

A tail of two personalities: How canine companions shape relationships and well-being[☆]

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Abstract

More people own pets than ever before. Further, people spend more money on pets than they ever have. The increase in pet ownership and spending on pets provides evidence of the importance humans place on the pets in their lives. This study explores the relationships between humans and their animal companions, specifically canine companions. Drawing on decades of research on personality, relationships, and well-being, the current research takes a cross-species approach to examine the influence of pet personalities on human outcomes. Using personality assessments for human and dog, the article examines how both personalities impact relationship satisfaction. The article also examines how human–dog closeness impacts owner well-being. Some findings corroborate results found in the human personality and relationship literature, but others point to some unique aspects of the human–dog bond. These results not only shed light on the human–dog relationship but also suggest some departures from the human relationship literature that could be explored in future research.

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Keywords: Pets; Personality; Relationship satisfaction; Well-being

1. Background

Consumption patterns speak volumes of the importance humans place on companion animals. According to the American Pet Products Manufacturing Association, the average American spends more than \$1500 each year on pet-related products and services, creating an estimated U.S. market total of almost \$36 billion spent in 2005 (APPMA, 2005). Americans increasingly purchase luxurious, varied, and expensive products and services for their pets. Spa services, bottled water, gourmet food, yoga classes, and designer clothing for dogs provide a few examples of what owners buy for these pets

(APPMA, 2005; Selbert, 2002; Serpell, 2003). When pet owners pass away, nearly one third of them mention their animals in their wills (Selbert, 2002). When pets pass away, friends and family mourn and honor their memory in a variety of ways. Some pet owners bury their deceased pets in cemeteries, others keep their remains in urns, and still others turn their pets' ashes into manufactured diamonds as a tribute (APPMA, 2005).

According to the Bureau of Labor Statistics, veterinary services employment will increase 44% by 2010 (Selbert, 2002). This increasing demand for pet health care services reflects the amount of money people are willing to spend on improving the quality and length of their animal companions' lives. People seek veterinary specialists including psychologists, neurologists, and chiropractors providing services like massage, joint replacement, eye surgery, renal transplant, and liposuction (Selbert, 2002; Chua-Eoan and Biegel, 1993). According to one study people are more willing to give up smoking because of the harmful effects that second-hand smoke has on their pets than because of the negative effects on their own health (Selbert, 2002). Reports such as these provide

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further evidence of the importance people place on their relationships with their pets.

The meanings people attach, the money they spend, and the effort they make to maintain relationships with their animal companions underscore the importance these relationships play in human lives. Drawing on decades of research on personality, relationships, and well-being, the current research takes a cross-species approach to examine the influence of pet personalities on human outcomes. This article examines how not only human but pet personalities shape relationship satisfaction and well-being.

1.1. The role of pets

Pets fill a variety of roles in people's lives. For some, dogs serve utilitarian roles helping people to complete important work: assisting the disabled, herding livestock, providing security, or sniffing out bombs and drugs (Derr, 2004; Hirschman, 1994). Others find identity markers in the simple act of being a pet-lover (Kidd and Kidd, 1980). Still others choose purebreds or specific breeds as symbols of status (Hirschman, 1994; Sanders, 1990). Pets also fill roles of avocation (Hirschman, 1994), ornament (Hirschman, 1994), and toy (Belk, 1996).

Most pet owners, however, do not regard their pets as simple consumption objects or tools for human benefit (Holbrook et al., 2001; Knapp, 1999). Rather for most pet owners, their pets are an integral part of their families and even contribute to sense of self (Belk, 1988; Brown, 2004; Sanders, 1990). The unique, intimate, emotional bonds and relationships that people share with their pets give important meaning to their lives (Holbrook et al., 2001; Knapp, 1999).

Changes in human needs may shape the type of relationships humans share with their pets. Shifts in technology, the economy, and cultural norms affect human needs and the nature of people–pet relationships (Sanders, 1990). Changing demographics, such as the rise of singles and childless couples (Klein, 2004), also influence the type of relationships people share with pets. As people increasingly consider pets as members of their families, the nature of associations shifts away from a utilitarian focus and toward genuine social relationships (Serpell, 2003). If people share such special bonds with their animal companions, then investigations of people and their pets should recognize animal companions as more than possessions but specifically as full partners in the relationship.

1.2. Dogs as relationship partners

Of all domestic pets in the U.S., about 43.5 million households keep dogs, more than any other species of animal (APMA, 2005). Several surveys find that the vast majority of pet owners regard their dogs as family members or as children (Hirschman, 1994; Sanders, 1990). In fact, many people report feeling closer to their pets than to their closest human family member (Barker, 1999).

According to Belk's (1988) influential view of possessions as extensions of self, people are what they own. People more

commonly integrate some objects, including pets, into their sense of self (Belk, 1988). This view helps to explain why one indulges pets (they are indulging themselves) and goes to extremes in caring for pets (they are caring for themselves). People often experience the loss of a pet as a loss of self (Belk, 1988; Stephens and Hill, 1996). Although multiple researchers posit that humans often regard pets as part of self (Belk, 1988; Brown, 2004; Sanders, 1990), no consensus on the implications of this closeness exists. Such closeness may provide benefits, such as pets soothing, affirming, and sustaining the owner's core sense of self (Brown, 2004). Other research, however, cautions against possible adverse effects of over-investment in a pet relationship (Belk, 1988).

While not focused explicitly on closeness, research on pet adoption focuses on fit between the animal's behavior and a person's or family's lifestyle. For example, animal-welfare organizations study behavioral traits of dogs to assist families in finding a dog that would best fit their household behaviorally (Maddie's Fund, 2006). A few studies focus on human personality traits and preferences for types of pets. For example, Kidd and Kidd (1980) use human personality traits including autonomy, dominance, nurturance and aggression to predict human preferences for various species of pets. They find that preferences for dogs, cats, and pets in general vary by human personality trait. Do not, however, focus on how pet personality may influence personal outcomes, such as relationship satisfaction and well-being.

