

“We Lost a Member of the Family”: Predictors of the Grief Experience Surrounding the Loss of a Pet

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Pets play an important role in their owners' lives and are often viewed as family members. However, research on human-animal relationships suggests that pet owners often receive relatively less emotional support when experiencing grief after the death of a beloved pet, a phenomenon known as disenfranchised grief. In this internet-based survey study, we explored how people experienced grief surrounding the loss of their pets, and how this experience mirrors emotions that result from the death of a human loved one. We examined how factors such as anthropomorphism, attachment to a pet, and social support influence the grief experience. We also explored how feelings of guilt and shame play a role when grieving the loss of a pet. We found that grief over the loss of a pet is similar to grieving a human loved one in large part due to the anthropomorphic qualities attribute that owners attribute to their pets. Avenues for future exploration of the psychological impact of pet ownership are discussed.

Keywords: disenfranchised grief, attachment, anthropomorphism

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In the most recent survey conducted by the American Pet Products Association (APPA, 2018), sixty-eight percent (or 85 million) of U.S. households report owning a pet. This statistic is twelve percent higher than the initial survey conducted thirty years earlier. The most common household pets include dogs and cats, with 60.2 million households reporting dog ownership and 47.1 million households reporting cat ownership. With such a large number of pet owners in the population, it is worth examining the

psychological and emotional impact that pet ownership may have on individuals.

Pet ownership is a unique experience, in that pet owners not only care for the animal's basic needs, but also often come to view pets as companions, confidants, and part of the family (McConnell, Lloyd, & Buchanan, 2017). Indeed, research suggests that pets play an extremely meaningful role in their owners' lives and that individuals form deep emotional bonds with them (e.g., Green et al., 2009; 2018). As such, the loss of a pet can also invoke intense grief.

Anthropomorphism: The Psychological and Biological Phenomena Underlying Human-Animal Emotional Bonding

Feelings of attachment to animal companions is associated with increased anthropomorphism, which is the assignment of a human identity or characteristics to a non-human animal or object (Albert & Bulcroft, 1988). For example, an owner may look over to their pet and believe that the animal looks content or guilty, may ascribe personality traits to their pet and use relationship names (e.g., daughter, brother), and may even incorporate their pet into family celebrations, such as birthday parties for the pet.

Beyond simply attributing a unique identity to their pets, research has found that if faced with a hypothetical ethical dilemma, people who view a pet as family would even choose to allocate resources (such as a rare but life-saving medicine) to the pet over a human who is not kin (Cohen, 2002). Similarly, a study in Australia found that considering a pet to be a part of the family predicted an increased likelihood of including the pet in considerations for emergency planning in the event of a natural disaster (Trigg, Smith, & Thompson, 2015). Because individuals may assign their animal companions human-like characteristics and thus elevate them to the status of family members in many respects, we propose that anthropomorphism is one mechanism that explains why people grieve so strongly over the loss of their pet.

In addition to psychological experiences, researchers have also pointed to evolutionary mechanisms and biological changes that may also be the underlying causes of this attachment. Specifically, research has shown that dogs and cats were some of the first animals to be domesticated, and thus have co-evolved alongside humans over several thousand years, increasing our interdependence with them (Green,

Mathews, & Foster, 2009). Other recent work has showed that there are similar neurobiologic bonding mechanisms between human-human and owner-dog pairs, including evidence of increased levels of oxytocin, beta-endorphin, prolactin, beta-phenylethylamine, and dopamine in pet owners and their dogs during and after positive interactions (Handlin et al., 2011). Affiliative hormones like prolactin and oxytocin have been shown to promote mother-child bonding (Numan & Young, 2016), and oxytocin has also been found to promote more positive paternal behaviors in men, including greater positive affect and increased physical contact with their infants (Weisman, Zagoory-Sharon, & Feldman, 2014). Thus, the hormone increases revealed in human-animal interactions indicates that people and their pets are forming attachment bonds as parents and children do, bolstering our contention that people often bond with their pets because they assign human characteristics to them and treat them like humans in some respects. This anthropomorphizing, in turn, will increase the depth and extent of grief experienced on the loss of the pet.

Further, fMRI evidence suggests similarities in patterns of brain activation in the affiliation and reward centers of the brain among women who were asked to view photos of their own children and own dogs (Stoekel et al., 2014). Notably, these similar patterns of activation did not appear when the women were asked to view photos of children or dogs not belonging to them, suggesting that people are uniquely attached to their own animal companions. In addition to brain activation, self-reports provide converging evidence showing that mothers rated pictures of their own children and dogs with similar levels of arousal and pleasantness. Taken together, these findings indicate that people may view their relationship with their pets similarly to the way they view a relationship

with a child, especially since the pet is entirely dependent upon them to receive care.

