Journal of Business Research 99 (2019) 306–318

Contents lists available at ScienceDirect

Journal of Business Research

journal homepage: www.elsevier.com/locate/jbusres

Dogs have masters, cats have staff: Consumers' psychological ownership and their economic valuation of pets

Colleen P. Kirk

New York Institute of Technology, 1855 Broadway, New York, NY 10023, United States of America

ARTICLE INFO

Keywords:
Psychological ownership
Pets
Dogs
Cats
Economic valuation
Attachment

ABSTRACT

Results of three experiments reveal that consumers place a higher economic valuation on dogs versus cats, as evidenced by willingness to pay more for life-saving surgery, medical expenses, and specialty pet products, as well as increased word-of-mouth about the pet. This effect is explained by consumers' enhanced psychological ownership of and resulting emotional attachment to the pet. The effect is reversed when a dog acts like a cat and a cat acts like a dog and is due to the perceived ability to control the animal's behavior rather than other attributes intrinsic to the pet. This research offers a first look at psychological ownership of a living creature and its effect on economic valuation.

"A cat is not owned by anybody."

Leonard Michaels (1995)

1. Introduction

Pet ownership is a phenomenon of contemporary life, and pets are big business. 68% of all U.S. households own a pet, with 48% owning at least one dog and 38% at least one cat. The U.S. pet market exceeds $70 billion in revenues (APPA, 2018), and a typical dog or cat owner will spend $25,000 to $35,000 on the pet over the course of its lifetime (Guzman, 2017). Consumers' "fur-babies" are increasingly being pampered with pet-related purchases that include plastic surgery, spa treatments, and designer clothing (Haldeman, 2018). These living possessions are ever more ubiquitous in consumers' lives, suggesting the growing interest in pet ownership in marketing research is warranted (Holbrook & Woodside, 2008).

Marketing researchers have documented the relationships humans have with their pets, using a rich variety of techniques to illuminate the diverse nature of the value pets bring to consumers (Belk, 1996; Dotson & Hyatt, 2008; Downey & Ellis, 2008; Hill, Gaines, & Wilson, 2008; Hirschman, 1994; Holbrook, 2008; Holbrook, Stephens, Day, Holbrook, & Strazar, 2001; Mosteller, 2008; Woodside, 2008). However, less research has examined the drivers of consumers' economic valuation of pets, which impacts important marketing-relevant outcomes such as intentions to purchase and to pay more for pet-related products, services, and medical procedures (Bettany & Daly, 2008; Brockman, Taylor, & Brockman, 2008; Ridgway, Kukar-Kinney, Monroe, & Chamberlin, 2008). Given the increasingly important role pets play in consumers' lives and in the economy, this question warrants examination.

Consumers report that both cats and dogs equally provide companionship, love, company, and affection (APPA, 2018; Dotson & Hyatt, 2008; Downey & Ellis, 2008; Holbrook, 2008). However, substantial empirical research has documented that consumers spend more for medical care and related products and services for dogs than cats (APPA, 2018; Dotson & Hyatt, 2008; Lue, Pantenburg, & Crawford, 2008; Perrin, 2009; Ridgway et al., 2008). For example, among American pet owners, dogs are taken to the vet more frequently than cats (2.3 vs. 1.1 times per year), even though there is no medical justification for this difference (Lue et al., 2008). Dog owners are more likely than cat owners to follow their veterinarians' medical care recommendations, as well as to seek vaccinations, regular physical examinations, and preventive dental care (Lue et al., 2008). Dogs are also more frequently treated than cats to premium and organic food and to be purchased treats and gifts (APPA, 2018; Lue et al., 2008). Even in households with both a dog and a cat, cats are seen by veterinarians significantly less often than dogs, suggesting that these effects are independent of household income (Lue et al., 2008).

These differences extend to life-saving medical procedures, and more dog owners (80%) than cat owners (69%) agree with the statement that they would "spend any amount necessary to keep their pets healthy" (Lue et al., 2008: 535). In particular, dog owners are willing to spend significantly more than cat owners to save the life of their pet (a mean of $2021 for dogs vs. $970 for cats; Lue et al., 2008). In sum, based on consumers' willingness to pay more for a variety of products and services, it would appear that they place a higher economic

E-mail address: ckirk01@nyit.edu.

https://doi.org/10.1016/j.jbusres.2019.02.057
Received 25 July 2018; Received in revised form 21 February 2019; Accepted 25 February 2019

valuation on dogs than on cats.

Nonetheless, despite this empirical evidence, the reasons for these economic discrepancies have been less well-articulated. Prior empirical studies have generally been descriptive and correlational, such that explanations for observed differences in spending can only be considered speculative and may be confounded with the reasons why an individual may prefer a dog or a cat in the first place. The current research addresses this limitation on two fronts: (1) theory: it integrates emotional attachment as a psychological mechanism with the broader theoretical framework of psychological ownership that directly links to valuation, and (2) design: it presents a series of studies that include experimental manipulation of pet ownership as well as of the proposed causal pathway, thereby reducing the potential for confounding from extraneous variables. Drawing from psychological ownership theory (Kirk, Peck, & Swain, 2018; Peck & Shu, 2009; Pierce, Kostova, & Dirks, 2003), I propose that consumers perceive more behavioral control over dogs than cats, and that these perceptions of control drive psychological ownership and ultimately economic valuation of the pet. Further, drawing from attachment theory (Bowlby, 1973; Thomson, MacInnis, & Whan Park, 2005), I propose that psychological ownership of a living creature facilitates the development of emotional attachment, and that these attachment feelings mediate the effect of psychological ownership on valuation of the pet. Results of three experiments, including manipulations of the type of pet, its perceived behavior, and attributions for its behavior, support this conceptualization (Fig. 1).

This research contributes to the growing interest in pet ownership in marketing (Beverland, Farrelly, & Lim, 2008; Caldwell, 2008; Cavanaugh, Leonard, & Scammon, 2008; Dotson & Hyatt, 2008; Downey & Ellis, 2008; Ellson, 2008; Hill et al., 2008; Holak, 2008; Holbrook, 2008) and animals and marketing more broadly (Lancendorfer, Atkin, & Reece, 2008; Woodside, 2008) by documenting valuation differences between dogs and cats and illuminating the mechanism through which these develop. Answering calls to better articulate the effects of owner-pet bonds on veterinary spending (Lue et al., 2008), this research examines managerially-relevant outcomes of willingness to pay more for life-saving surgery, health insurance, and related products for the pet, as well as word-of-mouth. This research further contributes to the burgeoning literature on consumer psychological ownership (Fuchs, Prandelli, & Schreier, 2010; Gineikiene, Schlegelmilch, & Auruskeviciene, 2017; Hassan & Shiu, 2015; Kamleitner & Erki, 2013; Kirk, Peck, & Swain, 2018; Kirk & Swain, 2018; Peck & Shu, 2009; Sinclair & Tinson, 2017) by offering the first examination of consumers' psychological ownership of a living creature. Finally, by experimentally manipulating a pet's behavior and demonstrating its effect on emotional attachment and valuation, this research contributes to the recent growing interest in human-animal psychology (Amiot & Bastian, 2015; Serpell, 1996; Zilcha-Mano, Mikulincer, & Shaver, 2011).

2. Theoretical background and hypotheses

Dogs and cats both are viewed by pet owners as companions, friends, children, siblings and members of the family (Belk, 1996; Dotson & Hyatt, 2008; Downey & Ellis, 2008; Hirschman, 1994). They provide joy and emotional solace and participate in family rituals (Belk, 1996); we grieve when they die (Hill et al., 2008; Holbrook, 2008); we speak to them as we do to our children (Ferguson, 1964). We spend on them as we spend on ourselves (Ridgway et al., 2008), often to the detriment of our financial well-being (Brockman et al., 2008; Gilly, 2008). They even serve to facilitate our relationships with others due to their ability to prompt human interaction (Ridgway et al., 2008). Whereas at one point in time, the value of pets to consumers appeared to be more utilitarian, such as from cats who were great barn mousers or from dogs who guarded property, today pet owners appear to value their pets more for intrinsically motivated reasons such as love (Kennedy & McGarvey, 2008). Pets have gone from being "outdoor workers on a leash to … partners indoors on the double bed" (Holbrook & Woodside, 2008: 2).

Nonetheless, whereas prior research has focused on articulating consumers' relationships with their pets and motivations for pet ownership, this research addresses a key outcome of consumers' perceptions of their pets' natural behavior: the economic valuation of the animal. Understanding consumers' economic valuation of their living possessions has important implications not only for marketers, veterinarians, and pet care product and service providers, but also for consumers themselves, given the large expenditures pet-owners often make for their companions (Ridgway et al., 2008), particularly the substantial expenditures required for medical care (Brockman et al., 2008).

In this research, I propose that feelings of ownership, or psychological ownership (Kirk, Peck, & Swain, 2018; Pierce et al., 2003), play a critical role in driving consumers' economic valuation of their pets. Psychological ownership refers to a feeling that "It's *Mine*!" (Pierce et al., 2003) and can operate independently from legal ownership (Shu & Peck, 2011). Psychological ownership results in important outcomes for marketers, including positive word-of-mouth (Kirk, McSherry, & Swain, 2015), increased purchase intentions (Gineikiene et al., 2017; Spears & Yazdanparast, 2014; Stoner, Loken, & Stadler Blank, 2018), territorial behavior (Kirk, 2017; Kirk, Peck, & Swain, 2018), and most notably for this research, enhanced economic valuation of a target, often measured as willingness to pay more for a product (Fuchs et al., 2010; Peck & Shu, 2009; Shu & Peck, 2011). Psychological ownership also enhances stewardship, or actions focused on responsible and careful management of the welfare of a target (Peck, Kirk, Luangrath, & Shu, 2019; Peck & Shu, 2018).