2. Personality, relationships, and well-being

2.1. Personality

2.1.1. Human personality

Personality refers to an individual's key traits and behavioral characteristics that endure over time (Wiggins, 1996; Bennett and Kassarjian, 1972). Many personality researchers focus on how individual differences described through personality traits result in different behaviors and life outcomes. These researchers link personality traits with individual, interpersonal, and social outcomes such as psychological health, quality of family life, and community involvement (Ozer and Benet-Martinez, 2006). Today consensus on a general taxonomy of personality traits revolves around the Big Five or the Five-Factor Model of personality (FFM, John and Srivastava, 1999). The FFM characterizes individuals by differences on five facets of personality: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.

The five-factor model provides an organizing framework encompassing more descriptive trait adjectives for the five facets (White et al., 2004). According to John and Srivastava (1999) neuroticism includes anxiety, irritability, shyness, moodiness, vulnerability, and depression. Extraversion consists of sociability, assertiveness, adventurousness, outgoingness, and positive emotions. Openness to experience includes curiosity, imagination, excitability, and varied interests. Agreeableness describes trustworthiness, straightforwardness, altruism, lack of stubbornness, modesty, and sympathy. Conscientiousness encompasses

efficiency, organization, and descriptors such as not careless, thorough, not lazy, and non-impulsive.

2.1.2. Dog personality

Beyond species and breed stereotypes, research demonstrates that animals have distinct personalities (Gosling and John, 1999; Svartberg and Forkman, 2002). In a cross-species investigation of personality, Gosling et al. (2003) find that personality differences exist in dogs as they do in humans. Their data demonstrate significant consistency (consistency across items), consensus (owner and peer judgments agree), and correspondence (owner and independent observer judgments agree) of dog personality judgments. Moreover, these judgments exhibit comparable size differences to those found for humans. The question of how human and dog personalities influence relationship satisfaction, however, remains unexplored.

2.2. Personality and relationship satisfaction

In the personality literature, a long history of research seeks to understand how personality influences human relationships (see Cooper and Sheldon, 2002; Robins et al., 2000, 2002; Watson et al., 2004; Zentner, 2000). Individuals' dispositions and skills shape the nature and quality of relationships (Ozer and Benet-Martinez, 2006). This intrapersonal perspective suggests that personality plays an important role in predicting relationship satisfaction among human beings (Bouchard and Areseneault, 2005; Donnellan et al., 2004).

After decades of research on the influence of personality on relationships, much remains unresolved (Karney and Bradbury, 1995) but some consistent findings do exist. The strongest and most consistent finding relates neuroticism, or negative affectivity, with lower relationship satisfaction (Karney and Bradbury, 1997, 1995; Karney et al., 1994; Robins et al., 2002). Additionally, empathy, a factor primarily comprised of extraversion and agreeableness, and emotional regulation, a factor best predicted by low neuroticism, correlate with higher relationship satisfaction (Ozer and Benet-Martinez, 2006). Additional research also suggests that extraversion and agreeableness relate positively to evaluations of relationships (White et al., 2004; Bouchard et al., 1999; Watson et al., 2000). Researchers lack a clear understanding of how openness to experience impacts interpersonal outcomes (Ozer and Benet-Martinez, 2006), and some researchers assert that openness has little to do with success and satisfaction in relationships (Brehm et al., 2002).

A considerable amount of research focuses on whether personality similarity ("birds of a feather flock together") or complementarity ("opposites attract") predicts relationship satisfaction among partners (Watson, et al., 2004). Reviews of literature on marital satisfaction find a consistent positive association between personality similarities and relationship satisfaction (Karney and Bradbury, 1995; Luo and Klohnen, 2005). Other research, however, finds that neither similarity nor dissimilarity reliably predicts relationship satisfaction (Gattis et al., 2004; Robins et al., 2002). Despite decades of research, personality psychologists lack a comprehensive picture of the

role personality plays in predicting relationship satisfaction in specific types of relationships, including family, peer, and romantic relationships (Ozer and Benet-Martinez, 2006).

2.3. Relationships and well-being

Relationships play an important role in perceptions of well-being. Research suggests that relationships, especially marriage, enhance individual well-being (see Ozer and Benet-Martinez, 2006; Stack and Eshleman, 1998). Children impact couples' relationship satisfaction, with varied outcomes (Bradbury et al., 2000). Researchers find strong associations between an individual's well-being and satisfaction with specific domains of life, e.g. job satisfaction; satisfaction in the social domain most consistently predicts well-being (Lent et al., 2005). Looking at the joint influence of multiple life domains on life satisfaction, only marital satisfaction significantly predicts well-being (see Diener et al., 1999). Research also suggests that the quality of a relationship changes over time. An initially strong relationship often grows less satisfying and contributes less to overall well-being as time goes by (Bradbury et al., 2000; Karney and Bradbury, 1995). Taken together, these findings suggest that an individual's close social relationships profoundly influence sense of well-being.

2.4. Current research

Building from the consumer behavior, personality, and relationship literatures, this study explores the relationship between humans and their canine companions. Similar to the context of human relationships, the authors expect personalities of both humans and their canine companions to impact relationship success, in particular relationship satisfaction and well-being. While folk wisdom suggests that dog is man's best friend, this study examines whether the presence or absence of different personality traits in both humans and dogs contributes to the veracity of that statement.

