms of the human-animal relationship. This relationship involves the interaction of two sentient beings of two different species, even under the cruel practices of dogfighting. The element of canine devotion and the unique relationship with this youth are still present and offer an opportunity to reach out, understand and help both the dogs and the young kids from socio-economically challenged contexts. The ethnographic study took place at the West London area of North Kensington, which has a history of diversity. The study population was representative of the local community and included youth from West Indian, North African, and White European backgrounds.

The author argued that, through ethnographic interviews, he identified a different reality regarding young people of low income and social class who own a fighting dog. In this context, “fighting dog” does not refer to dogs that are used for

fights only, but also to dogs that have the same intimidating appearance but are used as companions and/or for protection purposes. However, he added that when dogfighting happens, it is because of the easy money it offers to an economically challenged youth without many options for making income. Another factor for the occurrence of dog fighting is the respect and status the owner gains when his/her dog wins.

As had been discussed by Evans, Gauthier, & Forsyth (1998), Burley (2008) agreed that these boys, who are being raised in communities where they occupy subordinate positions within the class structure and are victims of unbalanced competition in the schooling system, are looking for ego approval within the dogfighting culture. They consider the aggressive and intimidating appearance of the fighting dogs as an alternative source of success. Given that these dogs instigate fear and concern to the public, they satisfy the "oppositional" element, as described by Cohen (1971, as cited in Burley 2008) in "delinquent boys."

More specifically, these youth attempt to challenge the symbolic order by the only power they have: to induce discomfort by being a threat. The fighting dog serves as a symbol of this effort. Furthermore, owning fighting dogs has several benefits. If you use them for dogfighting the monetary gains are high (£500-£5,000 per fight). You can also use these dogs for protection or to make profits by breeding them, since there is high demand for their puppies. In this instance Burley (2008) added that the breeders involved in the fighting dog industry do not care for their

dogs since this is a money making business and profit is a priority over the dog's welfare.

However, the author argued that stereotyping these young people and their relationships with their dogs would not help us immerse into this culture and further understand the truth behind it to help both the young people involved and their dogs. These relationships are unique and offer an insight regarding the practical and emotional needs of this socioeconomically marginalized group which uses dogs to make a political statement. In the street culture, a fighting dog provides unconditional love, companionship, comfort, and by being an extension of his owner, proof that the young person can take care of himself. In their culture, toughness is considered to be a virtue, while humility is not. Acts of submission are penalized, while aggression is rewarded. In this context, dogfighting could be interpreted as a way young people protect and gain honor.

The author furthermore argued that in such a culture, affection might be interpreted based on the concept that a dog "is a creature of its owner's way of life" (Thomas, 1983, as cited in Burley, 2008). Thus, accordingly, young people perceive that their dogs share their world and their challenges and provide acceptance that is not offered by peers. These young people live in conditions of uncertainty, loneliness and lack of trust even among friends. The author argued that these young people form very close, enduring and intimate relationships with their dogs and depend on the dogs for reassurance in a hostile social context. Thus, the human-canine bond in this context might even have therapeutic results and further

positive characteristics that are not obvious to observers. The author argued that there is also a resemblance between the low-income, urban youth and their dogs: they are both "alert, strong," and "solid yet agile," and they share the "same bow-legged walk." Furthermore, for these youth with low self-esteem and lack of opportunities for leadership at school, work or home, their dog provides the unique relationship in which they lead.

Burley (2008) concluded that dogs can serve as social catalysts and offer an opportunity to link marginalized youth to the wider society through the common ground found in our love for dogs. A major component to acknowledge and work on is that the relationship between the dog and the young person offers the unique opportunity to serve as a medium through which marginalized young people can learn how to give and receive love. Additionally, this might be the first relationship through which youth can learn and experience the significance of parenting and the associated responsibility. This approach offers the great opportunity to have a positive impact on both canine and youth welfare.

C. Theories that Explore how Family and Environment Influence Children's Perceptions and Behaviors

According to Bandura's (1999) concept of "reciprocal determinism" and social cognitive theory, there is a reciprocal and interactive relationship between environment and a person's behavior. Thus, a violent environment might influence the perceptions and behaviors of children raised in communities with dogfighting. Furthermore, if their family members and peers are involved in dogfighting, they

might become an example to follow for these children, considering that behavior is learned through modeling and observation (Bandura, 1999).

Additionally, it has been argued that masculinity is associated with violence, aggression and dogfighting in certain cultural contexts (Evans et al., 1998; Geertz, 1972). Thus, we could argue that for children raised in such cultural contexts, involvement in dogfighting might be related with motivation for effective modeling (Bandura, 1999). Lave and Wenger (1991) also support this theory, arguing that learning is situated and can occur unintentionally in the context of culture. Considering that in Detroit dogfighting is a problem encountered in communities associated with poverty, gangs and drugs (Kalof & Taylor, 2007), it is important to ensure that the voices of the less privileged are being brought "to the table" (Gaventa & Cornwall, 2008) to help identify risk factors associated with the prevalence of dogfighting and the closely associated deviant behaviors of gangs and drug dealing as well aggressive and antisocial behaviors.

The American Psychiatric Association cites animal abuse as one of the criteria of conduct disorder in the Diagnostic and Statistical Manual (American Psychiatric Association, 2013). Another condition that is associated with conduct disorder is antisocial personality disorder or psychopathy. This condition is described as "a pervasive pattern of disregard for and violation of the rights of others that begins in childhood or early adolescence and continues into adulthood" (American Psychiatric Association, 2000, p.701). There is evidence that children

with a history of animal cruelty, exhibit more severe and serious symptoms of conduct disorder (Frick et al., 1994).

Another indication of conduct disorder in early childhood, in addition to animal cruelty, is bullying or cruelty to other children (Loeber & Hay, 1997). It has been argued that the development and severity of symptoms associated with conduct disorder could be attributed to the interactions between genetic and environmental factors (Lytton, 1990). Environmental factors such as punitive parenting (Patterson, DeBaryshe & Ramsey, 1989), exposure to animal abuse, and poor family functioning (Frick et al., 1994) have been linked to conduct disorder, childhood aggression, and a tendency toward callousness (Frick et al., 1994) as an adaptive response to a violent environmental context (Loeber & Hay, 1997). Additionally, children who had witnessed deliberate animal cruelty were prone to exhibit bullying behaviors (Arbour et al., 2009). Unfortunately, children who are victims of violence can reproduce these abusive behaviors, or feel too intimidated to report them, thus perpetuating aggressive behaviors (Felthous, 1980).

Family functioning appears to be a major factor in either preventing or exacerbating certain behaviors. It has been suggested that there is a higher risk for early childhood or even infancy drinking in contexts where there is prevalence of parental alcoholism and co-concurrent psychopathologies, along with certain biological factors (Fitzgerald, Wong & Zucker, 2013). Thus, children raised in high risk families are prone to have mental representations and cultural rules that mirror the parent-child relationship of the earliest years and an environment where

there is interplay between parental alcoholism, co-occurring psychopathology, and conflicts within the family. Thus, children raised in such challenging environments can develop maladaptive stress management and behavioral self-regulatory systems as well as mental representations of self and others that are impacted by the negative circumstances of the family context (Fitzgerald et al., 2013). It has been documented that chronic stress affects the HPA axis (hypothalamic-pituitary-adrenal axis system) at the physiologic and even structural level. This tends to result in an increase of the allostatic load (balance). Severe or chronic stressors induce potential dysregulation, such as challenge to control certain behaviors, and, when combined with poor parent-child interaction, can result in aggression and non-compliant behaviors. In this context girls tend to withdraw, while boys are more prone to engage in oppositional and aggressive behaviors (Fitzgerald et al., 2013).

Additionally, it is important to mention that there are sex differences in antisocial behavior (Moffitt, Caspi, Rutter & Silva, 2001). The Dunedin study (Moffitt et al., 2001), followed 1,000 males and females from age 3-21 and studied the prevalence, risk factors and gender differences in anti-social behavior under the scope of developmental psychology, psychiatry and criminology. According to this study, even though females are less likely to develop the neuro-developmental form, both sexes are equally prone to the other forms of antisocial behavior that result from their social interactions and context (Moffitt et al., 2001). When considering aggression, however, it has been argued that the changes that occur from childhood

to early adulthood are not the same for each gender and some degrees of aggression are age-normative (Loeber & Hay, 1997). These authors also argued that antisocial behavior and aggression might not be based on psychopathology but rather represent adaptive mechanisms in response to a hostile environmental context. The term "aggression" describes "a range of acts that are diverse with regard to the age of onset and severity of manifestation and choice of victims" (Loeber & Hay, 1997).

The current ethnographic literature on why people are attracted to blood sports supported the argument that men are the main sex involved in dogfighting, cockfighting and bull fighting because it validates masculinity (Evans et al., 1998; Geertz, 1972). In addition, the literature regarding humane education (Grier, 1999) is supportive of the argument that young boys, in particular, should be exposed to humane education and pet ownership as a way to prevent aggressive behaviors (Grier, 1999). However, based on the current literature from the Dunedin study (Moffitt et al., 2001) as well as the literature review by Loeber & Hay (1997), this argument about male aggression does not appear to be supported by scientific evidence. According to these authors, there are certainly differences in manifestations of aggression in both sexes; however, males and females are equally prone to develop the socially influenced form of antisocial behavior (Moffitt et al., 2001).

Since my study population is juveniles 11 to 19 years old, it is important to mention that juvenile violence has dramatically increased, especially in terms of homicide in the 14- to17-year-old age group. During adolescence, several major

changes in the extent and type of aggressive behaviors occur. These behaviors can increase to cause injury or death, mostly due to use of weapons, and to some extent to the juvenile's increased physical strength at that age (Loeber & Hay, 1997).

It has been argued that drug dealers, male juvenile offenders and inner city high-school males are more likely to carry guns (Loeber & Hay, 1997). Additionally, gun ownership in juveniles is related to delinquent offenses as gang involvement that is known to emerge in middle schools, high schools and neighborhoods. In adolescence, cross-gender conflict increases, and juveniles who become parents may begin to abuse their children and spouses. Loeber and Hay (1997) argued that highly aggressive individuals who appear to desist from crime in young adulthood have actually turned their aggressive impulses toward family members. In the context of my study, cruelty to other children and cruelty to animals is associated with conduct disorder and can be seen as advanced symptoms of aggression, which have implications for the development of other forms of aggression.

Salomon (2008, p. 81) states that dogfighting, as a subculture, is a pure reflection of society. Dogfighting, and the associated gambling and betting, offer an opportunity for individuals who have limited access though mainstream society to "live above a poverty stricken status" (Salomon, 2008, p. 16). Another challenge associated with youth of the working poor is that these children are disconnected from the mainstream society. As a consequence, they have limited opportunities for success through legitimate activities and thus engage in deviant behaviors associated with subcultures and gangs. In this context, it is worthwhile to explore

alternative legitimate avenues for these children to prevent engagement in criminal activities. Empowering them with education regarding animal abuse and human abuse might help them identify abuse toward both when it happens.

D. The Link Between Animal Abuse and Human Violence

The link between animal abuse and domestic violence is not a new concept. Philosophers, saints, authority figures and spiritual leaders since ancient times have acknowledged that there is a connection between the ways people treat animals and how they treat their fellow humans. St. Francis of Assisi (1182-1226) argued that "if animals are excluded from the circle of human compassion and pity, so also will humans exclude other humans from that circle" (Kalof, 2007, p.68). Furthermore, scientific evidence supporting the viewpoint that animal cruelty is linked to domestic violence and child abuse is well established and ever increasing (Ascione, Weber & Wood, 1997).

There is widespread acknowledgement of the historical evidence linking abusive behavior toward animals with a high risk of those behaviors escalating toward humans (Grier, 1999). Additionally, it has been argued that violent behaviors toward animals are not just predictors of violence toward humans, but might be significant indicators that abuse toward humans co-occurs (Arbour et al., 2009; Gullone, 2011; Randour, 2004). Perhaps this explains why currently several US states mandate the collaboration of animal abuse investigators and child or spousal abuse investigators (Urbina, 2010). The link between animal and human cruelty also provides a strong rationale for implementing stricter anticruelty

statutes to protect the public (Urbina, 2010). Similarly, the FBI recognizes animal cruelty as a predictor of violent behaviors toward humans (Whitehead, 2011).

The American Psychiatric Association cites animal abuse as one of the criteria of conduct disorder in the Diagnostic and Statistical Manual (American Psychiatric Association, 2013). Children with a history of animal cruelty exhibit more severe and serious symptoms of conduct disorder (Frick et al., 1994). Another indication of conduct disorder in early childhood, in addition to animal cruelty, is cruelty to other children as well (Loeber & Hay, 1997). It has been argued that the development and severity of symptoms associated with conduct disorder could be attributed in the interactions between genetic and environmental factors (Lytton, 1990). It has been documented that children who witnessed deliberate animal cruelty were prone to exhibit bullying behaviors as well (Arbour et al., 2009). Finally, it appears that violence is a means used both in domestic violence cases as well as in animal cruelty cases in order to control and mentally abuse the victims (Siebert, 2010).

It has been supported that the popularity of blood sports in renaissance was attributed to a psychological and moral crisis, a breakdown of the traditional values and an increase in individualism (Kalof, 2007). Furthermore, the baiting spectacles were associated with scapegoatism and the popularity of these sports manifested "a site of humanity's confusion about itself" (Kalof, 2007, p.91). Similarly, it has been argued there might be evidence of narcissism, existential confusion and low self esteem in the context of dogfighting and other blood sports (Iliopoulou &

Rosenbaum, 2013). This confusion and low self esteem might be due to socioeconomic and power inequalities (Gaventa & Cornwall, 2008) as well as loss of traditional values.

It has been documented that socioeconomic problems are highly associated and result in criminal and deviant behaviors in youth, manifested mostly with young males involved in gangs (Balogi, 2004) and animal cruelty (Frick et al., 1994). Dogfighting has also been associated with deviance (Siebert, 2010). Thus, in the study of dogfighting it is important to take into consideration the reciprocal relationship between the prevalence of violent behaviors in a community and the associated socioeconomic components of poverty, race, and changes in family structure and low educational level (Tcherni, 2011). These socioeconomic components, in combination with neighborhood exposure to violence and family member/peer involvement in deviant behaviors (Pantin et al, 2009), all may play a significant role in conduct disorder (Hinshaw & Lee, 2003). Thus, in Questionnaire 3 of this study, there are questions regarding socioeconomic status (SES), gender and race to identify whether they influence attitudes and perceptions regarding dogfighting and canine care and welfare.

E. Dogfighting in the Context of Deviance

Several scholars argue that dogfighting is a manifestation of deviant behaviors (Forsyth & Evans, 1998; Randour & Hardiman, 2007). The term "deviance" is used to describe a violation of social norms (Bridges & Desmond, 2000). As Forsyth and Evans (1998, p.203) argued, there are four neutralizing techniques that dogfighters use to justify their involvement in the deviant behaviors

associated with dogfighting: "(1) denial of injury; (2) condemnation of the condemners; (3) appeal to higher royalties; and (4) defense, arguing they are good people." Neutralization techniques are used by individuals with deviant behaviors in an effort to justify their actions. These neutralization techniques influenced questions from Questionnaire 2, which explored perceptions of dogfighting. It is worthwhile to remember however, that there is a reciprocal relationship between prevalence of violent behaviors in a community and the associated socioeconomic components of poverty, race, changes in family structure (FS) and low educational level (Tcherni, 2011). Thus, in addition to questions about SES and race, questions regarding FS were also included in Questionnaire 3.

There are two major categories of theories used to explain how perceptions influence deviant behaviors, macro-level and micro-level theories. Macro-level theories explain the origins of deviance as a result of broader societal influences, such as poverty. These theories view gangs, drugs and robbery as "innovative adaptations to blocked opportunities for legitimate economic or occupational success" (Bridges & Desmond, 2000, para. 12). A related theory supports the existence of deviant subcultures that create a unique set of values supporting this subculture (Bridges & Desmond, 2000). Thus, the macro-level origins of deviance are supported by the argument of Evans et al. (1998) that men from lower classes might be attracted to dogfighting because they perceive it as an alternative way to express and attain masculinity and achieve higher status though the subculture of dogfighting (Evans et al., 1998).

Micro-level theories, by contrast, explain the origins of deviance at the level of the individual and the learning processes of the deviant behaviors from family and friends though communication of perceptions, beliefs and values that support them (Bridges & Desmond, 2000). These theories can be associated with Bandura's (1999) "reciprocal determinism." Bandura (1999) argued that there is a reciprocal and interactive relationship between environment and an individual's behavior, thus explaining the impact family and environment have on development of certain deviant behaviors.

Furthermore, it would be important to take into consideration the potential reciprocal relationship of both macro- and micro-level factors in regard to the development and expression of antisocial and conduct disorders (American Psychiatric Association, 2013; Gullone, 2011; Randour & Hardiman, 2007). When this deviant behavior becomes "acceptable" or "normal" for subcultures of deviance, or for individuals affected by mental issues in a context of violence, criminalizing dogfighting might not be enough to deter people from it.

Green and Allen (1981-1982) synthesized a model trying to explain the way society responds to deviant behaviors. They acknowledged that there is an intersection between social complexity, society's reaction to increased rates of deviance, and the ability of the law and criminal justice system to regulate and control criminal activities associated with deviant behaviors. They also argued that crimes that violate the public's collective conscience might be perceived as "private affairs," and thus not given the appropriate attention (Green & Allen, 1981-1982).

The authors argue that when these activities are perceived as private affairs there might be a tendency to ignore or lessen penalties. However, when these activities are perceived to be serious violations of collective values, they are taken seriously due to social pressures to crack down on them. Thus, the more the public and the legal system perceive dogfighting as a private affair (animal cruelty), the less seriously it will be taken. However, society may take it more seriously if it views dogfighting as a public affair, beyond just animal cruelty, and as part of a nexus of criminal behaviors associated with gangs, drug dealing and children's exposure to violence (Randour & Hardiman, 2007). This perspective, in particular, supports the need to address dogfighting through canine care and welfare education.

In conclusion, there are numerous reasons for research in the area of children's perceptions of dogfighting as animal abuse and how they are associated with their level of canine care and welfare knowledge. This is an area where little is known as there is an absence of literature and research. This research is just the first step in identifying components of human perceptions and behavior associated with dogfighting and animal abuse. I anticipate that this study will set up the stage for additional studies in this area and provide evidence in support of the need for canine care and welfare education interventions based on valid and reliable evaluations.

F. Hypotheses

I propose the following hypotheses based on the preceding literature:

Hypothesis 1. The Canine Care and Welfare scale is reliable and valid to assess children's canine care and welfare knowledge.

Hypothesis 2. The Perceptions of Dogfighting scale is reliable and valid to assess children's perceptions of dogfighting.

Hypothesis 3. Children who score higher on the Canine Care and Welfare scale will be more likely to perceive dogfighting as animal abuse than children with a lower score on the Canine Care and Welfare scale.

Hypothesis 4a. Children reared in higher SES families (do not receive free lunch) will be more likely to perceive dogfighting as animal abuse than children (who receive free lunch) reared in lower SES families.

Hypothesis 4b. Children reared in higher SES families (do not receive reduced price lunch) will be more likely to perceive dogfighting as animal abuse than children (who receive reduced price lunch) reared in lower SES families.

Hypothesis 5. Younger children are less likely to perceive dogfighting as animal abuse than are older children.

Hypothesis 6. Children reared in families that own dogs as pets are more likely to perceive dogfighting as animal abuse than children reared in families who own dogs for status/fighting and have been exposed to dogfighting.

Hypothesis 7. Gender predicts children's perceptions of dogfighting as animal abuse.

Hypothesis 8. Children reared in communities where dogfighting is prevalent are less likely to perceive dogfighting as animal abuse than children reared in communities with low prevalence in dogfighting.

CHAPTER III.
METHODS

A. Participants

The sample for this study consisted of children 11-19 years old from two charter schools in Detroit, Michigan: the Plymouth Educational Center-YouthVille site (PEC) and the Henry Ford Academy: School for Creative Studies (HFA:SCS). The majority of children recruited to the study were African Americans. Inclusion criteria for the study were as follows: (a) to be 11-19 years old, (b) to be from a school or youth center that agreed to collaborate for data collection for this study, and (c) to have parental Institutional Review Board (IRB) consent and participant assent forms signed.

Description of the Sample

Data were gathered from a total sample of 504 participants. Specifically, data from one half (n = 252) of the total sample were used for exploratory factor (EFA) analyses using Mplus. The EFA was performed to (a) identify good items to retain and poor items to remove, and (b) propose a better fitting factor model (from the EFA results) that would be confirmed with the second sample's (n = 252) data using Mplus confirmatory factor analyses (CFA) procedures.

Sample Characteristics

Before proceeding with the EFA, CFA, hypothesis testing and fulfilling the three goals of this study, preliminary analyses explored the nature of the collected data.

