CRITERIA INFLUENCING POTENTIAL CANINE ADOPTERS' DECISION DURING A SHELTER OR ADOPTION EVENT VISIT

by

Lawrence Edward Minnis

A Thesis
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of
Master of Arts
Psychology

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Fairfax, VA

Criteria Influencing Potential Canine Adopters' Decision During a Shelter or Adoption Event Visit

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts at George Mason University

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DEDICATION

This is dedicated to my wife, Brandi, who has been amazingly supportive and involved throughout my research. Also, to our two children, Isaiah and Corey. To my mom, Lois, for all the sacrifices that were made to provide opportunities that most children from Southeast D.C. would not have. And, finally to my dogs Nina, Saffire, and especially, Eboni, who inspired the present study and has been a part of the "Forever Home" family for 11-plus years after 3-month stay at the shelter.

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LIST OF ABBREVIATIONS

Length of Stay ..... LOS
Prince William County Animal Shelter ..... PWCAS
Fairfax County Animal Shelter ..... FCAS
Montgomery County Animal Shelter ..... MCAS
Loudoun County Animal Shelter ..... LCAS
Humane Rescue Alliance ..... HRA
Odds Ratio ..... OR

ABSTRACT

CRITERIA INFLUENCING POTENTIAL CANINE ADOPTERS' DECISION DURING A SHELTER OR ADOPTION EVENT VISIT

Lawrence Edward Minnis Choose an item.

George Mason University, 2020

Thesis Director: Dr. Doris Bitler Davis

Increasing focus within animal welfare research has been on pets, animal shelter adoptions, and relinquishment of animals to humane services. Most cross-sectional research has focused on perceptions of available animals, the likelihood of adoption, and unique reasoning for decisions to adopt or not adopt. The present study addressed gaps in literature by examining top reported criteria influencing potential adopters' decision during a visit to a canine adoption site in the greater Metropolitan D.C. region. Over 500 shelter and adoption event site visitors within DC, Maryland, and Virginia were surveyed for information related to their search, adoption intent during visitation, and top adoption decision criteria. Results revealed notable homogeneity of decision factors across several different sample populations. Study findings also showed top factors under consideration that were unexpected, given current cross-sectional animal adoption literature on reasons for decisions to adopt or not adopt.

INTRODUCTION

Two significant foci within animal welfare research have been on companion animal shelter adoptions and relinquishment of animals to humane services. Most animal welfare research has focused on improving the perceptions of potential adopters and augmenting the observed behaviors of adoptable animals to increase the likelihood of adoption. However, there are significant gaps related to the search and decision-making processes of potential adopters, along with the factors that lead to shelter or rescue event visitation, which is a key component of the adoption process. The current study addressed the gaps related to the following research question: What are the top decision variables considered by potential canine adopters during the companion pet search and visit to an animal shelter or adoption event site? This study examined the question through survey responses of visitors at various animal shelter and rescue adoption event sites in the metropolitan DC region. The survey targeted the variable factors that potential canine adopters reportedly considered within their active search and decision-making process, along with information on the search duration & status, visit intent, and family demographics. Such an approach is novel to the animal welfare and pet adoption literature and provides insight regarding circumstances leading to the point of decision to adopt an available companion animal.

The Pet Search and Adoption Process

General areas of companion animal adoption have been explored internationally, and researchers have aimed to contribute to adoption organizations that have limited resources and a mission that any pet owner or animal lover would wholeheartedly endorse. These organizations rely on the contributions of local volunteers and multifaceted staff members to take care of numerous animals daily; however, most organizations are bereft of innovation or research support that would help improve the "Forever Home" placement of adoptable animals. Euthanasia is the harsh outcome for too many animals that enter into a shelter and, because of that, animal welfare researchers have strived to find empirical-based methods that animal shelters and rescues could use to significantly increase adoption outcomes and limit euthanasia (Lepper et al., 2002). Animal welfare researchers, along with organization staff members and executives, have expressed the need for researchers to develop further understanding of shelter visitors and adopters to help adoption organizations better assess potential adopters and optimize successful adoptions (Marston & Bennett, 2003; Protopopova & Gunter, 2017).

Research has provided insight into differences between visitors that decide to adopt and those that decide not to adopt (Protopopova & Gunter, 2017), but there has been limited exploration of the relations among decision-making considerations and adoption site visitation (Southland et al., 2019). These two constructs are neglected areas of pet adoption research that exist within the multi-faceted process of acquiring a companion animal from a shelter or rescue. Only five studies (Protopopova et al., 2016; Protopopova & Wynne, 2014; Southland et al., 2019; Weiss et al., 2012; Wells &

Hepper, 2001) have empirically targeted adoption site visitations, and none of the studies included visitors to public adoption events. Three of the studies primarily used behavioral observations during the visitations (Protopopova et al., 2016; Protopopova & Wynne, 2014; Wells & Hepper, 2001). Only one of the three studies (Protopopova & Wynne, 2014) included a questionnaire for visitors regarding demographics and decision rationale for positive and negative adoption outcomes. However, the questionnaire only served a descriptive purpose, addressing demographic items and the adoption intent during the visit, and most responses were not included in the statistical analysis (p. 111).

The two remaining studies surveyed animal shelter visitors and collected responses on important decision-making variables (Southland et al., 2019; Weiss et al., 2012), but only Southland et al. (2019) captured information on the intent of the visit. None of these studies captured information on the length of the search or the variable considerations that occurred during search process prior to the visitation. Across nearly 20-plus years of research, only one study (Vink et al., 2019) has captured decision-variable data during the search phase prior to adoption, but the study was conducted online and did not include shelter or adoption event visitor collection. The present study targeted search information, visitor intentions, and visitor decision variables at shelters and public adoption event sites, which were included due to the increasing use of temporary, public adoption activities by both canine rescue and shelter/animal welfare organizations.

Onsite visitation is an important step within the animal adoption process from a shelter or rescue organization perspective and the point where final pet adoption

decisions are made. The existing literature severely lacks theoretical and operational models, and there is only a modest level of understanding regarding the whole companion pet search and decision-making processes. The manner that individuals conceptualize, analyze, and reach final decisions remains still largely unclear (Vink et al., 2019; Weiss et al., 2012) within the subfield.

The present exploratory study examined the scope of consideration that potential adopters report during the companion animal search phase, regarding decision factors that have been previously identified in pet adoption research. There is a preliminary assumption that the factors that prior studies have found to be associated with adoption decisions are also accounted for during the search and shelter visit phases that occur prior to the final adoption decision. The author assumes that decision variables are individually weighted and vary both between- and within-subjects over time. Given this assumption, eleven behavioral and morphological variables were included as decision-making considerations, based on field discussions with adoption staff, theoretical arguments sand empirical findings within prior research (Table 1).

The purpose of the present research is two-fold: 1) to address literature gaps related to variables included in the decision to visit an animal adoption site and 2) to provide initial test and validation for an operational theory on the pet adoption process. These data will inform the development of the first comprehensive operational model and theory that encompasses the search, visitation, interaction, and decision phases, and seeks

Table 1. ***Decision Variables Included within Surveys***

Variable	Description	*Support for Inclusion*
Morphological		
Age	Known or perceived life stage of the animal	Normando et al. (2006); Brown et al. (2013); Siettou et al. (2014)
Medical Condition	Pre-existing physiological health of the animal	Lepper et al. (2002); Bir et al. (2017); Southland et al. (2019)
Breed	Consideration of purebred or mixed-breed bloodline lineage	Gunter et al. (2016); Kay et al. (2018)
Appearance	Consideration for perceived attractiveness, cleanliness, and breed-specific body conformation	Lepper et al. (2002); Archer & Monton (2011); Weiss et al. (2012); Thorn et al. (2015)
Size	Consideration of the animal's body conformation, weight, and housing space requirements	Siettou et al. (2014); Garrison & Weiss (2014); Diverio et al. (2016); Bir et al. (2017)
Behavioral		
Background	Consideration of animal's history with previous owner(s), shelters, and other animals, including prior adoptions, breeding experience, or animal abuse victimization	Lepper et al. (2002); Garrison & Weiss (2014); Kay et al. (2018)
Training Level	Consideration of learning or training that the animal has demonstrated prior to potential adoption, including potty training, crate training, and obedience command training	Luescher & Medlock (2008)
Lifestyle Fit	Consideration of compatability with potential adopter(s) regarding expected level of energy/activity, independence, and caretaking needs	Marston & Bennett (2003)
Behavior	Consideration of animal's personality, temperament, friendliness, playfulness, aggression, tolerance, and adaptability	Wells & Hepper (1992); Protopopova & Wynne (2014); Protopopova & Gunter (2017); Southland et al. (2019)
Miscellaneaous		
Costs	Consideration of the expenses, including adoption costs, local registration fees, and caretaking expenses	Kay et al. (2018); Kwan & Bain (2013)
Bond or Connection	Consideration of liking behavior or early bond formation that potential adopter(s) experience during online search, site visits, or interaction with animal	Marston & Bennett (2003); Mondelli et al. (2004); Kurdek (2009)

Note. Variable descriptions were not provided to participants during site surveys, so possible variance in subject interpretation is present within the study. The study's intent was to examine the top variables that visitors reportedly considered for their respective decisions, so between-subject variance in variable definition considered within the scope of study. Costs variable was included primarily due to frequent consideration within canine relinquishment research; variable seldomly included within animal shelter adoption research.

to collect and analyze variance related to visitation intent, search status, and decision-making phases of the pet adoption process (Fig. 1). The prior assumption is based on the theoretical model, which proposes that animal-based and adopter-based variables (Fig. 2) affect the formation of interest, liking, or emotional arousal that may precipitate the decision to visit the shelter and interact with available, adoptable canines. The developing