Satisfying relationships enhance well-being (Diener et al., 1999; Lent et al., 2005). Similarly, human well-being improves when humans have relationships with pets (see Brown, 2004; Holbrook et al., 2001; Serpell, 2003). This study merges and enlarges the scope of these streams of research by investigating relationship satisfaction and well-being in the realm of human–dog relationships. The goal of this research is to determine how canine personalities influence satisfaction in human–dog relationships and how perceptions of these relationships may influence human well-being.

3. Method

3.1. Participants

The authors recruited current dog owners, who were over the age of eighteen, from three communities located in the north eastern, south eastern, and western parts of the United States, to complete a study about people and their canine companions. Dog owners who agreed to participate ($N=77$) completed a

questionnaire and provided the name and contact information for a friend who knew both them and their dog. Participants and friends who completed their respective portions of the study earned a chance to win \$150 or a contribution to a favorite pet charity for completing the 30-minute primary study and the 10-minute secondary friend study.

The focal participant sample includes 30 men and 47 women between the ages of 19 and 62 ($M=31.7$, $SD=14.4$) from various ethnic backgrounds (91% White, 4% Asian or Indian, 1.4% Black or African American, 1.4% Latino or Hispanic, 2.6% unspecified). In terms of marital status, single participants and married participants comprise 75% and 25% of the sample respectively. One fifth report currently having children in the home. Length of dog ownership ranges from 2.4 months to 17 years ($M=5.61$, $SD=4.63$).

3.2. Procedure

After participants provided informed consent, researchers gave them a paper and pencil questionnaire. Participants answered a series of questions about themselves, their dogs, and their relationships with their dogs. They completed assessments of their own personality and well-being as well as provided demographic information about their household. Next they completed a pet history, dog personality assessment, and measures of their satisfaction with their relationship with their dog and their sense of closeness to their dog. The researchers subsequently contacted the participants' friends via e-mail to collect additional data for validation of the measures. The e-mail message indicated that their friend was a participant in a research project and asked them to complete an online questionnaire about the participant and the participant's dog. Eighty-six percent of the friends responded and completed the friend survey. On average the friend respondents knew both the friend ($M=10$ years, $SD=9.2$) and the dog ($M=3.5$ years, $SD=3.6$) for a reasonably long period of time.

3.3. Measures

3.3.1. Personality judgments

The authors used a standard FFM instrument, the Big Five Inventory (BFI; John and Srivastava, 1999) to evaluate human personality. Utilization of the BFI instrument, one of the most widely used tools for assessing human personality, enabled direct comparison to canine personality through the use of an analogous scale created for dogs (canine-BFI; Gosling et al., 2003). Participants assessed dog personality using the canine-BFI, which closely mirrors the human-BFI instrument. For example, the canine-BFI changes the item on the human-BFI, "Is original, comes up with new ideas" to "Is original, comes up with new ways of doing things" for the canine instrument so that humans need not speculate on the thoughts of dogs. Only one human-BFI item regarding interests in art, music, and literature did not translate well into an analog on the canine form (Gosling et al., 2003), and thus, the authors omitted this item from both measures.

While most studies of human personality include five facets, previous research finds conscientiousness to be an unreliable

independent factor in dogs and other animal species, except chimpanzees (Gosling and John, 1999). Thus, the canine-BFI instrument offers a four dimensional model, using four of the five dimensions of human personality, for personality assessment in dogs (Gosling et al., 2003). In order to have matched data for human and dog pairs, this study included nine items for Openness/Intelligence (e.g., "Is curious about many different things"), eight items for Extraversion/Energy (e.g., "Is full of energy"), nine items for Agreeableness/Affection (e.g., "Is cooperative"), and eight items for Neuroticism/Emotional Reactivity (e.g., "Can be tense"). Together 34 items comprised both the human-BFI and canine-BFI instruments, each of which included reverse scored items. For every item, participants indicated the degree to which the item characterized the target (self or dog) on a 5-point scale ranging from 1 (disagree strongly) to 5 (agree strongly).

3.3.2. Well-being

The authors assessed subjective well-being using the Satisfaction with Life Scale (Pavot and Diener, 1993). The instrument includes five items designed to measure global cognitive judgments of one's life (sample item, "in most ways my life is close to my ideal"). Respondents indicated the extent to which they agreed with each item on a scale from 1 (strongly disagree) to 5 (strongly agree). The sum of these responses created a total satisfaction with life score, which served as a proxy for well-being. Reported well-being ranged from 7 to 25 ($M=16.72$, $SD=4.36$).

3.3.3. Relationship satisfaction

To assess relationship satisfaction the authors used a scale adapted from the relationship literature (Rusbult, 1983). The adapted relationship satisfaction scale includes ten items (sample item, "My dog fulfills my need for companionship"). Respondents indicated the degree to which they agreed with each of the statements regarding their current relationship with their dog on a scale from 1 (do not agree at all) to 4 (agree completely). Cronbach's coefficient alpha for the relationship satisfaction scale was .88. Relationship satisfaction ranged from 1.2 to 4.0 ($M=2.79$, $SD=0.61$).

3.3.4. Perceived overlap

Closeness in the human–dog relationship may influence well-being. Research in psychology shows that in close relationships individuals regard aspects of the partner as aspects of self (Aron et al., 1992) to varying degrees. To assess closeness the authors measured perceived overlap using the Inclusion of Other in the Self (IOS) Scale (Aron et al., 1992). The IOS captures a general sense of a person's feeling of interconnectedness with another using a single pictorial measure. Two circles, representing self and other, portray varying degrees of overlap between the two, ranging from completely separate entities to almost complete overlap. Participants considered their relationship with their dog and indicated which of the seven pictures (labeled A–G) best described their relationship with their dog; see Appendix. Participants used the full scale in reporting overlap with their dog, with responses ranging from 1 to 7. On average participants reported a moderate level of overlap between self and dog ($M=3.86$, $SD=1.59$).

