BRILL

Society and Animals 15 (2007) 169-189

Society & Animals Journal of Human-Animal Studies
www.brill.nl/soan

People and Their Pets: A Relational Perspective on Interpersonal Complementarity and Attachment in Companion Animal Owners

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Sent 28 April 2005, Accepted 11 March 2006

Abstract
The current study evaluated the interpersonal circumplex as a theoretical model of companion animal personality and companion animal attachment. To this end, the study surveyed 266 companion animal guardians (owners)—89 reporting their most recent pet a cat and 177 reporting their most recent pet a dog—to assess the relationships between interpersonal complementarity and companion animal attachment. The study used MANOVA to evaluate differences in interpersonal traits for cats, dogs, and people who self-identified that cats or dogs were their ideal pets. Results indicated that cats—and people who identified cats as their ideal pet—were more hostile in their orientation than were dogs or people who preferred dogs. In hierarchical regression-analysis, the study also confirmed the positive relationship between interpersonal complementarity and companion-animal attachment.

Keywords
companion animal attachment, interpersonal style, interpersonal circumplex, complementarity

Introduction

According to an old joke, dogs and cats can be understood by the basic manifestation of their world views: Regarding guardians (owners) a dog thinks: "This person's great. She feeds me, she pets me, and she plays with me. She must be a god"! A cat, on the other hand, thinks: "This person's great. She feeds me, she pets me, and she plays with me. I must be a god"!

The implication in this joke is that dogs and cats have personalities that are distinctive and effective in their relationships with humans. Despite a dearth

 DOI: 10.1163/156853007X187117

of scientific theory or evidence to support their beliefs, pet owners—on an intuitive level—frequently categorize themselves as either "cat people" or "dog people." Those personality characteristics that distinguish these two categories of companion animal attachment, however, remain vague and ill-defined.

Attachment Components

The Origins of Attachment

As defined by Bowlby (1969), attachment is a "lasting psychological connectedness" (p. 194) between two living beings. Most commonly focused on the parent-child bond, attachment theory has been used to describe and explain people's enduring patterns of relationships. Early theories of attachment were founded in ethological studies of imprinting in non-primates (Konrad Lorenz's work with water fowl in the 1930s). A primary assumption of generalized attachment across species, however, is that of homology. For attachment to occur, there must be some isomorphic behavioral structure in both species that shares a common function. Askew (1996) suggested that the behavior of pet owners toward their companion animals is actually parental behavior directed at another species. Thus, early imprinting studies likely did not address the true symbiotic and affectional bonds that are presumed to define the construct of attachment. Various research studies support the premise that attachment occurs in dogs (Gacsi, Topal, Miklosi, Doka, & Csanyi, 2001; Prato-Previde, Custance, Spiezio, & Sabatini, 2003; Topal, Miklosi, Csanyi, & Doka, 1998), primates (Novak, & Harlow, 1975), and humans (Bretherton, 1992; Thompson, 1991).

Although theories geared toward explaining the human/animal attachment have been offered in the past, as noted by Kidd and Kidd (1987), many of these early theories fall short because they are founded on analogous studies of purely human-animal or object-relationship models. The current study attempts to arrest this critique by examining the human-companion animal bond from a functional, theoretical perspective utilizing the interpersonal circumplex—a trait and state model of personality that has been found to apply to both humans and other animals, such as primates (de Waal, 1982).

Interpersonal Theory and the Circumplex Model of Personality

Grounded in theory and research spanning four decades, the circumplex taxonomy has been described as one of the most sophisticated and theoretically coherent models of interpersonal behavior (Henry, Schacht, & Strupp, 1986). A

circumplex is an arrangement of codable types of interpersonal behavior around a circular figure. Eight primary personality dimensions are arrayed around the figure:

1. Dominant (D);
2. Friendly-dominant (FD);
3. Friendly (F);
4. Friendly-submissive (FS);
5. Submissive (S);
6. Hostile-submissive (HS);
7. Hostile (H); and
8. Hostile-dominant (HD).