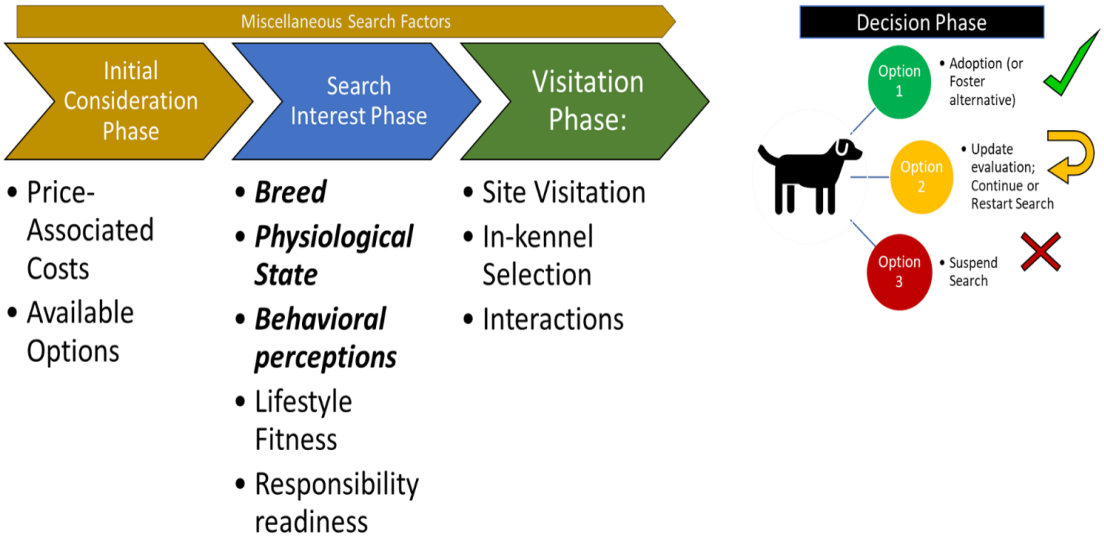

Figure 1. Phases of the canine adoption search and decision-making process.
This image highlights the different phases that may occur across the complete adoption search and decision-making processes, as proposed by the author. Adopter-related and animal-related variables may be primarily considered during early phases of the process and occur prior to the adoption site visitation. Separate final decisions may be reached for each visit and differ when multiple canines are selected for interactions.

theory proposes an additional assumption that attachment bonds begin to form during the initial phases of the search (Fig. 2). The theory further proposes that at some subjective threshold of interest, liking, or arousal, an individual will expend the resources (i.e. time, energy, money, and attention) to conduct a visit to an adoption site. The individual may or may not have an immediate intent to adopt during that particular visit; however, the visit serves as a bridge from the early search phases into the decision phase. The author intends to incorporate the findings and insights from the present study into the theoretical model to further refine the model design, theory, and assumptions.

This study provides initial testing and validation of the first assumption and can provide insight into the dynamics of decision-making, early bond formation, and

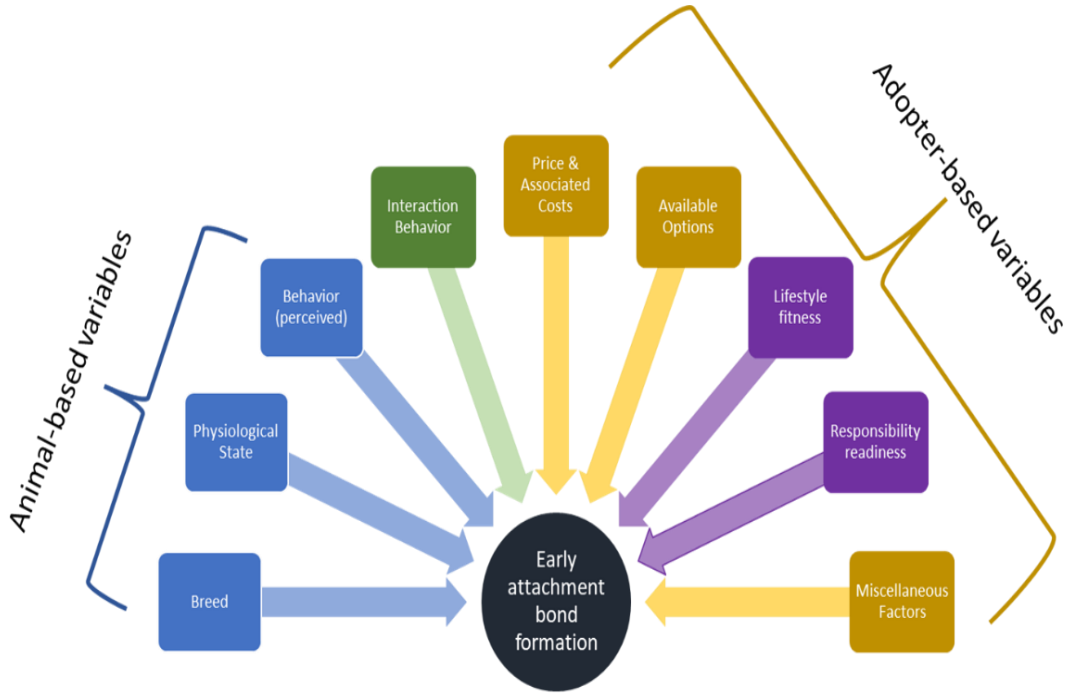

Figure 2. Proposed model for canine adoption decision variables.
This image denotes the operational model under development by the author. Animal-based and adopter-based variables may be considered by potential adopters and influence final adoption decisions.

consumer search behavior related to the pet adoption process. The study can also provide insight into potential heterogeneity in the relationship between decision variables and sample populations. Current research literature has seldomly included multiple adoption sites for data collection, with Weiss et al. (2012, p. 146) as the lone study to collect visitor data at multiple shelters in the U.S. This study distributed questionnaire surveys to visitors at several canine shelter or adoption event sites within the greater metropolitan Washington, D.C. region (35- to 40-mile radius from downtown Washington, D.C.).

Operational Theory and Model Development

The author's theoretical model of adoption decision-making is centered on pet attachment theory (Beck & Madresh, 2008; Kurdek, 2009a, 2009b) and the development of pet attachment measures ((Archer & Ireland, 2011; Dwyer et al., 2006). Pet attachment theory has been established and supported (Beck & Madresh, 2008; Kurdek, 2009a, 2009b); however, literature has not fully delved into the origination of such attachment. The theoretical argument proposes that initial bonds (unilateral form of attachment) begin to form as early as the initial phase of the search for pets, given the attraction and response to certain features (Archer & Monton, 2011; Pyzer et al., 2017; Thorn et al., 2015) and the effect of appearance on pet adoptions, which is discussed later.

Sufficient bond formation would lead potential adopters to visit specific canines, and such selectivity during visitation has been shown in previous literature (Protopopova et al., 2014; Wells & Hepper, 2001). The interaction during the visit, which has additionally been regarded as a critical component of adoption decision-making, further enhances or attenuates the bond and can yield decisions to adopt, as discussed in the shelter interaction literature (Protopopova et al., 2016; Protopopova & Wynne, 2014). If such a bond is present, it may be measurable and could provide a foundational measure that would facilitate longitudinal study of pet attachment from early search phases into ownership, given preexisting pet attachment measures (Archer & Ireland, 2011; Dwyer et al., 2006). Secondary analysis of decision variable data within this study may provide initial insight into early bond formation and variance between certain site visitor types.

In addition to the stated purposes, the present study provides insight into the effects of prior pet guardianship experience on the top decision-making factors across all site visitors, which has not been empirically investigated. In the context of this research, guardianship was defined, as written in the study's Informed Consent Statement, as "… previous or existing responsibility beyond daily caretaking (i.e. feeding, walking, playing, etc.). This would include responsibility for medical service decisions, expense payments, housing decisions, incident liability, and life/death decisions" (Supplement A). The definition informally aligns with the legal definition of guardianship (Fruh & Wirchnianski, 2017, p. 59). It is intended to convey the full scope of responsibility that is involved with companion animal care and to avoid confusion with the colloquial use of the term "owner". The delineation is critical due to the robust interpretation of the term "pet owner", which can be assigned to children raised in the household with pets, although they likely did not bear the legal burdens and scope of responsibilities for the animals. The definition was included on both the Informed Consent form and on the relevant survey item, and subjects were instructed to respond "No" if the definition criteria was not met.

Considerations and Limitations

The inclusion of the guardianship item provides a grouping variable that may provide insight into heterogeneity that may exit across sample populations. Additional grouping variable items, such as adoption intent and pet search parameters, and demographic items, such as household structure and preexisting household pets, facilitate the development of a far more saturated model than currently available within the

research literature, which will be discussed later. The present study offers several novel considerations to the research field, such as the inclusion of public-area pet adoption events, the use of multiple data collection sites, the inclusion of pet search-related items, the inclusion of lifestyle, cost, and attachment-related decision variables, and the contribution to operational theory and model development. However, there are limitations that must be acknowledged.

Survey completion time was a primary planning consideration, due to the operational dynamics of animal shelters, limitations of available space, and limits of participants' attentional resources. Given the participation and retention priorities, the 19-item survey did not include Likert-scale measures for decision variable. As a preliminary and exploratory study, the differences in decision variable selection rates, or likelihood of selection, were targeted to capture which variables were prioritized across various subgroups. The author determined that Likert-type and ordinal-scale measurement items were not necessary, as item scores, rankings, and follow-up surveys were not within the scope of analysis (Bishop & Herron, 2015; Davies, 2008); however, the decision restricted the level of insight that can be gained from decision-variable items and opened an avenue for potential error.

Artifact and order bias may have also impacted the survey findings for hardcopy versions of the survey. Participants were able to select and complete hardcopy or digital versions of the survey, which had identical formats. The digital version supported randomization of the presentation of decision variable items, but hardcopy surveys had static presentation order. To combat order bias, the decision variable order was modified

after approximately 200 hardcopy surveys were completed. Still, the lack of randomization raised the potential for order bias effects within the study.

Furthermore, survey participants were not isolated during the survey completion and were able to freely consult with family members and significant others that accompanied them. This restricted the ability to determine individual variance within the study and infer individual variance within the broader population. This was intentionally allowed within the study design because visitors typically visit shelter sites in dyads or groups, and final considerations or decisions are not made in isolation. An adoption decision or candidate selection can made based on compromise between group members on the best options for the groups' interest. With consideration for the ecological validity of adoption decisions, decision sets (individual, dyad, or group) were accommodated, and visitors were given the option to complete surveys separately or collectively, if familial or romantic relationships were disclosed during researchers' participation request. Visitors disclosing non-romantic friendship, cohabitation, or work relationships were exceptions, and study researchers requested everyone complete a separate survey in such contexts. No survey items served to differentiate the type of participation (individual or decision set) or group relationship (family, couple, roommates, etc.); however, the demographic household information within the survey allows for some manner of inference.

Despite these limitations and the efforts to attenuate their potential effects, this exploratory study was capable of the necessary collection and data analysis to address the relevant research questions and fulfill calls for methodological improvements (Southland et al., 2019, p. 11). The design can be improved upon for future study, which will be

discussed later, but the research provided novel insight and addressed significant knowledge gaps not yet substantively addressed within current research literature (Marston & Bennett, 2003; Protopopova & Gunter, 2017).