Three routes, or drivers, of psychological ownership have been theorized (Pierce et al., 2003) and empirically documented (Kirk, Peck, & Swain, 2018): *intimate knowledge*, such as when a consumer feels they

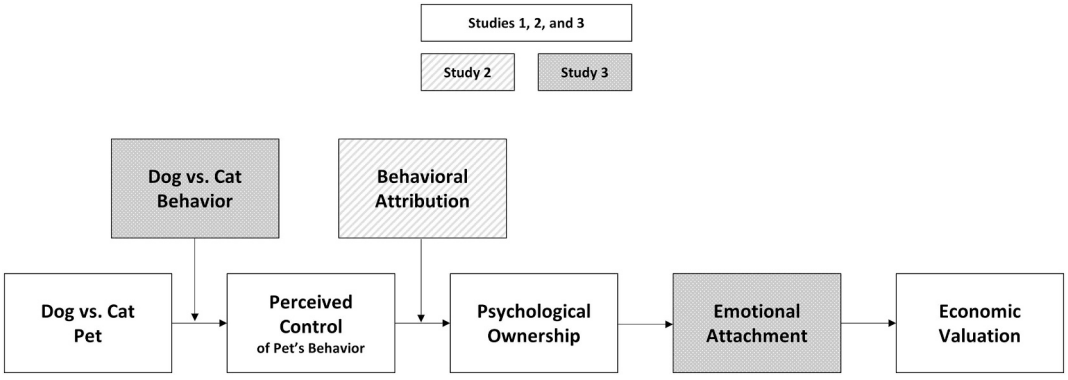

Fig. 1. Theoretical model.

have special or unique knowledge about a product; *investment of self*, such as when a consumer customizes (Hair, Barth, Neubert, & Sarstedt, 2016) or names (Stoner et al., 2018) a product; and *control*, such as touching or moving a product (Peck, Barger, & Webb, 2013; Peck & Shu, 2009). Any one of these routes is sufficient to elicit psychological ownership. However, unlike an inanimate object such as a sweater, a living creature has an independent will. Therefore, the perception that one is controlling the volitional behavior of a living creature might be especially powerful in eliciting feelings of ownership. For this reason, perceived control may play a particularly strong role as a driver of psychological ownership of living creatures.

Consumers perceive control when they believe their actions can modify the objective characteristics of a response (Averill, 1973). For example, when consumers touch a product in a store, their resulting feelings of control enhance their psychological ownership of the product – they feel it is already "theirs" (Atasoy & Morewedge, 2017; Peck & Shu, 2009). Even just imagining controlling an object is enough to elicit feelings of ownership (Peck et al., 2013) and consumers perceive that other people are communicating psychological ownership when they control a product by touching it (Kirk, Peck, & Swain, 2018). In addition to directly enhancing feelings of ownership, the ability to control a product also satisfies one of consumers' key motivations for psychological ownership: to feel a sense of effectance or mastery in the world (Pierce et al., 2003; White, 1959). In other words, consumers feel efficacy and pleasure as a result of "being the cause" and changing something in their environment through their control-related actions (Pierce et al., 2003: 89). Therefore, they are motivated to use control to enhance their feelings of ownership.

Whereas dogs and cats both may be able to be physically controlled by humans (e.g. held, put in a crate, etc.), perceived control of a pet's volitional behavior is another matter. Both anecdotal evidence and prior research suggest that dogs and cats differ fundamentally in humans' ability to control their behavior. For example, someone finding it challenging to control recalcitrant people, such as independent-minded university faculty members, might exclaim, "It's like herding cats!" It has been said that "Dogs come when they're called; cats take a message and get back to you later" (Bly, 1998). This humorous adage is consistent with the perception on the part of dog owners that their pets consciously behave so as to achieve certain goals that might be important to humans in the relationship (Dotson & Hyatt, 2008; Sanders, 1993). Researchers have also noted that humans acquire their canine companions (Dotson & Hyatt, 2008) – in other words, they are in control of the decision to bring the animal into the family – whereas cat owners may be more likely to feel chosen by their pet (Downey & Ellis, 2008; Tucker, 2017). Some behaviors of dog owners, such as dressing up or decorating the pet, can also satisfy control-oriented motives by demonstrating mastery over the pet (Beverland et al., 2008). In sum, perceiving control of a pet's behavior should elicit psychological ownership both due to the ability to manipulate the behavioral response of the pet, as well as by increasing feelings of efficacy and effectance in the relationship with the animal. I therefore propose that consumers' perceptions of their ability to control the behavior of dogs versus cats are likely to affect their psychological ownership of their pet.

At the same time, as consumers begin to feel ownership for a target, even a pet, it becomes part of the extended self (Belk, 1988, 1996). Extensive research documents the effect of psychological ownership on consumers' economic valuation of a target (Atasoy & Morewedge, 2017; Brasel & Gips, 2014; Fuchs et al., 2010; Kirk & Swain, 2016; Lessard-Bonaventure & Chebat, 2015; Peck & Shu, 2009; Shu & Peck, 2011). For example, when consumers control a product by touching it (Peck & Shu, 2009), or invest themselves by voting on a product design (Fuchs et al., 2010), they feel greater ownership and are willing to pay more for it. Therefore, if consumers feel more ownership for their pet, their economic valuation of the pet should increase, as evidenced by enhanced willingness to pay (WTP) for medical procedures and other pet-related products as well as word-of-mouth.

This conceptualization is validated across 3 experiments. Study 1 examines whether pet owners indeed place a higher economic value on dogs versus cats, reflected in willingness to pay more for life-saving surgery, and whether this enhanced valuation can be explained by their perceptions of control of the pet's behavior and resulting psychological ownership. Study 2 provides a more rigorous test of the proposed causal process by using a manipulation-of-mediator design (Imai, Tingley, & Yamamoto, 2013) and demonstrating that the effect is attenuated when psychological ownership is experimentally discouraged. Finally, by experimentally manipulating both the pet and its perceived behavior, study 3 demonstrates that it is the pet's behavior that drives valuation, not other attributes intrinsic to the pet. Investment of self, such as caring for a pet, and intimate knowledge, such as that of experienced pet-owners, are also antecedents to psychological ownership that might result in differences in economic valuation. Therefore, these are measured and tested as alternate accounts of the findings.

3. Study 1

3.1. Method

3.1.1. Design, participants, procedures

Study 1 employed a single-factor (pet legal ownership: dog vs. cat) between-subjects quasi-experimental design with 99 university employee dog or cat owners unaware of the research hypotheses. Fifty-five participants who owned both a dog and a cat were randomly assigned to dog or cat condition. Participants answered survey questions about a dog or cat they have owned; participants owning more than one dog (cat) were asked to think about the pet which exhibited behavior most typical of the species (see Appendix A for instruction details).

3.1.2. Measures

Unless otherwise indicated throughout this research, scale measures used 5-point Likert-type items with endpoints *disagree strongly/agree strongly* (see Appendix A for all measures and reliabilities). Participants were asked to confirm the species of the pet they were thinking about (*dog/cat/other*) and to write the name of the pet. Perceived control of the pet's behavior was measured with three items including such statements as "I feel in control when I am with this pet" (Brown, Pierce, & Crossley, 2014); psychological ownership was measured with three items including "I feel a very high degree of personal ownership of this pet" (Kirk, Peck, & Swain, 2018; Peck & Shu, 2009). Economic valuation was measured using willingness to pay (Fuchs et al., 2010) for life-saving surgery. Participants read, "As you imagine owning this pet, imagine that your pet contracts a serious illness. Curing this pet requires much surgery, and without the surgery your pet will die. What is the most you would be willing to pay for the life-saving surgery for your pet?" In order to examine the remaining antecedents of psychological ownership as alternate accounts, investment of self (e.g. "I invest a great deal of myself in caring for my pet"), and intimate knowledge (e.g. "I know a lot about caring for my pet") were each measured with two and three items respectively (Brown et al., 2014). Dogs and cats differ substantially in average size, and it is possible that differences in valuation might be impacted by the size of the pet. For example, if the animal is larger, consumers might perceive that more costly anesthesia and pharmaceuticals would be needed to medicate the animal. Therefore, the weight of the pet was assessed as a control variable.

3.2. Results

Of the 99 participants, 7 only owned cats, 37 only owned dogs, and of the remaining 55 who had owned both, 29 were randomly assigned to dog and 26 to cat conditions. Ninety-eight of 99 participants correctly confirmed the species of the pet they were asked to write about.

A confirmatory factor analysis with maximum likelihood estimation was conducted using AMOS 25 to examine the reliability and validity of

the latent measures, including control, intimate knowledge, investment of self, and psychological ownership. The measurement model fit was good ($\chi^2(38) = 52.58$; CFI = 0.985; RMSEA = 0.063), and all standardized factor loadings were > 0.84 ($p < .001$). All composite reliabilities and Cronbach's alpha scores were > 0.8 and average variance extracted (AVE) measures exceeded 0.7, offering evidence of convergent validity (Bagozzi & Yi, 2012; see Appendix A Tables A1–A3 for all correlations, reliabilities and summary statistics). The AVE for each factor exceeded any of the squared pairwise correlations involving the factor, confirming discriminant validity of the measures (Fornell & Larcker, 1981).

The willingness to pay data were positively skewed with 5 respondents reporting a WTP of $100,000 ($M$ = $8850.51, SD = $21,738.21; skewness = 3.83, SE = 0.243; kurtosis = 13.70, SE = 0.481) Therefore, following procedures used in prior research (Simpson, White, & Laran, 2017), the willingness to pay data were log-transformed, successfully reducing skewness (−1.71, SE = 0.243) and kurtosis (5.71, SE = 0.481). Raw data means are presented to facilitate interpretation.

ANOVA results revealed that participants would pay significantly more for life-saving surgery for their dog than for their cat (M_{Dog} = $10,689 vs. M_{Cat} = $5174; $F(1, 97) = 15.29$; $p < .001$). Further, participants perceived greater behavioral control over their dog than their cat ($M_{Dogs} = 3.86$, $M_{Cats} = 3.07$; $F(1, 97) = 13.64$; $p < .001$). Mediation analysis (Hayes, 2018; model 6), including pet weight as a covariate, revealed a direct effect of dog vs. cat ownership on WTP for surgery (95% CI: 0.183 to 1.045), along with the hypothesized indirect effect. Supporting the conceptualization, the effect of pet ownership on WTP for surgery is serially mediated by perceived control and psychological ownership (95% CI: 0.001 to 0.137). No other indirect effects were found (95% CI's did not include zero), and effects of the animal's weight were not significant (p's > 0.30). All bootstrap analyses reported in this research were conducted with 10,000 bootstrap samples.

In order to ensure that weight did not interact with pet species to influence WTP for surgery, a bootstrap analysis (Hayes, 2018, Model 1) was conducted, with pet species and weight as independent variables, and (log) willingness to pay for surgery as the dependent variable. Results revealed a significant main effect of pet species on willingness to pay ($B = 0.838$, $t(3, 95) = 3.14$, $p = .002$), but the main effect of weight ($p > .19$) and their interaction ($p > .24$) were not significant. Therefore, the parallel slopes assumption was not violated.