A major assumption of interpersonal theory is that relational behavior can be organized on two orthogonal dimensions, most commonly referred to as Dominance-submissiveness (which reflects who controls whom) and Hostility-friendliness (which identifies the warmth of the affiliation between two people). The control/agency dimension is located vertically on a circle; the affiliation dimension is located horizontally. There have been a multitude of studies supporting the two-dimensional structure of the circumplex in human adult behavior (Kiesler, 1996) over a variety of interpersonal relationships—including parent-child, marital, and therapist-patient. The interpersonal circumplex has even received acceptance from researchers outside the interpersonal tradition as a valid measure of interpersonal patterns of relating. McCrae and Costa (1989) confirmed the underlying factor structure of the interpersonal circumplex using a comparative model of the Big Five personality dimensions. Wiggins (1991) proposed that the conceptual coordinates of control and affiliation apply to broader concepts in the social sciences and humanities such as gender studies, language acquisition, and social cognition.

The power of the circumplex model is that it describes state-like personality characteristics and provides a set of predictions about the impact different types of interpersonal behavior will have on the members of a dyadic interaction. The central idea in interpersonal behavior theory is that of complementarity. According to rules of complementarity, different kinds of behaviors elicit predictable responses from others in a reflex-like fashion. In essence, people seek the security of relating to others in a way that helps maintain their own preferred styles of interacting. According to Orford (1994), those who are relatively dominant in their interpersonal orientations would feel most comfortable relating to others who are relatively more submissive in their styles of interacting. Thus, along the control axis, complementarity is achieved when dominance pulls submission and vice versa (reciprocity). Along the

affiliation axis, however, complementarity is achieved when an individual's interpersonal style corresponds to that of a close other (correspondence).

Hence, those who are friendly in their interpersonal interactions would prefer to interact with others who are friendly, and those who are more distant or hostile would likewise prefer greater distance or hostility in their interpersonal transactions. The rules of interpersonal complementarity have been found to correspond to greater peer liking (Dryer, 1993), greater therapeutic change (Kiesler, 1982), and greater marital satisfaction (Campbell, 1990). Although theories of complementarity have been utilized to better understand a diversity of human interactions, the interpersonal circumplex has never been extended to describe inter-species relationships, nor has this widely accepted theory been used to evaluate the human-companion animal bond—a field of growing interest within health psychology.

Companion Animals and Attachment

In a survey of human-human and human-nonhuman animal relationships, Okoniewski (1984) noted that "animals are significant beings in the overall schema of humans' relatedness to the world around them" (p. 4). The roots of the human-animal bond date to very early history and likely have their origins in food acquisition. Although urbanization and modern development have modified this bond, the attachment between humans and their companion animals remains relatively undiminished (Bustad & Hines, 1984). Various factors have been offered to account for the quality and strength of human-animal attachment—including behavioral characteristics of the companion animal (Houpt, Honig, & Reisner, 1996; New et al., 2000), lifestyle dictates (Arkow & Dow, 1984), and individual differences accounted for by the pet owner (Brown & Katcher, 2001; Kidd, Kidd, & George, 1992). In a study of gender and personality influences on human interactions with dogs and horses, Brown (1984) noted that the affectional quality of the human/animal relationship was dependent on the owner's need for dominance. Owners needing greater dominance developed more punitive relationships with their pets, and those requiring less dominance sought greater affection. This line of research suggests that the interaction between personality attributes of the human and the pet may contribute significantly to the strength of the companion animal bond and provides support for an interpersonal conceptualization of the dyadic transaction.

Personality and Pets

A growing body of research in animal behavior attributes behavioral characteristics that might be deemed personality to different breeds of dogs and cats

(*Are dogs people too*?, 2005). Hart and Hart (1984) summarized seven behavioral profiles for common breeds of dogs and eight characteristics (as manifested by breed) in cats. Podberscek and Gosling (2000), applied the big-five factor model of human personality to the study of pets across a diversity of species. The factors that emerged (bold/quiet and warm/harsh) were consistent with dimensions that overlapped the circumplex axes of control and affiliation. Although there is notable difficulty in assessing animal personality—the tendency toward anthropomorphism confounds the study of animal behavior—there is evidence, as reported by Kwan (2005), that interpersonal perceptions of canine behavior are not particularly susceptible to inappropriate human projections or assumed similarity. In a series of studies conducted among patrons of a local dog park, Goslin, Kwan, and John (2003) reported that personality differences in dogs were detected and judged as accurately as those in humans. Hence, personality attributions may result from very real differences in the social behavior of companion animals, specifically, interactional behaviors unique to dogs and cats.

Social Behavior of Animals.