Table 1. Age of Participating Children

Age (Years)		*n*	*Percent*
	11	34	6.7
	12	36	7.1
	13	35	6.9
	14	45	8.9
	15	86	17.1
	16	112	22.2
	17	88	17.5
	18	34	6.7
	19	4	.8
	Total	474	94.0
Missing	-1	30	6.0
Total		504	100.0

The mean age of children who participated in the study was 15.10 years (SD = 1.9) (Table 1). The gender distribution of the study-population children was 42.9% boys and 51.2% girls. The majority of children were African American (71.6%). Another 18.1% of the sample was multiracial African Americans (Table 2) who identified themselves as "Other" and specified in an open ended question; Appendix A contains a frequency chart (Figure A1) of the multiple ethnicities they reported. From the participating children, 64.1% (n = 323) qualified for free lunch programs and 47.8% (n = 241) qualified for reduced price lunch programs. Some children responded that they were qualifying for both reduced and free lunch programs. This was because depending on various household income variables (decrease in household's income, additional family members, etc.), the child's status might change during a school year (Michigan Department of Education, Office of School Support Services, School Nutrition Programs, 2011-2013). From these children, 82.3% reported living with their mother, 36.9% with their father, 37.6% with both

parents, 12.9% with their grandparent, 6.2% with a relative serving as legal guardian, 2.0% with a legal guardian other than relative, and 10.3% with other (often mentioning siblings) (Table 3). The most common family structure was single parent (57%, n = 289), and in the single parent households the most common single parents reported were mothers (38.6%, n = 193).

Table 2. Self-Reported Ethno-Racial Membership

	n	*Percent*
Mexican	3	.6
White	4	.8
African American	361	71.6
American Indian or Alaska Native	5	1.0
Asian	2	.4
Native Hawaiian Pacific Islander	1	.2
Other	91	18.1
Total	467	92.7
Missing	37	7.3
Total	504	100.0

Table 3. Who Do You Live With?

	Mother	*Father*	*Both Parents*	*Grand-parent*	*Relative Serving as Legal Guardian*	*Legal Guardian Other than Relative*	*Other*
M	.82	.36.9	.37.6	.13	.06	.02	.10
SD	.38	.48	.485	.33	.24	.14	.30
n	415	186	156	65	31	10	52

Sample Size

MacCallum, Widaman, Zhang and Hong (1999) argued that simple rules for sample size planning in factor analysis are not trustworthy because a lot depends

on the actual characteristics of the data. To do a proper power analysis, it would be necessary to make a large number of assumptions about the likely population parameter values and factor structure and then run a Monte Carlo simulation (Brown, 2006). Unfortunately, there is no prior data or literature from which to get sensible estimates of all those parameters for use in power analysis because I am trying to develop a new instrument. Thus, I would be making "blind" assumptions which could yield very misleading power analysis results for the required sample size. However, this highlights the importance of my research because one of the benefits would be to have data that would provide estimates to do power analysis for future research.

The next step in the study was to explore another way to proceed with power analysis and determine sample size. Regarding the logistic regression part of the proposed study, the power analysis has been conducted based on the thought that effect sizes are falling into four general categories: (a) group difference indices (Cohen's d), (b) strength of association indices (Pearson r), (c) corrected estimates, and (d) risk estimates (odds ratio) (Ferguson, 2009). Odds ratio (OR) is not anchored to r and it should be interpreted carefully. If OR ranges around 2.0, then this is the recommended minimum effect size representing a significant effect for social science data (RMPE). If OR ranges around 3.00, there is a moderate effect and if OR ranges around 4.00, there is a strong effect (Ferguson, 2009). For the logistic regression part of the study, power analyses were calculated based on formulas published by Hsieh, Block, and Larsen (1998). These calculations were made for a logistic

regression of a binary response variable (Y) on a binary independent variable (X). The sample size n was calculated for Power (1-ß err prob) at 0.8 with a = .05 significance criterion.

Thus, using the formula published by Hsieh et al. (1998), the sample size was calculated for different conditions optimal (balance on the distribution of the predictor) or not and conditions of extreme probability and extreme imbalance on distribution of predictor for RMPE (OR of 2.00) (Table 4).

Table 4. Logistic Regression Power Analysis

Power	*N*	*Pcnt N x = 1*	*Probability for Reference Group (x = 0)*	*Probability for Other Group (x = 1)*	*Odds Ratio*	*R Squared*	*Alpha*	*Beta*
80%	272	50.000	0.500	0.667	2.000	0.000	0.05	0.20
80%	416	80.000	0.500	0.667	2.000	0.000	0.05	0.20
80%	115	50.000	0.500	0.750	3.000	0.000	0.05	0.20
80%	171	80.000	0.500	0.750	3.000	0.000	0.05	0.20
80%	76	50.000	0.500	0.800	4.000	0.000	0.05	0.20
80%	111	80.000	0.500	0.800	4.000	0.000	0.05	0.20
80%	519	50.000	0.800	0.889	2.000	0.000	0.05	0.20
80%	760	80.000	0.800	0.889	2.000	0.000	0.05	0.20
80%	244	50.000	0.800	0.923	3.000	0.000	0.05	0.20
80%	341	80.000	0.800	0.923	3.000	0.000	0.05	0.20
80%	175	50.000	0.800	0.941	4.000	0.000	0.05	0.20
80%	235	80.000	0.800	0.941	4.000	0.000	0.05	0.20

Adapted from Hsieh, F. Y., Bloch, D A., & Larsen, M. D. (1998). A simple method of sample size calculation for linear and logistic regression. *Statistics in Medicine, 17,* 1623-1634.

In Table 4 it is obvious that even under extreme conditions and imbalance the sample size rarely rises above 500. Thus, it was concluded that a sample size of 500 would be sufficient to detect the recommended minimum effect size

representing a "practically" significant effect for social science data (RMPE) for an OR that ranges around 2.0. We know that as a general principle increasing sample size will always increase statistical power, assuming other input parameters remain unchanged (Aberson, 2010). This concept justified getting the largest sample I could afford, because it maximized statistical power within the constraints imposed by available time and resources.

B. Data Collection

A total of 504 children participated in the study. The survey instruments and consent/assent forms were submitted and approved by the MSU Social Science/ Behavioral/Education Institutional Review Board (SIRB) human research protection program in order to assure compliance with applicable federal regulations and University policies regarding research involving children.

The scale was reviewed for language, comprehension and content by eight boys and girls (9-11 years old) and one teacher from Huron Elementary school and by personnel from MSU Detroit Center. Additionally, feedback was received from the superintendent and a teacher from Plymouth Educational Center.

The initial intent was to follow two procedures for distribution of five pieces of information needed for the study: (a) parental consent forms, (b) legal adult (18 plus) consent forms, (c) assent forms for 11-12 years old, (d) assent forms for 13-17 years old, and (e) the survey instrument. These two procedures would have involved an electronic distribution of the forms and the survey and a hard copy distribution of the forms and the survey. Both options were offered, however, only hard copy

distribution was used. This decision was based on school preference and lack of access to computers for parents and students.

To identify collaborating research partners, I initially contacted several schools and one youth center in the Detroit area and asked them to collaborate in the study. An initial letter of support for the study was sent to schools explaining the research objectives and procedures (Appendix B). From the five schools and the one youth center that were contacted, two schools agreed and proceeded with actual collaboration: Plymouth Educational Center-Youthville site and HFA:SCS.

Hard Copy Distribution of the Consent/Assent Forms and the Survey Instrument

The teacher or school superintendent introduced me to the class during the morning meeting or during a seminar. I presented the study objectives and procedures. I talked about the hard copy distribution of the Canine Care and Welfare surveys, read out loud the consent and assent forms, answered any questions the students had, and distributed the hard copies of the consent forms for parents and legal adults. Additionally, I distributed hard copies of the assent forms to children 11-12 years old, as well as a separate form to children 13-17 years old.

I distributed the consent and assent forms two weeks before the survey distribution at a morning meeting (where students from all classes were in one room). I was there for the next two days to collect consent and assent forms. Additionally, I had a locked survey drop-off box for the consent and assent forms and the students had the option to drop off the forms there. Approximately two weeks after the consent/assent forms were distributed, depending on the school's

recommendation for timing of the survey distribution and completion, I went back. I presented, read, distributed and collected the surveys from children who had met the inclusion criteria requirements. The students had the choice either to hand the questionnaire to me or to drop it off at the survey drop-off box.

Students and teachers were asked about their preference of incentives for participating. Based on the students' and teachers' responses, pizza parties, drinks and candies were provided in appreciation for their participation in the study. Additionally, after completion of the data collection, I presented seminars on responsible canine ownership for HFA:SCS. For Plymouth Educational Center, a tour of the College of Veterinary Medicine at Michigan State University and seminars on careers in veterinary medicine took place for interested students.

After administering the consent forms and the survey instruments, parents and study participants were encouraged to contact me, the principal investigator (PI) or the IRB with questions or concerns about the study. Questions or concerns were addressed accordingly.

Only students who met the inclusion criteria participated in the study. On the day of survey completion, I read out loud the assent/consent form and the survey to the students in a group setting and answered their questions. Surveys were collected over the time frame of December 1st to April 30th, 2013.

There was a low response rate after two months of the study, due to the fact that distribution and collection of parental consent forms to parents of 500 children in Detroit was impossible in a setting of serious SES and family problems. I sent a

revision to IRB explaining that this procedure isolates communities of African Americans of low SES and hinders their ability to participate in research and have their voices heard. Thus, IRB accepted the revision to proceed with a waiver of parental permission and only send a study information sheet to parents that would allow them to contact us and exclude their child if they wished to do so (Appendix B).

C. Instruments

The survey instrument used in the study has three component parts. These components of the survey instrument are at times referred to as questionnaires 1, 2 and 3 to reflect the fact that different approaches were used to develop questions for each component. These components, and their development, are described below.

Canine Care and Welfare Scale Development: Questionnaire 1 of Survey

Of all the independent variables being considered in this study to help explain children perceptions of dogfighting as sport or animal abuse, the main variable of research interest is associated with Hypothesis 1, which tests for an inverse relationship between children's perception of dog fighting as animal abuse and their level of canine care and welfare knowledge.

In developing the survey questions to test this hypothesis, two challenges had to be addressed. First, there is no validated instrument that measures canine care and welfare. Second, there is a lack of a validated tool to assess the level of canine care and welfare knowledge from the owner's or child's perspective. Thus, my tasks were to: (a) review the literature and create a scale that reflected basic principles of

canine care and welfare, and (b) use existing survey questions from relevant research that reflected these principles to assess owners' and adolescents' knowledge. I then modified these questions to create Questionnaire 1 of the study, which measures canine care and welfare knowledge of children and adolescents. Valence was taken into consideration.

Developing the Canine Care and Welfare Scale

In order to create a pool of questions to assess the canine care and welfare knowledge of my study population, I used the survey assessing canine care and welfare created by Shore et al. (2005) and the modified version of it by Fielding (2010). These surveys were reviewed under the principles of the Five Freedoms developed by the Farm Animal Welfare Council (2009). These freedoms describe the basic needs of all animals that must be met in order to provide acceptable animal welfare. The Five Freedoms embrace the concept that in order for an animal to have an acceptable level of welfare and prevent any source of unnecessary suffering, all basic species needs should be met (Farm Animal Welfare Council, 2009). Furthermore, based on the Five Freedoms, both the physical and mental state of an animal needs to be taken into consideration in order to assess their level of welfare (Farm Animal Welfare Council, 2009).

In addition to the Five Freedoms and the associated research used to generate questions, relevant findings from canine quality of life and welfare (QOL) research were included (Iliopoulou, Kitchell & Yuzbasyian-Gurkan, 2013). Iliopoulou et al. (2013) investigated the development of an instrument that assessed QOL of dogs treated with chemotherapy as well as the human-canine bond under

the challenging circumstances of cancer diagnosis and treatment. Important findings from this study indicate statistically significant predictors of QOL of the canine cancer patient to be exhibition of signs of illness, play behaviors and canine happiness as perceived by the owner (Iliopoulou et al., 2013).

Children's Perceptions of Dogfighting Scale Development: Questionnaire 2 of the Survey

The second component part of the survey instrument was used for the development of the children's Perceptions of Dogfighting scale. Questions regarding dogfighting were retrieved from the limited literature on neutralization techniques developed by Sykes and Matza (1957), as summarized in the context of dogfighting by Forsyth and Evans (1998). The urban myths used to stereotype the dogs that are used for fighting, and the perceptions of pit bulls as identified by Burrows and Fielding (2005), were translated into survey questions.

Questions Regarding Demographics: Questionnaire 3 of the Survey

The third component of the survey instrument focused on demographic and personal characteristics of the respondent. Questions regarding socioeconomic and family status were derived from the research of Moffitt et al. (2001). The research of Fergusson and Lynskey (1996) set an example for the questions regarding family status. The set of questions that inquired information about canine ownership was influenced by the research of Hughes et al. (2011) and Burley (2008).

The literature on best practices in survey design was also consulted in the development of the survey instrument used in this study. Based on the current literature, shorter-in-duration surveys increase the response rate, even though the

literature on surveys is inconclusive regarding the exact optimal number of questions (Fanning, 2005). Furthermore, another component increasing the response rate is formatting of the questionnaire. According to Fanning (2005), survey success depends on the two "languages" it is written in—words and symbols—because they contribute to keeping the respondent engaged with the process. Thus, it is important to improve the survey's design and layout by placing the most interesting questions first and making all questions easy to comprehend and respond to. The survey questions for this study were written at the 4th-6th grade level of comprehension. The survey questions were screened for readability, absence of ambiguity and use of jargon. Any "double barreled" questions that had two questions in one were avoided to prevent respondent confusion.

Thus, I developed a survey instrument for children and adolescents. The survey included three questionnaires: (a) the Dog Care Scale (Questionnaire 1), (b) the Dogfighting and Fighting Dogs scale (Questionnaire 2), and (c) Questionnaire 3, which inquired about demographics and dog ownership.

D. Data Analyses

This study had three sequential analytical goals. The first goal was to use exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to guide development of scales to measure canine care and welfare knowledge constructs, and perceptions of dogfighting constructs. The second goal was to determine the level of canine care and welfare knowledge of the study population. Descriptive statistics and histograms were used to describe it. The third goal was to use logistic regression with multiple predictors to identify associations between children's

perceptions of dogfighting as animal abuse and the list of six independent variables described in hypotheses 3-8.

Goal 1: To determine whether the Canine Care and Welfare scale is reliable and valid to assess children's canine care and welfare knowledge (Hypothesis 1) and whether the Perceptions of Dogfighting scale is reliable and valid to assess children's perceptions of dogfighting (Hypothesis 2)

The first analytical goal sought to test hypotheses 1 and 2 respectively. Hypothesis 1 seeks to determine whether the Canine Care and Welfare scale is reliable and valid to assess children's canine care and welfare knowledge. Hypothesis 2, on the other hand, seeks to assess whether the Perceptions of Dogfighting scale is reliable and valid to assess children's perceptions of dogfighting. To test hypotheses 1 and 2 respectively, EFA and CFA were used to guide development of scales to measure children's canine care and welfare knowledge and perceptions of dogfighting.

Factor Analyses

Factor structure, validity, reliability and scale scores were determined for both the Canine Care and Welfare and the Perceptions of Dogfighting components of the survey questionnaire. A total of 504 completed surveys were randomly assigned to one of two groups. The two matched samples of 252, Group 1 and Group 2 respectively, are very similar in terms of the independent variables of age, sex, dog ownership and socioeconomic status. The two groups were selected by controlling variability of the independent variables of age, sex, dog ownership and

socioeconomic status; they were matched on these independent variables until the best match was achieved. Group 1 of the data was analyzed using EFA and after the EFA, Group 2 was analyzed with CFA as described below.

Initially, EFA of Group 1 of the study data was performed to explore how many underlying factors were in these data. In the EFA, the sets of items that load heavily on each of the latent factors were identified, which facilitated naming and describing the factors. A latent variable is a construct that is "a weighted linear combination of its observed measures, plus error" (Brown, 2006, p.352). After identifying the latent factors/constructs based on the factor analyses that were deemed appropriate for this data set, a CFA was performed on Group 2 of the data set. Then the scale scores were created and their reliability was assessed. Validity was assessed with EFA and CFA.

Mplus was used to run EFA and CFA for both groups. Mplus is a program that is used for structural equation modeling techniques and CFA. This program was used to specify how accurately the proposed model fits the data. One of the advantages of Mplus is that it provides the WLSMV estimator, which is a very good option for CFA modeling for categorical data (Brown, 2006). Additionally, Mplus provides a variety of defaults that automatically set frequently employed CFA specifications among other functions; all error covariances and indicator cross loadings were fixed to 0, all error variances, the factor variances and covariances were freely estimated, and the first observed variable was set as the marker/ indicator (Brown, 2006).

Data Input, Screening and Selection

The data were input using Remark OMR 7.1, then transformed into SPSS and Excel files. After the data were entered, they were screened for patterns of missingness on individual items, item score distributions, normality and outliers using SPSS (Brown, 2006). Standard procedures for data cleaning were used and when there was ambiguity regarding which option was chosen by the data participants, it was treated as missing data (Pierce, 2009; Smith, Budzeika, Edwards, Johnson & Bearse, 1986). Valid observations were correctly recorded and there were only few (1%) outliers. All analyses were conducted to data both with and without outliers. It did not make a difference to include or exclude them as the results were very similar to each other. Therefore, the reported analysis results include the outliers.

Exploratory Factor Analyses

Exploratory factor analyses were conducted in Group 2 of the data to identify the underlying factors/constructs that best explain the data set (Brown, 2006). The analyses were conducted using the WLSMV estimation method, which uses a diagonal weight matrix (W), robust standard errors and a mean and variance adjusted x2 test statistic. Exploratory factor analyses were performed to determine the factor structure of the items in the Canine Care and Welfare and the Perceptions of Dogfighting scales. The acceptability of a fitted EFA solution was evaluated on the basis of the following three aspects: (1) overall goodness of fit with at least one index of each fit class, because they provide different information regarding the fit of the solution; (2) absence/presence of data from individual items

that are not well fit by the model in a EFA solution; and (3) the interpretability, size, and statistical significance of the model's parameter estimates.

Multiple indices for goodness of fit were used to evaluate the overall fit of the data. They measure how well the model fits the data relative to the null model. Goodness of fit was evaluated using the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA) and its 90% confidence interval, and the comparative fit index (CFI). Based on suggestions provided by Brown (2006), a good model fit was defined by the following criteria: SRMR (≤ .08) CFI (≥ .95), RMSEA (≤ .06, 90% CI, ≤ .06) (Hu & Bentler, 1999). Multiple indices were used because providing different information regarding model fit contributes to a more reliable way to evaluate it.

In addition to considering overall model fit, the conceptual and empirical relevance of factors was evaluated as well (Brown, 2006). Models composed of items that each load on a single factor were preferred. Factor loadings are regression coefficients. Factor loadings of .30 or .40 are commonly used to define a reliable factor loading or cross loading. This is an arbitrary decision and cutoff values vary (DiStefano, Zhu & Mîndrilă, 2009). In general, items with primary factor loadings ≥ .40 and secondary factor loadings ≤ .30 were retained. Items not meeting these criteria were removed. Factor analyses were repeated until all scale items met all criteria. Factors that had two or fewer items with salient loadings, low factor determinacy, or items with small loadings were eliminated (Brown 2006, pp.38 and 39). The suggested factor structure was used as a basis of the Canine Care and

Welfare scale (Questionnaire 1) and the Perceptions of Dogfighting scale (Questionnaire 2) and constructs of Questionnaire 3. The suggested factor structure was used to specify CFA models for the Canine Care and Welfare and Perceptions of Dogfighting (questionnaires 1 and 2) from which scale scores were obtained.

Confirmatory Factor Analyses

The data were analyzed using CFA after conducting the EFA. Confirmatory factor analysis is based on the concept that there is an a priori model that describes the latent factor structure underlying a set of data and the factor analysis determines how well that model explains the observed data. The CFA analysis uses a specific model to create a covariance matrix. In this case the a priori model was determined by the EFA. According to Brown (2006, p.106), "Mplus automatically selects the first indicator (item) to be the reference indicator." After the model was specified, the CFA was performed with Mplus to fit the model to the data, estimating the factor loadings. In order to measure goodness of fit, multiple indices for goodness of fit were employed as described for the EFA. A CFA was conducted on the Canine Care and Welfare scale and the Perceptions of Dogfighting scale, using Mplus (structural equation analysis). Analyses were conducted using the item covariance matrices. Additionally CFA was used for assessing construct validity. Mplus provided both standardized and unstandardized solutions.

Missing Data

Missing data are the norm in applied research. Reasons for missing data for my research were expected to be either by chance, in this instance called missing completely at random (MCAR), or related to student scores on the items that are

missing (Not missing at random; NMAR). The assumption for MCAR is that "the probability of missing data on Y is unrelated to Y or any other variable in the data set" (Brown, 2006, p. 364). In applied research cases the assumption of missing at random (MAR) is met when "the probability that data are missing on Y may depend on the value of X, but is not related to the value of Y when holding X constant" (Brown, 2006, p 364).

Full information maximum likelihood was used to handle missing data. This approach used all available data, and in cases of MAR when the data have a multivariate normal distribution, this method produces consistent and efficient parameter estimates, standard errors and test statistics.

Reliability

Reliability refers to the concept of consistency of measurement and it is "the overall proportion of true score variance to total observed variance of the measure" (Brown, 2006, p. 337). Reliability and internal consistency of survey instruments are commonly calculated using Cronbach's alpha. In these cases Cronbach's coefficient alpha > 0.70 is an acceptable level of reliability (Nunnally & Bernstein, 1994).