3.3.5. Demographics and covariates

Animal science researchers and human relationship researchers look at how a variety of personal and family structure characteristics predict relationship satisfaction and human well-being. Family status variables including marital status and children influence satisfaction in both human relationships (Marks and Fleming, 1999; Neyer and Asendorpf, 2001; Robins et al., 2002) and human–animal relationships (Albert and Bulcroft, 1988). Personality and relationship researchers frequently find gender differences (Robins et al., 2000, 2002; White et al., 2004). Thus, the study includes information on key demographic variables as potential covariates: gender, age, marital status, children at home, and length of dog ownership.

4. Results

4.1. Preliminary analyses

Preliminary analyses reveal no significant relationship between any of the demographic variables (gender, age, marital status, children at home) and relationship satisfaction with canine companions, however, notable relationships with well-being exist. Marital status significantly affects well-being, $F(1, 76) = 8.63, p < .01$. Married participants report higher levels of subjective well-being ($M = 19.2, SD = 3.4$) than non-married participants ($M = 15.9, SD = 4.4$). Age and children at home show directional effects for well-being, $F(1, 76) = 2.3, p < .13$ and $F(1, 76) = 2.10, p < .15$ respectively. Both older participants and participants with children at home report greater well-being. Relationship satisfaction and well-being share a significant positive correlation ($r = .26, p < .02$).

Based on these findings as well as research suggesting that stage of life and household composition influence owner–pet relationships (Albert and Bulcroft, 1988) and owner well-being (Marks and Fleming, 1999; Stack and Eshleman, 1998), the study includes marital status and children at home as covariates in the final models. Marital status and children ($r = .46, p < .001, N = 77$), marital status and age ($r = .67, p < .001, N = 77$), and children and age ($r = .31, p < .001, N = 77$) correlate significantly with each other. The researchers mean-centered the independent variables and included marital status and children at home as covariates in the final models to minimize distortion that patterns of household composition might have on reports of relationship satisfaction and well-being. Based on prior theory, the researchers included age as an independent predictor in the analyses for well-being. All analyses for relationship satisfaction include the complete set of data ($N = 77$); the analysis for well-being includes $N = 75$ due to missing data on predictor variables for two study participants.

The study replicates the analyses Gosling et al. (2003) performed to establish internal consistency for the personality judgments of humans and dogs. Table 1 shows the coefficient alphas for person and knowledgeable other from Gosling et al.'s (2003) original data set along with those for participant and friend from the current data set. In the present study, the coefficient alphas for the human personality facets are: extraversion/energy (.85), agreeableness/affection (.79), neuroticism/emotional reactivity

Table 1

Comparison of current and Gosling et al. (2003) studies internal consistency: personality judgments of humans and dogs

BFI scales	Internal consistency (Cronbach's α)							
	Current study				Gosling et al. study			
	Owner judgments of				Peer judgments of			
	Human (self)	Own dog	Human (self)	Own dog	Human owner	Dog owner	Human owner	Dog owner
Extraversion	.85	.77	.83	.77	.84	.82	.84	.81
Agreeableness	.79	.83	.81	.84	.90	.79	.84	.83
Neuroticism	.83	.81	.80	.89	.84	.79	.86	.86
Openness	.79	.70	.83	.81	.83	.76	.84	.75
<i>M</i>	.82	.78	.82	.83	.85	.79	.85	.82

(.83), and openness/intelligence (.79) and for the dog personality facets: extraversion/energy (.77), agreeableness/affection (.83), neuroticism/emotional reactivity (.81), and openness/intelligence (.70). The consistency between participants' assessments and friends' assessments of both human and dog personalities, and comparability to Gosling et al.'s (2003) original study, demonstrate reliability of the measures. Thus, scores on the canine-BFI provide a measure of the dog's personality as assessed independently by owner and friend. Based on the level of consensus between the participant's and friend's assessments of the dog's personality, the authors ran all analyses using the participants' assessments.

4.2. Analyses

4.2.1. Relationship satisfaction

Two hypotheses—personality matching (“birds of a feather flock together”) and personality complementing (“opposites attract”)—offer competing predictions of compatibility and relationship success. Investigations of human relationships find mixed results on this issue. Additionally, it remains an empirical question as to whether similarity or dissimilarity in the personality facets leads to greater relationship satisfaction across species.

How accurate are human and dog personality scores in predicting relationship satisfaction? As a first step in this cross-species analysis, the authors examined the correlation matrix of human and dog personality facets. The correlation matrix illustrates that significant relationships do exist between various facets of human and canine personality, e.g., humans with higher levels of extraversion report that their dogs have higher levels of extraversion ($r = .42, p < .0001$) and neuroticism ($r = .22, p < .05$); see Table 2.

To begin addressing the question of how the similarity or dissimilarity of personality profiles of humans and their dogs might influence relationship satisfaction, the authors created a human–dog similarity/dissimilarity score based on the owner's responses to the human-BFI and canine-BFI for each facet of personality. The human–dog similarity/dissimilarity score captures the degree of discrepancy, as well as the direction of the difference, between the owner and their dog for each facet of personality. A negative score indicates that the dog exceeds the human on that personality facet. After controlling for marital status and children, the authors regressed relationship satisfaction

Table 2
Correlation matrix for human and dog personality facets

	bfiO	bfiE	bfiA	bfiN	dbfiO	dbfiE	dbfiA	dbfiN
bfiO	1.00							
bfiE	0.19 *							
bfiA	0.10	0.17						
bfiN	−0.05	−0.23 **	−0.31 ***					
dbfiO	0.15	0.13	0.13	0.03				
dbfiE	0.17	0.42 ***	0.20 *	−0.11	0.43 ***			
dbfiA	0.06	0.11	0.10	0.05	0.36 ***	0.10		
dbfiN	0.21 *	0.22 **	0.08	−0.38 ***	0.35 ***	0.23 **	0.37 ***	