Cats. In a study of social behavior of kittens in the first 7 weeks of life, Karsh (1984) reported that cats appear to have a critical period for socialization that might account for the generally asocial and solitary existence of most felines. Likewise, several studies (Fonberg, Brudnias-Stepowska, & Zagrodzka, 1985; Knowles, Curtis, & Crowell-Davis, 2004; Natoli & De Vito, 1991; Van Den Bos & De Cock Buning, 1994) have documented a significant relationship between group dominance and hostile behaviors in domestic cats. Palmer (2001) makes a compelling argument in her thesis on Foucault that less highly domesticated creatures (like cats) are closer to engaging in pure power relationships with humans.

Dogs. Logically, dogs, who have been domesticated since the dawn of history (an estimated 12,000 years), might be expected to assume a more submissive role to humans than do cats, who have been domesticated a scant 6,000 years. This hypothesis has, in fact, been upheld by Marder (1989) in her essay on establishing a dominance hierarchy in dog packs and by Juarbe-Diaz (1997) in studies of human-dog social interactions. When dogs do manifest dominance in play behaviors, it is typically exhibited as aggression and can reflect general attributes of their personality and their relationship with the owner (Rooney & Bradshaw, 2003). Occasionally, dominance behaviors may result from competition or a perceived threat from an owner (Reisner, 1997). In this case, from an interpersonal perspective, the pet and owner are engaging in an anti-complementarity and typically unsatisfactory interaction. In a study of the natural ethological behaviors of unowned strays, Rubin and Beck (1982)

reported that only 12% of the interactions between humans and stray dogs resulted in aggression or dominance behaviors. According to the authors, the more natural response of dogs roaming in unfamiliar territory was to retreat or approach a human submissively. This finding was upheld by the non-aggressive behaviors observed by Berman and Dunbar (1983) in a study of free-ranging suburban dogs. The sociability of dogs, who naturally live in pack formations, has been attributed as the source of their ability to facilitate social interactions between their owners and strangers in public places (Robins, Sanders, & Cahill, 1991). These findings intuitively fit with the fact that people generally make internal, dispositional attributions of friendliness to dogs observed engaging in play with a human but look for external explanations for aggressive behavior in dogs (Rajecki, Rasmussen, Sanders, Modlin, & Holder, 1999). Perceptions of innate sociability and submissiveness, accurate are not, likely underlie the dog's epithet, "man's best friend."

The Social Meaning of Pets

Most pet owners report that they keep animals for social reasons or companionship (Endenburg, 't Hart, & Bouw, 1994). Mitchener (1988) suggested that the attachment between owners and their pets can rival that between a parent and a child. Unquestionably, many pet owners bond with their pets much as they would to family members (Bodsworth & Coleman, 2001; Reynolds, 1999). The quality of facilitative companionship provided by a pet has been cited as a significant predictor of the human-animal bond (Bustad & Hines, 1984).

Theories of Companion Animal Attachment

Although owner personality has been found to play a significant role in the development of the human/companion animal bond (Bagley & Gonsman, 2005), the quality of attachment to companion animals would appear to be independent of the type of pet (Stallones, Johnson, Garrity, & Marx, 1989) or of the respective attachment style of the owner (Endenburg, 1995). Rather, there seems to be a reciprocal relationship between the needs of the owner and the dispositional characteristics of the pet. Studies of failed animal adoptions have consistently found that perceived behavioral problems and unrealistic human expectations of the animal were some of the most frequently cited reasons for relinquishing a pet to an animal shelter (Arkow & Dow, 1984; Houpt et al., 1996; Kidd et al., 1992; New et al., 2000). Hart and Hart (1984) suggested that the matching of behavioral traits common to different breeds of dogs and cats to the personality style of the owner might optimize

the companion animal adoption process. Not only is the interpersonal fit between owner and companion animal hypothesized to predict greater attachment, but it also has been theorized to improve the mental health benefits of pet therapy (Bustad & Hines, 1984).

Purposes of the Study

The intent of this study was two-fold. First, this survey explored the generalizability of the interpersonal circumplex model of personality through the cross-species assessment of the dimensions agency and affiliation. Second, this study analyzed interpersonal complementarity between pet owners and their companion animals in order to predict owners' relative attachment and satisfaction with the human-animal bond. In sum, the goal of this study was to broaden our understanding of both human and pet personality characteristics and their roles in predicting interpersonal relationship satisfaction. Three hypotheses were generated to this end.