Goal 2: To determine the level (or baseline) of canine care and welfare knowledge among the study population

SPSS was used to obtain descriptive statistics including the mean, median and standard deviation of scale (factor) and raw scores for canine care and welfare knowledge of my study sample and to produce histograms. Descriptive statistics for scale and raw scores were also reported separately for each gender and each age

group as well as gender within age group. Histograms were inspected to assess any departure of the score distributions from normality.

Goal 3: To determine whether children's perceptions of dogfighting as animal abuse are associated with their level of canine care and welfare knowledge, socioeconomic status, dog ownership status, race, age, sex, and prevalence of dogfighting in the community (hypotheses 3-8)

Hypothesis Testing

Two major methods for accomplishing statistical inference are confidence intervals and null hypothesis significance testing (Cohen, Cohen, West & Aiken, 2003, p. 41). In logistic regression the difference between the null and model deviances is referred to as goodness of fit or model prediction. Goodness of fit is also noted as G and "G is a test of the simultaneous contribution of the set of K predictors to the prediction of the dichotomous DV (dependent variable)" (Cohen et al., 2003, p. 505).

In this study, multiple logistic regression was used for hypothesis testing. The DV is perceptions of dogfighting as animal abuse or not. The independent variables (IV) of interest are the children's score on the Canine Care and Welfare scale (level of canine care and welfare knowledge; Hypothesis 3), the level of socioeconomic status (Hypothesis 4), the child's age (Hypothesis 5), the family's dog ownership status (Hypothesis 6), the child's gender (Hypothesis 7) and the prevalence of dogfighting in the community (Hypothesis 8).

An advantage of logistic regression is that it finds the best fit by using an equation based on the maximum likelihood statistical criterion (Cohen et al., 2003).

Thus, the goodness of fit and significance statistics are different from linear regression and least squares regression (Cohen et al., 2003). Logistic regression maximizes the probability of getting the observed results based on fitted regression coefficients.

Logistic regression was used because it has the following advantages over OLS models when the dependent variable is binary (Cohen et al., 2003):

- The dependent variable does not have to be normally distributed.
- There is not an assumption of a linear relationship between the IV and DVs.
- The parameters do not need to be related with a linear equation.

Data Screening

The data were screened for patterns of factor and total score distributions, normality and outliers with descriptive statistics and histograms using SPSS (Brown, 2006).

Hypotheses 3-8

Six hypotheses were tested and explored the association between children's perception of dogfighting as animal abuse and children's Canine Care and Welfare scale scores (Hypothesis 3), family's socioeconomic status (Hypothesis 4), children's age (Hypothesis 5), family dog ownership status (Hypothesis 6), children's gender (Hypothesis 7) and prevalence of dogfighting in the community (Hypothesis 8). Logistic regression with multiple predictors was employed to assess each of the six independent variables (IVs) as potential predictors of children's perceptions of dogfighting as animal abuse.

Multiple Logistic Regression

Logistic regression analysis (LRA) extends the techniques of multiple regression analysis to research situations in which the outcome variable is categorical, not continuous (Cohen et al., 2003). More specifically, in the case of my outcome variable which is binary (children perceive dogfighting as abuse or not), logistic regression is the method of choice. Logistic regression is best for situations where we are trying to predict whether there is an association or not. The goal in my research is to model the probability of children's perceptions of dogfighting as a function of the six (K) predictor variables.

In my study the standard logic model for multiple predictors is written as follows:

$$\ln\left[\frac{\hat{\pi}}{(1-\hat{\pi})}\right] = b_0 + b_1 X_1 + b_2 X_2 \ldots + b_k X_k$$

Regression Coefficients

Regression coefficients are interpreted in terms of odds (Cohen et al., 2003, p. 486). The coefficients for predictors are the typical regression coefficients. These coefficients are developed with the intention to provide valid inferences from the sample for the population.

CHAPTER IV.
RESULTS

A. Preliminary Data Analyses

Descriptive Statistics

The descriptive statistics for the raw data of the Canine Care and Welfare questionnaire and the Perceptions of Dogfighting questionnaire are represented in Tables C1 and C2 respectively (Appendix C). Table C2 presents the descriptive statistics of the CCW scale. Based on these responses children seem to have an overall good understanding of some basic care concepts, such as providing food, water and shelter to dogs, and concepts related to animal sentience. However, the answers pertaining to perceptions related to veterinary care and animal abuse revealed that there are some misperceptions associated with these topics.

Based on the perceptions of dogfighting responses (Appendix C), most children in the sample had a good sense of what constitutes animal abuse in the context of dogfighting. Additionally, the demographic data regarding dog ownership revealed that 68.8% (n = 347, M = .72, SD = .45) of participating children had a dog at home, 69.6% of the participating children loved their dog (n = 378, M = .93, SD = .26) and from this study sample 54.2% (n = 273, M = .73, SD = .45) of the children grew up with a dog in their home. Additionally, 39.1% (n = 197, M = .54, SD = .50) of these children agreed that "when you own a big dog people respect you more." Finally, participating children responded that their dog is a family member (85%), a companion (46.5%) and a guard dog (45.3%).

Missing Data

Although missing data are the norm in research projects and data sets (Brown, 2006), there was a low prevalence of missing data in the present data set and analyses, ranging from 1.2% (n = 6) to 5% (n = 25) for the scales and from 1.2% (n = 6) to 7.3% (n = 37) for the demographic and dog ownership items. The data were screened for patterns of missingness on individual items, item score distributions and normality using SPSS (Brown, 2006). The pattern of missingness for this study was assumed to be missing at random (MAR) because they were cases where data were missing due to unplanned missingness as well as because the assumption of MAR is met: "the probability that data are missing on Y may depend on the value of X, but is not related to the value of X when holding X constant" (Brown, 2006, p. 364). Additionally, version 4.2 Mplus (Muthen & Muthen, 2007) implemented a full information maximum likelihood (FIML) algorithm that has the advantage to provide, for large data sets, unbiased estimates and standard errors. When MAR is true, FIML creates consistent and efficient test statistics, parameter estimates, and standard errors (SE) (Brown, 2006). Likewise deletion was also explored and the results were approximately the same.

Latent Variable Measurement

In this study, manifest variables are items or survey/scale questions/ indicators that are being directly measured and are depicted as squares. Latent variables (factors) measure an underlying comprehensive construct. They are being measured by many items/survey questions. These are depicted as circles in diagrams. In the exploratory and confirmatory sections of this chapter,

measurement models describe the degree of fit between the items (manifest variables) and the latent construct (factors).

Additionally, both unstandardized (estimate) and standardized (STDYX estimate) coefficients are presented in tables. They were both used to make comparisons. However, standardized (STDYX) estimates were used for interpretation when comparing variables and item loadings (Brown, 2006).

Multiple indices for goodness of fit were used to evaluate the overall fit of the model. Goodness of fit was evaluated using the following indices (Hu & Bentler, 1999; Brown, 2006): a non-significant chi-square, a root mean square error of approximation (RMSEA) (≤.06), comparative fit index (CFI) and Tucker-Lewis index (TLI; Tucker & Lewis, 1973). Acceptable model fit was assessed with CFI and TLI (.90 - .95) and reasonably good fit with CFI and TLI (> .95) (Brown, 2006). Multiple indices were used because, by providing different information regarding model fit, they contribute to a more reliable evaluation of model fit (Brown, 2006). The standardized root mean square residual (SRMR) was initially considered, but due to significant evidence contraindicating use of SRMR in CFA models with categorical items (Brown, 2006, p.86), this index was not taken into consideration for model evaluation.

In addition to considering the overall model fit, the conceptual and empirical relevance of factors was evaluated as well. Models composed of items that each load on a single factor were preferred. Factor loadings of .30 were used to define a reliable factor loading or cross loading (Brown, 2006). This is an arbitrary decision

and cutoff values vary (DiStefano et al., 2009). In general, items with primary factor loadings ≥ .40 and secondary factor loadings ≤ .30 were retained. Items not meeting these criteria were removed. Factor analyses were repeated until all scale items met all criteria.

B. Study Goal 1

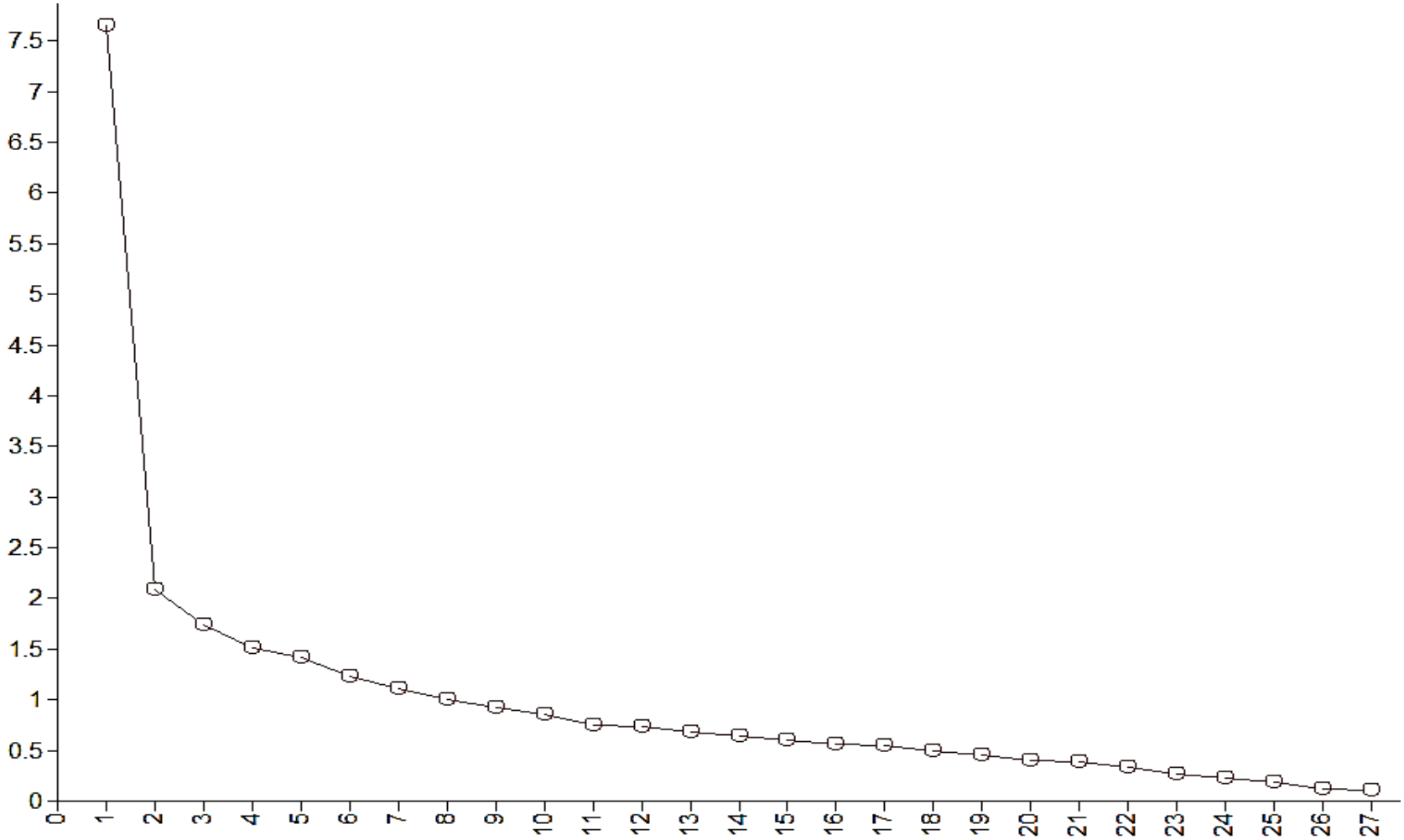
Goal 1: To determine whether the Canine Care and Welfare scale is reliable and valid to assess children's canine care and welfare knowledge (Hypothesis 1) and whether the Perceptions of Dogfighting scale is reliable and valid to assess children's perceptions of dogfighting (Hypothesis 2)

Canine Care and Welfare Scale

Exploratory Factor Analysis

The Canine Care and Welfare (CCW) questionnaire contained a pool of 27 items. An exploratory factor analysis (EFA) was run in Mplus to identify potential factors from the CCW questionnaire (Figure 1). Mplus version 7.11 (Muthén & Muthén, 1998-2012) was used for the exploratory factor analysis with categorical factor indicators (example 4.2, Muthén & Muthén, 1998-2012) to identify and retain good items from the Canine Care and Welfare Scale (CCWS). The default oblique GEOMIN rotation and the WLSMV estimator were used (Example 4.2, Muthén & Muthén, 1998-2012). The "categorical" option was used to indicate which DV are treated as binary or ordered categorical variables in the model and its estimation (Muthén & Muthén, 1998-2012). A lower limit of 1 and upper limit of 7 was set on the number of factors to be extracted. The results for all seven factors were carefully

Figure 1. Canine Care and Welfare: Exploratory Factor Analysis Scree Plot



examined and compared. More specifically, the scree plots and eigenvalues were examined and items that were cross-loading or with a loading of less than .3 were removed. Additionally, prior research evidence and theory was used as the base to provide justification that the six-factor model is meaningful and useful (Brown, 2006). The six-factor model with 25 items was identified to best fit the data. Items 12 and 24 were removed. All items were answered on a 1-5 Likert scale with the following options: Strongly agree, Agree, Uncertain, Disagree, or Strongly disagree.

The name of each factor was based on the theme of its item content. Factor 1, Basic Needs (BN), contained items pertaining to the basic needs of food, water and shelter. Factor 2, Protection from Extreme Weather Conditions (PEW), contained items inquiring about protection from hot and cold weather. Factor 3, Basic Veterinary Medical Care (VMC), contained items measuring knowledge about spay/neuter, vaccination, lethargy, canine behavior and preventive medicine practices. Factor 4, Protection from Animal Cruelty and Neglect (PCN), included items regarding common practices that contribute to animal abuse and neglect such as dogfighting, kicking, etc. Factor 5, Responsible Dog Ownership (RDO), included items regarding owner behaviors that enhance positive human-canine interactions, including play, spay/neuter and obedience training. Factor 6 included items regarding perceptions on Animal Sentience: dogs experience pain/emotions/feelings.

Even though, in this model, the items regarding veterinary medical care and animal sentience were contained under Factor 3, the literature supports that these are two distinct but very important factors. Thus, the six-factor model was chosen

based on model fit and the associated literature in order to have a conceptual and practical relevance as recommended by Brown (2006). The six-factor model showed a good fit with the data (chi-square (df=204) = 234, p = .07, CFI = .99, TLI =.98, RMSEA = .02). Table 5 summarizes the factor loadings for oblique GEOMIN six-factor solution for the Canine Care and Welfare scale. Questions 7, 18 and 26 have been reverse scored and labeled (R).

Table 5. Summary of Factor Loadings of Exploratory Factor Analysis: Six-Factor Solution for the Canine Care and Welfare Scale

	FACTOR LOADING					
Item	*F1=BN*	*F2=PEW*	*F3=VMC*	*F5=RDO*	*F4=PNC*	*F6=AS*
Q01	**.46**	.29	.33	.32	.02	-.16
Q02	**.67**	-.35	.20	-.01	.01	.01
Q03	**.63**	.13	.25	.09	-.13	-.02
Q04	.26	.34	.27	.41	-.12	.00
Q05	.51	**.65**	.41	.17	.14	-.14
Q06	.37	**.71**	.38	.23	.28	-.16
Q08	.25	.62	.63	.25	.18	-.21
Q09	.22	.36	.34	.15	.32	-.31
Q10	.15	.26	**.43**	.05	.13	-.17
Q11	.48	.14	**.46**	.15	.08	-.16
Q12	.12	-.10	-.20	-.41	-.15	.41
Q13	.22	.17	**.52**	.23	.31	-.35
Q14	.24	.15	.50	.16	**.54**	-.09
Q15	.28	.21	.60	.30	.16	-.42
Q16	.25	.43	.62	.30	.13	-.25
Q17	.33	.14	.53	.32	.25	-.20
Q19	.39	.21	.67	.35	-.11	-.17
Q20	**.34**	.14	.57	.31	-.03	-.25
Q21	.34	.08	**.77***	.30	.27	-.12
Q22	-.14	.06	-.46	-.56	**-.47**	.14
Q23	.01	.14	.54	.25	**.51**	-.15
Q24	.19	.31	.39	.10	.24	.06
Q25	.14	.28	**.77***	.44	.27	-.26

Table 5 (cont'd)

Q27	.38	.17	**.72***	.23	.32	-.29
Q07R	.06	.18	.35	.91	**.06**	-.18
Q18R	-.14	-.23	-.37	-.16	-.07	.73
Q26R	.03	.19	.23	.27	**.56**	.16
	GEOMIN factor correlations(significant at 5% level)*					
	F1 = BN	*F2 = PEW*	*F3 = VMC*	*F4 = PNC*	*F5 = RDO*	*F6 = AS*
F1 = BN	1.000					
F2 = PEW	.02	1.000				
F3 = VMC	.21	.45*	1.000			
F4 = PNC	.02	.12	.39	1.000		
F5 = RDO	-.09	-.04	.20	.04	1.000	
F6 = AS	-.03	-.13	-.25	-.14	-.01	1.000

Note: Items 21, 25, 27 initially loaded on F2, but are conceptually different, thus were considered as a separate factor, AS, for CFA.

Confirmatory Factor Analysis

The next step was to run a confirmatory factor analysis for the other half of the data (Group 2, n = 252) in Mplus. Mplus version 7.11 (Muthén & Muthén, 1998-2012) was used. The categorical option was used to select the DVs that were ordered categorical variables in the model and its estimation (Muthen & Muthen, 1998, 2013). The default estimator for this analysis was a robust weighted least squares estimator (Muthén, 1984; Muthén, duToit, & Spisic, 1997). With this estimator, probit regressions for the factor indicators regressed on the factors estimated (Muthen & Muthen, 1998, 2013). Using maximum likelihood estimation, the factor indicators regressed and the factors were estimated using a numerical integration algorithm. A confirmatory factor analysis was run with a second-order model with all six factors as first order factors and Canine Care and Welfare as a second-order factor. This second-order model showed acceptable model fit with the data (chi-

square (df=269) = 433, $p < .05$, CFI = .94, TLI = .93, RMSEA = .05). The CCW scale with six factors and 25 items has a reliability coefficient (Cronbach's alpha) of .78. Thus, there is enough evidence to support that the Canine Care and Welfare scale is a reliable and valid way to assess children's canine care and welfare knowledge.

The factor loadings were consistently strong among the six factors. All items were answered on a 1-5 Likert scale. Figure 2 depicts the second order model with: F8 = CCW; F1 = Factor 1, Basic Needs (BN); F2 = Factor 2, Protection from Extreme Weather Conditions (PEW); F3 = Factor 3, Veterinary Medical Care (VMC); F4 = Factor 4, Protection from Neglect and Cruelty (PNC); F5 = Factor 5, Responsible Dog Ownership (RDO); and F6 = Factor 6, Animal Sentience (AS).

Factor 1, Basic Needs (BN), indicated knowledge about basic canine needs for water, food and shelter. This factor had 4 items that loaded from .32 to .63. The items were answered on a 1-5 point Likert scale. Factor loading estimates and factor loadings are summarized in Table 6. They support that the items are related to their underlying factors. Factor 1 has a reliability coefficient (Cronbach's alpha) of .33.