Note: Human personality facets indicated by “bfi”: bfiO, bfiE, bfiA, bfiN. Canine personality facets indicated by “dbfi”: dbfiO, dbfiE, dbfiA, dbfiN.
 * $p<.10$.
 ** $p<.05$.
 *** $p<.01$.

on the human–dog similarity/dissimilarity score for each facet of personality. Three of the four personality facets demonstrate a significant negative relationship. Specifically, the data suggest significant effects for openness, ($B=-.25, p<.006$), agreeableness ($B=-.17, p<.04$) and neuroticism, ($B=-.12, p<.02$). Extraversion shows no significant effect ($B=.01, NS$). Namely, participants report significantly higher relationship satisfaction when their dogs exceed their assessment of their own levels of openness, agreeableness, and neuroticism. The demographic control variables in these models show no effects.

To further examine the relationship between human and dog based on each facet of personality, the authors used a GLM analysis to estimate a series of regression models. These analyses include the individual component variables (judgments for human and dog) for each facet of personality. Controlling for marital

status and children, the authors estimated a model predicting relationship satisfaction including the human’s score, the dog’s score, and the interaction of the two for each facet of personality. The data reveal that the dog’s openness ($B=.38, p<.002$) and dog’s agreeableness ($B=.26, p<.01$) each significantly predict relationship satisfaction, controlling for all other variables in the model. The data also reveal a marginally significant result for the dog’s neuroticism ($B=.15, p<.10$). No significant result occurs for extraversion. Additionally the model shows no significant effects for the human facets nor the interactions of the human and dog facets; Table 3 shows the results.

How much does the composite of a dog’s personality add to the prediction of relationship satisfaction above and beyond what is predicted based only on the owner’s personality and household demographics? The authors used a two-step hierarchical regression

Table 3
Personality facets predicting relationship satisfaction

Predictor	Regression 1	Regression 2	Regression 3	Regression 4
Marital status	0.11 (.18)	0.09 (.20)	0.15 (.18)	0.11 (.18)
Children	−0.18 (.20)	−0.15 (.20)	−0.08 (.20)	−0.08 (.20)
Human openness	−0.14 (.11)			
Dog openness	***0.38 (.12)			
Human * Dog openness	−0.05 (.22)			
Human agreeableness		−0.05 (.13)		
Dog agreeableness		***0.26 (.10)		
Human * Dog agreeableness		−0.14 (.15)		
Human neuroticism			−0.12 (.10)	
Dog neuroticism			*0.15 (.09)	
Human * Dog neuroticism			−0.11 (.12)	
Human extraversion				0.13 (.10)
Dog extraversion				0.12 (.10)
Human * Dog extraversion				0.07 (.11)
R ²	0.14	0.10	0.09	0.08

Note: Effects reported above are unstandardized regression coefficients. Standard errors reported in parentheses.
 * $p<.10$.
 *** $p<.01$.

Table 4
Results of hierarchical regression analysis predicting relationship satisfaction

Source	df	Sum of squares	Mean square	F value	p value
Model	10	7.43	0.74	2.43	.02
Error	66	20.17	0.31		
Corrected total	76	27.60			
R ² = .27					
Source	df	Type III sum of squares	Mean square	F value	p value
Marital status	1	.02	.02	0.07	.79
Children	1	.13	.13	0.43	.51
Human — openness	1	.58	.58	1.90	.17
Human — extraversion	1	.37	.37	1.21	.27
Human — agreeableness	1	.60	.60	1.95	.17
Human — neuroticism	1	1.36	1.36	4.44	.04
Dog — openness	1	1.54	1.54	5.04	.03
Dog — extraversion	1	0.04	0.04	0.13	.72
Dog — agreeableness	1	1.09	1.09	3.56	.06
Dog — neuroticism	1	0.03	0.03	0.09	.76

Table 5
Summary of hierarchical regression analysis predicting relationship satisfaction

Variable	Step 1	Step 2
Marital status	0.16 (.19)	0.05 (.19)
Children	−0.06 (.20)	−0.12 (.19)
Human — openness	−0.12 (.12)	−0.15 (.11)
Human — extraversion	0.18 (.10)	0.11 (.10)
Human — agreeableness	−0.10 (0.14)	−0.18 (.13)
Human — neuroticism	−0.15 (.10)	*−0.22 (.10)
Dog — openness		**0.31 (.14)
Dog — extraversion		0.04 (.10)
Dog — agreeableness		*0.21 (.11)
Dog — neuroticism		−0.03 (.10)
R ²	.10	** .27

Note: Effects reported above are unstandardized regression coefficients. Standard errors reported in parentheses.

* $p < .06$.

** $p < .05$.

analysis to investigate this question. They entered the determinants of relationship satisfaction from the human side—marital status, children, and the four human personality facets—into the model to control for these variables. This first step of the regression analysis accounts for 10% of the variance in relationship satisfaction, $R^2 = .10$, ($F(6, 70) = 1.34$, $p < .25$). In the second step the researchers added the four dog personality facets. The full model accounts for 27% of the variance in relationship satisfaction, $R^2 = .27$, ($F(10, 66) = 2.43$, $p < .02$). The addition of the set of dog personality variables to the model accounts for a significant amount of variance in relationship satisfaction, $F(4, 66) = 3.64$, $p < .01$. Both the dog's openness ($B = .31$, $p < .03$) and agreeableness ($B = .21$, $p < .06$) contribute meaningfully to relationship satisfaction. Tables 4 and 5 show the results.