Hypotheses

Hypothesis 1. Dogs will be perceived by their owners as less hostile/more friendly and more submissive/less dominant across octant scores than cats, whereas people who identify dogs as their ideal pet (dog people) will self-report as less hostile/more friendly and less submissive/more dominant across octant scores than people who identify cats as their ideal pet (cat people).
Hypothesis 2. There will be greater reported interpersonal complementarity between self-identified "dog people" and their dogs (versus cats) and greater reported interpersonal complementarity between self-identified "cat people" and their cats (versus dogs).
Hypothesis 3. Stronger interpersonal complementarity between owner and pet interpersonal styles will predict greater attachment to a companion animal.

Methods

Participants

Two hundred and sixty-six participants (213 women, 53 men; mean age 19.9, age range 18-45) were recruited from an introductory Psychology course at Ball State University. Ethnic background was as follows: 2% Black, 96% Caucasian, and 2% other. Participants were allowed to receive partial course credit for their participation.

Procedure

A total of 407 persons participated in a confidential web-based study of interpersonal style and pet ownership. Only participants who reported that they were currently pet owners and that their most recently acquired pet was a dog or a cat were selected for further analysis.

Materials

Interpersonal style. The respondent's interpersonal style was measured using the Impact Message Inventory-Generalized Others (IMI-GO; Kiesler, & Schmidt, 1993), while the pet's interpersonal style was assessed using an other-report version of the same measure completed by the owner (Impact Message Inventory-Significant Other; IMI-SO). The IMI was a 56-item self-report measure of how the respondents believe other people react to them. Responses were reported on a 4-point Likert-style scale (1-4) with responses of 1 indicating low endorsement of an item and 4 indicating high endorsement of an item. Participants responded to items with reference to three statements about the individual's style of interpersonal functioning: "When people are with me, they typically feel…" The IMI yielded eight, dimensional, circumplex octant scales and two general factors reflecting overall agency and affiliation. Higher scores indicated higher levels of each trait characteristic. It has generally demonstrated good inter-rater reliability (.56 to .85—for self and other ratings) and circumplex properties (Bluhm, Widiger, & Miele, 1990; Schmidt, Wagner, & Kiesler, 1994). Interpersonal complementarity was calculated using Kiesler's (1996) suggestion to report the square root of the sums of squared deviations between complementary octants for owners and pets.[1]

Companion animal attachment. Attachment was measured utilizing the Pet Attachment Survey (PAS; Holcomb, Williams, & Richards, 1985). The PAS consisted of 27 questions measuring conventional companion animal attachment and included 2 subscales: relationship maintenance and intimacy. For the relationship maintenance subscale, the total reliability was reported as .83; the intimacy subscale, an internal consistency of .74 (Holcomb et al.). Participants were asked to respond to the items using a 4-point Likert-type scale ranging from 1 (almost never) to 4 (almost always). Sample items included: "Your pet comes to greet you when you arrive?" and "You confide in your pet?" Items were totaled across the 2 subscales to derive a total pet attachment score. Higher scores indicated higher levels of attachment to the reported pet.

Pet behavior. The Pet Behavior Scale (PBS) was developed by the authors to assess the frequency of perceived positive pet behaviors and their respective value to the owner (Figure 1). Items included: "How well behaved is your

pet?" and "How important is it to you that your pet be well behaved?" (Figure 1). Participants were asked to respond to a 6-point Likert-type scale ranging from 1 (not at all) to 6 (extremely) across a total of eight possible domains. The mean desirability of each domain was scored across owners; Likert ratings were weighted by this mean rating. Higher scores indicated higher levels of endorsement of perceived, desirable pet behaviors. Although test-retest reliability data were not available for this measure, the internal consistency (as measured by all possible split-half reliabilities) was generally high in this study with a Chronbach's alpha = .92 across the 16 items. Expert assessors (veterinarians in small animal practice) deemed the measure to have strong content validity as a measure of characteristics and behaviors typically valued by companion animal owners.