To examine investment of self and intimate knowledge as alternate accounts of the findings, the analyses were repeated with each of these antecedents to psychological ownership. Neither analysis revealed any indirect effects (95% CI's: investment of self, −0.064 to 0.061; intimate knowledge, −0.061 to 0.037), and the direct effects remained significant (95% CI's: investment of self, 0.256 to 1.067; intimate knowledge, 0.264 to 1.074). Therefore, these findings seem to be driven by perceived control of the pet's behavior, rather than investment of self or intimate knowledge.

3.3. Discussion

Results of study 1 reveal that consumers are indeed willing to pay more for life-saving surgery for dogs than for cats, and that this result can be explained by consumers' perceived behavioral control and psychological ownership of the pet. Study 1 therefore provides initial evidence of the proposed psychological process which explains the effect of dog vs. cat ownership on valuation. Nonetheless, research designs in which mediators are measured, rather than manipulated, may provide statistical process evidence, but do not provide causal evidence. With such *measurement-of-mediation* designs, the mediator does not temporally precede the dependent variable, and the relationship between the two may be subject to the effects of additional unmeasured confounding variables (Imai et al., 2013; Pirlott & MacKinnon, 2016).

Therefore, in order to provide a stronger causal test of the proposed process, in study 2, I examine whether discouraging the emergence of psychological ownership experimentally (Imai et al., 2013) will dampen its effect as a mediator. According to psychological ownership theory, feelings of personal causal efficacy and competence are key motivators for psychological ownership (Pierce et al., 2003; Pierce, Kostova, & Dirks, 2001). Therefore, it is likely that even if an individual is able to control the behavior of a pet, if they attribute the pet's behavior to the efforts of someone else who trained the pet, rather than to the pet's own volitional response, their psychological ownership of the pet may be dampened. In this case, the causal mediation chain from pet to valuation should be diminished or broken.

In study 2, this notion is tested with dog and cat owners, using a different population of consumers to enhance external validity. At the same time, study 2 affords an opportunity not only to replicate the findings of study 1, but also to examine additional proxies for economic valuation of a pet, in this case valuation of pet-related products.

4. Study 2

4.1. Method

4.1.1. Participants and design

The study employed a between-subjects 2 (pet: dog vs. cat (measured)) × 2 (behavioral attribution: other vs. control (random assignment between-subjects)) experimental design. Participants comprised 200 Mturk workers who previously reported owning a dog or cat in TurkPrime, a scientific research platform for optimization of MTurk participant recruitment.

4.1.2. Procedure

To begin, participants were asked whether they currently had a pet, and if so, what kind. The study then proceeded as in study 1 (see Appendix A). Participants wrote about the behavior of their dog or cat, with those having both pet types randomly assigned to dog or cat condition. Perceived behavioral control was measured. Half of the participants then continued to the remaining theoretical measures as in study 1, forming the control group. The remainder were told “Now, for the rest of the survey, imagine that your pet had originally lived with someone else. Imagine that the pet's behavior as you know it is entirely the result of any training that someone else did before you got the pet,” then completed the remaining theoretical measures.

4.1.3. Measures

Perceived control of the pet's behavior, psychological ownership of the pet, willingness to pay for surgery, investment of self and intimate knowledge were measured as in study 1. As additional proxies for economic valuation of the pet, two additional measures were captured. First, participants were told “At a local pet store, pet owners can customize and personalize a specialty food bowl for their pets.” They were asked what they would expect to pay, and the most they would be willing to pay for the bowl. Participants were also told, “A local artist paints 11″ × 14″ portraits of pets” and asked, “Thinking about this pet, how likely would you be to purchase a painting of this pet?” indicating their response on three 5-point bipolar items including “likely/unlikely.” As a manipulation check, participants indicated their agreement with the statement, “The pet's behavior can be attributed to someone else's training.” The pet's weight was measured as a control variable. An open-ended response question asked “How many dogs or cats do you currently own?” (see Appendix A).

4.2. Results

Nine participants who did not currently have a dog or a cat were redirected out of the study before taking the survey. One participant missed two attention checks and was removed, resulting in usable data

from 190 participants. Of the 190 participants, 91 currently owned only a dog, 54 only a cat, and 45 both a dog and a cat. In total, 114 wrote about a dog and 76 about a cat. All participants correctly confirmed the species of the pet they were asked to write about.

Results of two-way ANOVA with pet type and behavioral attribution as the independent variables and the behavioral attribution manipulation check measure as a dependent variable revealed a main effect of behavioral attribution ($M_{Attribute} = 2.10$ vs. $M_{Control} = 1.59$, $F(1, 186) = 7.34$, $p = .007$), a marginally significant main effect of pet type ($p = .091$) and no significant interaction ($p > .46$). Thus the behavioral attribution manipulation was successful.

A confirmatory factor analysis with maximum likelihood estimation was conducted using AMOS 25 to examine the reliability and validity of the latent measures, including control, intimate knowledge, investment of self, psychological ownership, and intention to purchase a painting of the pet. The measurement model fit was good ($\chi^2(94) = 201.02$; CFI = 0.96; RMSEA = 0.078), and all standardized factor loadings were > 0.77 ($p < .001$). All composite reliabilities and Cronbach's alpha scores were > 0.87 and average variance extracted (AVE) measures exceeded 0.76, offering evidence of convergent validity (Bagozzi & Yi, 2012). The AVE for each factor exceeded any of the squared pairwise correlations involving the factor, confirming discriminant validity of the measures (Fornell & Larcker, 1981).

To examine whether the behavioral attribution manipulation discouraged psychological ownership as anticipated, data were submitted to two-way ANOVA with pet type and behavioral attribution as the independent variables and psychological ownership as the dependent variable. Results reveal a main effect of behavioral attribution on psychological ownership ($M_{Attribute} = 3.72$ vs. $M_{Control} = 4.41$, $F(1, 186) = 23.80$, $p < .001$). The main effect of pet type and the interaction were not significant (p's > 0.30), confirming that attributing a pet's behavior to another individual's training successfully discouraged psychological ownership. To examine the moderating role of behavioral attribution on the relationship between perceived behavioral control and psychological ownership, a bootstrap analysis (Hayes, 2018, PROCESS Model 1) was conducted. Results reveal a significant association between perceived control and psychological ownership ($B = 0.22$, $t(1, 186) = 2.29$, $p = .023$) and a significant interaction ($B = -0.29$, $t(1, 186) = -2.18$, $p = .031$). The association between perceived control is significant for participants in the control condition (B = 0.22, $t = 2.29$, p = .023; 95% CI: 0.030 to 0.414), but not for those who attributed the pet's behavior to prior training by someone else (B = −0.07, $t = -0.77$, $p > .44$, 95% CI: −0.251 to 0.111).

The willingness to pay for surgery data were positively skewed with 10 respondents reporting a WTP of $100,000 or greater ($M = $1,131,354; $SD = $10,251,040; skewness = 9.597, $SE = 0.176$; kurtosis = 91.474, $SE = 0.351$). As in study 1, log transformation successfully reduced skewness (1.870, $SE = 0.176$) and kurtosis (9.30, $SE = 0.351$). If psychological ownership indeed plays a key role in the pet to valuation link, then dampening psychological ownership by changing the attribution of the pet's behavior to someone else's training of the pet should attenuate the relationship observed in study 1. To examine this contention, a bootstrap analysis (PROCESS Model 93; Hayes, 2018) was conducted with pet type as the independent variable, WTP for surgery (log transformed) as the dependent variable, perceived behavioral control and psychological ownership as serial mediators, attribution as a moderator, and pet weight as a covariate. Results revealed a significant index of moderated mediation (95% CI: −0.140 to −0.001). Replicating the results of study 1, the serially mediated effect of pet type on WTP for surgery was significant in the control condition (95% CI: 0.001 to 0.133), but not when participants attributed the pet's behavior to someone else's training (95% CI: −0.026 to 0.011). The effect of pet weight was not significant ($p > .40$).

The bootstrapping analysis was repeated with the remaining two dependent variable proxies for economic valuation: WTP for the personalized food bowl and intentions to purchase a painting of the pet. On average, dog food bowls are likely to be larger than cat food bowls and therefore might be expected to cost more. Thus, to compute WTP for the personalized food bowl, the expected price of the food bowl was subtracted from the maximum expenditure to form the WTP measure. Bootstrapping analyses (PROCESS Model 92; Hayes, 2018) again revealed significant indices of moderated mediation (95% CI: -6.32 to −0.33 (food bowl); −0.250 to −0.009 (painting)). The serially mediated effects of pet type on WTP for the food bowl and intentions to purchase a painting of the pet were significant in the control condition (95% CIs 0.303 to 6.201 (food bowl); 008 to 0.223 (painting)), but not when the pet's behavior was attributed to prior training by someone else (95% CIs −0.674 to 0.297 (food bowl); −0.087 to 0.030 (painting)).

Finally, in order to examine investment of self and intimate knowledge as alternate accounts, the analyses were repeated with each alternate mediator. None of the analyses yielded significant results, suggesting that investment of self and intimate knowledge once again do not adequately account for the findings.

4.3. Discussion

Study 2 extends the findings of study 1, first by replicating the results not only with WTP for life-saving surgery, but also with two additional measures of economic valuation: WTP for a personalized food bowl, and intention to purchase a painting of the pet. Most importantly, study 2 provides additional evidence of the proposed psychological process by manipulating the mediator, psychological ownership of the pet. In the control condition, results of study 2 replicate those of study 1. However, consistent with a view of effectance as a key motivator for psychological ownership (Pierce et al., 2003), when participants' psychological ownership of the pet is dampened by imagining that the behavior of their pet is attributed to the prior training of another person, the serially mediated impact of pet type on economic valuation disappears.

5. Study 3

5.1. Emotional attachment

Whereas psychological ownership has cognitive and affective components (Pierce et al., 2003), attachment refers to an emotion or affect-laden bond between a person and an object (Bowlby, 1973; Thomson et al., 2005). Emotional attachment is characterized by strong feelings of connection, love, and passion and attached consumers are willing to pay a price premium for their relationship target (Thomson et al., 2005). Further, both psychological ownership and affective reaction play key roles in understanding loss aversion and the endowment effect (Shu & Peck, 2011), or the propensity for consumers to value products they own more highly than products they do not own (Ariely, Huber, & Wertenbroch, 2005). Psychological ownership answers the question “Is it mine?” whereas affective reaction addresses the question “How strongly do I feel about it?” (Shu & Peck, 2011). Therefore, both psychological ownership and emotional attachment should play a role in consumers' economic valuation of their pets.