Factor 2, Protection from Extreme Weather Conditions (PEW), included items with a focus on protection from cold and hot weather. This knowledge is important for dogs that are housed outside. The loadings of the two items were .84 and .86 (Table 7). Even though there are only two items in this factor and this is contraindicated (Brown, 2006), I decided to keep Factor 2 and the two items because they had heavy loadings, and, based on the literature, this is a very important

Figure 2. Canine Care and Welfare (CCW) Knowledge Measurement Model

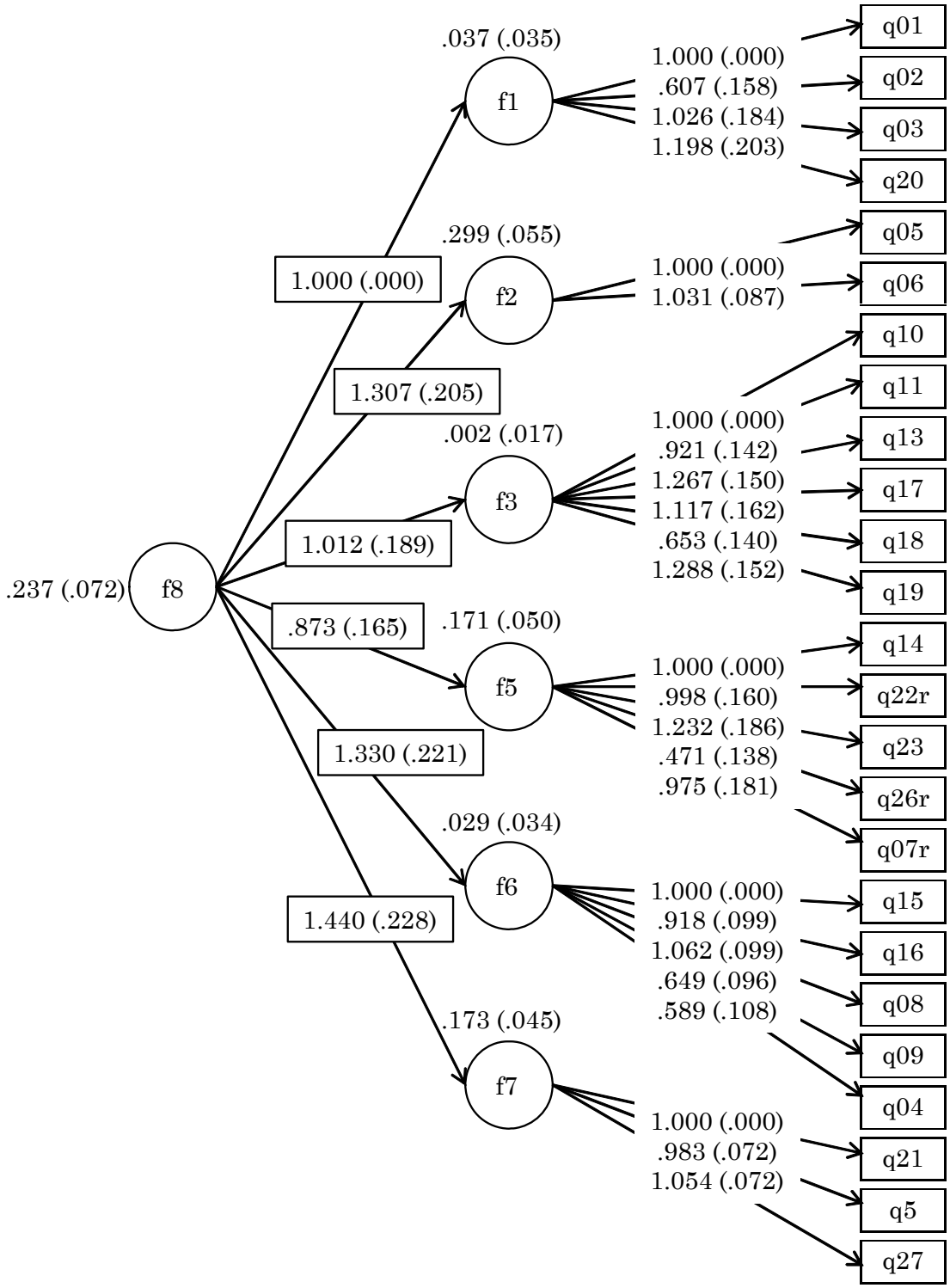


Table 6. Factor 1 of the Canine Care and Welfare Scale (Basic Needs): Factor Loading and Factor Loading Estimates

Item Number	*Items of Factor 1*	*Estimate*	*S.E*	*STDYX Estimate*	*R-Square Estimate*
Q01	A dog should have access to water daily.	1.00	.00	.53	.27
Q02	A dog should be fed at least once a day.	.61	.16	.32	.10
Q03	A dog should have access to shelter most of the time.	1.03	.18	.54	.29
Q20	We should make sure there is food available for a dog that is not able to get its own food (chained, locked in the house, etc.).	1.20	.20	.63	.40

Table 7. Factor 2 of the Canine Care and Welfare Scale (Protection from Extreme Weather Conditions): Factor Loading and Factor Loading Estimates

Item Number	*Items of Factor 2*	*Estimate*	*S.E*	*STDYX Estimate*	*R-Square Estimate*
Q05	In cold weather a dog should have access to a heated space.	1.00	.00	.84	.70
Q06	In hot weather a dog should have shade.	1.03	.09	.86	.75

factor for canine care and welfare. Additionally, during the CFA these items did not have a heavy loading on other factors. Factor 2 has a reliability coefficient (Cronbach's alpha) of .66.

Factor 3, Veterinary Medical Care (VMC), included items that inquire about basic and preventive veterinary care that contributes to acceptable canine welfare. This factor has six items. The item loadings range from .32 to .64 (Table 8). Factor 3 has a reliability coefficient (Cronbach's alpha) of .33.

Table 8. Factor 3 of the Canine Care and Welfare Scale (Veterinary Medical Care): Factor Loading and Factor Loading Estimates

Item number	*Items of Factor 3*	*Estimate*	*S.E*	*STDYX Estimate*	*R-Square Estimate*
Q10	A dog sleeps more and eats less when it is sick.	1.00	.00	.49	.24
Q11	A dog needs to have a health checkup by a veterinarian once a year.	.92	.14	.46	.21
Q13	A dog should receive medication to prevent fleas and ticks.	1.27	.15	.63	.39
Q17	All dogs suffer when they participate in organized fights that might result in death.	1.12	.16	.55	.31
Q18	All female dogs should be able to have puppies.	.65	.14	.32	.11
Q19	There are some costs associated with keeping a dog.	1.29	.15	.64	.41

Table 9. Factor 4 of the Canine Care and Welfare Scale (Protection from Neglect and Cruelty): Factor Loading and Factor Loading Estimates

Item Number	*Items of Factor 4*	*Estimate*	*S.E*	*STDYX Estimate*	*R-Square Estimate*
Q14	It is not all right for household members to kick the dog.	1.00	.00	.59	.35
Q22R	Dogs do not suffer when they participate in short street fights with other dogs(R = Opposite).	.99	.16	.59	.35
Q23	If a person physically injures a dog, it is animal abuse.	1.23	.19	.73	.53
Q26R	It is ok to hit a dog when it does something wrong (R).	.47	.14	.28	.08
Q07R	It is a good life for a dog to be chained outside all day and night for their whole life (R).	.97	.18	.58	.33

Factor 4, Protection from Neglect and Cruelty (PNC), contained items that assessed children's knowledge on preventing canine abuse and cruelty. This factor

includes five items. These items loaded from .28 to .73 (Table 9). Even though Q26R had a factor loading of .28, which is lower than a .3 factor loading, the item was relevant to the theme of Factor 4 and thus it was kept. Factor 4 has a reliability coefficient (Cronbach's alpha) of .21.

Factor 5 contained items that describe the responsibilities of a responsible dog owner (RDO). Responsible dog ownership refers to the concept that the owner can promote positive dog behaviors and prevent aggression. The owner should be knowledgeable about the importance of socializing his/her dog, playing/ spending quality time with the dog and never letting it roam without close supervision. This factor included five items. Item loading ranged from .39 to .71 (Table 10). Factor 5 has a reliability coefficient (Cronbach's alpha) of .53.

Table 10. Factor 5 of the Canine Care and Welfare Scale (Responsible Dog Ownership): Factor Loading and Factor Loading Estimates

Item Number	*Items of Factor 5*	*Estimate*	*S.E*	*STDYX Estimate*	*R-Square Estimate*
Q15	The best way to have a disciplined dog is to teach it obedience training when it is a puppy.	1.00	.00	.67	.45
Q16	Dogs enjoy playing with their owners.	.92	.09	.61	.38
Q08	The owner of a dog should spend quality time with the dog every day.	1.06	.09	.71	.51
Q09	A dog should have the opportunity to play with other dogs regularly.	.65	.09	.44	.19
Q04	A dog should never be allowed to roam on the streets without a person along.	.59	.11	.39	.15

Factor 6 focused on the perceptions regarding animal sentience. This factor inquired specifically about knowledge regarding animal pain, feelings and emotions as supported by animal welfare science (Dawkins, 2000). This factor contained three items. Item loading ranged from .80 to .86 (Table 11). Factor 6 has a reliability coefficient (Cronbach's alpha) of .69.

Table 11. Factor 6 of the Canine Care and Welfare Scale (Animal Sentience): Loading and Factor Loading Estimates

Item Number	*Items of Factor 6*	*Estimate*	*S.E*	*STDYX Estimate*	*R-Square Estimate*
Q21	Dogs experience similar feelings (hunger, thirst, discomfort) as human beings do.	1.00	.00	.81	.66
Q25	Dogs experience emotions (affection, joy, fear, distress) as humans do.	.98	.07	.80	.64
Q27	Dogs experience pain as humans do.	1.05	.07	.86	.74

Perceptions of Dogfighting Scale

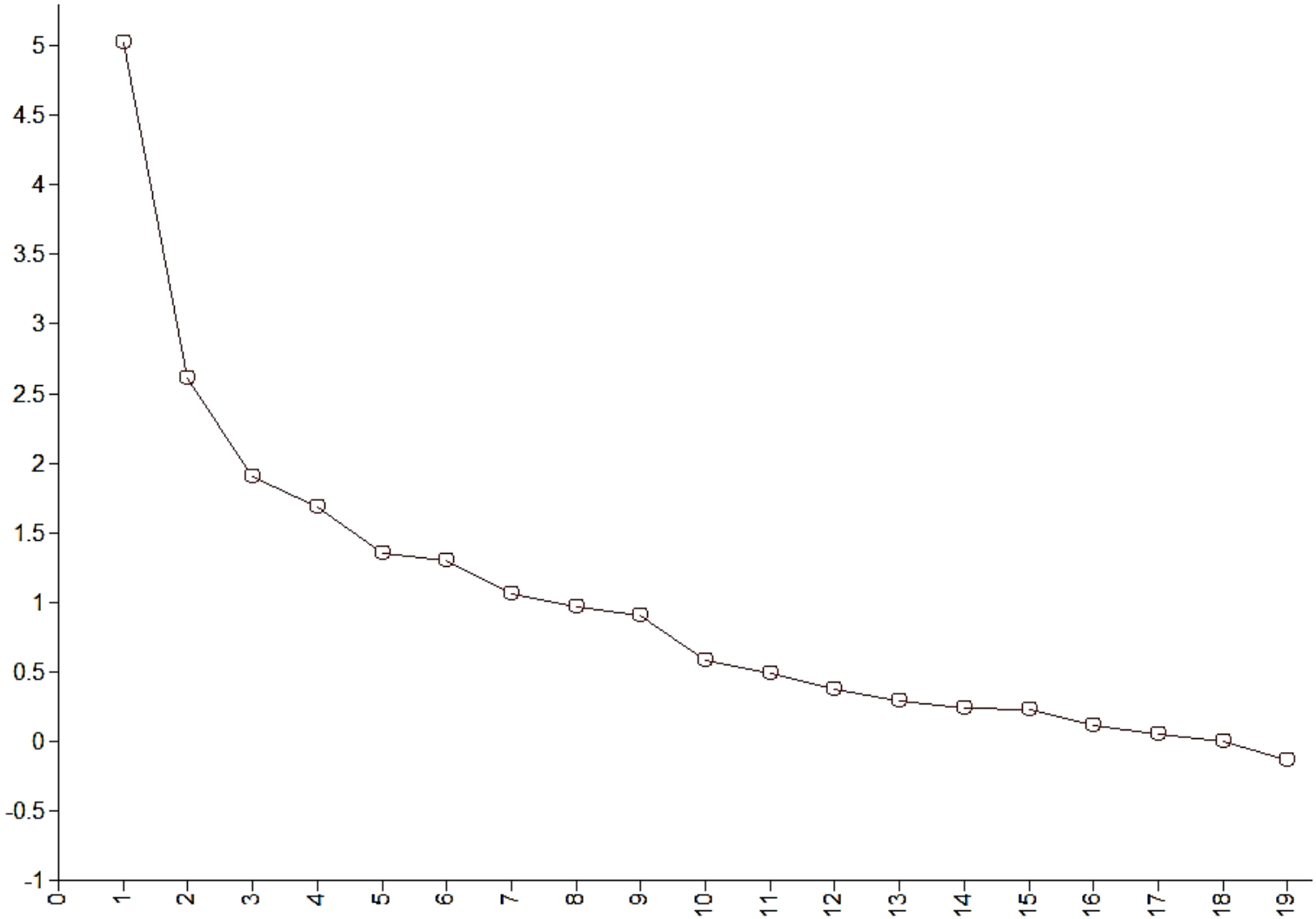
Exploratory Factor Analysis

Exploratory factor analysis was performed to determine the factor structure of the items on the Perceptions of Dogfighting scale. The first half (n = 252) of the data sample was used for EFA (i.e., scale item development and analysis, EFA extraction, rotation, and interpretation). The purpose of the exploratory factor extraction was to identify potential factors underlying the Perceptions of Dogfighting scale.

The Perceptions of Dogfighting questionnaire contained a pool of 21 items. An EFA was run in Mplus version 7.11 (Muthén & Muthén, 1998-2012) to identify and retain good items from the Perceptions of Dogfighting scale. The default oblique GEOMIN rotation and the WLSMV estimator were used (Example 4.2, Muthén & Muthén, 1998-2012). A lower limit of 1 and upper limit of 6 was set on the number of factors to be extracted. The results for all 6 factors were carefully examined and compared. The scree plots and eigenvalues were examined and items that were cross-loading or with a loading of less than .3 were removed except if they were strongly supported by relevant literature and theory. Figure 3 depicts the EFA scree plot and it is indicative of a one or even two factor structure. Items 30, 31, 35, 42, and 45 were removed due to cross-loading or with a loading of less than .3. Based on the Initial EFA results of the Perceptions of Dogfighting scale, 16 items met the psychometric criteria. Thus, the two factor model with 16 items was identified to best fit the data.

There was limited prior research evidence and theory to provide a strong underlying theoretical support for the model. However, the name of each factor was based on the theme of its item content. Factor 1 focused on Perceptions of Dogfighting (PDF). This factor contained items pertaining to common perceptions and misperceptions about dogfighting, as whether it is animal abuse or socially acceptable. Factor 2, Justification of Dogfighting (JDF), contained items inquiring about misperceptions regarding fighting dogs that justify the illegal blood sport.

Figure 3. Perceptions of Dogfighting: Exploratory Factor Analysis Scree Plot



As with the CCW scale, the acceptability of the fitted EFA solution was evaluated based on multiple indices for goodness of fit. The two- factor model showed a reasonably good fit with the data (chi-square (df=134) = 174.52, p = .01, CFI = .90, TLI = .87, RMSEA = .03). Even though the chi-square is significant, the rest of the indices RMSEA (≤ .06), CFI and TLI (.90 - .95) supported a reasonably good fit (Brown, 2006; Hu & Bentler, 1999). In Table 12, there is a summary of the factor loadings for the oblique GEOMIN two-factor solution for the Perceptions of Dogfighting scale. Questions 29, 36, 37, 38 and 39 have been reverse scored and labeled (R).

Confirmatory Factor Analysis

A confirmatory factor analysis was run for the other half of the data (Group 2, n = 252) in which Mplus version 7.11 (Muthén & Muthén, 1998-2012) was used. However, with the Perceptions of Dogfighting scale, due to limited literature and research in this area there was an exploratory component of the CFA. Using maximum likelihood estimation, the factor indicators regressed and the factors were estimated using a numerical integration algorithm. Three models were examined to explore which best fits the data; one with a second-order factor latent model, one with two latent variables and one with a single latent variable model. A confirmatory factor analysis was run with a second-order model with both factors PDF and JDF as first order factors and perceptions of dogfighting as a second-order factor. This second-order model did not show a good fit with the data (chi-square (df=113) = 233.28, p < .05, CFI = .72, TLI = .66, RMSEA = .07). A confirmatory factor analysis was run with two latent variables and similarly, did not show a good

fit with the data (chi-square (df=124) = 417.93, p < .05, CFI = .32, TLI = .25, RMSEA = .09). The single latent variable model with a single factor showed an excellent fit with the data (chi-square (df=5) = 5.58, p = .34, CFI = .99, TLI = .98, RMSEA = .02). In this model, though, the JDF factor was dropped from the model due to lack of cohesion.

Table 12. Summary of Factor Loadings of Exploratory Factor Analysis: Two-Factor Solution for the Perceptions of Dogfighting Scale

	Factor Loading	
	F1=PDF	*F2=JDF*
Q28	**.56**	.16
Q30	-.09	-.06
Q31	.14	-.15
Q32	**.86**	.19
Q33	**.99**	.21
Q34	-.05	**.41**
Q35	.21	.26
Q40	.53	.34
Q41	**.61**	.08
Q42	.35	-.09
Q43	-.06	-.39
Q44	**.58**	.18
Q45	-.22	.22
Q48	-.39	-.39
Q29R	**.52**	.27
Q36R	.48	**.78**
Q37R	.53	**.63**
Q38R	-.12	**.68**
Q39R	.22	**.63**
	GEOMIN Factor Correlations (significant at 5% level)*	
	F1=BN	*F2=PEW*
F1 = PDF	.00	
F2 = JDF	.69	.00

Since the single latent variable model with a single factor showed best fit, it was selected as the best model for the Perceptions of Dogfighting scale.

The Perceptions of Dogfighting: One factor scale contained items that assessed children's perceptions of dogfighting. As we can see in Figure 4 and Table 13, this factor includes five items. These items loaded from 0.54 to 0.78. Factor 1 has a reliability coefficient (Cronbach's alpha) of .54.

Figure 4. Perceptions of Dogfighting Measurement Model

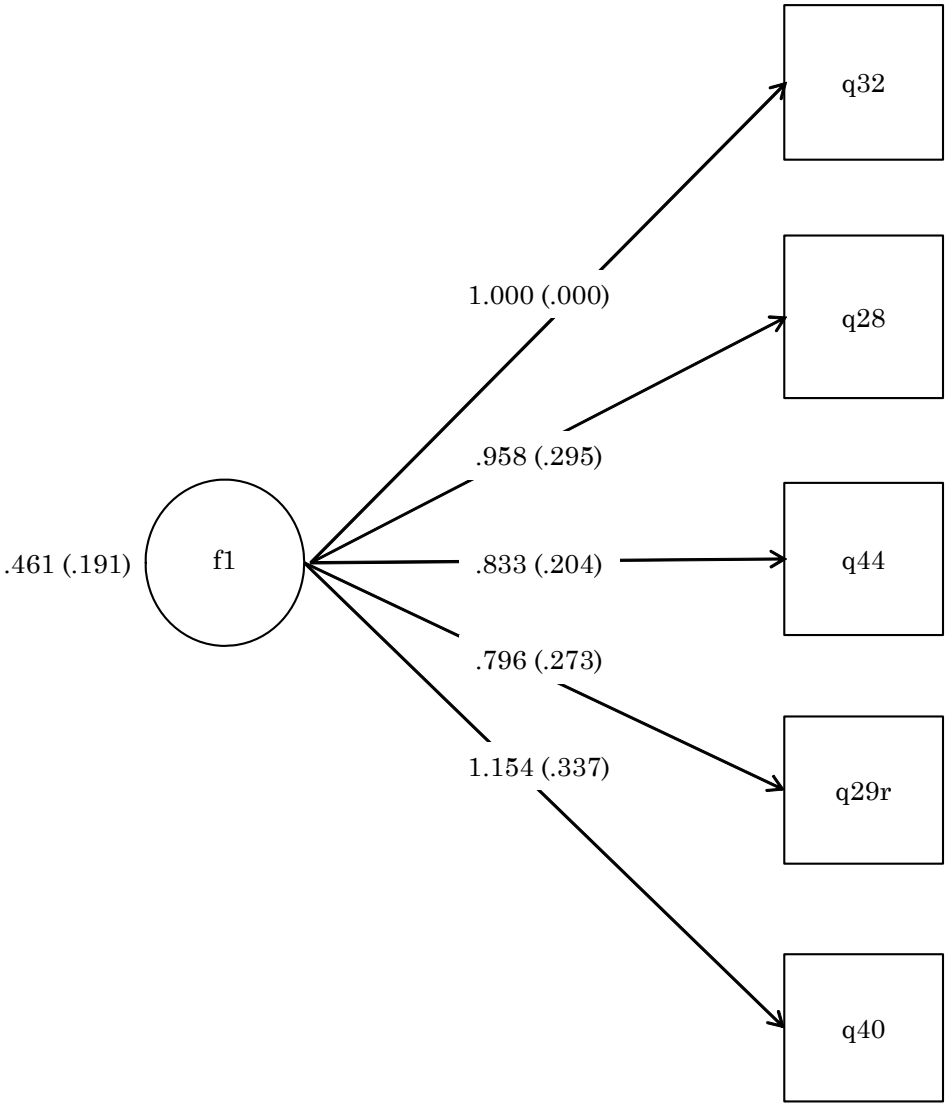


Table 13. Perceptions of Dogfighting: Factor Loading and Factor Loading Estimates

Item Number	*Items of Factor 1 (Perceptions of Dogfighting)*	*Estimate*	*S.E*	*STDYX Estimate*	*R-Square Estimate*
Q32	Fighting dogs feel pain when they fight.	1.00	.00	.68	.46
Q28	Dogfighting is animal abuse.	.96	.29	.65	.42
Q44	It is animal abuse if somebody physically injures a fighting dog.	.83	.20	.56	.32
Q29R	Dogfighting is socially acceptable (R).	.79	.27	.54	.29
Q40	Dogfighting is illegal.	1.15	.34	.78	.61

C. Study Goal 2

Goal 2: To determine the level (or baseline) of canine care and welfare knowledge among the study population