Figure 1. The pet behavior scale

For the following questions, please rate your MOST RECENTLY ACQUIRED PET on the following 6-point scale

0 = Not at all

1 = Slightly

2 = Somewhat

3 = Moderately so

4 = Very much so

5 = Extremely

	0= Not at all	**1= Slightly**	**2= Somewhat**	**3= Moderately**	**4= Very**	**5= Extremely**
How well behaved is this pet?	☐	☐	☐	☐	☐	☐
How important is it to you that your pet be well behaved?	☐	☐	☐	☐	☐	☐
How affectionate is this pet?	☐	☐	☐	☐	☐	☐
How important is it to you that your pet be affectionate?	☐	☐	☐	☐	☐	☐
How well does the pet respond to commands?	☐	☐	☐	☐	☐	☐

Figure 1. (*cont.*)

How important is it to you that your pet responds to commands?	☐	☐	☐	☐	☐	☐
How much companionship does your pet give you?	☐	☐	☐	☐	☐	☐
How important is it to you that your pet be companionable?	☐	☐	☐	☐	☐	☐
How comforting do you find this pet's companionship?	☐	☐	☐	☐	☐	☐
How important is it to you that your pet be comforting?	☐	☐	☐	☐	☐	☐
How intelligent is this animal?	☐	☐	☐	☐	☐	☐
How important is it to you that your pet be intelligent?	☐	☐	☐	☐	☐	☐
How entertaining or amusing did/do you find this pet?	☐	☐	☐	☐	☐	☐
How important is it to you that your pet be entertaining or amusing?	☐	☐	☐	☐	☐	☐
How friendly is your pet with you and/or your family?	☐	☐	☐	☐	☐	☐
How important is it to you that your pet be friendly with you and your family?	☐	☐	☐	☐	☐	☐

Results

Initial Analyses

Descriptives. All statistical analyses were performed using SPSS (2001). A frequencies and descriptive analysis was run on all primary predictor and outcome variables. These results provide valuable information on the generalizability of the study findings. A breakdown of frequencies and mean scores for key, companion-animal variables in the current study are reported in Table 1. Fisher's skewness values for the various measures are reported as follows: PAS total = .001 (*SE* = .15); IMI-GO affiliation = –1.61 (*SE* = .12); IMI-GO agency = –.21 (*SE* = .12); IMI-SO affiliation = –1.58 (*SE* = .16); IMI-SO agency = .58 (*SE* = .16); Pet Behavior = –1.0 (*SE* = .14). According to Tabachnick and Fidell (1996), values of +/– two standard errors of kewness (*SES*) or less represent an acceptable level of kewness. Thus an *SES* value of < .30 (*N* = 264) for the current sample indicated a distribution that approached normality.[2]

Demographics. Select demographic and methodological variables were examined to detect unpredicted relationships between possible confounding factors and the primary variables—interpersonal complementarity (IMI-GO and IMI-SO), pet behavior, and companion animal attachment (PAS). This preliminary analysis included participant sex, participant age, type of pet (dog/cat), sex of pet, age of pet, length of pet ownership, time spent with the pet weekly, and pet neutered or not. With respect to owner characteristics, owner sex predicted companion animal attachment (t (234) = –2.76, p < .006), perceptions of pet behavior (t (229) = –3.00, p < .003), and complementarity (t (233) = 2.30, p < .03). Table 1 includes the means and standard deviations for all primary predictor and outcome variables by owner sex. Women reported greater companion animal attachment, more positive perceptions of pet behavior, and greater complementarity of interpersonal style with their pets than did men. In addition, women were significantly more affiliative than were men in their interpersonal orientation (t (232) = –4.02, p < .001), and also perceived their pets as more affiliative (t (200) = –4.24, p < .001).

Several of the pet characteristics also demonstrated significant correlations with the designated predictor and outcome variables (Table 2). Time spent with pet was positively and significantly correlated to companion animal attachment (r = .22, p < .001) and perceptions of pet behavior (r = 1.79, p < .01). The more time spent with the pet, the greater the attachment reported for the pet and the more favorable the perceptions of the pet's behavior. Finally, there was a significant relationship between the type of most recent pet acquired and perceived pet behaviors (t (253) = –3.85, p < .001) as well as type

Table 1. Descriptives for Primary Predictor, Outcome, and Demographic Variables by Owner Sex[α]