Emotional attachment develops based on the interaction between an individual and a person or object (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996), including a pet (Kurdek, 2009b; Melson, 1990; Mosteller, 2008; Palmer & Custance, 2008; Siegel, 1990; Zilcha-Mano et al., 2011). Some research suggests that pet-owners are more emotionally attached to dogs than to cats (Lue et al., 2008; Siegel, 1990) and dogs are often studied as attachment figures (Kurdek, 2009a, 2009b). Further, cat-owners are more likely to report avoidant-style attachments with their pets, in which the pet seems more emotionally distant, than dog owners (Zilcha-Mano et al., 2011). However, in other research, no differences in emotional attachment between dogs and cats have been found (Zasloff, 1996). It is possible that the pet's behavior,

rather than the species of pet itself, helps to determine the emotional attachment of the owner to the pet.

According to attachment theory (Bowlby, 1973), some amount of perceived behavioral control is key to development of secure attachment partnerships (Moss, Rousseau, Parent, St-Laurent, & Saintonge, 1998). For example, a toddler's cry of pain brings the parent running, an element of perceived control on the part of the child that fosters their feelings of attachment. At the same time, parents perceive control of their child as they communicate with them and they respond accordingly. Therefore, the relationship between parents and children typically involves perceptions of control, fostering attachment in both relationship participants.

Many pets are typically also able to exert control over their humans. For example, dogs and cats bark or meow to communicate hunger, and their humans respond by feeding them. Therefore, the pet exerts control over their human's behavior (some might argue we are their "staff."). However, as illustrated by the study 1 results, dog owners are more likely perceive control of their pet's behavior than cat owners. This research proposes that owners' perceptions of control of their pet's behavior, and the resulting psychological ownership and attachment should help explain valuation. By answering the question "Is it mine?", psychological ownership mediates the relationship between perceived control of the pet's behavior and emotional attachment, ultimately enhancing consumers' economic valuation of their pet.

In study 3, I test this proposition. Further, while the results of studies 1 and 2 were illuminating, participants already legally owned their pet, and the quasi-experimental manipulation of pet type did not allow for true causal inference. Given that personality traits of self-identified "dog people" may differ from those of "cat people" (Gosling, Sandy, & Potter, 2010; Woodward & Bauer, 2007), and dog owners have higher incomes than cat owners (Lue et al., 2008), a research design that allows for true causal inference would help rule out possible effects of personality trait or demographic differences between pet owners. At the same time, if it is truly the behavior of the animal that is increasing economic valuation of dogs versus cats, and not some other attribute inherent to the animal, then manipulating the pet's behavior (dog-like versus cat-like) should attenuate or reverse the effect. Study 3 addresses these issues and further extends the research by examining additional indicators of economic valuation.

5.2. Method

5.2.1. Design, participants and procedures

Study 3 employed a 2 (pet: dog vs. cat) × 2 (pet behavior: dog vs. cat) randomized between-subjects design with 120 MTurk participants. Participants were asked to imagine owning either a typical dog (cat), or a dog that behaves like a cat (cat that behaves like a dog) and to write 4–6 sentences describing the behavior and personality of the imaginary pet (see Appendix A for details).

5.2.2. Measures

Perceived control of the pet's behavior, psychological ownership, investment of self and intimate knowledge were measured as in studies 1 and 2. To measure emotional attachment, participants were asked to describe their feelings towards the pet using nine items with endpoints *describes very poorly* or *describes very well*, including such words as "loving," "connected," "bonded," and "attached" (Thomson et al., 2005). WTP for life-saving surgery and for annual health insurance were measured with single open-ended questions as in studies 1 and 2. Three bipolar items, such as *unlikely/likely*, measured intentions to post a selfie with the pet (Kirk, Peck, & Swain, 2018). Finally, participants were told "Imagine that a store can create a 3-dimensional printed model of this pet, about the size of a bar of soap." WTP for the 3-D pet model was measured as in studies 1 and 2. Two questions served as manipulation checks: "Just to confirm, what kind of pet are you imagining owning?" (*dog/cat/other*) and "Is the behavior of the pet you are imagining more like that of a typical dog, or that of a typical cat?" (5-point bipolar: *acts like a dog/acts like a cat*). Imaginary pet weight was captured with an open-ended response question: "Approximately how many pounds do you imagine this pet would weigh?" A single open-ended response question asked "How many dogs or cats do you currently own? (Enter 0 if none)."

5.3. Results

The willingness to pay for surgery data included a single outlier ($100,000 vs. a mean of $3956.25; skewness = 8.45, SD = 0.22; kurtosis = 82.18, SD = 0.44). The outlier was removed from analysis, successfully reducing skewness (2.74, SD = 0.22) and kurtosis (8.68, SD = 0.44), leaving 119 participants. The significance and pattern of reported moderated mediation results were not affected by removal of the outlier. Of the 119 retained participants, 58% owned at least one dog and 50% at least one cat; 17% owned neither a dog nor a cat, and 36% owned both. All participants reported imagining the animal to which they were assigned, and the behavioral manipulation was successful (M_{Dog} = 1.18 vs. M_{Cat} = 4.87, $F(1, 115) = 1345.47$, $p < .001$). Pet behavior was coded as either congruent (0) or incongruent (1) with the species.

A confirmatory factor analysis with maximum likelihood estimation was conducted using AMOS 25 to examine the reliability and validity of the latent measures, including control, intimate knowledge, investment of self, psychological ownership, emotional attachment and intention to post a selfie. The measurement model fit was good ($\chi^2(252) = 513.01$; CFI = 0.94; RMSEA = 0.09), and all standardized factor loadings were > 0.68 ($p < .001$). All composite reliabilities and Cronbach's alpha scores were > 0.86 and average variance extracted (AVE) measures exceeded 0.75, offering evidence of convergent validity (Bagozzi & Yi, 2012). The AVE for each factor exceeded any of the squared pairwise correlations involving the factor, confirming discriminant validity of the measures (Fornell & Larcker, 1981).

It is possible that the behavioral manipulation might unintentionally also manipulate participants' perceptions of the animal's size, potentially serving as a confound. To examine this possibility, a two-way ANOVA was conducted to assess the impact of the pet-behavioral manipulations on pet weight. Results reveal the expected main effect of pet species on pet weight (M_{Cat} = 15.4 vs. M_{Dog} = 44.3, F(1, 115) = 26.90, $p < .001$, $\eta^2 = 0.190$); however, this main effect was qualified by a significant interaction ($F(1, 115) = 5.78$, $p = .018$, $\eta^2 = 0.048$). The main effect of pet-behavioral congruence was not significant ($p > .37$, $\eta^2 = 0.007$). Planned contrasts revealed that dogs were imagined to weigh less when they behaved like cats than like dogs ($M_{Congruent}$ = 53.5 vs. $M_{Incongruent}$ = 35.1, $F(1, 58) = 4.16$, $p = .046$). There were no imagined differences in cat weight by behavior ($p > .20$).

Nonetheless, the degree of the potential confound from imagined weight differences depends on the magnitude of the effect, and if the effect size of the intended manipulation is substantially larger than the sum of the other effects, a potential confound is unlikely to be a concern (Perdue & Summers, 1986). In this data, the effect of the pet species on weight is 3.5 times the magnitude of the sum of the other two effects. Therefore, weight as a confound is unlikely to be a concern in this data. Further attenuating any concerns regarding weight, bivariate correlation analysis reveals no significant correlation between weight and any of the mediating or dependent variables, with the exception of Willingness to Pay for the printed 3-D pet. It is possible that despite the explanation that the 3-D printed pet was "about the size of a bar of soap," participants may nonetheless have imagined a printed pet that varied more in size.

Results of two-way MANOVA with pet and pet-behavioral congruence as independent variables and (a) WTP for life-saving surgery; (b) WTP for health insurance; (c) WTP for a 3-D printed pet and (d) posting a selfie with the pet as the dependent variables reveal no main

Table 1
Economic valuation of pet as a function of behavior; results of MANOVA (Study 3).

DV	$F(1, 115)$	p	Means			
			Dog	Dog behaves like cat	Cat	Cat behaves like dog
WTP surgery	4.43	0.037	$4269.64*	$2371.88*	$2461.67	$3636.21
WTP insurance	4.91	0.029	$688.39*	$324.06*	$340.50	$445.17
WTP 3-D pet	2.37	0.126	$57.46	$48.19	$32.17	$56.79
Posting selfie	3.88	0.051	4.14	3.71	3.33	3.91

* $p < .05$.

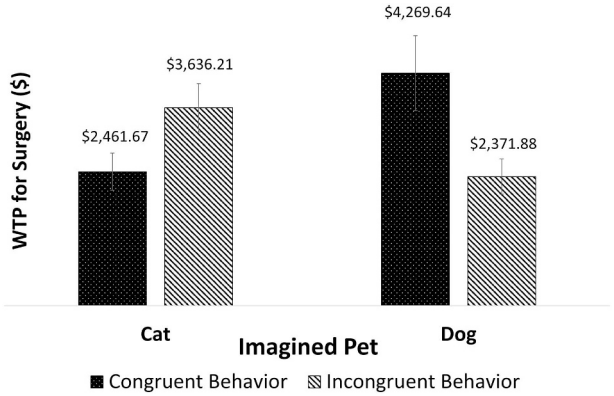

Fig. 2. Willingness to pay for life-saving surgery as a function of pet behavior (dog-like vs. cat-like; study 3).

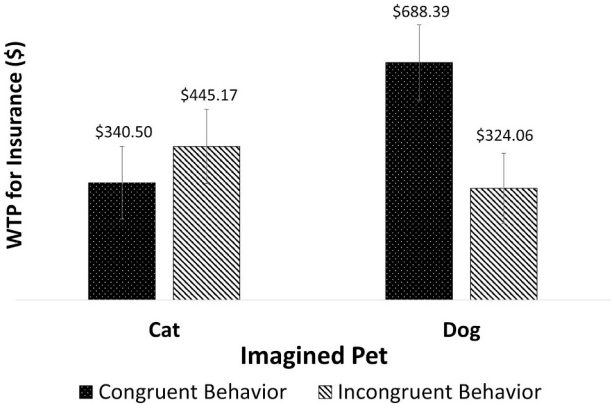

Fig. 3. Willingness to pay for medical insurance as a function of pet behavior (dog-like vs. cat-like; study 3).

effects and the predicted interactions on WTP for surgery and insurance (see Table 1). Planned contrasts revealed that participants imagining owning a dog reported they would pay more for life-saving surgery and health insurance when the pet behaved like a dog, but not when it behaved like a cat (see Figs. 2 and 3). The pattern was reversed for cats, although not statistically significant ($ps > 0.32$). Result patterns for WTP for a 3-D printed pet and posting a selfie with the pet were similar, though not statistically significant ($ps > 0.22$).