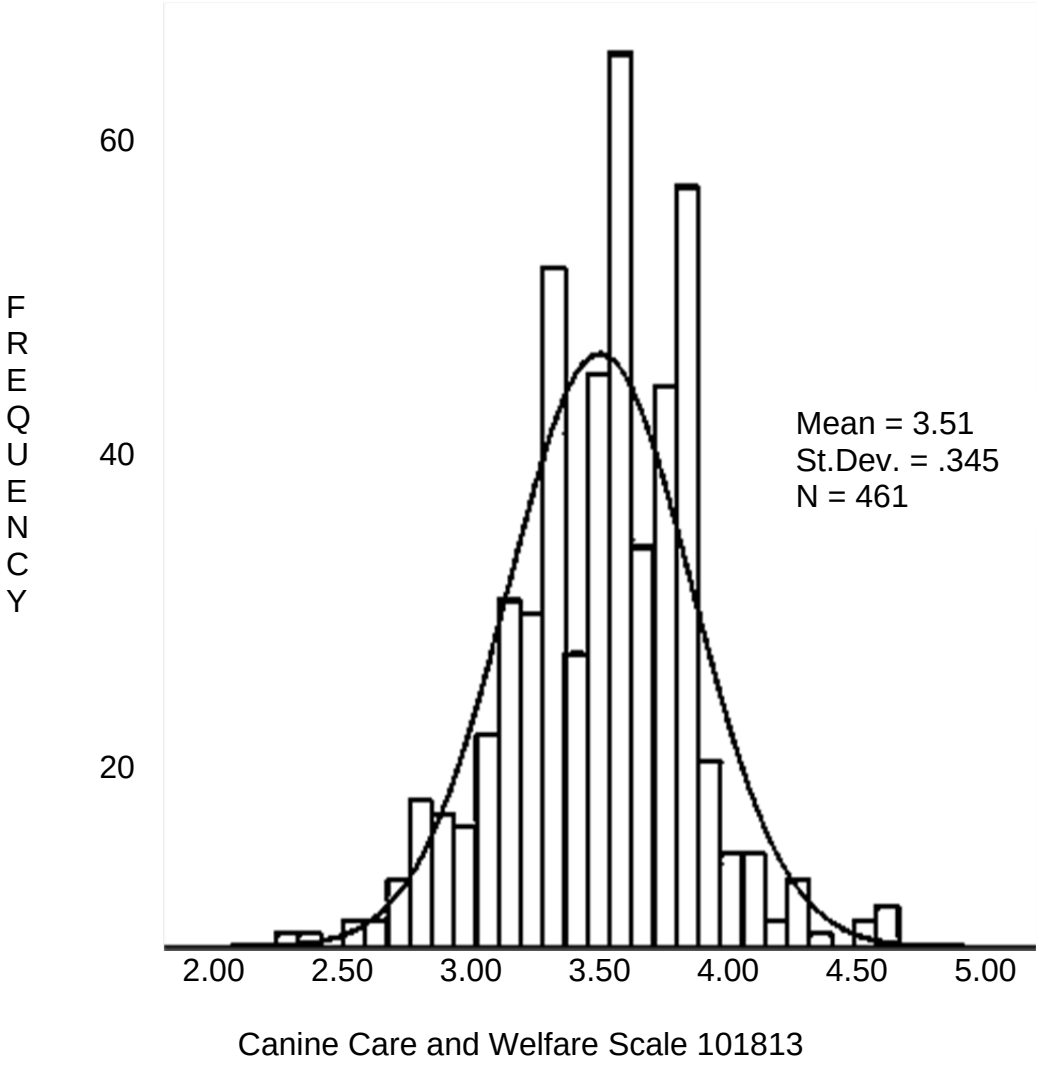
After the validity and the reliability of the Canine Care and Welfare (CCW) scale was established, SPSS was used to obtain descriptive statistics and raw scores for the CCW knowledge of all 504 children who participated in the study. Descriptive statistics include the CCW scale's mean (M = 3.51), median (Mdn = 3.54) and standard deviation (SD = .34) which are available in Table 14.

Table 14. Canine Care and Welfare Scale: Gender

Gender	*M*	*n*	*SD*
Boy	3.44	206	.36
Girl	3.58	246	.31
Other	3.16	4	.21
Total	3.51	456	.34

Furthermore, raw scores for canine care and welfare knowledge of the study sample were calculated and histograms were produced (Figure 5). Histograms were inspected to assess any departure of the score distributions from normality.

Figure 5. Canine Care and Welfare Scale: Raw Scores Histogram



In Figure 5, normality is depicted with a normal curve. As it is depicted, there is not any indication of departure from normality for the CCW scale study population. Additionally, in order to have a better understanding of sex or age

differences in CCW knowledge, descriptive statistics for scale and raw scores were also reported separately for each gender and each age group as well as gender within age group. These statistics are available in Tables 15, 16 and 17. The results of an ANOVA test (Table 17) show that there is significant difference in CCW knowledge between genders ($p = .01$), but not between different ages. In this sample, boys ($M = 3.44$) had a lower mean score in CCW knowledge than girls ($M = 3.58$). Based on the CCW statistics, the mean score of CCW knowledge among the respondents ($N = 461$) is $M = 3.51$ ($SD = .34$, $Mdn = 3.54$).

Table 15. Canine Care and Welfare Scale: Age

Age (Years)	*M*	*n*	*SD*
11	3.40	30	.36
12	3.56	35	.43
13	3.54	34	.41
14	3.58	44	.26
15	3.51	84	.33
16	3.48	107	.34
. .17	3.45	84	.32
18	3.58	31	.31
19	4.03	3	.52
Total	3.51	452	.35

Table 16. Canine Care and Welfare Knowledge: Gender Within Age

Age/Gender	*M*	*n*	*SD*
11 year old boy	3.48	15	.38
11 year old girl	3.45	12	.20
11 year old other	2.87	1	N/A
12 year old boy	3.39	13	.41
12 year old girl	3.66	22	.42
13 year old boy	3.38	16	.46
13 year old girl	3.68	18	.29
14 year old boy	3.56	21	.30
14 year old girl	3.61	22	.20
14 year old other	3.12	1	N/A
15 year old boy	3.42	35	.35
15 year old girl	3.59	47	.30
15 year other	3.31	2	.08
16 year old boy	3.41	48	.34
16 year old girl	3.54	59	.33
17 year old boy	3.36	35	.35
17 year old girl	3.52	49	.29
18 year old boy	3.51	17	.32
18 year old girl	3.67	14	.30
19 year old boy	4.17	2	.65
19 year old girl	3.75	1	N/A

Table 17. ANOVA Tests of Between-Subjects Effects: Dependent Variable: Canine Care and Welfare Scale

Source	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*p*
Corrected model	5.67[a]	20	.28	2.57	.00
Intercept	434.18	1	434.19	3925.61	.00
Gender (Q54)	.89	2	.44	4.01	.02
Age (Q53)	1.47	8	.18	1.66	.11
Gender within age (Q54 * Q53)	.98	10	.09	.88	.55
Error	47.45	429	.11		
Total	5603.02	450			
Corrected total	53.12	449			

[a]R squared = .11 (adjusted R squared = .06)

D. Study Goal 3

Goal 3: To determine whether children's perceptions of dogfighting as animal abuse are associated with their level of canine care and welfare knowledge, socioeconomic status, dog ownership status, race, age, sex, and prevalence of dogfighting in the community (hypotheses 3-8)

Logistic regression with multiple predictors was used to test hypotheses 3-8. The dependent variable (DV) is perception of dogfighting as animal abuse. The independent variables (IV) are related to the six hypotheses that explored whether children's perceptions of dogfighting as animal abuse are associated with levels of children's CCW knowledge, family's socioeconomic status, children's age, family dog ownership status, children's gender and perception of prevalence of dogfighting in the community. Table 18 depicts the logistic regression summary table and the model prediction that was employed to assess the six IV predictors of children's perceptions of dogfighting as animal abuse.

Table 18. Summary of Logistic Regression Analysis Predicting Children's Perceptions of Dogfighting as Animal Abuse

Predictor	*B*	*S.E.*	*Wald*	*df*	*p*	*Exp(B)*
Canine Care and Welfare Scale score	2.32	.61	14.310	1	.00	10.19
SES – Free lunch	.11	.42	.07	1	.78	1.12
SES – Reduced price lunch	.41	.43	.91	1	.33	1.51
Dog ownership	.11	.43	.06	1	.79	1.12
Age	-1.21	.41	8.80	1	.00	.29
Prevalence of DF in community	-.49	.42	1.36	1	.24	.60
Gender	-.65	.43	2.28	1	.13	.51
FS	-.47	.41	1.35	1	.24	.62
Constant	-4.42	2.08	4.42	1	.03	.01

Note: Family structure = FS

Measures of goodness-of-fit were used. These are pseudo-R2 indices. They are the Cox and Snell (1989) (.08), the Nagelkerke (1991) (.20), and the -2 log likelihood (133.83). These indices are variations of the R2 concept defined for the multiple logistic regression model.

The goal in my research was to model the probability of children's perceptions of dogfighting as a function of the six predictor variables (hypotheses 1-6). The following six statements specifically delineate the research hypotheses.

Hypothesis 3. Children who score higher on the CCW scale will be more likely to perceive dogfighting as animal abuse than children with a lower score on the CCW scale.

The results supported Hypothesis 3. Based on the results, the score on the CCW scale ($B = 2.32$, $p < .05$, Wald = 14.31, $df = 1$) is a significant predictor. This means that children who score higher on the CCW scale will be more likely to

perceive dogfighting as animal abuse than children with a lower score on the CCW scale.

Hypothesis 4a. Children reared in higher SES families (do not receive free lunch) will be more likely to perceive dogfighting as animal abuse than children (who receive free lunch) reared in lower SES families.

Hypothesis 4b. Children reared in higher SES families (do not receive reduced price lunch) will be more likely to perceive dogfighting as animal abuse than children reared in lower SES families (do receive reduced price lunch).

Hypotheses 4a (B = -.11, p = .78, Wald = .07, df = 1*)* and 4b (B = .41, p = .33, Wald = .91, df = 1) are not supported by the results. Thus, SES as assessed by children qualifying for free and reduced price lunch is not a significant predictor that influences children's perceptions of dogfighting as animal abuse.

Hypothesis 5. Younger children are less likely to perceive dogfighting as animal abuse than older children.

Based on the results, Hypothesis 5 is supported (B = -1.21, Wald = 8.80, df = 1, $p < .05$). Thus, older children are more likely to perceive dogfighting as animal abuse than younger children.

Hypothesis 6. Children reared in families that own dogs as pets are more likely to perceive dogfighting as animal abuse than children reared in families that own dogs for status/fighting and who have been exposed to dogfighting.

Hypothesis 6 was not supported. Dog ownership was assessed by the presence of dog in the household (B = .11, Wald = .06, df = 1, p = .79). Thus, dog

ownership did not predict whether children will perceive dogfighting as animal abuse.

Hypothesis 7. Gender predicts children's perceptions of dogfighting as animal abuse.

Hypothesis 7 failed to reach significance for gender (B = -.65, Wald = 2.28, df = 1, p = .13). Thus, the results did not support that children's gender is a significant predictor influencing whether children will perceive dogfighting as animal abuse.

Hypothesis 8. Children reared in communities where dogfighting is prevalent are less likely to perceive dogfighting as animal abuse than children reared in communities of low prevalence in dogfighting.

Hypothesis 8 was not supported (B = -.49, Wald = 1.36, df = 1, p = .24); prevalence of dogfighting in the community did not predict children's perceptions of dogfighting as animal abuse in this study.

In the multiple logistic regression model (Table 18) we can see the observed results based on fitted regression coefficients. Based on the model results, statistically significant predictors of children's perceptions of dogfighting as animal abuse were: the children's score on the Canine Care and Welfare scale (B = 2.32, $p < .05$, Wald = 14.31, df = 1) (Hypothesis 3), and children's age (B = -1.21, Wald = 8.80, df = 1, $p < .05$) (Hypothesis 5). Thus, older children were more likely to perceive dogfighting as animal abuse than were younger children.

Family structure (FS) was assessed by the question "Who do you live with?" Family structure was defined as "Live with mother and father" (both parents)

versus “Live with mother” (might include other guardian as grandparent, relative serving as legal guardian or legal guardian other than relative). All these categories (grandparent, relative serving as legal guardian and legal guardian other than relative) were explored as well. However, because there were very few cases in some of the possible categories, some categories were collapsed together in order to have reasonable sample sizes in each group. Based on the results, family status (FS) was not found to be a significant predictor ($B = -.47$, $p = .24$, Wald = 1.35, $df = 1$).

CHAPTER V.
DISCUSSION

Chapter V is organized as follows. Initially, there is a discussion of the findings (outlined in Chapter IV) in the context of the research hypotheses, research goals and the associated literature. Then, the strengths of this research are described. In the following section the potential limitations of this study are presented. And finally, directions for future research building from these results are discussed.

A. Summary of Research Findings

This study was the first step in identifying human perceptions associated with dogfighting and animal abuse and the need for canine care and welfare education interventions. There was not a sufficient body of literature or scales developed to provide a basis for this study, therefore this study is the first step in scale development and further work is required. Thus, this dissertation's study results provide important new information and set the stage for additional future studies.

The current investigation is the first empirical study to develop a canine care and welfare scale and a perceptions of dogfighting scale. Serpell (2008) acknowledged the lack of quantitative measures of human attitudes and values in order to evaluate educational interventions in the area of animal welfare as well as the national and global progress being made in regard to attitudes and values toward animal welfare issues over time (Serpell, 2008). This is also the first study to demonstrate that children who have a higher level of canine care and welfare

knowledge are more likely to perceive dogfighting as animal abuse than children with a lower level of canine care and welfare knowledge.

As previously mentioned, this study had three main goals that are discussed below in sequential order.

Canine Care and Welfare Scale

The first part of Goal 1 in this study was to determine whether the Canine Care and Welfare scale that was developed is a valid and reliable tool to assess children's canine care and welfare knowledge. The second-order model with six factors and 25 items showed acceptable model fit with the data (chi-square (df=269) = 433, $p < .05$, CFI = .94, TLI = .93, RMSEA = .05) and has a reliability coefficient (Cronbach's alpha) of .78. (Cronbach's alpha measures whether constituent items are measuring the same construct.)

In scale development studies a Cronbach's alpha that exceeds .70 is an indication of good internal consistency (Rattray & Jones, 2007) as it is demonstrated with the second-order factor that measures canine care and welfare knowledge (Figure 3). However, the Cronbach's alpha statistic values for each of the six first-order factors within the scale had a reliability coefficient lower than .70. One potential explanation, considering that factor loadings were >.32, is the low number of items for each individual factor (Brown, 2006). Stability, another aspect of reliability, is explored through test-retest procedures and assesses the stability of the measure over time (Rattray & Jones, 2007). Thus, further canine care and welfare scale development studies will address the stability of the scale as well as the effect of low numbers of items for each individual factor.

Further steps in canine care and welfare scale development will include multicultural validation and cross-cultural generalizability of the scale. The majority of participating children for this study were African American (71.6%). Considering that the United States school population is very diverse (Kong, 2011), it is important to create a scale that takes this multicultural aspect into consideration. Thus, in order to create a scale that assesses the knowledge of canine care and welfare for children of all cultural backgrounds, further development work of this scale should include a diverse population of children from different communities.

As was stated in Chapter II, no literature was found that measures children's canine care and welfare knowledge. Thus, there is no previous scale development work to compare with the current study results. The theoretical basis for this scale was the "Five Freedoms" and associated literature. However, in my study, there are some similarities and some differences with the Five Freedoms. First, based on this dissertation research results on the Canine Care and Welfare scale, there are six underlying factors versus the five that are implied by the concept of Five Freedoms. The similarities include that there are parallels between some of the underlying concepts of the Five Freedoms and factors 1, 2 and 4 of the Canine Care and Welfare scale. More specifically, these are the associated freedoms and factors: (a) freedom from hunger and thirst and Factor 1, Basic Needs; (b) freedom from physical and thermal discomfort and Factor 2, Protection from Extreme Weather

Conditions; and (c) freedom from pain and injury/freedom from fear and distress and Factor 4, Protection from Animal Cruelty and Neglect (PCN).

However, the other three factors are quite distinct from the Five Freedoms. More specifically, Factor 3, Basic Veterinary Medical Care (VMC), contained items that assessed children's knowledge about preventive veterinary care. Thus, the concepts of spay/neuter, lethargy (clinical signs of an animal that needs medical attention), canine behavior and canine preventive medicine (vaccines, parasite control) were assessed. Based on the descriptive statistics of this study (Appendix C), children seemed to have a low level of knowledge regarding questions of Factor 3 (Q10, 11, 13, 17, 18, 19) that assess basic veterinary care. For example, for Question 18, "All female dogs should be able to have puppies," 43.7% of the children responded with "Strongly Agree", 32.9% with "Agree," 16.5% with "Uncertain," 4.0% with "Disagree," and .8% with "Strongly Disagree." Potential reasons might be cultural differences or lack of access to veterinary care due to low income as well as a lack of veterinary community outreach for underserved and low-income populations (Greenhill, Cipriani Davis, Lowrie, & Amass, 2013). With the emerging concepts of One Health (One Health Initiative, n.d.) and One Welfare (University of Washington, School of Public Health, 2013), veterinarians are called to address in an interdisciplinary way emerging issues of human and animal health and welfare since we live in connected ecosystems and communities (Colonius & Earley, 2013). This approach is consistent with the concepts of community engaged scholarship and service (Fitzgerald & Primavera, 2013). Thus, we cannot expect children from

low income communities to have the financial means to provide veterinary care for their pets. To date, there are no organized veterinary programs and curricula that teach veterinary students how to become community health care leaders and engage with their communities to provide service to both animals and humans. This lack of veterinary community engaged scholarship is particularly evident in Detroit. Thus, it would be unfair to blame the children for this lack of knowledge in basic veterinary care. Considering the many benefits of the human-animal bond, it would be unjust to keep barriers that prevent low-income pet owners from providing basic veterinary care for their pets.

These data provide evidence that the veterinary profession needs to address issues of diversity and poverty. Furthermore, the need to provide basic veterinary care education for all children based on the community's true and not assumed needs is quite evident. It is also important to comment on the humane education programs provided by the animal welfare organizations. The history of humane education programs shows a tendency to misinterpret data (Ascione & Arkow, 1999), which can lead to generalizations regarding children's lack of empathy, versus a lack of basic knowledge, as a reason for animal neglect and abuse. It is also unclear which humane education programs work since to date there are no means of evaluating these programs (Serpell, 2008).

The low level of children's knowledge on basic veterinary care in association with Hypothesis 1 suggests the need to incorporate an intervention regarding canine care and welfare into the public school curriculum for Michigan students as

a strategy to prevent dogfighting, strengthen the human-canine bond, and provide service to underserved populations to create safe communities for both humans and animals.

Factor 5, Responsible Dog Ownership, included items regarding positive human-canine interactions. This factor measured children's knowledge regarding the importance of providing frequent opportunities for play interactions between the dog and the owner, as well between the dog and other dogs. The importance of puppy training was assessed as well. From the Five Freedoms, the freedom to express normal and anticipated species behavior might imply human-animal interaction, however, it is broad and is not referred to in the context of specific responsible dog ownership guidelines. Even though questions for Factor 5 were influenced by the research of Iliopoulou et al. (2013) as well as Shore et al. (2005), the study aims were different and there are no areas to compare except the fact that play behaviors are identified as important human-animal interactions and are a sign of a positive human-canine bond.

Factor 6 is a new factor that was added during EFA and was confirmed by CFA. It reflects the concept of animal sentience. This concept is the result of animal welfare science research acknowledging that animals experience pain, emotions and feelings (Dawkins, 2000). Thus, Factor 6 explored children's perceptions regarding these concepts. Children from my sample exhibited a good level of knowledge regarding these concepts. For example in response to Question 25, "Dogs experience emotions (affection, joy, fear, distress) as humans do," 66.3% of children responded

"Absolutely Agree," 22.6% "Agree," 6.2% "Uncertain," 1.4% "Disagree" and 1.6% "Absolutely Disagree." This response shows that the majority of participating children have a good understanding of animal sentience. It would be important to investigate in future studies what is the source of this knowledge. At this point I can only speculate that it might be media or that these children are raised in a society where there is more awareness regarding animal sentience (Green & Allen, 1981-1982).

Developing a scale to measure canine care and welfare is an important first step in intervention development and for short and long term evaluation of this intervention. This study's results (Hypothesis 1) suggest that introducing an intervention regarding canine care and welfare into the public school curriculum for Michigan students would be an effective strategy to prevent dogfighting and strengthen the human-canine bond. As mentioned in chapters I and II, there is currently not another scale to measure canine care and welfare.

Perceptions of Dogfighting Scale

The second part of the first goal of this study was to determine whether the Perceptions of Dogfighting scale is reliable and valid to assess children's perceptions of dogfighting (Hypothesis 2).

Even though the Perceptions of Dogfighting scale showed a good fit with the data and had factor loadings > .54, it had a reliability coefficient (Cronbach's alpha) of .54. A potential explanation for a low Cronbach's alpha is the low number of items for this one-factor scale (Brown, 2006). Stability is another aspect of reliability. It is explored through test-retest procedures and assesses the stability of

the measure over time (Rattray & Jones, 2007). Thus, future Perceptions of Dogfighting scale development studies must address the stability of the scale as well as the effect of the low number of items. Further steps should include multicultural validation of the scale.