4.2.2. Well-being

Linking the relationship satisfaction results with the analysis of well-being, the authors ran a model regressing well-being on

Table 6
Results of GLM analysis predicting well-being

Source	df	Sum of squares	Mean square	F value	p value
Model	9	461.37	51.26	3.40	.002
Error	65	980.95	15.09		
Corrected total	74	1442.32			
$R^2 = .32$					
Source	df	Type III sum of squares	Mean square	F value	p value
Marital status	1	43.45	43.45	2.88	.09
Children	1	5.99	5.99	0.40	.53
Age	1	23.59	23.59	1.56	.22
Ownership length	1	58.01	58.01	3.84	.05
Age*Ownership length	1	9.11	9.11	0.60	.44
Overlap	1	2.05	2.05	0.14	.71
Age*Overlap	1	46.45	46.45	3.08	.08
Ownership length*Overlap	1	156.84	156.84	10.39	.002
Age*Ownership length*Overlap	1	37.47	37.47	2.48	.12

Table 7
Summary of GLM analysis predicting well-being

Variable	B	SE B	p value
Marital status	2.88	1.70	.09
Children	0.82	1.31	.53
Age	−0.06	0.05	.22
Ownership length	**1.07	0.54	.05
Age*Ownership length	−0.03	0.04	.44
Overlap	0.12	0.32	.71
Age*Overlap	−0.05	0.03	.08
Ownership length*Overlap	***1.47	0.46	.002
Age*Ownership length*Overlap	0.06	0.04	.12

** $p < .05$.

*** $p < .01$.

marital status, children at home, age, and relationship satisfaction. A significant model ($F(4, 72) = 3.76$, $p < .01$) explaining 17% of the variance in well-being results, $R^2 = .17$. Both marital status ($B = 3.25$, $SE = 1.59$, $p < .05$) and relationship satisfaction ($B = 1.94$, $SE = .78$, $p < .02$) significantly predict well-being. Neither children nor age are significant in the model. This result suggests that satisfaction in a human–dog relationship significantly contributes to reported well-being.

How do length of ownership, stage of life, and perceived overlap with one's dog influence a person's reported well-being? After controlling for marital status and children in the household, the authors regressed well-being on age, length of ownership, perceived overlap, and the appropriate interaction terms. The model is significant ($F(9, 65) = 3.40$, $p < .002$) and accounts for 32% of the variance in well-being, see Table 6 and Table 7. The data reveal significant relationships between well-being and length of ownership ($F(1, 65) = 3.84$, $p < .05$) and the two-way interaction of length of ownership and overlap ($F(1, 65) = 10.39$, $p < .002$). Additionally the data reveal a marginally significant two-way interaction of age and overlap ($F(1, 65) = 3.08$, $p < .08$) and a marginally significant effect for marital status ($F(1, 65) = 2.88$, $p < .09$).

For ease of interpretation, the authors dichotomize ownership length (≤ 3 years or > 3 years) and split the overlap measure into thirds (low, medium, high). As shown in Fig. 1, higher perceived overlap contributes to greater well-being in longer relationships (low $M = 18.3$, medium $M = 18.3$, high $M = 20.4$) but not in shorter relationships (low $M = 16.6$, medium $M = 17.5$, high $M = 13.3$). Together these analyses demonstrate that canine companions do in fact shape relationships and human well-being. These findings suggest some avenues for

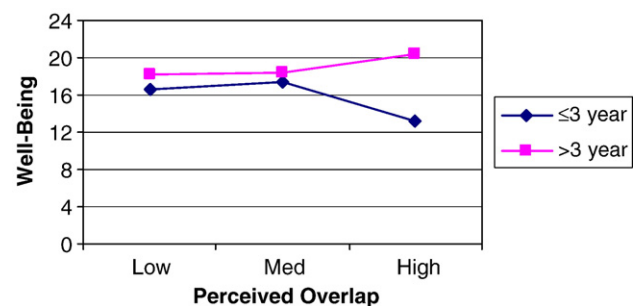


Fig. 1. Well-being as a function of relationship length and perceived overlap.

future research on human–pet and human relationships as well as point to some interesting implications for people and their consumption related to these companion animals.

5. Discussion

Animals occupy a special place in the hearts of many people. Animal caretakers recognize their animal companions as far more than mere possessions; they recognize pets as partners in close social relationships. Consumer behavior researchers study animals as objects of consumption, as possessions, as friends and as family members. The current research takes a personal look at the human–animal bond focusing on the social relationships between people and their pets, specifically their dogs. As one of a small number of cross-species investigations of personality, this study represents an initial examination of the interplay of cross-species personality facets as predictors of relationship satisfaction. The study also examines how these relationships influence well-being. Some findings replicate those from the human relationship literature while others suggest several unique aspects of the bond between humans and dogs. The results of this study provide insights about the human–dog relationship as well as humans in general. Based on these insights, the authors identify some additional directions for further exploration of human–pet relationships and their influence on human consumption decisions.

5.1. Relationship satisfaction: Insights gained from the human–dog relationship

In the present study, the dog's personality clearly exerts a significant impact on relationship satisfaction while the personality of the human contributes little. In the social psychology literature, self personality generally contributes more to explaining relationship satisfaction than does partner personality (Watson et al., 2000), so this finding is especially intriguing.

Two particular canine personality facets, openness and agreeableness, contribute significantly to explaining relationship satisfaction. Across multiple analyses, higher levels of canine openness and agreeableness lead to greater relationship satisfaction. Moreover, people report greater satisfaction when their dogs bring more of these traits to the relationship than they do. The openness finding is particularly remarkable because research on human relationships suggests that openness has little to do with success and satisfaction in close relationships (Brehm et al., 2002). Perhaps dogs' generally trusting, non-judgmental, empathetic (the agreeableness facet), and curious nature (the openness facet) enables them to blend into their owners' family and home and bring comfort and enjoyment to their lives. Findings from the current study suggest that humans may have a lot to learn from their canine companions, specifically about openness and agreeableness. Humans may admire their dogs for these personality traits. They may even include dogs in their lives to help cultivate these traits in themselves.