Moderated serial mediation analysis (Hayes, 2018; model 83) revealed a significant indirect effect of pet species (cat vs. dog) on WTP for surgery through attachment (95% CI: 41.91 to 935.89). However, supporting the conceptualization, the results further revealed a significant index of moderated mediation for the proposed moderated serially mediated path (95% CI: −2281.24 to −572.26) (Fig. 4). The effect of pet (cat vs. dog) on WTP for surgery is serially mediated by perceived control of the pet's behavior, psychological ownership, and emotional attachment, but only when the pet's behavior is typical for the species (95% $CI_{Congruent}$: 285.29 to 1243.92). When dogs behaved

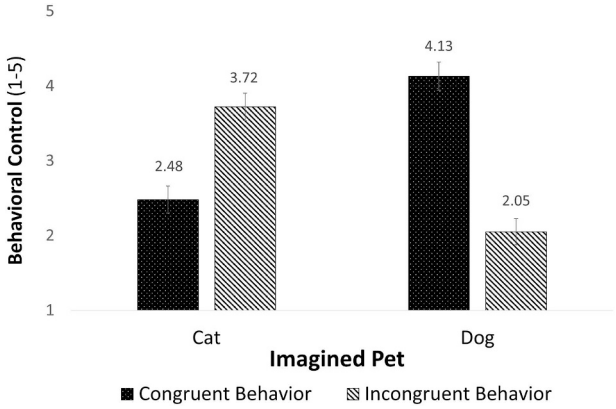

Fig. 4. Perceived behavioral control as a function of pet behavior (dog-like vs. cat-like; study 3).

like cats and cats behaved like dogs, the effect of pet on surgery WTP through psychological ownership was reversed (95% $CI_{Incongruent}$: −1122.91 to −253.02. No direct effects or other intermediate paths were significant (95% CI's contained zero). The effect of weight was not significant ($p > .24$).

The moderated serial mediation analysis was repeated with similar results for the remaining dependent variables: WTP for health insurance; WTP for a 3-D printed pet; and posting a selfie with the pet (see Table A4 for details). There was an indirect effect of pet type (dog or cat) on WTP for health insurance and posting a selfie with the pet (but not on WTP for the 3-D printed pet) through attachment. However, once again consistent with the conceptualization, all indices of moderated mediation were significant (95% CIs did not contain zero), and no additional direct effects or other intermediate paths were significant (95% CI's included zero). To examine investment of self and intimate knowledge as alternate accounts of the findings, all analyses were repeated with investment of self and intimate knowledge substituting for perceived control. These analyses revealed no significant indices of moderated mediation (95% CI's contained zero). Therefore, only perceived control of the pet's behavior adequately accounts for the effect of the pet's behavior on economic valuation.

5.4. Discussion

In study 3, the findings of studies 1 and 2 are replicated and extended in several ways. First, results again show that dog owners are willing to pay more for life-saving surgery than cat owners. These findings are also replicated with other measures of economic valuation, including WTP for pet health insurance and a 3-D printed model of the pet, as well as intention to post a selfie with the pet. Most significantly, by manipulating the behavior of the animal independent of other attributes, results show that the effect of the pet (dog vs. cat) on economic valuation is driven by the behavior of the pet rather than by other pet attributes. Finally, consistent with attachment theory (Bowlby, 1973), in which perceptions of control play a key role in the development of attachment feelings, the effect of pet behavior on economic valuation is

serially mediated by perceived control of the pet's behavior, psychological ownership, and emotional attachment.

6. General discussion

Across three studies, with both actual dog and cat owners as well as owners of imagined pets, this research demonstrates that consumers place a higher economic valuation on dogs than cats. This effect is explained by consumers' enhanced feelings of psychological ownership of and resulting emotional attachment to the pet, and is due to the perceived controllability of the animal's behavior rather than other attributes intrinsic to the pet. Limited prior research has examined consumers' economic valuation of pets (Kennedy & McGarvey, 2008; Lancendorfer et al., 2008; Ridgway et al., 2008), especially as it impacts spending on products and services for pets (Brockman et al., 2008; Lue et al., 2008). By experimentally manipulating the pet, the pet's perceived behavior, and the attribution of the pet's behavior, this research integrates emotional attachment and psychological ownership theories to provide a causal framework that documents the effect of a pet's behavior on consumers' economic valuation of the animal. This research reveals that consumers who perceive greater control of their pet's behavior will spend more on life-saving surgery, health insurance, and specialty pet merchandise such as a personalized food bowl, a painting of the pet, and a 3-D printed version of the pet. They will also be more likely to spread word-of-mouth about their pet, for example by posting selfies.

This research also offers the first exploration of consumers' psychological ownership of a living creature, contributing to the growing literature on the role of psychological ownership in marketing. By manipulating the attribution of the pet's behavior to another person, this research also introduces a novel mechanism for manipulating psychological ownership, contributing to the limited literature on consumers' motivations for psychological ownership (Kirk, Peck, Hart, & Sedikides, 2018; Pierce et al., 2003). Given that living creatures have a mind to behave as they wish, this research suggests the ability for humans to control their behavior may be especially powerful in eliciting psychological ownership in this context. Whereas the effect of psychological ownership on willingness to pay more for a product has been well-documented, results of this research also demonstrate the additional role that emotional attachment plays in explaining valuation of a living thing. Pets, even dogs, whose behavior or personalities make them more difficult to control are less likely to be psychologically owned, and this should reduce the potential for emotional attachment and resulting valuation, with implications for both pet consumers and medical service providers. Given that the right to legal ownership of a sentient creature of another species can be controversial (Holbrook & Woodside, 2008) and animal rights (Regan, 1987) are increasingly receiving attention, understanding the role of psychological ownership and its outcomes in human-animal relationships is important.

Feral dogs and cats live side by side with humans in many countries (Miller & Howell, 2008; Srinivasan, 2013). Despite cats' independence, their hungry responsiveness to humans' proffered food might increase consumers' perceptions of control of the animal's behavior, resulting in greater psychological ownership, or “semi-ownership” (Toukhsati, Bennett, & Coleman, 2007). Animals' relationships with humans differ dramatically by culture (Herzog, 2016; Walsh, 2009). For example, many animals, such as cats, dogs, horses and rabbits are pets in one culture, but serve as food, or even both pet and food, in another. The role of cultural influences on feelings of ownership and the valuation of pets should be examined. Further, dogs and cats are more likely to be relinquished to animal shelters when they have been acquired from friends than from other sources (New et al., 1999). It is possible that the salience of a friend's psychological ownership of the pet makes it more challenging for the adoptive parent to feel ownership for the animal, reducing valuation and leading to increased relinquishment.

Psychological ownership can be a double-edged sword. For example, consumers with high psychological ownership, especially those higher in narcissism, can become territorial and will retaliate when infringed (Kirk, Peck, & Swain, 2018). Feelings of proprietary ownership for a relationship partner have been implicated in domestic abuse (Serran & Firestone, 2004) and maladaptive personality traits such as narcissism have been linked to partner violence (Varley Thornton, Graham-Kevan, & Archer, 2010). Future research should examine whether there might be personality types who translate feelings of ownership into a darker side of pet ownership (Beverland et al., 2008), or even a perceived right to abuse an animal, rather than emotional attachment.

Despite substantial interest in the study of human relationships with animals and their emotional attachment to pets, little research has provided a systematic examination of the role of attachment in the economic valuation of these living possessions. This research demonstrates that, consistent with the role of control in the development of attachment (Moss et al., 1998), emotional attachment plays a key role in explaining the effect of control-based psychological ownership on economic valuation. According to attachment theory (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1973; Zilcha-Mano et al., 2011), attachment styles develop based on children's early relationships with their caregivers and can be classified as secure, avoidant, or anxious-ambivalent. Attachment styles endure into adulthood and affect adult romantic relationships (Feeney & Noller, 1990). Avoidant and anxious attachment styles have been shown to impact grief following a pet's loss (Field, Orsini, Gavish, & Packman, 2009; Zilcha-Mano et al., 2011). Life-saving medical procedures for a pet can be economically devastating for a family (Brockman et al., 2008), and if consumers understand their own attachment styles, they may be better able to regulate their spending on their pets. Given the potential implications for consumer welfare as well as for veterinarians and pet hospitals, further research in this area is warranted.

In this research, the experimental manipulations were focused on the pet species (dog vs. cat), the pet's behavior, and attributions for the pet's behavior. It is possible that participants who had prior experience with surgery for a pet might respond differently from those answering from a hypothetical standpoint. This question warrants further research. The effect of pet type on economic valuation through attachment in study 3, beyond the effect of behavioral control, suggests there may be additional routes to valuation that should be examined in future research. For example, the powerful social bonding hormone, oxytocin, may be implicated in consumers' responses to animals' behaviors (Romero, Nagasawa, Mogi, Hasegawa, & Kikusui, 2014). Further, both child and adult dog ownership have been associated with increased adult empathy (Daly & Morton, 2009), and the role of empathy for the animal should be explored.

Additional emotional responses may also play a role. Pet owners express pride in their pets (Belk, 1996; Bettany & Daly, 2008) and consumers might feel pride of ownership (Kirk, Swain, & Gaskin, 2015) resulting from their ability to master their dog's behavior, leading to greater word-of-mouth. Families that have both a dog and a cat might even struggle with guilt (Brockman et al., 2008) for paying less on medical care for one pet than for the other. The potential role of personality differences between dog and cat owners (Gosling et al., 2010; Woodward & Bauer, 2007) on economic valuation should also be examined. For example, “dog people” score higher on extraversion, agreeableness, and conscientiousness, while “cat people” score higher on neuroticism and openness to experience (Gosling et al., 2010). The research design of study 3, in which dog and cat ownership and behavior are randomly assigned, makes it unlikely that these research findings are due to individual differences in owners. Nonetheless, characteristics of owners themselves, or even personality congruence between humans and animals (Cavanaugh et al., 2008), may augment or attenuate the findings. Cat or dog behavior that is perceived to be more novel (Junghan & Lakshmanan, 2015), as might be the case with cats that act like dogs, may also increase the valuation of the pet.

Although challenging due to the nature of a pet as an ownership target, the ecological validity of pet-related research would also be enhanced by the addition of laboratory or field experiments with live animals.

Dog-owners generally have higher incomes than cat-owners (Lue et al., 2008). While this may be explained by other factors, such as lifestyle choices or personalities, this research suggests that the relationship between choice of pet species (dog or cat) and income in the general population might be explained by consumers' expectations that they will become more emotionally attached and therefore spend more to care for a dog than a cat. Interestingly, researchers have found that overall, income and education level are actually negatively associated with pet owners' willingness to "spend any amount necessary to keep their pets healthy" (Lue et al., 2008: 535), also suggesting potential areas for future research.