The limited research and literature in the area of children's perceptions of dogfighting is one explanation for the low number of items included in Factor 1. The questions related to dogfighting and fighting dogs were included, but they were not based on a solid body of research and literature. However, the scale on Perceptions of Dogfighting contains items assessing an important aspect from the literature on neutralization techniques developed by Sykes and Matza (1957) as summarized in the context of dogfighting by Forsyth and Evans (1998). The Children's Perceptions of Dogfighting scale addresses two of the neutralization techniques that dogfighters use to justify their involvement in dogfighting: denial of dog injury (since based on this justification fighting dogs do not feel pain and they enjoy fighting) and defense (arguing they are good people). Thus, the scale included items that acknowledge that fighting dogs feel pain and that dogfighting is animal abuse, illegal and not socially acceptable.

The second goal of this study was to explore the baseline level (mean) of canine care and welfare knowledge among the study population. Thus, now we have the baseline of canine care and welfare knowledge of my sample. Additionally, differences in canine care and welfare between gender and age were investigated. The results supported that there is a significant difference in canine care and

welfare knowledge between genders as evidenced by participating boys who had a lower mean score in canine care and welfare knowledge than girls.

This is the first study assessing canine care and welfare knowledge among children. The importance of having a baseline of canine care and welfare knowledge is pointed out by Serpell (2008). He acknowledged the lack of research and absence of evaluation of outcomes of the current humane education programs. Serpell (2008) argued that having a scale that measures human attitudes, perceptions and behaviors toward animals gives us a means to measure changes of them that occur over time and in different socioeconomic and cultural contexts. He also pointed out that these are the most meaningful assessments of progress in animal welfare. The author argued that by measuring people's attitudes and values we can, to some extent, predict behaviors. He also argued that animal welfare assessment and human perceptions are interrelated. Thus, having this information about the current baseline level of knowledge of children in Detroit offers a great opportunity to understand the need for canine care and welfare education, since a mean of 3.5 supports that this is a low baseline level. Additionally, having this information about the baseline level allows us to assess future canine care and welfare program outcomes and the change of this knowledge over time.

Furthermore, the results supported Hypothesis 3, meaning that children who have a higher level of canine care and welfare knowledge are more likely to perceive dogfighting as animal abuse than children with a lower level of canine care and welfare knowledge. This means that by raising the baseline level of canine care and

welfare knowledge, there is a possibility of influencing perceptions and behaviors associated with prevention of dogfighting.

Finally, there was a statistically significant difference on canine care and welfare knowledge between genders. There are some theories that might explain why boys have a lower level of canine care and welfare knowledge. Based on the current ethnographic literature on why people are attracted to blood sports, men are the main sex involved in dogfighting, cockfighting and bull fighting because it validates masculinity through violence (Evans et al., 1998; Geertz, 1972; Iliopoulou & Rosenbaum, 2013). Additionally, the literature regarding humane education (Grier, 1999) is supportive of the argument that young boys in particular should be exposed to humane education and pet ownership as a way to prevent aggressive behaviors (Grier, 1999). These theories offer some potential explanations regarding why boys had a lower level of canine care and welfare knowledge. Further research is required to address this question.

The third and last goal in my research was to model the probability of children's perceptions of dogfighting as animal abuse, as a function of the six predictor variables (hypotheses 3-8).

The hypothesis that children that have a higher level of canine care and welfare knowledge will be more likely to perceive dogfighting as animal abuse than children with a lower level of canine care and welfare knowledge was supported. There is an evident lack of research linking animal care and welfare knowledge to children's perceptions of animal abuse. However, this hypothesis is in agreement

with the relevant literature stating that animal welfare assessment and human perceptions are interrelated. It has been argued that animal welfare education appears to be a major tool used to shape human perceptions toward animals (Serpell, 2008). Based on Hypothesis 1, canine care and welfare education is a tool that can be used to shape perceptions about dogfighting. The literature states that behavioral change follows perception change (Maust-Mohl et al., 2012; Serpell, 2008); thus, by changing perceptions about dogfighting there is a potential to prevent it. Considering the lack of research linking animal care and welfare knowledge to children's perceptions of animal abuse in the canine care and welfare literature, this is the first research that provides data to support this association.

Furthermore, there is an extensive body of literature supporting the close association between dogfighting and crimes of human concern such as illegal gambling, drug trafficking, spousal and child abuse, rape, and homicide (Akrow, 2011; Arbour et al., 2009; Ascione, Weber & Wood, 1997; Frick et al., 1994; Grier, 1999; Gullone, 2011; Randour, 2004.; Siebert, 2010; Urbina, 2010). Thus, preventing dogfighting through canine care and welfare interventions for children might also prevent behaviors that are highly associated with risks and crimes of human concern.

Hypotheses 4a and 4b explored whether children reared in higher SES families were more likely to perceive dogfighting as animal abuse than children reared in lower SES families. Socioeconomic status was assessed by children qualifying for free or reduced price lunch. However, the results did not support that

these indicators are significant predictors of the outcome of interest. To date, there are no studies supporting a direct relationship between children's perceptions of dogfighting as animal abuse and their family's SES. However, it has been documented that socioeconomic problems are highly associated with and result in criminal and deviant behaviors in youth, manifested mostly with young males involved in gangs (Balogi, 2004) and animal cruelty (Frick et al., 1994). Additionally, It has been argued that gambling and betting through dogfighting offers an opportunity for individuals who have limited access though mainstream society to "live above a poverty stricken status" (Salomon, 2008, p. 16) since in dogfighting the monetary gains are high (Burley, 2008). In this case though, it seems that other predictors that were supported to be statistically significant might have had a higher influence than SES on children's perceptions of dogfighting as animal abuse. Furthermore, Burley (2008) provides another potential explanation, arguing that there is a unique and intimate relationship young people form with their dogs even in the context of dogfighting; even marginalized low income youth in UK were reluctant to risk their dog's life for monetary gain (Burley, 2008).

The fifth hypothesis of this dissertation research explored whether younger children are less likely to perceive dogfighting as animal abuse than older children. The results supported this hypothesis. There are no previous studies to support this hypothesis. As stated earlier, it seems that Hypothesis 5 might be also be consistent with Hypothesis 3, since knowledge increases with age as well.

Hypothesis 6 explored whether children reared in families that own dogs as pets are more likely to perceive dogfighting as animal abuse than children reared in families that own dogs for status/ fighting and who have been exposed to dogfighting. The results did not support this hypothesis. Serpell (2008, p. 25) supported the importance of including questions regarding current and childhood involvement with animals because it influences children's perceptions about animals and the same was supported by Grier (1999). The difference between this study's results and what has been supported by Serpell and Grier might be due to differences in context. Thus, despite these differences, more research is needed to address this question.

Hypothesis 7 was not supported. Hypothesis 7 explored whether male children are less likely to perceive dogfighting as animal abuse than female children. There is a significant body of literature supporting that masculinity is associated with violence, aggression and dogfighting in certain cultural contexts (Evans et al., 1998; Geertz, 1972, Kalof & Taylor, 2007). Additionally, Serpell (2008) recommended inquiring about gender as well. However, the data in this study did not support these theories. It is possible that boys of my sample have different influences in the complex systems of Detroit.

Finally, the sixth hypothesis of this research explored whether children reared in communities where dogfighting is prevalent are less likely to perceive dogfighting as animal abuse than children reared in communities of low prevalence in dogfighting. In contrast to previous studies, supporting that children's exposure

to dogfighting might desensitize them to the animal cruelty associated with dogfighting (Gibson, 2005; Kalof & Taylor, 2007), my dissertation study results did not support this hypothesis. Even though 218 children reported that dogfighting is prevalent in the community, this did not seem to be a statistically significant predictor of children's perceptions of dogfighting as animal abuse for this study. It would be important to investigate this question with future studies.

B. Study Strengths

This study is noteworthy because it documents the first effort to develop the Children's Canine Care and Welfare scale and the Perceptions of Dogfighting scale. It also explored statistically significant predictors of children's perceptions of dogfighting as animal abuse among African-American children in Detroit, Michigan.

Moreover, this study advances our understanding of what are some significant predictors of children's perceptions of dogfighting as animal abuse. In this case, knowing that advancing canine care and welfare knowledge can influence children's perceptions of dogfighting is a very positive message because it is much easier to proceed with interventions to advance knowledge in canine care and welfare than it is with interventions to change the SES of a community.

This study provides the first theoretical and practical effort to develop a valid and reliable scale to measure intervention outcomes in canine care and welfare and children's perceptions of dogfighting.

Lastly, all three goals of this study were accomplished and thus advanced scientific knowledge as discussed previously in chapters IV and V. In summary, the results from Goal 1 furthered scientific knowledge regarding the development of the

Canine Care and Welfare scale (Hypothesis 1) and the Perceptions of Dogfighting scale (Hypothesis 2). The results from Goal 2 generated new knowledge regarding the baseline level of canine care and welfare knowledge among my study population. And finally, through Goal 3, this dissertation research's data provided new information regarding the predictors of children's perceptions of dogfighting as animal abuse.

The findings of this study provide the first step that leads to a better understanding regarding the need to develop and pilot an educational intervention to identify whether bringing awareness of human behaviors that result in canine suffering through a canine care and welfare class would act as deterrent to dogfighting.

C. Potential Limitations

There are several limitations to this study. These findings cannot be generalized. My study sample might represent only the system dynamics of the Plymouth Educational Center and HFA:SCS areas in Detroit. Thus, results of this study might not necessarily reflect the broader United States population or areas that represent a different system and societal dynamics.

Furthermore, it is possible that if the parents or legal guardians were involved in dogfighting, they probably did not give permission to their children to participate. Likewise, it is possible that youth involved in dogfighting did not opt to participate in this study. Due to these reasons there might be bias on the study population recruited.

D. Future Research

Future research goals were mentioned throughout Chapter V. In summary, future studies will aim to further the development of valid and reliable scales to measure children's canine care and welfare knowledge as well as children's perceptions of dogfighting. Additional research is necessary to develop valid and reliable measures for adults as well. Furthermore, these instruments will be validated in different cultures and communities.

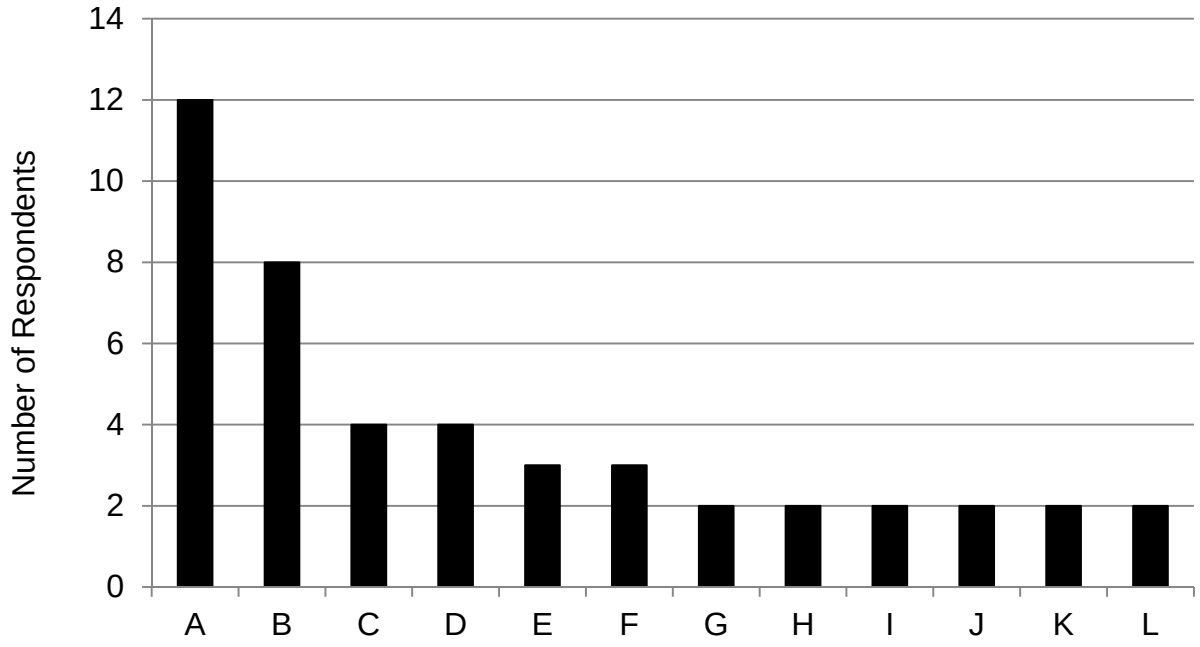
Also, further research should assess whether raising the level of canine care and welfare knowledge would prevent dogfighting. Additionally, another interesting research project would be to explore whether increased knowledge in other species' care and welfare would result in increased understanding of what animal abuse constitutes for this species, as was the case with the present study. Furthermore, it would be important to explore predictors of animal abuse for other species. Finally, additional research is necessary to expand the list of predictors of children's and adults' perceptions of dogfighting as animal abuse.

APPENDICES

Appendix A.
Multiracial Ethnic Identities Reported by African-American Study Participants

Figure A1 displays the frequency of the ethnic identities claimed under the "Other" category.

Figure A1. Other Ethnicities Reported by Multiracial African American Study Participants



Legend:
A = African American, Indian
B = White, African American
C = Hispanic, African American, Indian
D = White, African American, Indian
E = African American, Native Hawaiian Pacific Islander
F = Hispanic, African American
G = African American, White
H = Hispanic, White, African American
I = Hispanic, White, African American, Indian
J = Mexican, African American
K = White, African American
L = White, African American, Asian

Appendix B.
Consents, Assents, Study Information Sheet and Letter of Support

Parental Consent Form for Adolescents 11-12 Years Old

You are being asked to allow your child to participate in a research project. Researchers are required to provide a consent form to inform you about the study, to convey that participation of your child is voluntary, to explain risks and benefits of participation, and to empower you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Study Title: Construction of Children's Canine Care Knowledge Scale: Understanding the Link Between Canine Care Knowledge in Children and their Perceptions of Dogfighting to Inform Humane Education Interventions

Researcher and Title: Dr. Rene P. Rosenbaum, PhD (PI), and Dr. Maria A. Iliopoulou, DVM, MS, PhD candidate

Department and Institution: Department of Community, Agriculture, Recreation and Resource Studies (CARRS), Michigan State University

Address and Contact Information: Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383; Dr. Maria Iliopoulou: iliopoul@gmail.com, phone: 517-775-1858

1. PURPOSE OF RESEARCH

Your child is being asked to participate in a research study of the CARRS department of Michigan State University. This study's purpose is to: (a) develop a scale that assesses the level of canine care knowledge in youth to inform humane education interventions for schools, and (b) explore what are youths' perceptions of dogfighting and how they associate with the following variables: children's level of canine care knowledge, socioeconomic status, dog ownership status, environment, and demographics.

Your child has been selected as a possible participant in this study because he/she is a student at one of the schools or youth centers that agreed to participate in the study.

From this study, the researchers hope to learn: (a) whether the canine care scale is a reliable and valid instrument to assess canine care knowledge among children; (b) the level (or baseline) of canine care knowledge among our study population and children's perceptions of dogfighting; and (c) whether children's perceptions on dogfighting are associated to their level of canine care knowledge, socioeconomic

status, dog ownership status, environment, and demographics. In the entire study, 500 youth are being asked to participate. Your participation in this study will take about 22 minutes.

2. WHAT YOUR CHILD WILL DO

Your child is being asked to complete the Dog Care survey. This survey includes 61 questions regarding canine care, perceptions of dogfighting as animal abuse, dog ownership and demographics. More specifically, during the morning meeting or a class the PhD student will explain the research objectives, read the consent and assent forms out loud, answer any questions, and send either a hard copy or electronically the parental consent form home for the parents to read and sign. The researcher's contact information is included on the consent form. Parents, youth and teachers can contact her with any questions or concerns about the study. After the consent form is read and signed by the parents, the assent form will be sent either electronically or by a hard copy, signed by children and turned in to the PhD student or the drop-off box for the dog care study. There would be either 22 minutes of class time that the children would be allowed to complete the survey and the PhD student will answer any questions and collect the surveys (or the children can drop them off at the dog study drop-off box), or the children would complete the electronic version of the questionnaires individually. The questionnaires are anonymous. The research findings will be shared with the schools after the study is completed. However, there is no way that the information in the survey could be used to identify specific youth. All the answers will be treated with the strictest confidence. Most children are able to complete the questionnaire in less than 22 minutes.

3. POTENTIAL BENEFITS

You and your child will not directly benefit from your child's participation in this study. However, your child's participation in this study may contribute to the understanding of youths' canine care knowledge level as well as whether there is a need for an educational intervention for this subject in schools designed to teach responsible canine ownership, enhance the human-canine relationship and prevent dogfighting.

4. POTENTIAL RISKS

There are no foreseeable risks associated with participation in this study. This study is anonymous and there is no way the child can be connected to the questionnaire. The questionnaire is anonymous and the data will be kept confidential, minimizing the risks of breach of confidentiality.

5. PRIVACY AND CONFIDENTIALITY

The data for this project are being collected anonymously. Anonymous means that neither the researchers nor anyone else will be able to link data to you. The data for this project will be kept confidential. The questionnaires are anonymous. Your confidentiality will be protected to the maximum extent allowable by law. Hard copies of data (surveys and consent forms) will be secured by keeping them in a locked file cabinet at Dr. Rosenbaum's office at the 3rd floor of the NR building. Some data will be stored in an electronic format. Confidential data will be stored on the PhD student's laptop and a network computer on a safe drive. They will be kept safe from unauthorized access by keeping anti-malware software up-to-date, using password protection, and encrypting files as advised by CARRS ITC personnel.

Information that identifies you or your child will not be released. The Michigan State University Institutional Review Board will have access to the records. The data will be stored electronically in the CARRS secure server. Any paper data will be stored in the investigators' office at the Department of CARRS MSU at 312A Natural Resources Building, East Lansing, MI 48824, under locked cabinet. The data will be kept for at least three years after the project closes. Only the principal and secondary investigators will have access to data. Electronic data files will be stored and shared by the investigators on a CARRS server. Surveys will be completed and collected in a confidential manner either online or by the PhD student, Maria Iliopoulou. Any potentially identifying information will be treated with the mandated confidentiality observed by academics. Data will be coded numerically and stored only on secure servers of CARRS.

Results of this study may be published or presented at professional meetings, but the identities of all research participants will remain anonymous. The data for this project are being collected anonymously. Neither the researchers nor anyone else will be able to link data to you. Only the researchers will have access to the data.

6. YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

Participation in this research project is completely voluntary. You have the right to say no and not allow your child to participate. You may change your mind at any time and withdraw. You may choose for your child not to answer specific questions or to stop participating at any time. You will be told of any significant findings that develop during the course of the study that may influence your willingness to continue to participate in the research.

7. COSTS AND COMPENSATION FOR BEING IN THE STUDY

Procedures being performed for research purposes only will be provided free of charge to the participant.

Potential compensations include educational presentations on responsible dog ownership and positive dog training, as well as incentives such as books, food, etc.

8. CONTACT INFORMATION FOR QUESTIONS AND CONCERNS

If you have concerns or questions about this study, such as scientific issues, how to participate, how to do any part of it, or to report an injury, please contact the researcher, Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383 or by regular mail: Dept. of CARRS, MSU, 312A Natural Resources Building, 480 Wilson Rd., East Lansing, MI 48824-1222.

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or by e-mail irb@msu.edu or regular mail at 408 W. Circle Drive, Room 207 Olds Hall, MSU, East Lansing, MI 48824.

9. DOCUMENTATION OF INFORMED CONSENT

Your signature below means that you voluntarily agree to allow your child to participate in this research study.

Student's Name: (please print) _____

Student's Grade: _____

Print Name of Parent/Guardian: (print) _____

Relation to Student: _____

_____

Signature of Parent/Guardian Date

Parental Consent Form and Assent Form for Adolescents 13-17 Years Old

You are being asked to allow your child to participate in a research project. Researchers are required to provide a consent form to inform you about the study, to convey that participation of your child is voluntary, to explain risks and benefits of participation, and to empower you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Study Title: Construction of Children's Canine Care knowledge Scale: Understanding the LinkB Canine Care Knowledge in Children and their Perceptions of Dogfighting to Inform Humane Education Interventions

Researcher and Title: Dr. Rene P. Rosenbaum, PhD (PI), and Dr. Maria A. Iliopoulou, DVM, MS, PhD candidate

Department and Institution: Department of Community, Agriculture, Recreation and Resource Studies (CARRS), Michigan State University

Address and Contact Information: Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383; Dr. Maria Iliopoulou: iliopoul@gmail.com, phone: 517-775-1858

1. PURPOSE OF RESEARCH

Your child is being asked to participate in a research study of the CARRS department of Michigan State University. This study's purpose is to: (a) develop a scale that assesses the level of canine care knowledge in youth to inform humane education interventions for schools, and (b) explore what are youth's perceptions of dogfighting and how they associate with the following variables: children's level of canine care knowledge, socioeconomic status, dog ownership status, environment, and demographics.