	Men *(N = 53)*		Women *(N = 213)*	
Variable	Mean	S.D.	Mean	S.D.
Hours spent with most recently acquired pet weekly	5.76	10.66	12.16	20.28
Number of reported years of ownership for most recently acquired pet	3.53	3.04	4.34	3.78
Reported attachment to most recently acquired pet** (PAS)	58.40	11.64	64.01	12.64
Perceptions of positive behaviors in most recently acquired pet**	155.49	35.34	169.33	26.13
Owner's self-reported interpersonal affiliation*** (IMI-GO)	2.41	1.53	3.19	1.09
Owner's self-reported interpersonal control (IMI-GO)	–.14	1.05	–.20	.91
Most recent pet's perceived interpersonal affiliation*** (IMI-SO)	1.65	1.59	2.61	1.22
Most recent pet's perceived interpersonal control (IMI-SO)	.02	.60	.24	.73
Interpersonal complementarity between pet and owner*	1.45	.51	1.25	.58

[α] Cases deleted pairwise.
* Denotes significance at the .05 level or better.
** Denotes significance at the .01 level or better.
*** Denotes significance at the .001 level or better.

of pet and complementarity (t (258) = 2.24, p < .03). Owners whose most recent pet was a dog reported having more favorable perceptions of their pets and more complementary relationships with them. As a consequence, these variables were controlled for in subsequent regression analyses.

Table 2. Descriptives for Primary Predictor, Outcome, and Demographic Variables for Each Respondent's Most Recently Acquired Pets[α]

Variable		Most Recent Pet—Cat (n = 82) Percent or mean (standard deviation)	Most Recent Pet—Dog (n = 162) Percent or mean (standard deviation)
Pet sex	Male	43%	51%
	Female	53%	49%
	Don't know	4%	0%
Pet neutered	Yes	72%	68%
	No	23%	30%
	Don't know	5%	2%
Pet age (years)		4.09 (3.89)	4.93 (3.60)
Years owned		3.86 (3.92)	4.47 (3.58)
Hours spent with pet (weekly)		10.34 (18.52)	10.31 (18.30)
Pet attachment (PAS)		60.26 (13.60)	62.86 (12.53)
Complementarity		1.41 (.58)	1.24 (.55)
Pet Behavior Scale (ratings on eight favorable traits)		155.37 (29.49)	169.97 (28.03)

[α] Cases deleted listwise

Main Analyses

Previous theories of animal attachment have focused either exclusively on the behavioral qualities of the pet or personality characteristics of the human owner. The proposed hypotheses deviate from previous theories in that they examine the human-companion animal bond from an interactionist perspective using an established model of personality—the interpersonal circumplex. Statistical analyses, as outlined below, were intended to assess the confirmatory power of these hypotheses.

Analyses 1 and 2

A MANOVA was run on the dependent variable of owner's perceived ratings of their cats' and dogs' interpersonal styles. Most recent type of pet acquired (cat or dog) was a between-subjects factor. Results suggested that of the eight interpersonal octants associated with the interpersonal circumplex (dominant, hostile-dominant, hostile, hostile-submissive, submissive, friendly-submissive, friendly, and friendly-dominant) there were significant differences between dogs and cats on only two. Cats were rated as significantly more hostile (or distant) than dogs $F(1, 197) = 7.04$, $p < .009$ ($Ms = -.46$ and $-.58$, $SDs = .40$ and .33, respectively); dogs were rated as significantly more friendly-submissive than cats $F(1, 197) = 5.48$, $p < .02$ ($Ms = .54$ and .41, $SDs = .39$ and .40, respectively). On the overall dimension of affiliation, owners reporting on their dogs generally perceived their pets as more loving than owners reporting on their cats, $F(1, 197) = 3.00$, $p < .085$ ($Ms = 2.48$ and 2.20, $SDs = 1.31$ and 1.36, respectively). A post-hoc t-test further assessed the dimensional octant scores for hostile and friendly-submissive, confirming that the means for dogs and cats on the octant score for hostile did differ significantly after using Bonferroni correction ($t(233) = 2.71$, $p < .007$), although the means for friendly-submissive did not ($t(234) = -2.19$, $p < .03$).[3]

Since the first hypothesis was partially confirmed, a second sub-sample of 57 self-identified cat people and 176 self-identified dog people was selected from the above-described population of dog and cat owners. These participants identified that either a cat or a dog would be their ideal pet. It was hypothesized that dog and cat people would differ in their interpersonal styles from each other and that participants expressing a preference for a cat or a dog might have more complementary interpersonal styles with their idealized pet.