Due to the burgeoning market for pets and pet-related products and services, the managerial implications of this research are substantial. This research reveals that it is the pet's behavior that drives differences in economic valuation between dogs and cats, reflected in important managerial outcomes such as willingness to pay for life-saving surgery, health insurance, and pet-related products, in addition to word-of-mouth. If cat owners were motivated to feel greater ownership for their pet, despite the unpredictable nature of their pet's behavior, better medical outcomes for the animal might ensue. For example, cats can be trained, and some assistance to cat owners in training their pet, such as to use a scratching post or even toilet-training a cat, would also enhance consumers' perceived control of their cat's behavior, ultimately leading to increased valuation of the pet. Such a result has implications for veterinarians as well as pet-related product and service providers.

Psychological ownership theory suggests additional implications. In this research, investment of self and intimate knowledge do not differ between dog and cat owners. These findings are consistent with research on humans' relationships with cats in which emotional intimacy, rather than control and attachment, play a key role (Beck & Katcher, 1996; Downey & Ellis, 2008). Nonetheless, these antecedents are documented drivers of psychological ownership and if they can be boosted in pet owners, they could enhance psychological ownership, attachment, and ultimately valuation with perhaps better outcomes for animals. Veterinarians could encourage new pet owners to invest themselves in their pet, for example by providing or recommending interactive toys, grooming tools, or an online community board to post their favorite photos. Providing cat owners with the latest research, in consumer-digestible format, concerning cat behavior could also help boost intimate knowledge of their pet and lead to improved medical treatment. Examples could include explanations of why cats purr, cat "kneading" behavior, and the sleep behaviors of cats. With states beginning to ban such activities as greyhound racing, thousands of these gentle dogs will need homes, and psychological ownership could be used to motivate consumers to adopt them. For example, consumers could be invited to submit (Stoner et al., 2018) or vote (Fuchs et al., 2010) on names for shelter animals, which would enhance their feelings of ownership of the animal. Videos of feeding or play sessions could be posted online or live-streamed, enhancing intimate knowledge of the prospective pets.

This research might also have implications for animal ownership beyond dogs and cats (McMullen, 2008), such as birds, horses (Keaveney, 2008), or even farm animals. Marketers have created robot dogs and virtual pet apps, and artificially intelligent robotic assistants are coming to be perceived as companions or relationship targets (Belk, 2018; Lakatos & Miklosi, 2012). The power of perceived behavioral control, compared with physical control, is also evident in the rapid adoption of Internet of Things devices such as Amazon's *Alexa*. Psychological ownership and emotional attachment would likely have important implications for economic valuation in these contexts and should be examined.

7. Conclusion

Providing a first look at the impact of psychological ownership of a living creature, this research reveals the essential roles that control-based psychological ownership and resulting emotional attachment play in explaining why consumers place a higher economic valuation on dogs than cats. Ultimately, although both dogs and cats provide joy and companionship to their humans, it appears that consumers as masters place a higher economic valuation on their pets than they do as staff.

Acknowledgements

The author thanks Bernadette Kamleitner, Samantha Kirk, Joann Peck and Rosemarie Whyte, as well as two anonymous reviewers, for their helpful insights on earlier versions of this work.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Appendix A. Methodological details

A.1. Measures

Perceived Control (Brown et al., 2014) **of Pet's Behavior**

1.) My (this) pet lets me be in control.
2.) When I play with my (this) pet, I feel in charge.
3.) I feel in control when I am with my (this) pet.
4.) I would be able to control this pet's behavior (studies 2 and 3 only).

Psychological Ownership (Fuchs et al., 2010; Kirk, Peck, & Swain, 2018; Peck & Shu, 2009) **of the Pet**

1.) I feel a very high degree of personal ownership of this pet.
2.) I feel like this is "my" pet.
3.) This pet incorporates a part of myself.

Emotional Attachment (Thomson et al., 2005)

1.) Affectionate
2.) Friendly
3.) Loving

4.) Passionate
5.) Delighted
6.) Captivated
7.) Connected
8.) Bonded
9.) Attached

Willingness to Pay (Fuchs et al., 2010) **for Life-Saving Surgery**

Study 1. "Imagine that your pet contracts a serious illness. Please take a minute to write 4 to 6 sentences about how you would handle the situation. Consider how you would feel and the steps you would take to cure your pet's illness" then, "It turns out that curing your pet requires much surgery, and without the surgery your pet will die. How much would you *expect to spend* on the life-saving surgery for your pet? [This question is used to help participants self-anchor (Gawronski, Bodenhausen, & Becker, 2007), but results are not used in analysis.] What is the *most you would be willing to pay* for the life-saving surgery for your pet?"

Studies 2 and 3. "Imagine that your pet contracted a serious illness. Curing this pet requires much surgery, and without the surgery your pet will die. How much would you *expect to spend* on the life-saving surgery for your pet? [This question is used to help participants self-anchor (Gawronski et al., 2007), but results are not used in analysis.] What is the *most you would be willing to pay* for the life-saving surgery for your pet?"

Willingness to Pay (Fuchs et al., 2010) **for a customized and personalized food bowl**. How much would you *expect to spend* on a customized and personalized food bowl for your pet? What is the *most you would be willing to pay* for a customized and personalized food bowl for your pet? [WTP computed as difference.]

Willingness to Pay (Fuchs et al., 2010) **for Health Insurance**

"What would you *expect to pay* per year for health insurance for this pet? [This question is used to help participants self-anchor (Gawronski et al., 2007), but results are not used in analysis.] What is the *most you would be willing to pay* per year for health insurance for this pet?"

Willingness to Pay (Fuchs et al., 2010) **for a 3-D Model of a Printed Pet**

"Imagine that a store can create a 3-dimensional printed model of this pet, about the size of a bar of soap. How much would you *expect to spend* on such a 3-D printed model of this pet?" [This question is used to help participants self-anchor (Gawronski et al., 2007), but results are not used in analysis.] "What is the *most you would be willing to pay* for such a 3-D printed model of this pet?"

Intention to Purchase a Painting of the Pet

"A local artist paints 11″ × 14″ portraits of pets. Thinking about this pet, how likely would you be to purchase a painting of this pet?"

1.) Unlikely/Likely
2.) Improbable/Probable
3.) Impossible/Possible

Intention to Post a Selfie (Kirk, Peck, & Swain, 2018)

Thinking about this pet you are imagining, how likely would you be to post a selfie with this pet on social media?

1.) Unlikely/Likely
2.) Improbable/Probable
3.) Impossible/Possible

Investment of Self (Brown et al., 2014)

1.) I (would) invest a great deal of myself in caring for my pet.
2.) I (would) invest a lot of effort in caring for my pet (study 2 only)
3.) Overall, I (would invest) have invested a lot of myself in my pet.

Intimate Knowledge (Brown et al., 2014)

4.) I (would) have a depth of knowledge about caring for my pet.
5.) I (would) know a lot about caring for my pet.
6.) Overall, I feel I (would) have an intimate knowledge of my pet.

Manipulation Check Questions.

Study 1. "Just to confirm, the pet that I am thinking about is a (*dog/cat*)."

Study 2. "Just to confirm, what kind of pet did you write about? (*dog/cat*) and "The pet's behavior can be attributed to someone else's training." (5-point Likert type with endpoints *strongly disagree/strongly agree*).

Study 3. "Just to confirm, what kind of pet are you imagining owning?" (*dog/cat/other*) and "Is the behavior of the pet you are imagining more like that of a typical dog, or that of a typical cat?" (5-point bipolar: *acts like a dog/acts like a cat*).

A.2. Details of participant instructions

A.2.1. Study 1

For this survey, we would like to ask you to think about your cat (dog). If you have more than one cat (dog), please think about the cat (dog) that seems to exemplify behavior most typical of a cat (dog). With this cat (dog) in mind, answer the questions in the rest of this survey.

Think about the typical behavior of your pet. Please take a moment to describe, in 4 to 6 sentences, the typical behavior and personality of your pet, as well as your typical interaction with him or her, in the space below.

A.2.2. Study 2

Participants in the pet-congruent behavior (typical dog or typical cat) conditions were told the following: "For this survey, I would like to ask you to imagine owning a typical dog (cat). Please think about the way a dog (cat) typically behaves. Then close your eyes and imagine what your experience would be like in caring for a typical dog (cat)." Then, they were told "Think about the behavior of this typical dog (cat) that you are imagining owning. Please take a moment to describe, in 4 to 6 sentences, the behavior and personality of this imaginary dog (cat), as well as your typical interaction with him or her, in the space below. This may include specific examples of how energetic your dog (cat) is, what activities he or she engages in and enjoys and what you do with your dog (cat). Remember, this is a typical dog (cat)."

In the pet incongruent-behavior conditions, participants were given the identical instructions, but instead of imagining owning a *typical* dog or cat, participants imagined owning a dog that acts like a cat (cat that acts like a dog).

Table A1
Correlations, composite reliabilities, and summary statistics (study 1).

		Mean	SD	Cronbach alpha	1	2	3	4
1	Perceived control	3.6	1.07	0.91	0.881[a]			
2	Investment of self	4.06	1.02	0.93	0.296**	0.935		
3	Intimate knowledge	4.25	0.87	0.95	0.297**	0.750***	0.934	
4	Psychological ownership	4.31	0.9	0.87	0.382**	0.764***	0.692***	0.842
5	WTP for surgery	3.31	0.9					

[a] Composite reliabilities on the diagonal.
** $p < .01$.
*** $p < .001$.

Table A2
Correlations, composite reliabilities, and summary statistics (study 2).

		Mean	SD	Cronbach alpha	1	2	3	4	5
1	Perceived control	3.53	1.04	0.92	0.870[a]				
2	Investment of self	4.38	0.859	0.95	0.069	0.926			
3	Intimate knowledge	4.56	0.625	0.90	0.034	0.546***	0.873		
4	Psychological ownership	4.07	1.01	0.90	0.083	0.280***	0.285***	0.870	
6	Purchase painting	3.38	1.44	0.96	0.136†	0.465***	0.263**	0.142+	0.939
7	WTP for surgery	3.45	0.886						
9	WTP for food bowl	−4.62	21.38						

[a] Composite reliabilities on the diagonal.
† $p < .10$.
** $p < .01$.
*** $p < .001$.

Table A3
Correlations, composite reliabilities, and summary statistics (study 3).