Your child has been selected as a possible participant in this study because he/she is a student at one of the schools or youth centers that agreed to participate in the study.

From this study, the researchers hope to learn: (a) whether the canine care scale is a reliable and valid instrument to assess canine care knowledge among children; (b) the level (or baseline) of canine care knowledge among our study population and children's perceptions of dogfighting; and (c) whether children's perceptions on dogfighting are associated to their level of canine care knowledge, socioeconomic status, dog ownership status, environment, and demographics. In the entire study, 500 youth are being asked to participate. Your participation in this study will take about 22 minutes.

2. WHAT YOUR CHILD WILL DO

Your child is being asked to complete the Dog Care survey. This survey includes 61 questions regarding canine care, perceptions of dogfighting as animal abuse, dog ownership and demographics. More specifically, during the morning meeting or a class the PhD student will explain the research objectives, read the consent and assent forms out loud, answer any questions, and send either a hard copy or

electronically the parental consent form home for the parents to read and sign. The researcher's contact information is included on the consent form. Parents, youth and teachers can contact her with any questions or concerns about the study. After the consent form is read and signed by the parents, the assent form will be sent either electronically or by a hard copy and signed by children and turned in to the PhD student or the drop-off box for the dog care study. There would be either 22 minutes of class time that the children would be allowed to complete the survey and the PhD student will answer any questions and collect the surveys (or the children can drop them off at the dog study drop-off box), or the children would complete the electronic version of the questionnaires individually. The questionnaires are anonymous. The research findings will be shared with the schools after the study is completed. However, there is no way that the information in the survey could be used to identify specific youth. All the answers will be treated with the strictest confidence. Most children are able to complete the questionnaire in less than 22 min.

3. POTENTIAL BENEFITS

You and your child will not directly benefit from your child's participation in this study. However, your child's participation in this study may contribute to the understanding of youths' canine care knowledge level as well as whether there is a need for an educational intervention for this subject in schools designed to teach responsible canine ownership, enhance the human-canine relationship and prevent dogfighting.

4. POTENTIAL RISKS

There are no foreseeable risks associated with participation in this study. This study is anonymous and there is no way the child can be connected to the questionnaire. The questionnaire is anonymous and the data will be kept confidential, minimizing the risks of breach of confidentiality.

5. PRIVACY AND CONFIDENTIALITY

The data for this project are being collected anonymously. Anonymous means that neither the researchers nor anyone else will be able to link data to you. The data for this project will be kept confidential. The questionnaires are anonymous. Your confidentiality will be protected to the maximum extent allowable by law. Hard copies of data (surveys and consent forms) will be secured by keeping them in a locked file cabinet at Dr. Rosenbaum's office at the 3rd floor of the NR building. Some data will be stored in an electronic format. Confidential data will be stored on the PhD student's laptop and a network computer on a safe drive. They will be kept safe from unauthorized access by keeping anti-malware software up-to-date, using password protection, and encrypting files as advised by CARRS ITC personnel.

Information that identifies you or your child will not be released. The Michigan State University Institutional Review Board may review research records. The data will be stored electronically in the CARRS secure server. Any paper data will be stored in the investigators' office at the Department of CARRS MSU at 312A Natural Resources Building, East Lansing, MI 48824, under locked cabinet. The data will be kept for at least three years after the project closes. Only the principal and secondary investigators will have access to data. Electronic data files will be stored and shared by the investigators on a CARRS server. Surveys will be completed and collected in a confidential manner either online or by the PhD student, Maria Iliopoulou. Any potentially identifying information will be treated with the mandated confidentiality observed by academics. Data will be coded numerically and stored only on secure servers of CARRS. Results of this study may be published or presented at professional meetings, but the identities of all research participants will remain anonymous. The data for this project are being collected anonymously. Neither the researchers nor anyone else will be able to link data to you. Only the researchers will have access to the data.

6. YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

Participation in this research project is completely voluntary. You have the right to say no and not allow your child to participate. You may change your mind at any time and withdraw. You may choose for your child not to answer specific questions or to stop participating at any time. You will be told of any significant findings that develop during the course of the study that may influence your willingness to continue to participate in the research.

7. COSTS AND COMPENSATION FOR BEING IN THE STUDY

Procedures being performed for research purposes only will be provided free of charge to the participant. Potential compensations include educational presentations on responsible dog ownership and positive dog training, as well as incentives such as a book, food, etc.

8. CONTACT INFORMATION FOR QUESTIONS AND CONCERNS

If you have concerns or questions about this study, such as scientific issues, how to participate, how to do any part of it, or to report an injury, please contact the researcher, Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383 or by regular mail: Dept. of CARRS, MSU, 312A Natural Resources Building, 480 Wilson Rd. East Lansing, MI 48824-1222.

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the

Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or by e-mail irb@msu.edu or regular mail at 408 W. Circle Drive, Room 207 Olds Hall, MSU, East Lansing, MI 48824.

9. DOCUMENTATION OF INFORMED CONSENT

Your signature below means that you voluntarily agree to allow your child to participate in this research study.

Student's Name: (please print) _____

Student's Grade: _____

Print Name of Parent/Guardian: (print) _____

Relation to Student: _____

_____

Signature of Parent/Guardian Date

_____

Signature of Assenting Child (13-17) Date

You will be given a copy of this form to keep.

Assent Form for Adolescents 11-12 Years Old

Dear Student,

Hello!

I am asking you to participate in my dissertation study, which aims to develop a questionnaire that measures children's knowledge on dog care and children's perceptions of dogfighting. This is a research study from Michigan State University, where I am currently a doctoral student. Participation in this study is voluntary and anonymous. All answers will be treated with the strictest confidence.

In my study I will use a 1-5 Likert scale, with 1 being the best measure (strongly agree), 3 being a neutral measure and 5 being the worst measure of outcome (strongly disagree). For conduct of this study a 61 item survey instrument was developed.

I hope that this study will support the need to develop dog care education for children at schools and youth centers. Such education will potentially offer

important knowledge on how to best take care of a dog and have a positive human-dog relationship.

Study Title: Construction of Children's Canine Care knowledge Scale: Understanding the Link Between Canine Care Knowledge in Children and their Perceptions of Dogfighting to Inform Humane Education Interventions

Researcher and Title: Dr. Rene P. Rosenbaum, PhD (PI), and Dr. Maria A. Iliopoulou, DVM, MS, PhD candidate

Department and Institution: Department of Community, Agriculture Recreation and Resource Studies (CARRS), Michigan State University

Address and Contact Information: Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383; Dr. Maria Iliopoulou: iliopoul@gmail.com, phone: 517-775-1858

After your parent/legal guardians complete the parental consent form (hard copy or electronic), you will be asked to read the assent form. If you have any questions ask the investigators or the IRB (see end of assent form). If you agree to participate in the study, after signing the present assent form (hard copy or electronic), you will be given the Dog Care Survey (hard copy or electronic) to complete. Most people are able to complete the questionnaire in less than 22 minutes.

4. POTENTIAL RISKS

There are no foreseeable risks associated with participation in this study. This study is anonymous and there is no way you can be connected to the questionnaire.

5. PRIVACY AND CONFIDENTIALITY

The data for this project are being collected anonymously. Anonymous means that neither the researchers nor anyone else will be able to link data (the questionnaires) to you. The data for this project will be kept confidential. Results of this study may be published or presented at professional meetings, but the identities of all study participants will remain anonymous. Only the researchers will have access to the data. Information that identifies you will not be released. The Michigan State University Institutional Review Board may review research records.

The data will be stored electronically in the CARRS secure server. Any paper data will be stored in the investigators' office at the Department of CARRS MSU at 312A Natural Resources Building, East Lansing, MI 48824, under locked cabinet. The data will be kept for at least three years after the project closes.

Only the principal and secondary investigators will have access to data. Electronic data files will be stored and shared by the investigators on a CARRS server. Surveys will be distributed and collected in a confidential manner either online or by the PhD student, Maria Iliopoulou, or dropped off in the survey collection box. Any potentially identifying information will be protected to the maximum extent allowable by law. Data will be coded numerically and stored only on secure servers of CARRS.

6. YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

Participation in this research project is completely voluntary. You have the right to say no. You may change your mind at any time and withdraw. You may choose not to answer specific questions or to stop participating at any time.

7. COSTS AND COMPENSATION FOR BEING IN THE STUDY

Procedures being performed for research purposes only will be provided free of charge by the participant.

Potential compensations include educational presentations on responsible dog ownership and positive dog training, as well as incentives such as books, food, etc.

8. CONTACT INFORMATION FOR QUESTIONS AND CONCERNS

If you have concerns or questions about this study, how to participate, how to do any part of it, or to report an injury, please contact the researcher, Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383 or by regular mail: Dept. of CARRS, MSU, 312A Natural Resources Building, 480 Wilson Rd. East Lansing, MI 48824-1222.

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or 408 W. Circle Drive, Room 207 Olds Hall, MSU, East Lansing, MI 48824.

9. DOCUMENTATION OF INFORMED ASSENT

Your signature below means that you voluntarily agree to participate in this research study.

Student's Name: (please print) _____

Date: _____

Student's Signature: _____

Legal Adult (18 plus) Consent Form

You are being asked to participate in a research project. Researchers are required to provide a consent form to inform you about the study, to convey that participation of your child is voluntary, to explain risks and benefits of participation, and to empower you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Study Title: Construction of Children's Canine Care Knowledge Scale: Understanding the Link Between Canine Care Knowledge in Children and their Perceptions of Dogfighting to Inform Humane Education Interventions

Researcher and Title: Dr. Rene P. Rosenbaum, PhD (PI), and Dr. Maria A. Iliopoulou, DVM, MS, PhD candidate

Department and Institution: Department of Community, Agriculture, Recreation and Resource Studies (CARRS), Michigan State University

Address and Contact Information: Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383; Dr. Maria Iliopoulou: iliopoul@gmail.com, phone: 517-775-1858

1. PURPOSE OF RESEARCH

You are being asked to participate in a research study of the CARRS department of Michigan State University. This study's purpose is to: (a) develop a scale that assesses the level of canine care knowledge in youth to inform humane education interventions for schools, and (b) explore what are youths' perceptions of dogfighting and how they associate with the following variables: children's level of canine care knowledge, socioeconomic status, dog ownership status, environment, and demographics.

You have been selected as a possible participant in this study because you are a student at one of the schools or youth centers that agreed to participate in the study.

From this study, the researchers hope to learn: (a) whether the canine care scale is a reliable and valid instrument to assess canine care knowledge among children; (b) the level (or baseline) of canine care knowledge among our study population and

children's perceptions of dogfighting; and (c) whether youths' perceptions on dogfighting are associated to their level of canine care knowledge, socioeconomic status, dog ownership status, environment, and demographics. In the entire study, 500 youth are being asked to participate. Your participation in this study will take about 22 minutes.

If you are under 18, you cannot be in this study without parental permission.

2. WHAT YOU WILL DO

You are being asked to complete the Canine Care questionnaire. This questionnaire includes 61 questions regarding canine care, perceptions of dogfighting as animal abuse, dog ownership and demographics. More specifically, during the morning meeting or a class the PhD student will explain the research objectives, read the consent and assent forms out loud, answer any questions and give you either a hard copy or send you electronically the consent form to read and sign. The researcher's contact information is included on the consent form and parents, youth and teachers can contact her with any questions or concerns about the study. After the consent form is read and signed, if it is a hard copy it can be turned in to the PhD student or the drop-off box for the dog care study. There would be either 22 minutes of class time that you would be allowed to complete the survey and the PhD student will answer any questions and collect the surveys (or you can drop them off at the dog study drop-off box), or you could complete the electronic version of the questionnaires individually. The questionnaires are anonymous. The research findings will be shared with the schools after the study is completed. However, there is no way that the information in the survey could be used to identify specific youth. All the answers will be treated with the strictest confidence. Most children are able to complete the questionnaire in less than 22 minutes.

3. POTENTIAL BENEFITS

You will not directly benefit from participation in this study. However, your participation in this study may contribute to the understanding of youths' perceptions of dogfighting and their association to canine care and welfare knowledge as well as whether there is a need for an educational intervention for this subject in schools designed to enhance the human-canine relationship and prevent dogfighting.

4. POTENTIAL RISKS

There are no foreseeable risks associated with participation in this study. This study is anonymous and there is no way you can be connected to the questionnaire. The questionnaire is anonymous and the data will be kept confidential, minimizing the risks of breach of confidentiality.

5. PRIVACY AND CONFIDENTIALITY

The data for this project are being collected anonymously. Anonymous means that neither the researchers nor anyone else will be able to link data (the questionnaire) to you. The data for this project will be kept confidential. Information about you will be kept confidential to the maximum extent allowable by law. Hard copies of data (surveys and consent forms) will be secured by keeping them in a locked file cabinet at Dr. Rosenbaum's office at the 3rd floor of the NR building. Some data will be stored in an electronic format. Confidential data will be stored on the PhD student's laptop and a network computer on a safe drive. They will be kept safe from unauthorized access by keeping anti-malware software up-to-date, using password protection, and encrypting files as advised by CARRS ITC personnel. Information that identifies you will not be released. The Michigan State University Institutional Review Board may review research records.

The data will be stored electronically in the CARRS secure server. Any paper data will be stored in the investigators' office at the Department of CARRS MSU at 312A Natural Resources Building, East Lansing, MI 48824, under locked cabinet. The data will be kept for at least three years after the project closes. Only the principal and secondary investigators will have access to data. Electronic data files will be stored and shared by the investigators on a CARRS server. Surveys will be distributed and collected in a confidential manner either online or by the PhD student, Maria Iliopoulou, or dropped off in the survey collection box. Any potentially identifying information will be treated with the mandated confidentiality observed by academics. Data will be coded numerically and stored only on secure servers of CARRS.

Results of this study may be published or presented at professional meetings, but the identities of all research participants will remain anonymous. The data for this project are being collected anonymously. Neither the researchers nor anyone else will be able to link data to you. Only the researcher will have access to the data.

6. YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW

Participation in this research project is completely voluntary. You have the right to say you do not want to participate. You may change your mind at any time and withdraw. You may choose not to answer specific questions or to stop participating at any time. Whether you choose to participate or not will have no effect on your grade or evaluation. You will be told of any significant findings that develop during the course of the study that may influence your willingness to continue to participate in the research.

7. COSTS AND COMPENSATION FOR BEING IN THE STUDY

Procedures being performed for research purposes only will be provided free of charge by the participant.

Potential compensations include educational presentations on responsible dog ownership and positive dog training, as well as incentives such as books, food, etc.

8. CONTACT INFORMATION FOR QUESTIONS AND CONCERNS

If you have concerns or questions about this study, such as scientific issues, how to participate, how to do any part of it, or to report an injury, please contact the researcher, Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383 or by regular mail: Dept. of CARRS, MSU, 312A Natural Resources Building, 480 Wilson Rd., East Lansing, MI 48824-1222.

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 408 W. Circle Drive, Room 207 Olds Hall, MSU, East Lansing, MI 48824.

9. DOCUMENTATION OF INFORMED CONSENT

Your signature below means that you voluntarily agree to allow your child to participate in this research study.

Student's Name: (please print) _____

Date: _____

Student's Signature: _____

You will be given a copy of this form to keep.

Study Information Sheet for Henry Ford Academy: School For Creative Studies

You are being asked to allow your child to participate in a research study. Researchers are required to provide a study information form to give you information about the study, to ensure that participation of your child is voluntary, to explain benefits of participation and whether there are any associated risks, and

to help you to make an informed decision. You should feel free to ask the researchers (Dr. Iliopoulou and Dr. Rosenbaum) any questions you may have.

Study Title: Construction of Children's Canine Care Knowledge Scale: Understanding the Link Between Canine Care Knowledge in Children and their Perceptions of Dogfighting to Inform Humane Education Interventions

Researcher and Title: Dr. Rene P. Rosenbaum, PhD (PI), and Dr. Maria A. Iliopoulou, DVM, MS, PhD candidate

Department and Institution: Department of Community, Agriculture, Recreation and Resource Studies (CARRS), Michigan State University

Address and Contact Information: Dr. Rene Rosenbaum: rosenba5@anr.msu.edu, phone: 517-432-3383; Dr. Maria Iliopoulou: iliopoul@gmail.com, phone: 517-775-1858

1. PURPOSE OF RESEARCH

Your child is being asked to participate in a research study of the CARRS department of Michigan State University. This study's purpose is to: (a) develop a questionnaire that assesses the level of dog care knowledge in youth to inform new educational classes about animal care for schools, and (b) explore what are youths' perceptions of dogfighting and how they associate with the following: children's level of dog care knowledge, socioeconomic status, dog ownership status, environment, and demographics.

Your child has been selected as a possible participant in this study because he/she is a student at one of the schools or youth centers that agreed to participate in the study.

From this study, the researchers hope to learn: (a) whether the dog care scale is accurately measuring dog care knowledge among children; (b) the level of dog care knowledge among children and their thoughts of dogfighting; and (c) whether children's thoughts on dogfighting are associated to their level of dog care knowledge, socioeconomic status, dog ownership status, environment, and demographics. In the entire study, 500 youth are being asked to participate. Your participation in this study will take about 22 minutes.

2. WHAT YOUR CHILD WILL DO

Your child is being asked to complete the Dog Care survey. This survey includes 61 questions regarding dog care, thoughts of dogfighting as animal abuse, dog ownership and demographics. More specifically, during the morning meeting or a

class the PhD student will explain the research objectives, read the consent and assent forms out loud, answer any questions and send either a hard copy or electronically.

School Letter of Support

LETTER OF SUPPORT

Re: CONSTRUCTION OF CHILDREN'S CANINE CARE KNOWLEDGE SCALE; UNDERSTANDING THE LINK BETWEEN CHILDREN'S CANINE CARE KNOWLEDGE AND THEIR PERCEPTIONS OF DOGFIGHTING TO INFORM HUMANE EDUCATION INTERVENTIONS FOR SCHOOLS

Dear Drs. Iliopoulou and Rosenbaum,

The Plymouth Educational Center, Detroit is aware of your proposed research project to develop a reliable and valid scale to measure dog care knowledge in an effort to provide evidence in support of the need to develop canine care education for children. Additionally this study will explore the association between canine care knowledge in children and perceptions of dogfighting.

We understand that the involvement of the Plymouth Educational Center in assisting you to accomplish this important study consists of helping to administer the survey to 200 students at the Center. To do so, you will be provided with the space and the students to facilitate your study. Before administering your survey to students you will read the parental consent form and the assent form to students with instructions to take a copy home to parents for signature and return the next day. You will personally collect the survey from students over the next couple of days and after that you will have two locked Drop Off box will be available for late ones. A week after the consent form is sent out, a hard copy survey, which will take twenty minutes to complete, will be administered to students who have elected to participate in the study. Locked drop off boxes will be made available for students to drop off the surveys.

In exchange for this assistance, I understand that you will facilitate the provision of seminars regarding careers in veterinary medicine for Plymouth Educational Center students, you will provide three workshops on Responsible Canine Ownership and a Positive Canine Training Seminar for Plymouth Educational Center students and parents and a tour at the College of Veterinary Medicine for our students.

As the Superintendent of Plymouth Educational Center, I have read through your letter summarizing your research and support the involvement of oPlymouth Educational Center in this project and look forward to working with you.

Sincerely,

The Superintendent of Plymouth Educational Center Christopher Plum, Ph.D

Signature

11/30/12

Date

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Appendix C.
Tables from Results

Tables C1 and C2 include descriptive statistics from the Canine Care and Welfare and Perceptions of Dogfighting scales.