BACKGROUND

Current literature is heavily composed of cross-sectional studies using retrospective or correlational data (Protopopova & Gunter, 2017) that examine the effects of factors such as canine physiological traits (Bir et al., 2017; Brown et al., 2013; Diverio et al., 2016; Normando et al., 2006; Posage et al., 1998; Siettou et al., 2014; Weiss et al., 2012), behavioral perception (Isgate & Couchman, 2018; Lampe & Witte, 2015; Luescher & Medlock, 2009; Protopopova et al., 2012, 2014; Pyzer et al., 2017; Schipper et al., 2008; Wells & Hepper, 2000b), and post-adoption or relinquishment issues (Hill & Murphy, 2016; Marston & Bennett, 2003; Weiss et al., 2014; Wells & Hepper, 2000a). Meanwhile, little has been provided to define the animal adoption decision-making process (Protopopova & Gunter, 2017; Vink et al., 2019; Weiss et al., 2012) or the decision points related to labor-intensive facets like site visitation or residence preparation, both of which require focused effort and planning by potential adopters (Southland et al., 2019). The main body of research has investigated the predictive value of variables, using data collected from shelter or rescue databases and self-report measures to identify the behavioral and morphological traits of canines that may significantly relate to statistical factors of adoption (Protopopova & Gunter, 2017).

Morphological Variables within Adoption Decision-making

For decades, researchers have primarily relied upon canine characteristics to generate inferences on adoption decisions. Lepper et al. (2002, p. 30) analyzed retrospective data to assess potential effects of characteristics on the likelihood of adoption in an effort to predict euthanasia rates for canine subpopulations and promote different strategies for low-preference populations that could increase adoption rates. The researchers included size, breed, age, coat color, and physical health/injury characteristics, among other factors, to generate odds ratios between adoption rates and euthanasia rates. The findings suggested that age, breed, sex, injury status, and coat color were all significant variables related to the likelihood of adoption (pp. 36–39). While insightful, this research did not include any behavioral or adopter-related characteristics to draw inference on adopters beyond suggested adoption preferences.

Weiss et al. (2012) surveyed recent canine adopters to ask about the morphological or behavioral reasons behind their selection and adoption decision. Appearance was cited most often as the single, most important reason for the adoption of their new canine (p. 156). Age was another significant response. Sex, health, and energy level were further denoted as important factors in the decision to adopt the new pet. As with the Lepper et al. (2002) study, Weiss and colleagues (2012) did not include many behavior-related or adopter-related variables (Fig. 2) to draw generalizable inferences about adopters or the search and decision processes. Similar findings were also demonstrated in other studies.

Age was noted as the most or one of the most important predictors for the length of stay (LOS) at a shelter (Brown et al., 2013; Normando et al., 2006). Physical and genetic health, behavior, and appearance were cited as important characteristics for adoption, in an assessment of preference variance across respondent gender (Bir et al., 2017). Siettou and colleagues (2014) used a consumer demand model to analyze retrospective adoption data and found that age, size, pedigree, coat length, training, and behavior had significant effects on consumer choice when examining data records of 2,037 canine adoptions in the U.K. over a 3 and a half-month period. All the studies reported findings similar to those within prior research; however, the limitations on inferences about adopters or the search and decision processes were still present.

Regarding the current study, these findings supported the inclusion of the selected morphological factors within the survey as decision variables. The aforementioned findings and a recent review by Protopopova and Gunter (2017) informed the development of the following hypotheses:

H1: Appearance will have the highest odds ratio (OR)

H2: Morphological variables will make up the majority of the top probabilities and OR.

H3a: The morphological variables will have higher selection odds for visitors that intend to adopt during the visit compared to those that do not.

H3b: The morphological variables will have higher selection odds for visitors targeting specific dogs compared to visitors openly searching with no specific target.

Selection odds for these hypotheses references the odds of each decision variable being chosen by participants compared to the odds of each decision variable not being chosen, respectively. Additionally, the majority referenced in H2 will be identified based on decision variable order by thirds. Therefore, the majority of the top third of decision variable ORs will be classified as a morphological variable.

Behavioral Variables within Adoption Decision-Making

Though age, appearance, health, and size are consistently reported as top factors for adoption decisions, behavior is a key component within the selection and evaluation processes involved with such decisions. Extensive research effort has been invested recently to investigate behavioral variables related to adoption (Isgate & Couchman, 2018; Luescher & Medlock, 2009; Protopopova et al., 2012; Wells & Hepper, 2000b), LOS (Lampe & Witte, 2015; Protopopova et al., 2012, 2014), and relinquishment of canines (Diesel et al., 2010; Hill & Murphy, 2016; Kwan & Bain, 2013; Mondelli et al., 2004; Patronek et al., 1996; Shore, 2005; Sinski et al., 2016; Weiss et al., 2014). So, behavior evaluations and perception development are constantly included throughout the canine adoption search & decision-making process, and they continue to occur and have an effect on early ownership experiences (Hill & Murphy, 2016; Shore, 2005; Wells et al., 2012; Wells & Hepper, 2000a).

Wells and Hepper's (1992) seminal work provided a significant basis for behavior enrichment shelter programs and for studies examining the effects on adoption. Their study showed significant behavioral effects on adoption preferences, in which dogs at the front of kennels, that were quiet and attentive were preferred above the opposite of each

behavioral category (i.e. in the rear of the kennel, barking, or inattentive). In other studies, the investigative pair explored further by using multiple experimental conditions (chewy toy, bed at front of kennel, increased social contact) to examine the effects of environmental enrichment to train shelter canines to exhibit the preferred behaviors (Wells & Hepper, 2000b). They identified significant differences in the observation rate of preferred kennel behaviors by adoptable canines, with subjects in the social stimulation condition and bed condition spending more time at the front of the kennel, compared to subjects in the chewy toy or control conditions. The researchers inferred that increases in preferred behaviors improved the likelihood of adoption. Thus, early shelter adoption studies described the effects of canine behavior on the likelihood of adoption, but these studies did not provide insight into the search considerations and additional decision variables that may also be considered by potential adopters.

Luescher and Medlock (2009) explored environmental modification and obedience training effects on canine adoptions, using control and experimental conditions (training, aesthetic modifications in or outside the kennel), along with corresponding adoption data for the canine subjects. They concluded that trained dogs were 1.4 times more likely to be adopted than untrained dogs (in both control and environmental modification conditions). Siettou and colleagues (2014) showed comparable, statistically significant findings for both behavior-related and training variables. However, not all training was found to yield such effects. Protopopova and her colleagues (2012) explored the effects of gaze training (looking directly at a person) and found no significant difference between the adoption rates for gaze training and control groups. These studies

provided additional insight to the extent that kennel behavior, training, and attentiveness may affect the likelihood of canine adoptions from a shelter. For these reasons, behavior and training variables were included within the survey list of considerations.

In addition to examining morphological variables, Lepper et al. (2002) included background information related to the reason for impoundment to determine the effects of background or status on adoptions rates. Results suggested that dogs listed with behavioral problems by prior owners and dogs with reported age-related illness had significantly lower odds of adoption, compared to dogs listed as "stray". Additionally, dogs that were removed from their owners, relinquished due to expenses, or relinquished due to moving all had higher odds of adoption (OR = 1.56, 1.86, 1.49, respectively), compared to "strays", although these findings were not statistically significant. The reported findings provided suitable rationale to include the background variable within the current survey. Additionally, the expense-related background item provided modest support for the inclusion of the costs variable.

Some decision variables included in the present study have seldom been included in adoption-related research but have been included in research on relinquishment of canines to the shelter. Costs are more frequently considered within relinquishment literature, when researchers examine reasons for the relinquishment reported by prior guardians (Shore, 2005; Weiss et al., 2014). This further supported the inclusion of the costs variable. Additionally, lifestyle fit and care requirements are frequently included in relinquishment research, in regard to potential dissatisfaction or issues of commitment (Gunter et al., 2017; Kwan & Bain, 2013; Patronek et al., 1996; Shore, 2005; Weiss et al.,

2014). However, the variables are typically not included in the retrospective studies that dominate adoption research since they are not objective characteristics of a canine that are typically collected with historical adoption data.

Because lifestyle fit was frequently investigated and/or reported within the relinquishment literature, the variable was included as a decision variable to examine if the variable is also considered during the adoption search and decision processes, which has not been done to date. Additionally, ownership attachment has been discussed in relation to reported reasons for relinquishment (Kwan & Bain, 2013; Marston & Bennett, 2003) and has, likewise, seldom been considered or included within adoption-related research. So, inclusion of the bond/connection variable was considered and further supported by write-in responses on several survey submissions during initial collection trials.

The aforementioned findings on behavioral variables informed the development of the following hypotheses:

H4: Behavioral categories will have higher selection odds for participants reporting prior guardianship experience than those reporting no prior experience.

H5: Bond/Connection odds will be significantly different for visitors targeting specific adoptable dogs than those not targeting specific dogs.

Adoption Decision-Making Modeling in Current Literature

There are potentially numerous variables under consideration by potential adopters that affect decision outcomes, and, anecdotally, animal adoption organizations and employees have spent years trying to qualitatively identify any variables that may

consistently relate to a visitor's decision to adopt. However, many potential variables have not been considered or explored by researchers. Literature findings have addressed some knowledge gaps regarding the effects of innate canine characteristics; however, shelters cannot control the physiological states of canines and often care for animals that have undergone trauma, such as abuse, neglect, or accidents, and that need professional care and attention. Therefore, the utility of the morphological findings is limited. Such findings offer no remedy or intervention the applied animal welfare community can use to definitively increase adoption rates of all canines. The research is modestly beneficial to individuals involved in breed rescues that specialize in breed-specific foster/adoption programs and have more animal intake restrictions, but, again, the findings do not offer insight into finding adoptive homes for difficult or needy cases.

Behavior has been presented as a primary target of interventions intended to increase adoption rates and likelihood in shelters (Bright & Hadden, 2017; Protopopova et al., 2012, 2014, 2016; Protopopova & Wynne, 2014; Schipper et al., 2008; Wells & Hepper, 1992), but research findings suggest that it is not the principal factor for adoption decision (Posage et al., 1998; Protopopova & Gunter, 2017; Siettou et al., 2014; Southland et al., 2019; Weiss et al., 2012). While findings generally supported theories on adopter preferences for behavioral or morphological characteristics of the animal (Southland et al., 2019), little depth or explanation has been provided for variance between adopters and disappointed non-adopters who intended to adopt during the shelter visit. Search parameters and some decision variables have not been considered, such as personal/family lifestyle, home condition or preparation, adoption costs, or other

miscellaneous considerations (e.g. similarities to a previous pet). This underlies the complexities and issues with theory and operational model development within adoption research. Since the Wells and Hepper (1992) article publication, only two studies have proposed models related to adoption decision-making (Siettou et al., 2014; Vink et al., 2019).