In a MANOVA, there was a main effect for the factor, ideal pet, on the dependent variable, owner's interpersonal style. Dog and cat people differed in their interpersonal characteristics in a complementary fashion to their interpersonal perceptions of dogs and cats as companion animals. Findings revealed that those who reported that dogs were their ideal pet were significantly less hostile ($F(1, 219) = 3.58$, $p < .04$; $Ms = -.62$ and $-.51$, $SDs = .35$ and .43, respectively) and tended to be less submissive ($F(1, 219) = 4.35$, $p < .06$; $Ms = -.20$ and $-.13$, $SDs = .32$ and .33, respectively) than those who reported that cats were their ideal pet (although the latter relationship did not reach traditional significance). A t-test (using Bonferroni correction) on mean scores for the octant reflecting hostility revealed that this difference achieved significance for dog people and cat people ($t(219) = 2.07$, $p < .04$). The means and standard deviations for all scores across octants are reported in Table 3.

Table 3. Sample Means and Standard Deviations on the Octant Scales of the Impact Message Inventory for Dogs, Cats, and Respondents

IMI octant scale	*Dogs*		*Cats*		*People whose ideal pet is a dog*		*People whose ideal pet is a cat*	
	(*N* = 128)		(*N* = 62)		(*N* = 176)		(*N* = 57)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Dominant	–.01	.33	.01	.33	–.31	.32	–.33	.36
Hostile-dominant	–.42	.32	–.43	.28	–.67	.28	–.66	.37
Hostile*	–.58	.33	–.46	.40	–.62	.34	–.51	.42
Hostile-submissive	–.45	.36	–.42	.38	–.42	.37	–.41	.46
Submissive	–.27	.28	–.27	.33	–.20	.32	–.13	.33
Friendly-submissive	.54	.39	.41	.40	.45	.35	.38	.37
Friendly	.75	.47	.75	.48	1.1	.44	1.08	.48
Friendly-dominant	.43	.30	.38	.29	.61	.42	.57	.51
Control total	.19	.70	.26	.72	–.17	.87	–.24	1.15
Affiliation total	2.48	1.31	2.20	1.36	3.10	1.16	2.85	1.41

Note: Pairwise deletion accounted for variance in N as reported in the results.

* In a t-test, the difference between dogs and cats, and dog people and cat people, achieved significance at the .05 level or better on this octant.

A separate MANOVA was performed to analyze the interaction between the factors—ideal pet and type of pet reported on for the dependent variable of interpersonal complementarity—to determine if people whose ideal pet was a dog would achieve greater complementarity when reporting on dogs and if people whose ideal pet was a cat achieved greater complementarity when reporting on cats. The results did not support the proposed hypotheses. Neither self-reported dog people nor self-reported cat people achieved greater complementarity when interacting with their ideal pets, nor was there a main effect for the variables ideal pet and type of pet reported on.

Analysis 3

Hierarchical multiple regression analysis was used to examine the contributions of interpersonal complementarity to companion animal attachment, controlling for demographic variables and perceptions of pet behavior. As the second hypothesis was not upheld, the full sample of people reporting on either a dog or a cat was used in this analysis. Predictors were entered in two

Table 4. Intercorrelations between Primary Predictor and Outcome Variables for a Population of Dog and Cat Owners

	Years owned	Time w/ pet	Pet behavior	Interper. compl.	Attachment
Years owned	–	.089	.053	.009	.118*
Time w/ pet		–	.179**	–.122*	.218**
Pet behavior			–	–.433**	.555**
Interper. compl.				–	–.376**
Attachment					–

Note: Interper. compl. = Interpersonal complementarity.
* $p < .05$. ** $p < .01$.

Table 5. Summary of Hierarchical Regression Analysis for Variables Predicting Companion Animal Attachment for Dog and Cat Owners

Variable	*B*	*SE B*	β	R^2	ΔR^2	*Sig. Change*
Step 1				.33	.14	.001
Owner sex	2.27	2.12	.07			
Type of pet	–.96	1.80	–.04			
Years owned	.29	.22	.08			
Time with pet	.07	.05	.10			
Pet behavior	.20	.03	.46**			
Step 2				.35	.021	.024
Interpersonal complementarity	–3.67	1.61	–.16*			

* $p < .05$. ** $p < .001$.

blocks. Since owner sex was found to affect companion animal attachment, this variable was entered as a predictor in the first block of the regression analysis. In addition, companion animal characteristics (type of pet, years owned), time spent with pet, and owner's perceptions of pet behaviors were entered in the first block to control for these potential covariates of attach-

ment. Interpersonal complementarity was entered in the second block to assess for the impact of this relational variable separately. According to regression analyses, only the variables—pet behavior ($\beta = .20$, $p < .001$) and complementarity ($\beta = -3.7$, $p < .02$)—achieved significance as predictors of companion animal attachment. More favorable perceptions of pet behavior and greater interpersonal complementarity corresponded to higher levels of attachment (Tables 4 and 5).