Table C1. Descriptive Statistics for Canine Care and Welfare Scale Variables

	CCW Items	*Strongly agree*	*Agree*	*Uncertain*	*Disagree*	*Strongly disagree*	*M*	*SD*	*N*
Q1.	A dog should have access to water daily.	424 (84.1%)	60 (11.9%)	9 (1.8%)	1 (.2%)	4 (.8%)	4.81	.550	498
Q2.	A dog should be fed at least once a day.	320 (63.5%)	68 (13.5%)	30 (6%)	46 (9.1%)	32 (6.3%)	4.21	1.272	496
Q3.	A dog should have access to shelter most of the time.	340 (67.5%)	129 (25.6%)	19 (3.8%)	7 (1.4%)	3 (.6%)	4.60	.689	498
Q4.	A dog should never be allowed to roam on the streets without a person along .	331 (65.7%)	98 (19.4%)	32 (6.3%)	23 (4.6%)	12 (2.4%)	4.44	.972	496
Q5.	In cold weather a dog should have access to a heated space.	370 (73.4%)	103 (20.4%)	21 (4.2%)	3 (.6%)	0	4.69	.579	497
Q6.	In hot weather a dog should have shade.	326 (64.7%)	129 (25.6%)	35 (6.9%)	1 (.2%)	4 (.8%)	4.56	.706	495
Q7.	It is a good life for a dog to be chained outside all day and night for their whole life.	18 (3.6%)	22 (4.4%)	33 (6.5%)	112 (22.2%)	313 (62.1%)	1.63	1.032	498
Q8.	The owner of a dog should spend quality time with the dog every day.	276 (54.8%)	190 (37.7%)	28 (5.6%)	4 (.8%)	0	4.48	.641	498
Q9.	A dog should have the opportunity to play with other dogs regularly.	134 (26.6%)	45.8 (37.7%)	115 (22.8%)	12 (2.4%)	3 (.6%)	3.97	.809	495
Q10.	A dog sleeps more and eats less when it is sick.	126 (25.0%)	159 (31.5%)	197 (39.1%)	8 (1.6%)	4 (.8%)	3.80	.868	494

Table C1 (cont'd)

Q11.	A dog needs to have a health checkup by a veterinarian once a year.	270 (53.6%)	155 (30.8%)	51 (10.1%)	13 (2.6%)	7 (1.4%)	4.35	.872	496
Q12.	A dog needs to be fixed (to have a surgery so they do not have puppies).	49 (9.7%)	59 (11.7%)	150 (29.8%)	137 (27.2%)	99 (19.6%)	2.64	1.212	494
Q13.	A dog should receive medication to prevent fleas and ticks.	317 (62.9%)	138 (27.4%)	32 (6.3%)	5 (1.0%)	2 (.4%)	4.54	.698	494
Q14.	It is not alright for household members to kick the dog.	270 (53.6%)	155 (30.8%)	51 (10.1%)	13 (2.6%)	7 (1.4%)	4.35	.872	496
Q15.	The best way to have a disciplined dog is to teach it obedience training when it is a puppy.	338 (67.1%)	115 (22.8%)	34 (6.7%)	3 (.6%)	4 (.8%)	4.58	.718	494
Q16.	Dogs enjoy playing with their owners.	338 (67.1%)	115 (22.8%)	34 (6.7%)	3 (.6%)	4 (.8%)	4.58	.718	494
Q17.	All dogs suffer when they participate in organized fights that might result in death.	338 (67.1%)	115 (22.8%)	34 (6.7%)	3 (.6%)	4 (.8%)	4.58	.718	494
Q18.	All female dogs should be able to have puppies.	220 (43.7%)	166 (32.9%)	83 (16.5%)	20 (4.0%)	4 (.8%)	4.17	.907	493
Q19.	There are some costs associated with keeping a dog.	253 (50.2%)	179 (35.5%)	52 (10.3%)	2 (.4%)	8 (1.6%)	4.35	.811	494
Q20.	We should make sure there is food available for a dog that is not able to get its own food (chained, locked in the house, etc.).	253 (50.2%)	179 (35.5%)	52 (10.3%)	2 (.4%)	8 (1.6%)	4.35	.811	494

Table C1 (cont'd)

Q21. Dogs experience similar feelings (hunger, thirst, discomfort) as human beings do.	348 (69.0%)	109 (21.6%)	32 (6.3%)	2 (.4%)	1 (.2%)	4.63	.643	492
Q22. Dogs do not suffer when they participate in short street fights with other dogs.	348 (69.0%)	39 (7.7%)	58 (11.5%)	118 (23.4%)	244 (48.4%)	2.00	1.266	493
Q23. If a person physically injures a dog, it is animal abuse.	320 (63.5%)	105 (20.8%)	45 (8.9%)	12 (2.4%)	9 (1.8%)	4.46	.894	491
Q24. When training a dog for obedience it is not ok to hit it as punishment.	118 (37.3%)	111 (22.0%)	108 (21.4%)	63 (12.5%)	20 (4.0%)	3.78	1.201	490
Q25. Dogs experience emotions (affection, joy, fear, distress) as humans do.	334 (66.3%)	114 (22.6%)	31 (6.2%)	7 (1.4%)	8 (1.6%)	4.54	.809	494
Q26. It is ok to hit a dog when it does something wrong.	53 (10.5%)	114 (22.6%)	129 (25.6%)	103 (20.4%)	93 (18.5%)	2.86	1.270	492
Q27. Dogs experience pain as humans do.	346 (68.7%)	108 (21.4%)	30 (6.0%)	5 (1.0%)	3 (.6%)	4.60	.705	492

Table C2. Descriptive Statistics for Perceptions of Dogfighting Variables

	PDF Items	*Yes*	*No*	*M*	*SD*	*N*
Q28.	Dogfighting is animal abuse.	444	48	.90	.297	492
Q29.	Dogfighting is socially acceptable.	46	444	.09	.292	490
Q30.	Dogfighting is very common in the community.	218	263	.45	.498	481
Q31.	Dogfighting is a way to make money.	324	161	.67	.471	485
Q32.	Fighting dogs feel pain when they fight.	455	34	.93	.255	489
Q33.	Fighting dogs feel pain when they are injured.	462	26	.95	.255	488
Q34.	Fighting dogs are just like other dogs.	275	209	.57	.496	484
Q35.	Fighting dogs have the same care needs as other dogs.	375	110	.77	.419	485
Q36.	Fighting dogs enjoy short street fights with other dogs.	361	119	.25	.432	480
Q37.	Fighting dogs enjoy the organized fights that might result in death.	95	384	.20	.399	479
Q38.	Fighting dogs are different from other dogs.	229	255	.47	.500	484
Q39.	All fighting dogs are vicious by nature.	178	306	.37	.483	484
Q40.	Dogfighting is illegal.	427	60	.88	.329	487
Q41.	A fighting dog's behavior depends on the treatment of the dog by the owner.	432	53	.89	.312	485
Q42.	No one should be allowed to own a fighting dog.	329	154	.68	.467	483
Q43.	Fighting dogs are mixed breed dogs.	158	314	.33	.472	472
Q44.	It is animal abuse if somebody physically injures a fighting dog.	431	49	.90	.303	480
Q45.	Fighting dogs can be safe pets.	180	299	.38	.485	479
Q46.	open ended-coded					
Q47.	open-ended-coded					
Q48.	All fighting dogs are pit bulls.	60	417	.13	.332	477

BIBLIOGRAPHY

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Aberson, C. L. (2010). *Applied power analysis for the behavioral sciences.* New York: Routledge, Taylor & Francis Group.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders.* Arlington, VA: American Psychiatric Publishing.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th Ed.). Arlington, VA: American Psychiatric Publishing.

Arbour, R. A., Signal, T. B., & Taylor, N. C. (2009). Teaching kindness: The promise of humane education. *Society and Animals, 17,* 136-148.

Arkow, P. (2011). *Bibliography of the link between animal abuse, domestic violence, child abuse and elder abuse.* Retrieved from http://www.animaltherapy.net/Bibliography-Link.html#anchor1396304

Ascione, F. R., & Arkow, P. (Eds). (1999). *Child abuse, domestic violence and animal abuse: Linking the circles of compassion for prevention and intervention.* West Lafayette, IN: Purdue University Press.

Ascione, F. R., Weber, C. V., & Wood, D. S. (1997). The abuse of animals and domestic violence: A national survey of shelters for women who are battered. *Society and Animals, 5*(3), 205-218.

ASPCA Professional. (n.d). *The veterinarian's legal role in animal cruelty cases.* Retrieved from http://www.aspcapro.org/resource/disaster-cruelty-animal-cruelty/veterinarians-legal-role-animal-cruelty-cases

Association of Professional Humane Educators (2011, Summer). Is humane education an endangered species? *The Latham Letter, 32*(3), pp. 6-9.

Balogi, K. T. O. (2004). At the cross roads: Family, youth deviance and crime control in Botswana. *Pula: Botswana Journal of African Studies, 18*(1).

Bandura, A. (1999). A social cognitive theory of personality. In L. Pervin & O. John (Eds.), *Handbook of personality* (2nd Ed., pp. 154-196). New York: Guilford.

Bekoff, M., & Meaney, C. A. (1998). *Encyclopedia of animal rights and animal welfare.* Westport, CT: Greenwood Press.

Brener, N. D., Billy, J. O. G., & Grandy, W. R. (2003) Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents:

Evidence from the scientific literature. *Journal of Adolescent Health, 33,* 436-457.

Bridges, G. S., & Desmond, S. A. (2000). Deviance theories, In E. Borgatta & R. J. V. Montgomery (Eds.), *Encyclopedia of sociology.* New York: Macmillan Reference USA. Retrieved from: http://edu.learnsoc.org/Chapters/3%20theories%20of%20sociology/6%20deviance%20theories.htm

Brown, T. A. (2006). *Confirmatory factor analysis for applied research.* New York, London: Guilford Press.

Burley, S. (2008). My dog's the champ: An analysis of young people in urban settings and fighting dog breeds. *Anthropology Matters, 10*(1). Retrieved from http://www.anthropologymatters.com/index.php/anth_matters/article/view/40/72

Burrows, T., & Fielding, W. (2005). Views of college students on pit bull "ownership": New Providence, the Bahamas. *Society and Animals 13*(2), 139-152.

Cherry, K. (n.d.) *Perception and the perceptual process.* Retrieved from: http://psychology.about.com/od/sensationandperception/ss/perceptproc.htm

Cohen, J., Cohen, P., West, G. W., & Aiken, l. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences.* Hillsdale, NJ: Erlbaum.

Cohen, J., & Richardson, J. (2002). Pit bull panic. *Journal of Popular Culture, 36*(2), 285-302.

Colonius, T. J., & Earley, R. W. (2013, February). One welfare: A call to develop a broader framework of thought and action. *J. Am. Vet. Med. Assoc., 242*(3), 309-310. doi: 10.2460/javma.242.3.309.

Coppinger, R., & Coppinger, L. (2002). *Dogs: A new understanding of canine origin, behavior, and evolution.* Chicago: University of Chicago Press.

Cox, D. R., & Snell, E. J. (1989). Analysis of binary data (2nd ed.). *Monographs on Statistics and Applied Probability, 32.* Boca Raton, FL: Chapman & Hall/CRC Press.

Dawkins, M. S. (2000). Animal minds and animal emotions. *Amer. Zool., 40*(6), 883-888. doi: 10.1093/icb/40.6.883

DiStefano, C., Zhu, M., & Mîndrilă, D. (2009, October). Understanding and using factor Scores: Considerations for the applied researcher. *Practical Assessment, Research & Evaluation, 14*(20).

Evans, R., Gauthier, D. K., & Forsyth, C. J. (1998). Dogfighting: Symbolic expression and validation of masculinity. *Sex Roles, 39*(11/12), 825-838.

Fanning, E. (2005). Formatting a paper-based survey questionnaire: Best practices. *Practical Assessment Research & Evaluation, 10*(12). Retrieved from: http://pareonline.net/pdf/v10n12.pdf

Farm Animal Welfare Council. (n.d.). *Animal welfare on the farm* [The Five Freedoms]. Retrieved from: http://ec.europa.eu/food/animal/welfare/farm/index_en.htm

Farm Animal Welfare Council. (2009, October). *Farm animal welfare in Great Britain: Past, present and future.* Retrieved from http://www.fawc.org.uk/pdf/ppf-report091012.pdf

Favre, D. S. (2008). *Animal law: Welfare, interests, and rights.* Aspen Publishers.

Felthous, A. R. (1980). Aggression against cats, dogs, and people. *Child Psychiatry and Human Development, 10*(3), 169-177.

Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice, 40*(5), 532-538. doi: 10.1037/a0015808.

Fergusson, D. M., & Lynskey, M. T. (1996). Adolescent resiliency to family adversity. *Journal of Child Psychology & Psychiatry & Allied Disciplines, 37,* 281-92.

Fielding, W. J. (2010). Determinants of the level of care provided for various types and sizes of dogs in New Providence, The Bahamas. *International Journal of Bahamian Studies, 16,* 13-26. Retrieved from http://researchjournal.cob.edu.bs

Fitzgerald, H. E., & Primavera, J. (2013). *Going public: Civic and community engagement.* East Lansing: Michigan State University Press.

Fitzgerald, H. E., Wong, M. M., & Zucker, R. A. (2013). Early origins of alcohol use and abuse: Mental representations, relationships, and the risk-resilience continuum. In N. Suchman, M. Pajulo, & L. C. Mayes (Eds.), *Parenting and substance addiction: Developmental approaches to intervention* (pp. 126-155). New York: Oxford University Press.

Forsyth, C. J., & Evans, R. D. (1998). *Dogmen: The rationalization of deviance.* Cambridge, UK: White Horse Press.

Fraser, D. (2008). *Understanding animal welfare: The science in its cultural context.* Ames, IA: Wiley-Blackwell.

Frick, P. J., O'Brien, B. S., Wootton, J. M., & McBurnett, K. (1994). Psychopathy and conduct problems in children. *Journal of Abnormal Psychology, 103*(4), 700-707.

Gaventa, J., & Cornwall, A. (2008). Power and knowledge. In P. Reason & H. Bradbury (Eds.), *Handbook of action research* (pp. 172-189). Thousand Oaks, CA: Sage.

Geertz, C. (1972, Winter). Deep play: Notes on the Balinese cockfight. *Daedalus, 101*(1), 1-37. Retrieved from: http://www.jstor.org/stable/20024056

Gibson, H. (2005). *Dog fighting detailed discussion.* East Lansing: Michigan State University, College of Law. Retrieved from: http://www.animallaw.info/articles/ddusdogfighting.htm

Green, P. A., & Allen, H. D. (1981-1982). Severity of societal response to crime: A synthesis of models. *Law & Society Review, 16*(2), 181-206.

Greenhill, L. M., Cipriani Davis, K., Lowrie, P. M., & Amass, S. F. (2013). Navigating diversity and inclusion in veterinary medicine. West Lafayette, IN: Purdue University Press.

Grier, C. K. (1999). *Childhood socialization and domestic animals: United States, 1820-1870.* Cambridge, UK: White Horse Press.

Gullone, E. (2011). Conceptualizing animal abuse with an antisocial behaviour. *Animals, 1,* 144-160. doi:10.3390/ani1010144

Hart, L. A. (1995). Dogs as human companions: a review of the relationship. In J. Serpell (Ed.), *The domestic dog: Its evolution, behavior, and interactions with people* (pp. 161-178). Cambridge, UK: Cambridge University Press.

Hewson, C. J. (2003a). What is animal welfare? Common definitions and their practical consequences. *Can. Vet. J., 44,* 496-499.

Hewson C. J. (2003b).Can we assess welfare? *Can. Vet. J., 44,* 749-753.

Hinshaw, S. P., & Lee, S. S. (2003). Conduct and oppositional defiant disorders. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology* (pp. 144-198). New York: Guilford Press.

Hsieh, F. Y., Bloch, D A., & Larsen, M. D. (1998). A simple method of sample size calculation for linear and logistic regression. *Statistics in Medicine, 17,* 1623-1634.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional versus new alternatives. *Structural Equation Modeling, 6,* 1-55.

Hughes, G., Maher, J., & Lawson, C. (2011). *Status dogs, young people and criminalisation: Towards a preventative strategy* [Research Project Report]. Retrieved from: http://www.cardiff.ac.uk/socsi/resources/wp139.pdf

Iliopoulou, M. A., Kitchell, B. E., & Yuzbasiyan-Gurkan, V. (2013). Development of a survey instrument to assess health-related quality of life in small animal cancer patients treated with chemotherapy. *Journal of American Veterinary Medical Association, 242*(12), 1679-1687.

Iliopoulou, M. A., & Rosenbaum R. P. (2013, May). Understanding blood sports. *Journal of Animal & Natural Resource Law, 9,* 125-140. Retrieved from: http://www.animallaw.info/journals/jo_pdf/jouranimallawvol9.pdf

Irizarry, K. (n.d.). Breed specific or looks specific. Retrieved from: http://www.nationalcanineresearchcouncil.com/uploaded_files/tinymce/Irizarry%20viewpoint.pdf

Kalof, L. (2007). *Looking at animals in human history*. London, UK: Reaction Books.

Kalof, L., & Taylor, C. (2007). The discourse of dog fighting. *Humanity & Society* [special issue on social justice and the animal question], 31(4), 319-333.

Kong, J. (2011). *Development and validation of the multicultural school-based consultation competency scale* (doctoral dissertation, University of New York). Retrieved from ProQuest, UMI Dissertations Publishing.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* New York: Cambridge University Press.

Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology, 48,* 371-410.

Lytton, H. (1990). Child and parent effect in boys' conduct disorder: A reinterpretation. *Developmental Psychology, 26,* 683-697.

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods, 4,* 84-99.

Maust-Mohl, M., Fraser, J., & Morrison, R. (2012). Wild minds: what people think about animal thinking. *Anthrozoos, 25*(2), 133-147.

McMillan, F. D. (2000). Quality of life in animals. *J. Am. Vet. Med. Assoc., 216,* 1904-1910.

Michigan Department of Education, Office of School Support Services, School Nutrition Programs. (2011-2013). *Free and reduced price school meals.* Retrieved from: http://michigan.gov/documents/mde/Free_and_Reduced_Price_School_Meals_Family_Application_Packet_for_School_Year_2011-2012_351483_7.pdf

Moffit, T. E., Caspi, A., Rutter, M., & Silva, P. A. (2001). *Sex differences in antisocial behavior.* Cambridge, UK: Cambridge University Press.

Muthén, B. (1984). A general structural equation model with dichotomous, ordered categorical, and continuous latent variable indicators. *Psychometrika, 49,* 115-132.

Muthén, B., du Toit, S.H.C., & Spisic, D. (1997). *Robust inference using weighted least squares and quadratic estimating equations in latent variable modeling with categorical and continuous outcomes.* Unpublished technical report.

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide* (7th Ed.). Los Angeles, CA: Author.

Nagelkerke, N.J.D. (1991). A note on a general definition of the coefficient of determination. *Biometrika, 78*(3), 691-692.

Nunnally, J. C., & Bernstein, I. (1994). *Psychometric theory.* New York: McGraw-Hill.

One Health Initiative. (n.d.) *One Health Initiative will unite human and veterinary medicine.* Retrieved from: http://onehealthinitiative.com/

Pantin, H., Prado, G., Lopez, B., Huang, J., Tapia, M. I., Schwartz, S. J., Sabillon, E., Brown, C., & Branchini, J. (2009). A randomized controlled trial of Familias Unidas for Hispanic adolescents with behavior problems. *Psychosomatic Medicine, 71,* 987–995.

Patterson, G. R., DeBaryshe, B. D., & Ramsey, E. (1989). A developmental perspective on antisocial behavior. *American Psychologist, 44*(3), 29-35.

Pierce, S. J. (2009). *Practical data management: Principles and strategies for handling research data* [invited presentation at a Michigan State University, College of Nursing Research Seminar]. East Lansing: Michigan State University.

Randour, M. L. (2004). *Including animal cruelty as a factor in assessing risk and designing interventions. Proceedings of Persistently Safe Schools: The National Conference of the Hamilton Fish Institute on School and Community Violence*, Washington, DC.

Randour, M. L., & Hardiman, T. (2007).Creating synergy for gang prevention: Taking a look at animal fighting and gangs. *Proceedings of Persistently Safe Schools: The 2007 National Conference on Safe Schools.*

Rattray, J., & Jones, M. C. (2007). Essential elements of questionnaire design and development. *Journal of Clinical Nursing, 16*(2), 234-243. doi: 10.1111/j.1365-2702.2006.01573.x

Salomon, R. F., Jr. (2008). *No curs allowed: Exploring the subculture of dogmen* (master's thesis). Retrieved from: http://libres.uncg.edu/ir/uncg/f/Solomon_uncg_0154M_10035.pdf.

Serpell, J. A. (2008). *On measuring progress in animal welfare* (report for the World Society for the Protection of Animals). Retrieved from: http://www.fao.org/ag/againfo/themes/animal-welfare/aw-awhome/detail/zh/item/54381/icode/

Shore, E. R., Douglas, D. K., & Riley, M. L. (2005). What's in it for the companion animal? Pet attachment and college students' behaviors toward pets. *Journal of Applied Animal Welfare Science, 8*(1), 1-11. Retrieved from: http://www.tandfonline.com/doi/abs/10.1207/s15327604jaws0801_1#.U5dqlyhWrTo

Siebert, C. (2010, June 7). The animal-cruelty syndrome. *New York Times Magazine.* Retrieved from http://www.nytimes.com/2010/06/13/magazine/13dogfighting-t.html?pagewanted = 1&hp

Smith, P. C., Budzeika, K. A., Edwards, N. A., Johnson, S. M., & Bearse, L. N. (1986). Guidelines for clean data: Detection of common mistakes. *Journal of Applied Psychology, 71*(3), 457-460. doi: 10.1037/0021-9010.71.3.457

Sykes, G., & Matza, D. (1957). Techniques of neutralization: A theory of delinquency. *American Sociological Review, 22*(6), 664-670.

Tcherni, M. (2011, December). Structural determinants of homicide: The big three. *Journal of Quantitative Criminology, 27*(4), 475.

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38,* 1-10.

Twining, H., Arluke, A., & Patronek, G. (2000). Managing the stigma of outlaw breeds: A case study of pit bull owners. Society & Animals, 8(1), 25-52.

University of Washington, School of Public Health. (2013). *Human-animal medicine project: One welfare?* (Web log post). Retrieved from: http://deohs.washington.edu/hamp/blog/2013/31/one-welfare

Urbina, I. (2010, March 17). Animal abuse as clue to additional cruelties. New York Times. Retrieved from: http://www.nytimes.com/2010/03/18/us/18animal.html

Whitehead, T. (2011). FBI profiler sheds light on animal abuse. *Brownsville Herald.* Retrieved from: http://www.brownsvilleherald.com/articles/animal-134209-difficult-profile.