Siettou et al. (2014) proposed a general consumer demand model that considers the probability of a dog's selection as a function of 8 variables (age, coat length and color, purebred status, size, friendliness, behavioral issues, and need for training). The model does not include specific consumer behaviors nor the effects of shelter environment, adopter-animal interaction, or option availability, which can all impact the final adoption decision (Protopopova et al., 2016; Protopopova & Wynne, 2014; Southland et al., 2019; Weiss et al., 2012). The researchers selected retrospective data that was relevant to innate or developed canine characteristics (Siettou et al., 2014), based on an old, underlying consumer demand theory (Hendler, 1975; Lancaster, 1966) instead of modern approaches to consumer demand and decision-making (Groeppel-Klein, 2005; Hsee et al., 2009; Kirsch, 2019; Ledgerwood et al., 2018). Thus, the model did not include many potentially influential variables (Siettou et al., 2014) such as adoption costs, estimated caretaking costs, or lifestyle fitness, which were included within the current study.

Vink et al. (2019) recently proposed a theoretical decision-making model based on social cognitive constructs and conducted longitudinal analysis on over 550 subjects' construct ratings and adoption decisions over the course of a year. The model includes

psychological factors related to social cognitive constructs, such as perception of advantages/disadvantages, social normalcy, self-efficacy, and expected commitment. However, the exploratory analysis did not include consumer behaviors, provide insight into the operational assessments and reassessments that may occur over time, or include the influence of behavioral or morphological canine characteristics on the decision process. So, neither model provides a saturated model that operationally defines the complex search or decision-making process for animal shelter adoptions.

Across multiple decades, the research field has made marginal progress into the theory development and understanding needed to model the dynamics of the companion pet search and decision-making processes. Several calls have been made for deeper examination and understanding of adopter characteristics (Marston & Bennett, 2003; Protopopova & Gunter, 2017; Wells & Hepper, 2001). Recently, additional calls for examination of the adoption decision-making process have been made (Southland et al., 2019; Vink et al., 2019). To develop an advanced and comprehensive model, researchers must concurrently define the parameters of the adoption process and characterize the principle parties involved in the process.

To date, the effects of canine charateristics on the adoption process have been well-established within research (Protopopova & Gunter, 2017). The visitation phase and decision phase of the process has also been thoroughly explored (Protopopova et al., 2016; Protopopova & Wynne, 2014; Wells & Hepper, 2001). The present study aims to: 1) investigate and support development of the early phases of the process, which research literature lacked, 2) identify the effects of site location, and 3) build further insight into

the human parties involved in the process. These exploratory efforts directed the development of the following hypotheses:

H6: The selection odds for the behavior variable will be higher for those with children (under 13 years old) in the household than those without children in the household.

H7: Selection odds for decision variables will be significantly different between shelter visitors and public adoption event visitors.

H8: Selection odds for decision variables will be significantly different between demographic age groups.

METHODS

Subjects

All shelter visitors that met the age requirements for adoption, 18 years old and above, and visited the available dog kennel area at the respective shelters were eligible to participate. Dyads or groups of visitors with romantic cohabitation or familial connection were eligible for consideration as a decision set, under the assumption that the dyad or group may jointly reach an adoption decision. Decision set visitors were given the option to complete surveys individually, for each member that met criteria, or as a set. Groups classified as non-cohabitating romantic partners, roommates, neighbors, or workplace colleagues were asked to complete surveys individually.

Site Locations

Eight distinct sites associated with six local humane adoption organizations were included as data collection sites (Table 2). Each site supported multiple data collection visits with one exception, the Museum-site adoption event.

Table 2. *Sites for Survey Data Collection*

Site	City/State	Capacity[c]	Local Development	Collection Site Visits	Time Onsite (hours)	Surveys Collected
Shelter				**28**	**78.5**	**453**
FCAS	Fairfax, VA	24-30	Suburban	8	20.5	147
HRA[a]	Washington, DC	40+	Urban	5	17.5	118
LCAS	Leesburg, VA	30-36	Exurban[d]	9	24.5	96
MCAS	Gaithersburg, MD	40+	Suburban	3	9	73
PWCAS	Manassas, VA	20-24	Suburban/Exurban	3	7	19
Adoption Event				**3**	**10**	**64**
Baseball Stadium	Bowie, MD	1-2	Suburban	2	8	26
Museum[b]	Washington, DC	8-10	Urban	1	2	38
Total				**31**	**88.5**	**517**

Note. a) HRA has two separate adoption shelter sites in Washington, DC. b) Event conducted by HRA on public walkway in front of Museum site. c) Capacity is based on estimated number of dog kennels available to public traffic without restrictions. d) Exurban refers to developed areas between suburban and rural development, as defined by Newburn and Berck (2011).

Survey Design

The survey consisted of 19 items, including six demographic items, ten search-related items, and three decision variable items. Participant were given the option to complete a paper hardcopy or an online survey using Qualtrics software (2019). The online version randomized the presentation of decision variables and supported branching logic so that relevant questions differentiated based on responses to target visitation and online search items. Seven alterations were made to the survey over the period of the study. Six minor alterations, completed in June 2019, were aesthetic changes to the font or format of the survey (see Appendix A). One minor alteration, completed in September 2019, was made to the order of decision variables for hardcopy surveys to mitigate ordinal effects and order bias (see Appendix B). This alteration was made after 13 data collection visits (42% of total visits) had been conducted.

Procedures

Collection Station

Adoption Shelter Sites. A research assistant accompanied the author for 10.5 hours of data collection at shelter sites. During each collection visit, the researcher(s) established a station in a lobby or concourse of the shelter, with a minimal footprint to allow the free flow of visitor traffic through the shelter. The station was set within the line-of-sight to the canine kennel entryway. Two to four sets of Informed Consent sheets, surveys, and writing utensils were prepared on clipboards, with the Informed Consent on top and visible. The researcher(s) wore an appropriate identification tag (see Appendix D) around the neck or placed on the chest area for visual distinction from shelter or rescue employees and volunteers. The researcher(s) stood for the duration of the onsite data collection and remained in the vicinity of the station until prospective participants were identified and approached.

Adoption Event Site. A research assistant accompanied the author for 10 hours of data collection at two public adoption event sites. Procedures similar to those described above were followed to establish stations at the public adoption sites. A central collection site was established for supply and survey storage in the vicinity of the canine display area. Stadium collection efforts began prior to the beginning of the game, as fans passed through ticket stations and walked the concourse to the stadium seating. The researchers stood on opposite ends of the humane rescue's display table, which was placed on the main concourse approximately 15 yards away from the stadium's concession stands. Canines were showcased in front of the display area, and the

researchers kept a line-of-sight for visitors that approached and interacted with the adoptable canines. The researchers stood in their respective areas until visitors approached the area and had distinguishable vocal and/or physical interaction with the canines. In cases of uncertainty, the researchers asked visitors to confirm their intentional interaction with the canine. The collection station was occupied until the conclusion of the adoption rescue event, which ended after the first two innings of the game.

Museum collection efforts were conducted along public sidewalks in front of the hosting museum. The researchers stood on opposite ends of the event site to and visually identified bystanders and event visitors who interacted vocally or physically interacted with the adoptable canines. In cases of uncertainty, the researchers again asked visitors to confirm their intentional interaction.

Introduction and Survey Distribution

When visitors were identified leaving the designated kennel or adoption event areas, the researcher approached the visitors and introduced himself, using a scripted introduction (see Appendix E). Once participants agreed, the researcher presented the paper or online survey options and allowed participants to choose their format. In cases where hardcopy surveys were selected, the researcher would present the Informed Consent sheet and allow the participant as much time as desired to review the content. The participants' consent was indicated by continuing to and completing survey questions.

If the online survey was selected, the participant was directed to the researcher's laptop, if present, and linked to the anonymous online survey. If the tablet was not

present, participants scanned the assigned platform QR code on their mobile device and linked directly to the online survey platform. Once at the online survey, participants would review the Informed Consent sheet online and continue to the first question to indicate consent.

The researcher returned to the collection station area and provided hardcopy participants space to complete the survey apart from the researcher. During this time, other potential participants would be approached if in the area. Online participants could freely leave once directed to the online survey link. Upon completion of the hardcopy survey, participants would return the forms, writing utensil, and clipboard to the researcher. At such time, the surveys were labeled with the sticker identifying the survey collection site and stored in a lockable container at the collection station.

Data Analysis

Data Coding

For decision variable survey items, item responses were treated as a dichotomous variables and coded with 0 (“not selected”) or 1 (“selected”). This allowed selection status to be treated as a grouping variable (“Selected” or “Not Selected” group) for the decision variables in the binary logistic regression analysis. Predictor variables were treated as categorial variables and were also dummy coded using numeric identifiers. The response to the guardianship item was treated as dichotomous and coded with 0 or 1. Responses to items for location, adoption intent, search duration and status, guardianship experience and adoption reason were coded with positive integer values, beginning with the neutral integer, 0. All demographic items, except household-related items, were

treated as categorical and coded in the same manner. Scaled responses for household-related items were converted into a new categorical predictor variable, Household Type. The new variable was coded as 0 (“solitary”), 1 (“residents 13 years old or older”), or 2 (“with children under 13 years old”).

Cross-Sectional Analyses

Models computing the odds of one decision variable with a second decision variable were constructed using logistic regression method through IBM SPSS v26 (IBM, Armonk, NY). Binary logistic regression was used to analyze categorical responses and predict selection group membership of decision variables. The method was also used to predict each decision variable’s odds of membership in “Selected” or “Not selected” groups based on pattern of Participants’ responses to visitation, search, experience, and demographic items. Decision variable responses for participants reporting guardianship experience were compared with those reporting no experience. Responses for visitors targeting specific pets during the visit were compared with those that did not report specific targets for the visit. The same applied for those reporting the intent to adopt during the visit compared with all other intention groups and households with children under 13 were compared to the other household type groups. Additional analyses were run comparing decision variable selection by location, age group, and current pet status.