		Mean	SD	Cronbach alpha	1	2	3	4	5	6
1	Perceived control	3.05	1.30	0.96	0.933[a]					
2	Investment of self	4.27	0.87	0.96	0.191*	0.946				
3	Intimate knowledge	4.11	0.93	0.90	0.090	0.849***	0.882			
4	Psychological ownership	3.96	1.09	0.92	0.535***	0.543***	0.443***	0.902		
5	Emotional attachment	4.16	0.92	0.96	0.199*	0.439***	0.433***	0.160†	0.960	
6	Posting selfie	3.76	1.41	0.97	0.376***	0.785***	0.695***	0.692***	0.314**	0.864
7	WTP for surgery	3149	4005							
8	WTP for insurance	443	587							
9	WTP for 3-D printed pet	48.43	60.10							

[a] Composite reliabilities on the diagonal.
† $p < .10$
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table A4
Moderated serial mediation results (study 3).

DV	Direct effect	indirect effect of pet type (cat vs. dog) through attachment	Index of moderated (serial) mediation	Congruent pet behavior	Incongruent pet behavior
WTP surgery	−1971.22 to 1136.17	41.91 to 935.89	−2281.24 to −572.26	285.29 to 1243.92	−1122.91 to −253.02
WTP insurance	−246.85 to 217.72	2.73 to 114.07	−278.71 to −44.01	22.99 to 150.66	−135.30 to −19.40
WTP 3-D pet	−29.42 to 18.87	−0.167 to 12.62	−33.99 to −0.552	0.295 to 18.29	−16.52 to −0.249
Posting selfie	−0.292 to 0.799	0.015 to 0.346	−1.01 to −0.155	0.080 to 0.539	−0.506 to −0.068

95% confidence intervals (Hayes, 2018; model 83 with 10,000 bootstrap samples).

References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (1978). *Patterns of attachment: A psychological study of the strange situation.* Hillsdale, NJ: Erlbaum.

Amiot, C. E., & Bastian, B. (2015). Toward a psychology of human–animal relations. *Psychological Bulletin, 141*(1), 6.

APPA (2018). *National Pet Owners Survey, 2017–2018.* Greenwich, CT: American Pet Products Association, Inc. Retrieved from https://americanpetproducts.org/Uploads/MemServices/GPE2017_NPOS_Seminar.pdf.

Ariely, D., Huber, J., & Wertenbroch, K. (2005). When do losses loom larger than gains? *Journal of Marketing Research,* 134–138.

Atasoy, O., & Morewedge, C. K. J. J. o. C. R. (2017). Digital goods are valued less than physical goods. 44(6), 1343–1357.

Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin, 80*(4), 286.

Bagozzi, R. P., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science, 40*(1), 8–34. https://doi.org/10.1007/s11747-011-0278-x.

Baldwin, M. W., Keelan, J. P. R., Fehr, B., Enns, V., & Koh-Rangarajoo, E. (1996). Social-cognitive conceptualization of attachment working models: Availability and accessibility effects. *Journal of Personality and Social Psychology, 71*(1), 94.

Beck, A. M., & Katcher, A. H. (1996). *Between pets and people: The importance of animal companionship: Purdue University Press.*

Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research, 15*(2), 139–168.

Belk, R. W. (1996). Metaphoric relationships with pets. *Society and Animals, 4*(2), 121–145.

Belk, R. W. (2018). Robots, cyborgs, and consumption. In A. Lewis (Ed.), Cambridge handbook of psychology and economic behaviour.

Bettany, S., & Daly, R. (2008). Figuring companion-species consumption: A multi-site ethnography of the post-canine Afghan hound. *Journal of Business Research, 61*(5), 408–418. https://doi.org/10.1016/j.jbusres.2006.08.010.

Beverland, M. B., Farrelly, F., & Lim, E. A. C. (2008). Exploring the dark side of pet ownership: Status- and control-based pet consumption. *Journal of Business Research, 61*(5), 490–496. https://doi.org/10.1016/j.jbusres.2006.08.009.

Bly, M. (1998). Retrieved from http://www.catsinfo.com/catquotes.html.

Bowlby, J. (1973). Attachment and loss, vol. II: Separation (Vol. 2): Basic Books New York.

Brasel, S. A., & Gips, J. (2014). Tablets, touchscreens, and touchpads: How varying touch interfaces trigger psychological ownership and endowment. *Journal of Consumer Psychology, 24*(2), 226–233. https://doi.org/10.1016/j.jcps.2013.10.003.

Brockman, B. K., Taylor, V. A., & Brockman, C. M. (2008). The price of unconditional love: Consumer decision making for high-dollar veterinary care. *Journal of Business Research, 61*(5), 397–405.

Brown, G., Pierce, J. L., & Crossley, C. (2014). Toward an understanding of the development of ownership feelings. *Journal of Organizational Behavior, 35*(3), 318–338. https://doi.org/10.1002/job.1869.

Caldwell, M. (2008). Pet loves, rants, and raves: Commentary on Downey and Ellis's article. *Journal of Business Research, 61*(5), 442–443. https://doi.org/10.1016/j.jbusres.2007.07.016.

Cavanaugh, L. A., Leonard, H. A., & Scammon, D. L. (2008). A tail of two personalities: How canine companions shape relationships and well-being. *Journal of Business Research, 61*(5), 469–479. https://doi.org/10.1016/j.jbusres.2007.07.024.

Daly, B., & Morton, L. L. (2009). Empathic differences in adults as a function of childhood and adult pet ownership and pet type. *Anthrozoös, 22*(4), 371.

Dotson, M. J., & Hyatt, E. M. (2008). Understanding dog–human companionship. *Journal of Business Research, 61*(5), 457–466.

Downey, H., & Ellis, S. (2008). Tails of animal attraction: Incorporating the feline into the family. *Journal of Business Research, 61*(5), 434–441. https://doi.org/10.1016/j.jbusres.2007.07.015.

Ellson, T. (2008). Can we live without a dog? Consumption life cycles in dog–owner relationships. *Journal of Business Research, 61*(5), 565–573.

Feeney, J. A., & Noller, P. (1990). Attachment style as a predictor of adult romantic relationships. *Journal of Personality and Social Psychology, 58*(2), 281.

Ferguson, C. A. (1964). Baby talk in six languages. American Anthropologist, 66 (6_PART2), 103–114.

Field, N. P., Orsini, L., Gavish, R., & Packman, W. (2009). Role of attachment in response to pet loss. *Death Studies, 33*(4), 334–355.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research,* 39–50.

Fuchs, C., Prandelli, E., & Schreier, M. (2010). The psychological effects of empowerment strategies on consumers' product demand. *Journal of Marketing, 74*(1), 65–79. https://doi.org/10.1509/jmkg.74.1.65.

Gawronski, B., Bodenhausen, G. V., & Becker, A. P. (2007). I like it, because I like myself: Associative self-anchoring and post-decisional change of implicit evaluations. *Journal of Experimental Social Psychology, 43*(2), 221–232.

Gilly, M. C. (2008). The price of peace in the household: A commentary on "The Price of Unconditional Love: Consumer Decisions Concerning High-Dollar Veterinary Care". *Journal of Business Research, 61*(5), 406–407.

Gineikiene, J., Schlegelmilch, B. B., & Auruskeviciene, V. (2017). "Ours" or "theirs"? Psychological ownership and domestic products preferences. *Journal of Business Research, 72,* 93–103.

Gosling, S. D., Sandy, C. J., & Potter, J. (2010). Personalities of self-identified "dog people" and "cat people". *Anthrozoös, 23*(3), 213–222.

Guzman, Z. (2017). Owning a pet can cost you $42,000, or 7 times as much as you expect. Retrieved from https://www.cnbc.com/2017/04/27/how-much-does-it-cost-to-own-a-dog-7-times-more-than-you-expect.html

Hair, J. F., Barth, K., Neubert, D., & Sarstedt, M. (2016). Examining the role of psychological ownership and feedback in customer empowerment strategies. *Journal of Creating Value, 2*(2), 194–210.

Haldeman, P. (2018). The secret price of pets. *The New York Times.* Retrieved from https://www.nytimes.com/2018/07/04/style/how-to-pamper-your-pet.html.

Hassan, L. M., & Shiu, E. (2015). The moderating role of national cultural values in smoking cessation. *Journal of Business Research, 68*(10), 2173–2180. https://doi.org/10.1016/j.jbusres.2015.03.017.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* New York: The Guilford Press.

Herzog, H. (2016). Does cultural group selection explain the evolution of pet-keeping? *The Behavioral and Brain Sciences, 39.*

Hill, R. P., Gaines, J., & Wilson, R. M. (2008). Consumer behavior, extended-self, and sacred consumption: An alternative perspective from our animal companions. *Journal of Business Research, 61*(5), 553–562.

Hirschman, E. C. (1994). Consumers and their animal companions. *Journal of Consumer Research, 20*(4), 616–632.

Holak, S. L. (2008). Ritual blessings with companion animals. *Journal of Business Research, 61*(5), 534–541.

Holbrook, M. B. (2008). Pets and people: Companions in commerce? *Journal of Business Research, 61*(5), 546–552.

Holbrook, M. B., & Woodside, A. G. (2008). *Animal companions, consumption experiences, and the marketing of pets: Transcending boundaries in the animal–human distinction.* In: Elsevier.

Holbrook, M. B., Stephens, D. L., Day, E., Holbrook, S. M., & Strazar, G. (2001). A collective stereographic photo essay on key aspects of animal companionship: The truth about dogs and cats. *Academy of Marketing Science Review, 1*(1), 1–16.

Imai, K., Tingley, D., & Yamamoto, T. (2013). Experimental designs for identifying causal mechanisms. *Journal of the Royal Statistical Society: Series A (Statistics in Society), 176*(1), 5–51.

Junghan, K., & Lakshmanan, A. (2015). How kinetic property shapes novelty perceptions. *Journal of Marketing, 79*(6), 94–111. https://doi.org/10.1509/jm.14.0284.

Kamleitner, B., & Erki, B. (2013). Payment method and perceptions of ownership. *Marketing Letters, 24*(1), 57–69. https://doi.org/10.1007/s11002-012-9203-4.

Keaveney, S. M. (2008). Equines and their human companions. *Journal of Business Research, 61*(5), 444–454. https://doi.org/10.1016/j.jbusres.2007.07.017.

Kennedy, P. F., & McGarvey, M. G. (2008). Animal-companion depictions in women's magazine advertising. *Journal of Business Research, 61*(5), 424–430.

Kirk, C. P. (2017). When good fences make good customers: Exploring psychological ownership and territoriality in marketing. In C. Olckers, L. v. Zyl, & L. v. d. Vaart (Eds.), Theoretical orientations and practical applications of psychological ownership: Springer.