Beyond demonstrating the important role that dogs' personalities play in relationship satisfaction, findings from this study also bring into question some other well-accepted findings from

the human relationship literature. Researchers generally accept that personality plays an important role in satisfaction with close relationships and that some personality facets contribute more than others. Research consistently finds a negative impact of neuroticism on relationship satisfaction (Karney and Bradbury, 1997). The present study does not find any evidence that human neuroticism detracts from satisfaction with a relationship with one's dog. The data, however, do suggest that people find more relationship satisfaction when their dogs bring more of this trait to the relationship than they do. Unlike human partners in relationships, even neurotic dog partners can make a positive contribution to satisfying relationships.

If, as many contend, people keep pets for companionship, love, affection, and company (Belk, 1996; Hirschman, 1994; Holbrook et al., 2001; Selbert, 2002; Serpell, 2003), then the inclusion of a dog as a member of the household may lead not only to greater relationship satisfaction but may also positively impact a person's well-being. This study demonstrates that dog personalities contribute significantly to relationship satisfaction. Further, relationship satisfaction with a canine companion contributes positively to well-being.

5.2. Well-being: Insights gained from the human–dog relationship

The current study offers some insights regarding what specific aspects of the human–dog relationship play important roles in determining well-being. The current data suggest an interesting interaction between length of relationship with one's dog and perceived closeness to one's dog in predicting human well-being. This finding raises the possibility of a departure from the understanding of close relationships in the human psychology literature. With human relationships, relationship satisfaction tends to decline over time and contribute less to overall well-being (Kurdek, 1998; Lindahl et al., 1998). With human–dog relationships, however, well-being appears to be greater in longer, close relationships.

An interesting question is why in human–dog relationships such an interaction occurs. Several explanations appear possible. For example, individuals may find comfort and even a greater sense of self as the result of a long, close relationship with a dog. Long-term relationships with ever-loyal dogs may provide greater stability, comfort, and security, generally enhancing human well-being over time. Yet for others, an extremely close relationship developed over a shorter time period may hamper well-being. For these individuals, the relationship with the dog may surface the possibility of unmet needs in their human relationships or feelings of guilt related to neglect of or inability to develop relationships with others. A close, all-consuming relationship with a dog may even close individuals off from other human relationships, and thus, adversely affect well-being.

5.3. Future research

The current study focuses on personality, relationship satisfaction, and well-being with data obtained from a relatively small sample of dog owners from three geographic areas at one

point in time. In the future, researchers should consider using different research methods, participants, and analytical techniques. Researchers could explore links between relationship satisfaction and well-being in the context of other cross-species relationships. Researchers could further examine how human–pet relationships foster intimacy and identity formation, how these relationships change over time, as well as how the presence of different types of pets in the household influence interaction patterns. Future research could also explore how relationships with pets impact human consumption decisions. Further examination of human–pet relationships seems likely to reveal important insights about humans.

Cooperative partnerships with pet-products retailers or pet-care specialists, such as veterinarians, pet day-care centers, and trainers, could yield existing data sets, facilitate data collection, and offer other interesting research opportunities. In addition to larger scale surveys, which would allow the use of techniques such as path analysis to explore the possibility of moderating and mediating relationships among variables, the authors recommend the use of other types of data and analyses. Qualitative methods, such as participant-observation, in-depth interviews, and ethnographies could offer additional insights about human–pet relationships and their development over time. Q-methodology could provide a blend of quantitative and qualitative analysis to afford a subjective holistic, yet quantitative measure of the impact of personality on human outcomes. Using a variety of methods, future research could explore a number of interesting themes suggested by the current study.

5.3.1. Relationship intimacy and well-being

Particular characteristics of human–dog relationships may facilitate more intimate relationships, fostering greater self-exploration and development. The connection between sources of intimacy in relationships and the connection of these sources to well-being are likely candidates for investigation. Research in the human relationship literature suggests six specific dimensions of intimacy: knowledge, caring, interdependence, mutuality, trust, and commitment (Brehm et al., 2002). These dimensions relate closely to the facets of canine personality highlighted in this research as contributing to relationship satisfaction. Findings in the human relationship literature suggest that intimacy grows when relationship partners share new experiences, such as novel recreational activities (Strong and Aron, 2006). Relationship partners, such as the dogs in this research, who tend to be more agreeable and open to new experiences, may foster more intimate relationships. Openness to the exploration of new adventures may add new life to relationships, contributing to well-being. Reexamination of the connections between personality facets, relationship satisfaction, and well-being with a focus on what appear to be common themes could be fruitful.

5.3.2. Relationships and exploration of self

Relationships provide a training ground for learning about self. Relationships with dogs may facilitate exploration of self in a number of ways. This research suggests that relationships

appear more satisfying when dogs bring more of particular personality facets to the relationship than do humans. Relationships with animal partners who have different personalities than one's own may facilitate the exploration of possible alternative selves (Belk, 1988). Humans may take advantage of certain animal personalities to cultivate, complement, or fill voids in their own sense of identity. A close, extended relationship with a pet may allow a person to become more comfortable with his or her own identity. Growing comfort with self and learning to build satisfying relationships with a canine companion may even help individuals develop skills to navigate future human relationships.