Results were calculated and presented as odds ratios (OR) and 95% or 99% confidence intervals (95% - 99% CI). Statistical tests with a p-value less than .05 or confidence intervals that do not include one, within the range, were considered statistically significant.

RESULTS

Descriptive Statistics

Five hundred and fifty-one participants submitted surveys over a seven-month collection period, from the end of April to the end of November. Of the surveys completed, 34 were excluded from final analysis due to insufficient information or responses that did not fit the instructions on the survey, such as having more than three responses when asked to select the top three options for decision variable items. Insufficient information was defined by the absence of responses for all visitation, search, and decision variable survey items. Data from the remaining 517 surveys were used to examine the hypotheses. Of the surveys completed, 27.9% indicated that visitors targeted a specific canine(s) for their visit and 70.6% indicated that visitors had no specific canine that was targeted (1.5% did not indicate a response). 56.7% of participants were female, and more than half the participants were 35 yr. or younger (25.5% in 18-25 age group, 26.5% in 26-35 age group).

Household Demographics

Respondents reported a mean of 3.05 members in their household (*Mdn* = 3.0, SD = 1.507, *Mode* = 2.0, *Max* = 13). For household types, 60 (11.6%) reported being one-member households, 163 (31.5%) reported households with children under age thirteen, and 289 (55.9%) reported households of two or more members, composed of adults only

or adults and teens age ≥ thirteen. Of the reported households with children under age thirteen, 88 (54%) reported one child, 54 (33%) reported two children, and 21 (13%) reported three or more children in the household. Approximately 51% of respondents also reported having current pets at home.

Visitor Search

148 respondents (28.6%) were reportedly just visiting with no intention to adopt, and 129 (25%) reported the intent to adopt the day of the visit. 252 respondents (48.7) were reportedly just started their search, 129 (25%) were considering options at some level, and 80 (15.5%) were making a final decision on the day of the visit. For the reported search duration, 276 (53.4%) were less than a month into their search, 74 (14.3%) were either 1-2 months or 4+ months into their search, respectively, and 37 (7.2%) were 2-3 months into their search.

Logistic Regression Analyses

Overall

Odds ratios (OR) were used for the effects size within the present analyses to represent contrast between two variable groups on a dichotomous item response variable. The overall approach was to compare the selection of each decision variable to the selection of other decision variables, which was used to test H1 and H2. These analyses were conducted in two forms: 1) a multivariate comparison between the odds of selection for each respective decision variable and the composite odds of selection for all the remaining decision variables and 2) a bivariate comparison between the odds of selection for two individual decision variables.

Table 3 shows the OR data for the multivariate comparison. In the analyses, the OR compares the odds of "Selected" group membership between one decision variable and all other decision variables. Table 4 shows the OR data for the bivariate comparison, which compares the odds of "Selected" group membership between one decision variable and each remaining decision variable, respectively. Each survey respondent had up to three options for the "Top 3 decision factor" items, for a total 1,551 possible responses (517 respondents * 3 options per respondent = 1,551). Some respondents included only one or two of the three maximum selections, therefore each unused "Top 3" selection was recorded as "no response", resulting in a total of 156 "no response" selections. The comparison or selection odds was calculated while controlling for the "no response" selections.

Table 3. *Overall Odds Ratios for Survey Decision Variables*

Decision Variable	*n* (Selected)	Probability of Selection	Logit	OR	SE(OR)	99.9% CIs LL	99.9% CIs UL
Morphological							
Age	211	0.408	-1.543	**0.214** ***	0.108	0.15	0.305
Size	178	0.344	-1.937	**0.144** ***	0.111	0.1	0.208
Medical	61	0.118	-3.828	**0.022** ***	0.155	0.013	0.036
Breed	148	0.286	-2.325	**0.098** ***	0.116	0.067	0.143
Cost	45	0.087	-4.255	**0.014** ***	0.173	0.008	0.025
Appearance	81	0.157	-3.396	**0.034** ***	0.14	0.021	0.053
Behavioral							
Training	61	0.118	-3.828	**0.022** ***	0.155	0.013	0.036
Lifestyle Fit	172	0.333	-2.012	**0.134** ***	0.112	0.092	0.193
Behavior	305	0.59	-0.497	**0.608** ***	0.105	0.43	0.86
Miscellaneous							
Background	36	0.07	-4.549	**0.011** ***	0.189	0.006	0.02
Bond/ Connection	73	0.141	-3.559	**0.028** ***	0.145	0.018	0.046
Other	24	0.046	-5.053	**0.006** ***	0.224	0.003	0.013

Note. CI = confidence interval. LL = lower limit. UL = upper limit. OR calculated using ratio between odds of variable selection and odds of selection for all remaining variables. Each OR is significant, as determined by one (1.0) not being included within ranges for 95% CI. Total number of possible responses is 1,551 (*517 respondents * 3 selections per respondent = 1,551 potential selections*). Table does not include 156 "no response" selections (*1,551 - 156 = 1,395*).

*** $p < .001$.

The overall OR results in Table 3 show statistically significant findings across all decision variables, but the findings do not provide support for H1 or H2, which propose that Appearance will have the highest OR and that morphological variables will make up the majority of the top ORs. Binary logistic regression calculations were used to compare the selection odds of individual decision variables against the selection odds of all remaining variables, while accounting for the "no response" selections. The closer the OR is to 1.0, the less difference there is between the selection odds of one variable and the odds for the remaining 11 variables. The Behavior decision variable registered the highest ratio (OR = .61, 99.9% CI [.43, .86], $p < .001$), and behavioral categories made up two of the top 4 decision variables on the list (Behavior, Age, Size, Lifestyle Fit, in order). A subsequent binary logistic regression analysis using bivariate comparisons supports these results.

In Table 4, only the Behavior decision variable shows significant OR with each decision variable ($p < .01$). Findings suggest Behavior had a minimum of 2.09 times the odds of selection compared to each distinct decision variable like Age, which had the second highest overall OR in Table 3 (OR = .214, 99.9% CI [.15, .305], $p < .001$). Age had significantly higher odds of selection than each distinct decision variable, except for Size (OR = 1.31, 99% CI [.94, 1.83]), Lifestyle Fit (OR = 1.38, 99% CI [.99, 1.93]) , and Behavior (OR = .48, 99% CI [.35, .66], $p < .01$). This confirmed that H1 and H2 were not supported as the Behavior decision variable was selected at significantly higher odds than other decision variables and as the top 4 decision variables only included two from the

morphological category. The remaining hypotheses were analyzed with reference to different predictor variables included within the models.

Predictor Variables

The following binary logistic regression analyses were conducted to predict each decision variable's odds of membership in "Selected" or "Not selected" groups based on pattern of Participants' responses to visitation, search, experience, and demographic items.

H3a and H3b. These hypotheses proposed that morphological categories would be higher for visitors intending to adopt during the visit and for visitors targeting specific adoptable canines, respectively. Adoption intent responses were coded as a categorical variable, and respondents selecting "Intend to adopt today" served as the reference group. Only two morphological variables provided support for H3a. Age, χ^2 (4, N = 511) = 12.523, $p < .05$, and Medical Condition, χ^2 (4, N = 511) = 10.048, $p < .05$, were significant; however, the significant findings relied on differences between the reference group and two different subgroups. Respondents considering adoption in the future (2+ months) had significantly lower odds of selecting Age compared to the "Adopt Today" reference group (β = -.618, OR = 0539, $p < .05$) but had 2.4 times higher odds to select Medical Condition than the reference group (β = .881, OR = 2.413, $p < .01$).

Table 4. *Bivariate Odds Ratios between Adoption Decision Variables*

		Odds Ratios (OR)											
Variables	Odds	Age	Background	Medical Condition	Breed	Training	Lifestyle Fit	Cost	Appearance	Behavior	Size	Bond/ Connection	Other
Age	0.690	-	**9.21** **	**5.15** **	**1.72** **	**5.15** **	1.38	**7.23** **	**3.71** **	**0.48** **	1.31	**4.19** **	**14.16** **
Background	0.075	**0.11** **	-	**0.56** **	**0.19** **	**0.56** **	**0.15** **	0.79	**0.40** **	**0.05** **	**0.14** **	**0.46** **	1.54
Medical Condition	0.134	**0.19** **	**1.79** **	-	**0.33** **	1.00	**0.27** **	1.40	0.72	**0.09** **	**0.25** **	0.81	**2.75** **
Breed	0.401	**0.58** **	**5.36** **	**3.00** **	-	**3.00** **	0.80	**4.21** **	**2.16** **	**0.28** **	0.76	**2.44** **	**8.24** **
Training	0.134	**0.19** **	**1.79** **	1.00	**0.33** **	-	**0.27** **	1.40	0.72	**0.09** **	**0.25** **	0.81	**2.75** **
Lifestyle Fit	0.499	0.72	**6.66** **	**3.73** **	1.24	**3.73** **	-	**5.23** **	**2.68** **	**0.35** **	0.95	**3.03** **	**10.24** **
Cost	0.095	**0.14** **	1.27	0.71	**0.24** **	0.71	**0.19** **	-	**0.51** **	**0.07** **	**0.18** **	**0.58** **	**1.96** **
Appearance	0.186	**0.27** **	**2.48** **	1.39	**0.46** **	1.39	**0.37** **	**1.95** **	-	**0.13** **	**0.35** **	1.13	**3.82** **
Behavior	1.439	**2.09** **	**19.22** **	**10.75** **	**3.59** **	**10.75** **	**2.89** **	**15.09** **	**7.74** **	-	**2.74** **	**8.75** **	**29.55** **
Size	0.525	0.76	**7.02** **	**3.93** **	1.31	**3.93** **	1.05	**5.51** **	**2.83** **	**0.36** **	-	**3.19** **	**10.79** **
Bond/ Connection	0.164	**0.24** **	**2.20** **	1.23	**0.41** **	1.23	**0.33** **	**1.72** **	0.88	**0.11** **	**0.31** **	-	**3.38** **
Other	0.049	**0.07** **	0.65	**0.36** **	**0.12** **	**0.36** **	**0.10** **	0.51	**0.26** **	**0.03** **	**0.09** **	**0.30** **	-

Notes . Odds Ratio is calculated using odds of variables in the lefthand column in the numerator divided by odds of variables in top row (*ex. OR = Odds of Background / Odds of Age = .075 / .690 = 0.11*). The reciprocal for each Odds Ratio is presented in the upper/right quadrants of the table (*ex. OR = Odds of Age / Odds of Background = .690 / .075 = 9.21*). An OR > 1 is interpreted as the lefthand-column variable has greater odds of selection than the top-row variable. An OR<1 interpreted as the odds of lefthand-column variable has lower odds of selection than the top-row variable. An OR = 1 signifies identical odds of selection and means there is no discernible relationship between the two variables.