Kirk, C. P., & Swain, S. D. (2016). *The value in lurking: The effect of a mere opportunity for two-way communication on consumers' psychological ownership and valuation of digital content.* Las Vegas: Proceedings of the American Marketing Association Winter Academic Conference.

Kirk, C. P., & Swain, S. D. (2018). Consumer psychological ownership of digital technology. In J. Peck, & S. Shu (Eds.). *Psychological ownership and consumer behavior.*

New York: Springer.
Kirk, C. P., McSherry, B., & Swain, S. D. (2015). Investing the self: The effect of non-conscious goals on investor psychological ownership and word-of-mouth intentions. *Journal of Behavioral and Experimental Economics, 58*(C), 186–194.
Kirk, C. P., Swain, S. D., & Gaskin, J. E. (2015). I'm proud of it: Consumer technology appropriation and psychological ownership. *Journal of Marketing Theory & Practice, 23*(2), 166–184.
Kirk, C. P., Peck, J., Hart, C., & Sedikides, C. (2018). *It's meant for me: When serendipity increases word-of-mouth. In NA-advances in consumer research.* Duluth, MN: Association for Consumer Research.
Kirk, C. P., Peck, J., & Swain, S. D. (2018). Property lines in the mind: Consumers' psychological ownership and their territorial responses. *Journal of Consumer Research, 45*(1), 148–168.
Kurdek, L. A. (2009a). Pet dogs as attachment figures for adult owners. *Journal of Family Psychology, 23*(4), 439.
Kurdek, L. A. (2009b). Young adults' attachment to pet dogs: Findings from open-ended methods. *Anthrozoös, 22*(4), 359–369.
Lakatos, G., & Miklosi, A. (2012). How can the ethological study of dog-human companionship inform social robotics. In L. Birke & J. Hockenhull (Eds.), Crossing boundaries: investigating human-animal relationships (Vol. 14, pp. 187): Brill.
Lancendorfer, K. M., Atkin, J. L., & Reece, B. B. (2008). Animals in advertising: Love dogs? Love the ad!. *Journal of Business Research, 61*(5), 384–391.
Lessard-Bonaventure, S., & Chebat, J.-C. (2015). Psychological ownership, touch and willingness to pay for an extended warranty. *Journal of Marketing Theory & Practice, 23*(2), 224–234.
Lue, T. W., Pantenburg, D. P., & Crawford, P. M. (2008). Impact of the owner-pet and client-veterinarian bond on the care that pets receive. *Journal of the American Veterinary Medical Association, 232*(4), 531–540.
McMullen, C. (2008). Romancing the alpaca: Passionate consumption, collection, and companionship. *Journal of Business Research, 61*(5), 502–508. https://doi.org/10.1016/j.jbusres.2007.07.023.
Melson, G. F. (1990). Studying children's attachment to their pets: A conceptual and methodological review. *Anthrozoös, 4*(2), 91–99.
Michaels, L. (1995). *A cat.* Portland, Oregon: Tin House Books.
Miller, R., & Howell, G. V. (2008). Regulating consumption with bite: Building a contemporary framework for urban dog management. *Journal of Business Research, 61*(5), 525–531.
Moss, E., Rousseau, D., Parent, S., St-Laurent, D., & Saintonge, J. (1998). Correlates of attachment at school age: Maternal reported stress, mother-child interaction, and behavior problems. *Child Development, 69*(5), 1390–1405.
Mosteller, J. (2008). Animal-companion extremes and underlying consumer themes. *Journal of Business Research, 61*(5), 512–521.
New, J., John, C., Salman, M. D., Scarlett, J. M., Kass, P. H., Vaughn, J. A., ... Kelch, W. J. (1999). Moving: Characteristics of dogs and cats and those relinquishing them to 12 US animal shelters. *Journal of Applied Animal Welfare Science, 2*(2), 83–96.
Palmer, R., & Custance, D. (2008). A counterbalanced version of Ainsworth's Strange Situation Procedure reveals secure-base effects in dog–human relationships. *Applied Animal Behaviour Science, 109*(2–4), 306–319.
Peck, J., & Shu, S. B. (2009). The effect of mere touch on perceived ownership. *Journal of Consumer Research, 36*(3), 434–447.
Peck, J., & Shu, S. (2018). Solving stewardship problems with increased psychological ownership. In J. Peck & S. Shu (Eds.), Psychological Ownership in Consumer Behavior: Springer.
Peck, J., Barger, V., & Webb, A. (2013). In search of a surrogate for touch: The effect of haptic imagery on perceived ownership. *Journal of Consumer Psychology, 23*(2), 189–196.
Peck, J., Kirk, C. P., Luangrath, A., & Shu, S. (2019). *Uncommonly mine: Feelings of ownership promote stewardship of public goods. Paper presented at the Association for Psychological Science Conference Annual Convention.* D.C.: Washington.
Perdue, B. C., & Summers, J. O. (1986). Checking the success of manipulations in marketing experiments. *Journal of Marketing Research,* 317–326.
Perrin, T. (2009). The business of urban animals survey: The facts and statistics on companion animals in Canada. *The Canadian Veterinary Journal, 50*(1), 48.
Pierce, J. L., Kostova, T., & Dirks, K. T. (2001). Toward a theory of psychological ownership in organizations. *Academy of Management Review, 26*(2), 298–310.
Pierce, J. L., Kostova, T., & Dirks, K. T. (2003). The state of psychological ownership: Integrating and extending a century of research. *Review of General Psychology, 7*(1), 84.
Pirlott, A. G., & MacKinnon, D. P. (2016). Design approaches to experimental mediation. *Journal of Experimental Social Psychology, 66*, 29–38.
Regan, T. (1987). The case for animal rights. In Advances in animal welfare science 1986/87 (pp. 179–189): Springer.
Ridgway, N. M., Kukar-Kinney, M., Monroe, K. B., & Chamberlin, E. (2008). Does excessive buying for self relate to spending on pets? *Journal of Business Research, 61*(5), 392–396.
Romero, T., Nagasawa, M., Mogi, K., Hasegawa, T., & Kikusui, T. (2014). Oxytocin promotes social bonding in dogs. *Proceedings of the National Academy of Sciences, 111*(25), 9085–9090.
Sanders, C. R. (1993). Understanding dogs: Caretakers' attributions of mindedness in canine-human relationships. *Journal of Contemporary Ethnography, 22*(2), 205–226.
Serpell, J. (1996). *In the company of animals: A study of human-animal relationships: Cambridge University Press.*
Serran, G., & Firestone, P. (2004). Intimate partner homicide: A review of the male proprietariness and the self-defense theories. *Aggression and Violent Behavior, 9*(1), 1–15.
Shu, S. B., & Peck, J. (2011). Psychological ownership and affective reaction: Emotional attachment process variables and the endowment effect. *Journal of Consumer Psychology, 21*(4), 439–452.
Siegel, J. M. (1990). Stressful life events and use of physician services among the elderly: The moderating role of pet ownership. *Journal of Personality and Social Psychology, 58*(6), 1081.
Simpson, B., White, K., & Laran, J. (2017). When public recognition for charitable giving backfires: The role of independent self-construal. *Journal of Consumer Research, 44*(6), 1257–1273.
Sinclair, G., & Tinson, J. (2017). Psychological ownership and music streaming consumption. *Journal of Business Research, 71*, 1–9.
Spears, N., & Yazdanparast, A. (2014). Revealing obstacles to the consumer imagination. *Journal of Consumer Psychology, 24*(3), 363–372. https://doi.org/10.1016/j.jcps.2014.01.003.
Srinivasan, K. (2013). The biopolitics of animal being and welfare: Dog control and care in the UK and India. *Transactions of the Institute of British Geographers, 38*(1), 106–119.
Stoner, J. L., Loken, B., & Stadler Blank, A. (2018). The name game: How naming products increases psychological ownership and subsequent consumer evaluations. *Journal of Consumer Psychology, 28*(1), 130–137.
Thomson, M., MacInnis, D. J., & Whan Park, C. (2005). The ties that bind: Measuring the strength of consumers' emotional attachments to brands. *Journal of Consumer Psychology, 15*(1), 77–91.
Toukhsati, S. R., Bennett, P. C., & Coleman, G. J. (2007). Behaviors and attitudes towards semi-owned cats. *Anthrozoös, 20*(2), 131.
Tucker, A. (2017). *The lion in the living room: How house cats tamed us and took over the world: Simon and Schuster.*
Varley Thornton, A. J., Graham-Kevan, N., & Archer, J. (2010). Adaptive and maladaptive personality traits as predictors of violent and nonviolent offending behavior in men and women. *Aggressive Behavior, 36*(3), 177–186. https://doi.org/10.1002/ab.20340.
Walsh, F. (2009). Human-animal bonds I: The relational significance of companion animals. *Family Process, 48*(4), 462–480.
White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review, 66*(5), 297–333. https://doi.org/10.1037/h0040934.
Woodside, A. G. (2008). Using the forced metaphor-elicitation technique (FMET) to meet animal companions within self. *Journal of Business Research, 61*(5), 480–487.
Woodward, L. E., & Bauer, A. L. (2007). People and their pets: A relational perspective on interpersonal complementarity and attachment in companion animal owners. *Society and Animals, 15*(2), 169–189. https://doi.org/10.1163/156853007X187117.
Zasloff, R. L. (1996). Measuring attachment to companion animals: A dog is not a cat is not a bird. *Applied Animal Behaviour Science, 47*(1), 43–48.
Zilcha-Mano, S., Mikulincer, M., & Shaver, P. R. (2011). An attachment perspective on human–pet relationships: Conceptualization and assessment of pet attachment orientations. *Journal of Research in Personality, 45*(4), 345–357.

Colleen P. Kirk is Assistant Professor of Marketing at New York Institute of Technology in New York City. Kirk's research centers around consumer behavior, especially in the areas of psychological ownership, territoriality, emotions, and narcissism. Her work is published in leading journals such as Journal of Consumer Research, Journal of Advertising Research, Entrepreneurship: Theory and Practice, Journal of Behavioral and Experimental Economics, Journal of Brand Management, Journal of Marketing Theory and Practice, and Journal of Retailing and Consumer Services. An award-winning researcher and reviewer, she presents regularly at leading national and international conferences. Kirk holds a Bachelor of Arts from Cornell University, a Master of Business Administration from Southern Methodist University, a Master of International Management from the Thunderbird School of Global Management, and a Doctor of Professional Studies in Marketing and International Economics from Pace University.