5.3.3. Cross species personality studies

As Gosling (2001) notes, and this study suggests, pursuing further research on animal–human bonds may lead to additional insights about humans. People keep a variety of animals as pets, from fish to ferrets to felines. Interesting connections may exist between personality, attachment styles, and preferences for different types of pets. Research suggests that human personality differences help explain preferences for different types of pets but the findings are complex (Kidd and Kidd, 1980). Generally, the human personality traits of autonomy, dominance, and nurturance relate to preferences for cats versus dogs. If, as some folk wisdom suggests, cats are more independent than dogs, does this translate into personality differences between people who choose cats versus dogs? Does choosing a more independent pet reflect anything about a person's willingness to accept commitment to a relationship or responsibility for another being, or about underlying attachment style?

As animal scientists continue to explore the minds of various species, research employing personality inventories of other pets may add insight into the relationships and patterns noted in earlier work. Further study of cross-species personality profiles may reveal new understandings of ways in which humans construct their self-identity through others. Within species, the selection of particular breeds may communicate characteristics desired by the owner, such as ruggedness, playfulness, or sophistication. Much like cars, consumers may use species and breeds as brands to communicate their self-perceived or aspirational identities.

5.3.4. Changing dynamics of relationships

Constellations of relationships may influence the meaning that a single relationship has and the extent to which relationships prove to be satisfying. The introduction of a new pet into a household with multiple pets and/or multiple humans is likely to change relationship dynamics among all involved. Various members of the household may have different relationships with a single pet, and the pet may fill different needs in each relationship. As one learns to balance the investment in relationships with multiple others in the household (particularly children, but increasingly dependent elders), a relationship with a pet may take on a different meaning.

Over time, human–dog relationships may shape the identity of the human and the dog. Investigation of whether the

“Michelangelo phenomenon” occurs in human–animal relationships could yield important insights. This phenomenon suggests that relationship partners influence each other, sculpting both partners closer to their ideal selves (Drigotas et al., 1999). Examining identity and relationship outcomes over time could add evidence to the debate about whether being the person my dog thinks I am is better or worse than for my dog to truly be the dog I want him to be.

The nature of the human–pet relationship also changes markedly over a pet’s life course, as the pet grows from a youth to mature adult and eventually to an older pet in decline. Because most pets age much faster than their human partners, examining the transformation of relationships as pets age may provide insights about humans’ comfort with life course changes. For example, puppies that chew and require housebreaking may disrupt daily schedules. Later, failing physical capabilities may prevent pets from participating in routines central to a satisfying relationship, such as going for runs or playing frisbee. Understanding human reactions to a pet’s growth, health problems, and aging may offer insight about humans’ attitudes, feelings, and intentions for their own life course. Through their relationships with pets humans may model how they wish to be treated by their own human family in such circumstances.

5.3.5. Behavioral patterns and business opportunities

While this study focuses on personality and perceived closeness as key drivers of relationship satisfaction and well-being, further investigation of the behavioral patterns underlying the human–dog bond may prove fruitful. Numerous dog owners share important rituals with their pets, cuddling first thing in the morning, going walking or running together, and snuggling before falling asleep at night. With more Americans working from home and spending leisure time with pets, the number of hours in a day spent with pets has also increased making some pairs virtually inseparable. Caretakers bring their pets with them exercising, shopping, and camping, and they devote their free time to participating in pet sports such as agility, field trials, fly-ball and herding. Such strong social relationships between humans and pets create new and expand existing business opportunities for those attentive to trends with regard to animal companions.

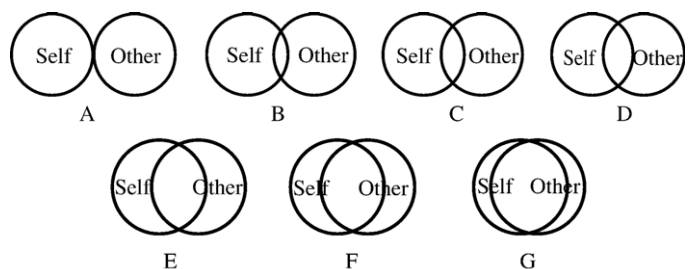
Examining the specific types of pets and pet-related products and services purchased by caretakers may offer insight into the latent desires and unmet needs of consumers. Moving beyond aggregate measures of total expenditure to a more fine-grained analysis of consumption patterns by category, such as food, treats, toys, clothing, grooming, veterinary services, and day care, may reveal important differences in human sources of identity and self-esteem. Investigating behavioral trends such as these may offer additional insight on the relationship between identity and consumption.

Dogs not only occupy a special place in many people’s hearts, they increasingly occupy places in their laps, beds, and the space beneath the seat in front of them on airplanes. An increasing number of Americans make vacation and holiday plans around pet needs. Pet-friendly guides, such as www.dogfriendly.com and www.companionair.com, assist owners in finding pet-

friendly transportation, resorts, cities, hikes, parks, beaches, outdoor dining, and events by city. Dog camps no longer simply provide daytime diversions for the pets of working owners but rather serve as destinations for both humans and dogs. At camp, dogs and humans jointly participate in agility, swimming, hiking, painting and costume parties, and at night they share dorms reminiscent of a summer camp atmosphere. As pets become more integral to households, families are more likely to consider pets in major purchase decisions. Choices such as the type of vehicle to buy (e.g., hatch-back, SUV, truck), the location (e.g., neighborhood close to a pet-friendly park) and type of residence in which to live (e.g., house with a fenced yard) may be made with the needs of the pet foremost in mind.

The current research builds on the proposal that close human–pet relationships prime the substantial dog-related expenditures Americans make. The authors find that dogs’ personalities impact relationship satisfaction and that human–dog relationships, particularly their closeness and length, positively influence human well-being. Thus, this tail of two personalities suggests that dogs contribute importantly to the satisfaction humans gain from their relationships with dogs. Dogs may also benefit from their relationships with humans, especially if their caretakers shower them with more toys, more treats, and lots of love.

Appendix A. Inclusion of other in self scale (Aron et al., 1992)



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