****Boldfaced Odds Ratios are considered significant (p < 0.01), as one is not included within the corresponding 99% confidence interval (see Table 5 in Appendix F).**

Respondents with no intention to adopt also differed from the reference group in the same way. Those with no intention had significantly lower odds of selecting Age (β = -.688, OR = .503, $p < .05$) compared to the reference group but had significantly higher odds of selecting Medical Condition (β = .897, OR = 2.453, $p < .05$) than the reference group. All other morphological decision variables or adoption intent categories did not show any significant differences, relative to the "Adopt Today" reference group. Two additional decision variables (Background and Bond/connection) showed significant difference between the reference group and "No Intention" subgroup, but neither model was significant, χ^2 (4, N = 511) = 8.101, p = .088; and χ^2 (4, N = 511) = 5.760, p = .218, respectively.

The findings do not provide any support for H3b. Only the Medical Condition model was significant, χ^2 (1, N = 509) = 3.889, p = .049, across all 12 decision variables. However, the odds for selecting the Medical Condition variable were not significantly different between visitors targeting specific canines and those not targeting specific canines at the adoption site (β = -.652, OR = .521, p = .062). All other variables yielded models and odds ratios between the groups that were not significant.

H4. This hypothesis proposed that respondents reporting prior guardianship experience would yield higher odds on selection for behavioral category decision variables, compared to those reporting no experience. The findings from the analyses do not provide any support for H4. None of the decision factors in the behavioral category yielded significant differences for model fit or odds ratios between respondents reporting

guardianship experience and those reporting no experience. No significant differences in selection odds were found for any of the 12 decision variables across the two groups.

H5. This hypothesis proposed that selection odds for Bond/connection would be significantly different between targeting visitors and non-targeting visitors. Using the targeting visitors as the reference group, binary logistic regression analysis revealed no significant difference in Bond/connection selection odds between visitors targeting specific canine and those not targeting specific canines (β = -.436, OR = .647, p = .081). Therefore, the main effect findings do not support H5. Further investigation was conducted using multinomial logistic regression, with targeting status and adoption intent as predictor variables and a potential interaction effect. The inclusion of both predictors into the model did not significantly improve fit, $-2LL$ = 40.059, χ^2 (2, N = 503) = 2.535, p = .282. The addition of the interaction term marginally improved model fit but the findings were still not significant, $-2LL$ = 38.456, χ^2 (3, N = 503) = 4.138, p = .247. However, with both predictors and the interaction term included, difference between the targeting and non-targeting visitor groups were significant with selection odds of visitors targeting specific canines 2.25 times higher than those not targeting specific canines (β = .810, OR = 2.247, $p < .05$).

H6. This hypothesis proposed that selection odds for Behavior would be higher for respondents with children under age 13 in the household than those that do not. For the logistic regression analysis, households with children under age 13 served as the reference group. Findings showed no significant differences in the selection odds between the reference group and respondents from solitary or adults-only/adult-teen

households ($\beta_{solitary}$ = -.126, OR = .882 , p = .683; and $\beta_{adult\text{-}only/\text{-}teen}$ = -.148 , OR = .862, p = .459, respectively). Thus, findings do not provide support for H6.

Under the Household Type predictor variable, significant differences were only found for the Lifestyle Fit, Size, and Medical decision variables. Specifically, differences in selection odds were found between the solitary household group and the children-under-13 household group for the Lifestyle Fit and Medical Condition decision variables. Solitary households showed higher odds of selection for Lifestyle fit (β = .826, OR = 2.283, p < .01) and lower odds of selection for Medical Condition (β = -1.659 , OR = .190, p < .05) compared to the reference group. The adults-only/adults-teens household group showed higher odds of selection for Size (β = .448, OR = 1.565, p < .05) compared to the reference group. All other odds ratios across the remaining decision variables did not show significant difference between group selection odds.

H7. This hypothesis proposed differences in selection odds between shelter respondents and adoption event respondents across decision variables. Binary logistic regression analysis was conducted using the public adoption event respondents as the reference group. Only the Bond/connection decision variable showed any significant OR, which suggested that Loudoun County Animal Shelter (LCAS) respondents had significantly lower odds of selecting Bond/connection that Adoption event respondents (β = -2.067, OR = .127, p < .01). Thus, only Bond/connection provided support for H7. All other variables did not support the hypothesis.

To further investigate, an additional analysis was run using LCAS as the reference group, instead of the Adoption Event group. In this case, all of the shelters and adoption

event groups showed significantly higher odds, ranging from 4 times to 14 times higher odds, of selecting Bond than LCAS respondents ($p < .05$, respectively).

H8. This hypothesis proposed differences in selection odds between age groups would be present across decision variables. Binary logistic regression analysis was conducted using the 18-25 age group as the reference group. The findings showed significant differences across three decision variables, Breed, Background, and Behavior. For the Background variable, the 26-35 age group showed significantly lower odds of selection for the decision variable compared to the reference group ($\beta = -.997$, OR = .369, $p < .05$). Odds for all other groups did not significantly differ from the reference group. For the Breed variable, the 36-45 age group showed significantly lower odds of selection for the decision variable compared to the reference group ($\beta = -.721$, OR = .486, $p < .05$). Again, all other groups did not significantly differ from the reference group.

For the Behavior variable, all age groups, except the 66+ group, showed significantly higher odds of selection, ranging from 1.7 times to nearly 2.5 time higher, for the decision variable compared to the reference group ($\beta_{25\text{-}36} = .676$, OR = 1.967; $\beta_{36\text{-}45} = .579$, OR = 1.784; $\beta_{46\text{-}55} = .703$, OR = 2.019; and $\beta_{56\text{-}65} = .912$, OR = 2.489, $p < .05$, respectively). Thus, support for H7 is found for Background, Breed, and Behavior, but no support is provided across the remaining decision variables.

Supplementary Analysis

Additional analyses were conducted to isolate and examine the first item series on the survey that related to respondents that were visiting for specific canines. The first decision variable item on the survey specifically targeted the top three reasons that

respondents decided to visit a specific canine(s), which may or may not differ from the top decision variables for their adoption decision, later in the survey.

The OR was calculated for each decision variable in the same manner as the overall OR (Table 3). Table 5 shows the findings for the supplementary analysis and the comparison with the overall OR data set. All the corresponding OR were significant based on 99.9% confidence intervals ($p < .001$).

Table 5. *Order Comparison between OR for Visitors Targeting Specific Canine and the Overall OR*

	Overall		Visitors Targeting Specific Canines		
Order (high-low)	Decision Variable	OR***	Decision Variable	OR***	Δ in Order
1st	Behavior	**0.608**	Age	**0.428**	(+1)
2nd	Age	**0.214**	Behavior	**0.396**	(-1)
3rd	Size	**0.144**	Size	**0.267**	-
4th	Lifestyle Fit	**0.134**	Breed	**0.155**	(+1)
5th	Breed	**0.098**	Bond	**0.074**	(+2)
6th	Appearance	**0.034**	Appearance	**0.066**	-
7th	Bond	**0.028**	Lifestyle Fit	**0.052**	(-3)
8th	Medical	**0.022**	Background	**0.021**	(+3)
9th	Training	**0.022**	Cost	**0.013**	(+1)
10th	Cost	**0.014**	Training	**0.011**	(-1)
11th	Background	**0.011**	Medical	**0.008**	(-3)
12th	Other	**0.006**	Other	**0.006**	-

Note. Overall $N = 517$. Targeting Visitor $n = 144$. OR calculated using ratio between odds of variable selection and odds of selection for all remaining variables. Change in order refers to change in order for decision variables on Targeting list from the Overall list. As a caveat, none of the changes in order were statistically significant.

*** $p < .001$

DISCUSSION

The aim of this study was to investigate the top decision variables that potential adopters may consider during the search phases of the canine adoption process and to provide insight into the variance that may exist within the population, across several predictor variables. A secondary aim was explore and provide insight into model development for the adoption search and decision process and gain further understanding about various characteristics of potential adopters (Marston & Bennett, 2003; Protopopova & Gunter, 2017; Southland et al., 2019; Vink et al., 2019; Weiss et al., 2012). The results of this study provide a multitude of insightful findings that go beyond qualification of statistical significance. There is as much to learn from the non-significant findings as there is for those found to be significant.

The overall OR analysis involved the comparison of selection odds for individual decision variables and the selection odds for all remaining decision variables. Based on research literature, *H1* predicted that Appearance would yield the highest OR, but the Behavior decision variable stood out beyond expectations and was shown as the clear, top selection for respondents. That variable was followed by Age, Size, Lifestyle Fit, and Breed, in order. Current literature has also expressed the value of morphological features on adoption decisions (Protopopova & Gunter, 2017, p. 36), which provided the basis for *H2*. The present findings show that behavioral categories are highly considered leading

up to the point that final adoption decisions are made. This suggests that morphological variables may not dominate adoption decisions, as has been referenced in literature.

Perhaps most insightful, regarding potential adopters, are the limited contexts in which predictor variables show variance between the selection of Behavior across the sample populations. *H4* and *H6* predicted that the odds for behavioral variables will be higher for respondents with prior guardianship experience or children under age 13 at home, but the selection odds did not significantly differ across prior guardianship, the presence of children at home, or adoption site. The only significant findings of difference for Behavior was observed in testing for *H8*. The difference occurred between predictor Age subgroups, with the 18-25 group set as the reference group. Almost every age group above 18-25 had, on average, two times higher odds of selection than the reference group. Overall, the evidence suggests that prioritization during search process is considerably homogenous for Behavior and many of the other decision variables.

The limited, sporadic support of the hypotheses *H3* through *H8* is evidence that respondents prioritized and selected many of the same decision variables across several different predictor variables. The commonalities existed across guardianship experience, household type, location, age group, and, more broadly, community demographics. Surveys were collected in many different demographic community settings, yet many of the findings revealed limited scopes of between-group variance across decision variables. For example, analysis testing *H8* showed significant differences between Age subgroups for Bond, Background, and Behavior. In the cases for Bond and Background, the significant differences were only found between one subgroup and the reference group,

respectively. As stated earlier for Behavior, almost all subgroups significantly differed from the reference group, with comparable odds ratios between them.