Pet Ownership and Grief

Given the extensive research support for the depth and importance of bonds between humans and their animals, it follows that losing a pet may trigger similar feelings of grief to losing another human loved one. However, these emotions following the death of a pet are often not given the same validation or empathy by close others (e.g., those who do not have pets) relative to the support one might receive if the deceased were a human loved one. This lack of support is known as *disenfranchised grief*, and leaves people feeling isolated and unsupported (Cordaro, 2012; Packman, Field, Carmack, & Ronen, 2011). This sense of isolation can inhibit one's willingness to disclose feelings to close others (Rémillard, Meehan, Kelton, & Coe, 2017). In fact, research suggests that people will even weigh the costs and benefits of posting about the loss of a pet on social media, as they fear they may be ignored, or worse, derided (Vitak, Wisniewski, Ashktorab, & Badillo-Urquiola, 2017). Most importantly, this lack of support exacerbates the already challenging grief process, leaving people feeling that their emotions are illegitimate, resulting in increased distress and reduced quality of life (Spain, O'Dwyer, & Moston, 2019).

Though there has been some research examining the grief surrounding the loss of a pet, a majority of this work approaches grief over a pet from a counseling or social work perspective. Thus, most research focuses on the emotional impact and the types of services that should be provided to an individual during these times (Hess-Holden, Monaghan, & Justic, 2017). There is far less work that attempts to theoretically and empirically describe the psychological experience and its aftermath. Greater understanding of the psychological experience, in turn, will better inform

interventions to ameliorate the grief.

In a survey of participants who had recently lost an animal companion, 30% of individuals reported severe grief in the aftermath of their loss (Adams, Bonnett, & Meek, 1999). The authors proposed that the experience of grief varied by how attached people were to their pets, and whether or not the pet had been euthanized. Interestingly, the authors discussed that societal attitudes towards pet death was a contributing factor for experiencing severe grief. This suggests that people may be forced to express grief over a pet differently than grief over a human (e.g., immediately went back to their everyday routines) because social norms may dictate that an extended mourning period for pets is not appropriate. They also reported that over half of participants reported feeling as though society did not view the loss of a pet as an appropriate reason to grieve. However, they assessed these feelings in the days and weeks immediately following the loss.

In the current study, we did not limit our survey only to participants who had experienced the recent death of a pet, with the rationale that grief in the immediate aftermath of a loss may be more pronounced than it would be after some time has passed. By including a wider range of participants, we were able to avoid the element of time as a potential confounding factor. This also allowed pet owners to provide a longer-term picture of the amount of social support they had received following the death of their pet; they might have received support in the immediate aftermath of the loss, but may have felt that this tapered off rather quickly if the people around them did not fully recognize or acknowledge the magnitude of grief associated with the death of a pet.

Grief is a complicated emotion, with multiple factors determining how strongly it may influence an individual. For example, the circumstances surrounding the death, the

individual's closeness to the deceased, and how much social support received (Lobb et al., 2010; Bellet, Jones, Neimeyer, & McNally, 2018) can affect the depth and duration of an individual's grief. Thus, we expect that these factors will also play a role when losing an animal companion, especially for pet owners who report a strong bond to their pets. The sudden or accidental death of a loved one can result in greater depression during the grief process versus a prolonged illness or death due to natural causes, suggesting that these types of deaths are a distinct type of trauma (Kaplow, Howell, & Layne, 2014). However, there has been mixed research regarding the most critical situational factors that might surround the death of a beloved pet (Davis, 2011). For example, whereas some research suggests that the decision to euthanize a pet might result in a less negative emotional experience relative to circumstances in which pets die suddenly or accidentally, other findings support the notion that being faced with this decision is actually more stressful for owners. This increased stress is attributed to the anticipatory grief that pet owners face when trying to determine if euthanasia is an appropriate decision for their pet, and this negative experience can be exacerbated without the proper social and emotional support (Lagoni, 2011).