Discussion

The intent of the current study was (a) to determine interpersonal characteristics associated with cats and dogs, as assessed by their owners and (b) to employ the circumplex model of personality to account for companion animal attachment. To this end, three hypotheses were tested. Regarding the interpersonal characteristics of dogs and cats and their respective people, cats were rated by their owners as significantly more hostile than dogs, and dogs were rated by their owners as more friendly-submissive than cats. In addition, self-identified dog people rated themselves as significantly less hostile and less submissive than cat people. These findings are consistent with research published by Goslin and Bonnenburg (1998), in which cat owners were reportedly higher in neuroticism (a trait typically associated with hostility) than dog owners.

The results also confirm the theoretical underpinnings of circumplex theory. This suggests that cat and dog people seek complementarity in companion animals on the axes of control and affiliation. In other words, "cat people" should seek hostile/aloof pets (correspondence) who are also low on submissiveness (reciprocity) whereas "dog people" should seek pets low on hostility (correspondence) and high on submissiveness (reciprocity). However, there were no significant main effects or interactions for ideal pet (cat or dog) and type of pet reported on for the variable interpersonal complementarity. Thus, the relative success of the circumplex model in capturing the descriptive dimensions of control and affiliation for dogs and cats is mediated by its limited nomothetic generalizability. The failure to find that interacting with an idealized pet promotes greater complementarity suggests that although dogs and cats may have stereotyped, interpersonal characteristics, companion animals also manifest a wide range of individual variance. It is the fit between owner needs and pet personality (rather than pet type) that best predicts companion animal attachment.

Last, it was proposed that interpersonal complementarity would contribute to greater companion animal attachment in dyadic interactions. Results demonstrated that complementarity between the interpersonal style of an owner

and that of a pet was a significant predictor of attachment to a companion animal.

Conclusion

A primary critique of this study is the nature of the sample population, which was comprised entirely of college students and was predominantly female. As owner sex was found to predict complementarity and companion animal attachment, a replication of this study with a more diverse population would be beneficial. In addition, the number of owners who reported their most recently acquired pet was a dog outnumbered by a ratio of 2:1 those who reported their most recently acquired pet was a cat. The analyses likely reflect these limits to power; negative findings may be due to Type II error. Greater diversity in the companion animal population would also provide the basis for an evaluation of interpersonal style by breed of pet.

As the current findings suggest, the interpersonal circumplex provides a new relational perspective from which to understand and predict the process of attachment to a companion animal. Most important, interpersonal theory presents a conceptual paradigm by which we can assess both owner and pet personalities and expand our awareness of certain interpersonal traits that distinguish dog people from cat people. Understanding this difference may provide insight into better matching procedures for companion animal adoptions, with greater consideration given to the interpersonal needs of the owner and the personality characteristics of an individual pet. As the cost of caring for unwanted or abandoned animals is significant, future directions for this research might examine the role of interpersonal complementarity in commitment level and longevity of pet ownership, as well as optimizing relational interactions in animal-assisted therapies and in the selection and training of helper animals. With this goal in mind, a simple and valid measure of nonhuman interpersonal style would prove useful to those who care for, breed, and handle pets on a regular basis.

Notes

1. Complementarity = $\sqrt{((D_{pet} - S_{owner})^2 + (HD_{pet} - HS_{owner})^2 + (H_{pet} - H_{owner})^2 + (HS_{pet} - HD_{owner})^2 + (S_{pet} - D_{owner})^2 + (FS_{pet} - FD_{owner})^2 + (F_{pet} - F_{owner})^2 + (FD_{pet} - FS_{owner})^2)}$.

2. The *SES* can be estimated using the following formula $\sqrt{\frac{6}{N}}$.

3. The simplest and most conservative approach is the Bonferroni correction, which sets the *alpha* value for the entire *set* of η comparisons equal to α by taking the *alpha* value for *each* comparison equal to α/η.

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