Analysis for *H7* showed Bond/connection as the only decision variable, out of 12, that registered significant difference in selection odds between respondents across any of the shelters and the adoption events. The significant difference was observed between LCAS and the public adoption events, but further analysis revealed that LCAS significantly differed from all other collection sites and not just the adoption events. This finding provides additional evidence to the homogeneity of decision variable considerations across a broader context. One theoretical argument for the difference between LCAS and all other locations may relate to LCAS's proximity to rural communities and its status as an exurban community. The author posits that canines in rural locales may serve in companion and working capacity, so the Bond variable may not be considered a priority if the functional capacity is also desired. As one of the first studies to target the early phases of the adoption process, such findings provide notable opportunity to enhance the perspectives of pet adoption research.

Hypotheses *H3a*, *H3b*, and *H5* predicted that significant variance would exist in morphological or Bond decision variables across different levels of adoption intent and visitation targeting. Analyses for each continued to show limited contexts in which significant differences were evident. Respondents intending to adopt on the day of the visit differed from those that were just visiting, with no intention to adopt at all, across four decision variables. This may initially appear noteworthy, but the scope of insight declines, as it would be commonplace to assume that differences would generally occur

between such bipolar opposites. What may be surprising is that significant differences were not evident with the remaining eight decision variables, in this case. So, limited insight may be gained from knowing the stated intent of the shelter visit, in practical settings. However, future studies can explore the extent to which visitors intending to adopt may follow on to adopt during the visit and analyze the extent to which adopters within the subcategory may differently weight Age or other decision variables compared to non-adopters within the same subcategory.

If individuals in the early search phases do not largely differ in the top considerations, then future investigations of the latter phases can focus more attention on potential points or environments where events may significantly affect the trajectory of an adoption decision, such as the adopter-canine shelter interaction (Protopopova et al., 2014, 2016; Protopopova & Wynne, 2014; Wells & Hepper, 2000b, 2001). Visitors entering a shelter or rescue event may not vary widely on most considerations; however, the early experiences during the visit may have a great effect on how visitors, intending to adopt, continue to the next steps of the process. Additionally, deeper investigation can be done into the extent certain factors may be individually weighted and its relevance to the final onsite adoption decision. Further understanding of these dynamics may generate practical evidence-based practices (EBP) that can bolster shelter/rescue adoptions.

Decision Variable and Model Development

The presence of Behavior and Lifestyle fit within the top-4 decision variables identifies some of the limitations that may exist within the retrospective data used within previous cross-sectional studies. Typically, lifestyle fit is not recorded in shelter data and

behavior is recorded by way of bite history data or behavioral problems that have been previously identified (Siettou et al., 2014). The absence of data items for these two highly considered decision variables demonstrates the limitations that previous studies have knowingly or unknowingly faced. Due to such circumstances, the present data provide the type of insight into potential adopters and operational model development that has alluded the field for nearly two decades.

Decision Variables Included in Literature

The use of retrospective adoption data from shelters and rescues has restricted adoption decision analyses to variables that were traditionally captured by the organizations. And, these variables were primarily morphological variables. In some cases, behavior data was included, but the data was typically constrained to the presence of behavior problems or bite history (Lepper et al., 2002; Normando et al., 2006; Siettou et al., 2014). The Training decision variable has seldom been included (Siettou et al., 2014, p. 140), and the Bond/connection, Lifestyle fit, Background, and Costs decision variables have not been included in research due to focus on innate or developed canine characteristics (Brown et al., 2013b; Protopopova & Gunter, 2017). This study provided further insight into the variables that potentially affect adoption decision because it included a more comprehensive list of decision variables.

Of the 24 other decision variable responses, 20 included write-in responses from the respondents to provide further details. Most of the write-in responses could arguably be recoded into one of the 12 decision variables already in the study. Nine of the write-in responses referenced the behavioral variables, Lifestyle Fit, Training, or Behavior (ex.

"fit for spouse", "get along with kids/other pets", "compatibility with current dog", "ADA trainable"). Three referenced Size (ex. "space", "room", "housing") and two referenced Appearance (ex. ("cute/cuddliness", "long hair"). Two of the six remaining write-ins referenced canine gender. However, Gender was not included in the present study due to mixed findings of the variable's effect on LOS and adoption decisions, which tend to be not significant (Brown et al., 2013, p. 14; Normando et al., 2006, p. 218; Siettou et al., 2014, p. 143). The remaining four write-ins were either related to the respondents' self-efficacy or altruism (ex. "our ability to care for animal", "because they need a home") or beyond one distinct category (ex. "sister for our dog", "already adopted a dog"). This suggests the robust nature of the 12 variables examined within this study.

The comprehensive decision variable list allowed for further insight into the effects that variables, commonly included in research, may have on the search and decision-making process. The Appearance decision variable has been widely promoted as a top factor for adoption decisions by previous studies, but it performed below expectations within this study. Across overall variable OR (Table 3) and variable OR related to dogs that visitors targeted (Table 5), Appearance consistently registered the sixth-highest OR and was far below the top two decision variables in both contexts, Age and Behavior. Age, Size, and Breed performed steadily, in both contexts, and as would expected given the consistent findings for all three variables within literature (Brown et al., 2013, p. 14; Protopopova & Gunter, 2017, pp. 36–37; Siettou et al., 2014, p. 143).

Behavior steadily outperformed expectations, but other novel decision variables also performed well across the overall OR and targeting visit OR and add to the

understanding of the search and decision process. Background, Lifestyle Fit, and Bond/connection each provided insight, given the contextual performance in Table 5. The Background variable had the second lowest OR in the overall analysis. However, the variable had the 8th highest OR (Table 6) for respondents that selected top decision variables for targeting specific canines during the visit. Although the change in order was not significant, this provides insight into variance between shelter visitors because visitors targeting specific canines were more prepared to adopt during the visit. Visitors intending to adopt during the visit had 38.5 times higher odds of targeting specific dogs, and those characterizing their search at the "final decision" point had 2.7 times higher odds of targeting specific dogs. This inferred that the Background decision variable has modestly more relevance for visitors that are close to an adoption decision than those in the search phases of the adoption process and not close to a decision.

Conversely, the Lifestyle Fit variable dropped from the 4th highest overall OR to the 7th highest OR for visitors targeting specific canines. This inferred that Lifestyle Fit may have modestly less relevance for visitors that are close to an adoption decision than those that are not. The Bond/connection variable demonstrated a pattern comparable to Background and increased from the 7th highest overall OR to the 5th highest for those targeting specific canines. This inferred that Bond/connection had modestly higher relevance for those close to an adoption decision than those that are not. Such inferences have been limited within prior literature but may have profound impact on theory and model development.

Support for Adoption Model Development

The Bond/connection inference provides possible support for the theory and operational model posited by the author (Figure 2). Revisiting earlier argument, the theory proposes that initial bonds (unilateral form of attachment) begin to form as early as the initial phase of the search for pets and that sufficient bond formation would lead potential adopters to visit the specific canines, given such selectivity during visitation shown in previous literature (Protopopova et al., 2014; Wells & Hepper, 2001). The inference provides initial support for the argument and identifies the need for future research to directly examine and validate or invalidate the theoretical argument. This potentially advances the subfield of research beyond considerations for innate or developed animal characteristics and begins to establish a robust, saturated model. This is further strengthened by the inclusion of the comprehensive list of decision variables that was previously discussed (Figure 2).

In addition to the potential support of the model, the present data provides support for the longitudinal outlook of the process (Figure 1) and the population characteristics across different phases, corroborated by the search response data that was collected. Of the 78 respondents reportedly making final decision during the search, 52 (73%) of them were reportedly visiting for specific canines and intended to adopt during the shelter visit. This aligns with the latter two stages of Figure 1, showing that visitors planned to visit with specific canines and move through the Visitation phase into the final decision phase, resulting in one of the three proposed outcome options. Such insight provides initial

understanding for the type of individuals and decision sets that may be in the latter phases of the adoption search and decision processes.

Of the 244 respondents reportedly just starting their search, 103 (42%) of them were not visiting specific canines and were a month, or more, away from adopting. An additional 69 (28%) respondents, just starting their search, were not visiting specific canines, and were just visiting with no intention to adopt. Thus, 70% of those just starting their search were not close to an adoption decision. This provides additional evidence and understanding for the type of individuals and decision sets that may be in the early phases of the adoption search process. However, more research is needed to test the inferences, findings, and theories that may emerge from this study.

LIMITATIONS AND FUTURE STUDIES

Several limitations should be noted, referencing the methods and findings of the study. First, no discreet behavioral outcome variable was included within the study, such as an adoption decision or Likert-scale rating. The survey was heavily based on categorical and dichotomous variables, which presented limitations for the statistical methods that could be used for analyses. Also, the lack of a data for the behavioral outcome variable restricts the inference that can be drawn between decision variables during the adoption search and the final decision phases. Future studies should aim to refine the survey questionnaire and include methodology to collect final decision outcomes to capture the maximum extent of data that relates to the canine adoption process.

Also, gender was excluded from the decision variables within the study, due to inconsistent finding on the effects of canine gender on adoption decision making. However, it was submitted twice as a write-in response and may justifiably warrant inclusion in future studies that conduct factor or principal component analysis to better examine the independence of each decision variable. The limited number of write-in submissions for gender cannot infer the variable's lack of effect on adoption decision making. So, while the list of decision variables included in the study is arguable

comprehensive, the list is not complete and statistically validated. Thus, future studies need to examine this fully.

Despite extensive collection efforts and over 500 participants, only 64 (12.4%) of the included submissions were from public adoption event sites. More data from this subpopulation would facilitate more extensive logistic regression and ANOVA analysis, which may generate deeper insights into the sample populations. Future studies are needed to test the present findings, related to collection sites, and expand on potential effects that may be present.

Another limitation is the inclusion of both individual and decision set respondents, in which individuals were able to consult with family members and partners during the survey. This limited the level of individual variance that could be inferred upon, but the sacrifice was justified by the ecological validity of decision set consultations and compromises that occur during a typical adoption search and decision process. Peer researchers will need to debate the suitability of such methods and either approve the rationale behind the methods or push for stricter procedures that focus on individual variance by including methods to isolate future participants, in such a setting. For this study, decision sets were suitable for inclusion, given the primary aim to capture the top decision variable of potential adopters. The sacrifice of individual variance was justified to capture insight into how all stakeholders may factor into the adoption decision.