Adams et al. surveyed participants about how the decision to euthanize their pet influenced their grief and found that doubts over this choice predicted a stronger grief experience. The authors concluded that because of the different societal perspectives surrounding mourning the loss of a pet versus a person, and the fact that euthanasia plays a much more prominent role in the loss of a pet, grief over the loss of an animal may differ from grief experienced over the loss of a human and should not be studied using the same models. However, they did not directly examine feelings of guilt or shame, which we

believe factor directly into the lingering feelings of doubt surrounding decisions to euthanize a pet, as they play a role in the mental well-being of those individuals caregiving for their human loved ones (Losada, Márquez-González, Peñacoba, & Romero-Moreno, 2010; Roach, Laidlaw, Gillanders, & Quinn, 2013). More specifically, guilt is typically viewed as involving emotional discomfort over a specific offense committed, whereas shame is typically viewed as seeing oneself as bad or flawed (Griffin et al., 2016; Marschall, Sanftner, & Tangney, 1994; Tangney, Miller, Flicker, & Barlow, 1996). In the case of our pets, owners struggle with making decisions about end of life care just as they would for a human loved one (Testoni, De Cataldo, Ronconi, & Zamperini, 2017). Thus, guilt may stem from feeling as though we did not do enough to care for them, and shame may be triggered by the thought that we directly contributed to their deaths by deciding to euthanize. Because human-animal relationships are more asymmetrical (e.g., inability to communicate verbally, greater responsibility for pets due to their reduced agency), experiences of shame and/or guilt may be qualitatively different and quite influential in the unfolding experience of guilt. Taken together, these emotional experiences may exacerbate the grief experience surrounding an already difficult loss, especially when we feel responsibility in a caregiver-type role. Moreover, we argue that the need for social support surrounding the death of a pet and doubt over how to manage caring for a pet in their final stages of life means that these processes are actually more similar than previously suggested, especially when pets are treated and viewed as family members.

Research suggests that the more bonded a person is to their pet, the more profoundly they experience grief (e.g., Ryan & Ziebland, 2015). In one such study,

researchers surveyed a small sample of adolescents ($N = 55$) who had recently lost a pet and found that grief was amplified among those who viewed the pet as a companion (Brown, Wilson, & Richards, 1996). Other research has found that receiving understanding from others plays an important role in buffering feelings of grief when a pet dies (Gosse & Barnes, 1994), just as social support plays an integral role in helping us cope with the loss of a human loved one (Villacieros et al., 2014).

More recent research also lends further support to our argument. In secondary analyses of video interviews of participants with chronic illnesses, Ryan & Ziebland (2015) found that individuals discussed pets as being similarly important as human family members, but did not receive the same type of responses from the researchers performing the interviews. The authors concluded that the influence of pets often was downplayed or ignored in research examining people's health. They further argued that because animals offer a number of benefits to an individual's health and well-being, including being a source of unwavering emotional support, they should be considered when assessing individuals' health. Other researchers have deemed grief surrounding the loss of a pet as a "destabilizing emotion" (Redmalm, 2015), because grieving owners fluctuate between whether or not they feel their emotions are acceptable. Participants interviewed for this research indicated that this vacillation stems from the influence of societal attitudes that contend that the lives of pets are not as valuable as the lives of people.

Further research shows that pets can serve as attachment figures and sources of social support in the same way that human companions do (Meehan, Massavelli, & Pachana, 2017; Green, Coy, & Mathews, 2018), even in the most traumatic circumstances (Flynn, 2000). In fact, the attachment bond among pets and their

owners has been found to be comparable in strength to that between romantic partners, and also more likely to be categorized as secure (Beck & Madresh, 2008; Green et al., 2018). Research also has found that we are more motivated to anthropomorphize our pets when we feel less socially connected to other people (Paul et al., 2014), suggesting that the loss of a pet can simultaneously involve the loss of a significant source of comfort and security for many individuals. Taken together, these findings underscore the importance of our current research, and why it is crucial to gain a better understanding of how to offer support to those experiencing the loss of a pet.

Overview of the Current Research

We examined the role of anthropomorphism as a mediational variable in the relationship between how attached pet owners are to their pets and the grief they feel over their loss. In addition, we explored whether owners perceive adequate social support surrounding the loss of a pet relative to a human loved one. Not all people will experience the loss of a pet in their lifetimes. Thus, some people might underestimate or even dismiss the emotional significance of this type of loss. Consequently, many who have lost an animal companion may not receive the same quantity or quality of social support from others, though the grief may be as profound as the grief in the aftermath of losing a human companion. Third, we wanted to examine how shame and guilt played a role in the grief experience, as people are caregivers for their pets, and these emotions typically are associated with caregiving in the end of life.