This study targeted a sample population that is representative of the regional variance and characteristics within the greater Washington, D,C, area, but the collections

were concentrated in D.C (156 surveys collected) and Virginia (262 surveys collected). Data analysis for H7 showed significant differences for only one of twelve decision variables, which suggested homogeneity in decision variable considerations across the region. The significant differences for the selection of Bond/Connection between LCAS and all other collection sites suggested possible variance across area development status, which should be included as a variable in future studies. However, all insights reference the regional variance around Washington, D.C. and lack support for generalizability at the national or international levels. Further research is needed to examine potential variance across regional, national, and international populations, as well as differences in culture and development status.

Overall, the findings of this research lay the foundation for learning that fills knowledge gaps and address calls for research that have been present for nearly two decades. Theory and model development may benefit greatly from the examination of canine adoption research areas that were seldomly addressed. The findings may generate more questions than they answer, but the door for research innovation, expansion, and discovery has now been expanded.

APPENDIX A

Survey Version One – Page One

Canine Adoption Visitation Survey

Location of today's visit: **Shelter** (specify): _____ or **Adoption Event** (specify): _____

Are you visiting for a specific dog(s) today? Y / N (if No, skip to the Next Section)

If yes, How many, in particular? _____

Select the top 3 reasons that you are visiting this (these) particular dog(s)? Select up to three (3)

- o *Behavior*
- o *Breed*
- o *Age*
- o *Size*
- o *Appearance*
- o *Medical Condition*
- o *Cost of Adoption*
- o *Unexplainable bond or connection*
- o *Level of Training*
- o *Background Story*
- o *Lifestyle / Activity Fit*
- o *Other:*

Were these your top adoption decision-making priorities throughout the search? Y / N

Current pet search status:

- o *Just starting search*
- o *Considering top two or three options*
- o *Evaluating several options*
- o *Making final decision today*

How long have you been actively searching?

- o Less than a month
- o 1-2 months
- o 2-3 months
- o 4+ months

Adoption intent:

- o *Intend to adopt today*
- o *Considering adoption in the future (2+ months)*
- o *No intention to adopt; Wanted to visit/interact with the dogs*
- o *Intend to adopt within 1-2 months*
- o *Spur of the moment consideration to adopt*

What are the top 3 factors for your adoption decision making? *Select up to three (3)*

- o *Behavior*
- o *Medical Condition*
- o *Lifestyle / Activity Fit*
- o *Appearance*
- o *Age*
- o *Size*
- o *Level of Training*
- o *Cost of Adoption*
- o *Other:* _____
- o *Breed*

APPENDIX B

Survey Version Two – Page One

Canine Adoption Visitation Survey

Location of today's visit: **Shelter** (specify): _____ or **Adoption Event** (specify): _____

Are you visiting for a specific dog(s) today? Y / N (if No, skip to Adoption Intent)

If yes, How many, in particular? _____

Select the top 3 reasons that you are visiting this (these) particular dog(s)? Select up to three (3)

- o *Age*
- o *Breed*
- o *Cost of Adoption*
- o *Size*
- o *Background Story*
- o *Level of Training*
- o *Appearance*
- o *Unexplainable bond or connection*
- o *Medical Condition*
- o *Lifestyle/Activity Fit*
- o *Behavior*
- o *Other:*

Were these your top adoption decision-making priorities throughout the search? Y / N

Adoption intent:

- o *Intend to adopt today*
- o *Intend to adopt within 1-2 months*
- o *Considering adoption in the future (2+ months)*
- o *Spur of the moment consideration to adopt*
- o *No intention to adopt; Wanted to visit/interact with the dogs*

Current pet search status:

- o *Just starting search*
- o *Evaluating several options*
- o *Considering top two or three options*
- o *Making final decision today*

How long have you been actively searching?

- o Less than a month
- o 1-2 months
- o 2-3 months
- o 4+ months

What are the top 3 factors for your adoption decision making? *Select up to three (3)*

- o *Breed*
- o *Lifestyle/Activity Fit*
- o *Cost of Adoption*
- o *Size*
- o *Background Story*
- o *Age*
- o *Level of Training*
- o *Medical Condition*
- o *Unexplainable bond*
- o *Behavior*
- o *Appearance*
- o *Other:* _____

1 of 2

Next Question at Top of Page

APPENDIX C

Survey Version 1/2 – Page Two

Page two of surveys were identical and remained unchanged.

Canine Adoption Visitation Survey

Prior Guardian experience: **Read note below before responding** – Y / N

NOTE-
Guardianship refers to responsibilities beyond daily caretaking (feeding, walking, playing, etc.). It includes responsibilities for medical service decisions, expense payments, housing decisions (such as pet daycares and boarding over vacations), life/death decisions (euthanasia).
Growing up in a house with pets DOES NOT count as prior guardian experience. If you were not the primary guardian, please mark "No".

Primary reason for dog adoption? *Select only one (1).*

- o Companionship for self
- o Companion for another animal
- o Functional Service (guard dog, hunting, etc) Other
- o Companion for another household member
- o Medical Assistance

Did you search online prior to this visit? Y / N

If yes, which online listing did you visit?

- o *Organization Website*
- o *Organization Social Media page*
- o *Third Party Directory (Petfinder, Adopt-a-Pet, etc.)*

Did you normally visit unrelated websites/social media simultaneously or focus on the pet listing site?

- o Yes, I regularly visited unrelated sites while looking at pet listings
- o No, I only visited the pet listing site

Demographic Information:
This information is an important consideration for this research.
It will be used solely for statistical purposes.

Number of people in household: ____ Number in household under age 13: ___

Any current pets (animals not considered livestock) in your residence? Y / N

Gender Identification:

- o M
- o F
- o Other, not listed: _____
- o Prefer not to say

Age Group:

18-25 26-35 36-45 46-55 56-65 >66

APPENDIX D

Name Tag Design

L.E. MINNIS

Primary Researcher

APPENDIX E

Introduction Script

Hello, my name is _____

and I and a graduate student researcher with George Mason University (GMU). I am here today conducting research on why visitors, like yourself, are coming to the shelter and visiting the dog area. Can we include your participation in an anonymous, 5-minute survey that could benefit the shelter/rescue?

APPENDIX F

Table 6 shows the 99% confidence intervals for the results in Table 4.

Table 6. *99% Confidence Intervals for Comparative Odds Ratios*

	Age		Background		Medical Condition		Breed		Training		Lifestyle Fit		Cost		Appearance		Behavior		Size		Bond/Connection		Other	
Variable	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*	*LL*	*UL*
Age	-	-	**5.58**	**15.21**	**3.39**	**7.85**	**1.22**	**2.42**	**3.39**	**7.85**	0.99	1.93	**4.55**	**11.50**	**2.52**	**5.47**	**0.35**	**0.66**	0.94	1.83	**2.81**	**6.25**	**7.88**	**25.44**
Background	**0.07**	**0.18**	-	-	0.32	0.99	**0.11**	**0.31**	**0.32**	**0.99**	**0.09**	**0.25**	0.43	1.43	**0.23**	**0.69**	**0.03**	**0.09**	**0.09**	**0.24**	**0.26**	**0.79**	0.76	3.09
Medical Condition	**0.13**	**0.30**	**1.01**	**3.15**	-	-	**0.22**	**0.51**	0.61	1.64	**0.18**	**0.41**	0.82	2.39	0.45	1.15	**0.06**	**0.14**	**0.17**	**0.39**	0.50	1.31	**1.44**	**5.23**
Breed	**0.41**	**0.82**	**3.22**	**8.93**	**1.95**	**4.62**	-	-	**1.95**	**4.62**	0.57	1.14	**2.62**	**6.76**	**1.45**	**3.22**	**0.20**	**0.39**	0.54	1.08	**1.62**	**3.68**	**4.55**	**14.92**
Training	**0.13**	**0.30**	**1.01**	**3.15**	0.61	1.64	**0.22**	**0.51**	-	-	**0.18**	**0.41**	0.82	2.39	0.45	1.15	**0.06**	**0.14**	**0.17**	**0.39**	0.50	1.31	**1.44**	**5.23**
Lifestyle Fit	0.52	1.01	**4.02**	**11.05**	**2.44**	**5.70**	0.88	1.76	**2.44**	**5.70**	-	-	**3.27**	**8.35**	**1.81**	**3.98**	**0.25**	**0.48**	0.68	1.33	**2.02**	**4.54**	**5.68**	**18.47**
Cost	**0.09**	**0.22**	0.70	2.32	0.42	1.22	**0.15**	**0.38**	0.42	1.22	**0.12**	**0.31**	-	-	**0.31**	**0.85**	**0.04**	**0.11**	**0.11**	**0.29**	**0.35**	**0.97**	1.00	3.83
Appearance	**0.18**	**0.40**	**1.44**	**4.27**	0.87	2.22	**0.31**	**0.69**	0.87	2.22	**0.25**	**0.55**	**1.17**	**3.24**	-	-	**0.09**	**0.19**	**0.24**	**0.52**	0.72	1.77	**2.05**	**7.11**
Behavior	**1.51**	**2.89**	**11.64**	**31.73**	**7.07**	**16.37**	**2.55**	**5.04**	**7.07**	**16.37**	**2.07**	**4.03**	**9.50**	**23.98**	**5.26**	**11.41**	-	-	**1.97**	**3.82**	**5.87**	**13.04**	**16.45**	**53.09**
Size	0.55	1.06	**4.23**	**11.62**	**2.57**	**6.00**	0.93	1.85	**2.57**	**6.00**	0.75	1.48	**3.45**	**8.79**	**1.91**	**4.18**	**0.26**	**0.51**	-	-	**2.13**	**4.78**	**5.99**	**19.44**
Bond/ Connection	**0.16**	**0.36**	**1.27**	**3.81**	0.76	1.98	**0.27**	**0.62**	0.76	1.98	**0.22**	**0.49**	**1.03**	**2.89**	0.56	1.39	**0.08**	**0.17**	**0.21**	**0.47**	-	-	**1.80**	**6.34**
Other	**0.04**	**0.13**	0.32	1.31	**0.19**	**0.69**	**0.07**	**0.22**	**0.19**	**0.69**	**0.05**	**0.18**	0.26	1.00	**0.14**	**0.49**	**0.02**	**0.06**	**0.05**	**0.17**	**0.16**	**0.56**	-	-

Note . LL = Lower Limit. UL = Upper Limit. Confidence intervals align with OR calculations (see Table 3) between lefthand -column variable and the top-row variable. Intervals containing One within the range are not considered statistically significant. All boldfaced values show significant intervals, as $p < .01$.

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