Hypotheses

We predicted:

Hypothesis 1) That participants would report feeling less support from others after experiencing the death of a pet compared to after experiencing the death of a human loved one, consistent with the literature on

disenfranchised grief (Packman et al., 2011; Cordaro, 2012).

Hypothesis 2) The circumstances surrounding the death of the pet would influence grief, shame, and guilt, such that these emotions will be stronger for those whose pets died due to an accident or due to being euthanized versus those that died of natural causes.

Hypothesis 3a) Anthropomorphism, guilt, shame, and attachment to one's pet would all positively predict the experience of grief. Thus, the more one attributes personality characteristics and human-like qualities to their pet, and the greater one feels guilty or ashamed regarding their pet's death, the more profound the sense of loss would be.

Hypothesis 3b) Receiving increased social support after a pet dies from a variety of sources (significant other, family, friends) would be associated with reduced grief, consistent with findings surrounding the loss of a human loved one (Lobb et al., 2010; Bellet, Jones, Neimeyer, & McNally, 2018).

Hypothesis 4) Anthropomorphism would mediate the relationship between attachment and grief, given the existing literature on the similarities human-animal bonds and attachment bonds between people. That is, we hypothesized that the attribution of personality characteristics and human-like qualities to the deceased pet would explain the relationship between attachment to a pet and the grief surrounding their loss.

Method

Participants

Participants ($N = 328$)¹ were recruited from Facebook pet groups ($n=170$) and from the undergraduate research pool at a large, urban research university ($n=158$). Participants must have experienced the loss of a pet dog ($n = 253$) or cat ($n = 56$) in order to qualify for the study. Our rationale for including only dog or cat owners is that individuals typically form stronger bonds with these types of pets and more

interdependent behaviors and routines evolve with cats and dogs, whereas relationships with other types of animals such as fish are relatively parasocial (i.e., one-sided; Green, Mathews, & Foster, 2009; Brown, Shilling, Young, & Berrong, 2015). There were no additional exclusion criteria.

Participants reported a wide variety in the length of time since the pet had passed away, ranging from less than one year (19.8%) to more than five years ago (37.5%). Additionally, approximately 43% of our participants reported that they had owned this pet for 10 or more years, underscoring the significant roles these companions play in the lives of their owners.

We included seven attention check items at various points throughout the questionnaires, (e.g., *"To show that you are paying attention, select strongly agree and move to the next question."*), and any participant who answered more than 2 incorrectly was excluded. Of the 328 individuals who completed the online survey, 19 failed attention check measures, leaving a final sample of 309 participants (235 women).

All participants were 18 years of age or older ($M_{age} = 29.08$). Of the sample reporting, 68.3% reported being White, 9.4% reported being Hispanic/Latino, 6.5% reported Black/African-American, 2.9% reported being Asian, 5.9% reported being more than one race, and 7.0% reported Other.

Procedure

All participants completed an online survey that contained items pertaining to their experience dealing with the loss of a pet. Participants were asked to name a pet whose loss had a significant impact on them and to think of that pet when answering items in the survey. They then completed the following self-report measures in this order:

Measures

Pet Demographics. At the beginning of the study, participants responded to a

number of questions regarding the pet that had passed away. More specifically, they were asked to provide the pet's name and to select the type of pet (i.e., dog or cat) so that the pet's name could be auto-populated in the to-be-completed questionnaires (i.e., the subsequent questions they answered contained the name of their deceased pet). In the event that participants had experienced the loss of more than one pet, they were asked to select the one that had the most significant emotional impact. They were also be asked to provide the length of time that they had had the animal, how long ago the pet died, and the circumstances surrounding the pet's death (i.e., accidental, natural causes, euthanasia, etc.).

Anthropomorphism Scale. The widely-used, 10-item Anthropomorphism Scale ($\alpha = .79$; Albert & Bulcroft, 1988) measured the extent to which pet owners anthropomorphize their dogs, ranging from 0 (*doesn't describe me at all*) to 10 (*describes me exactly*). Sample items include "I celebrate my dog's birthday" and "I assign my dog a role, such as son or daughter." Higher levels of personification are likely to result in greater feelings of loss and grief surrounding the death of the pet. This scale is frequently cited in the human-animal interaction literature as a strong measure of the anthropomorphism construct (Trigg et al., 2019); we slightly modified the scale to feature the pet's name rather than merely a specific type of pet in order to ensure that it would be applicable to all of our participants.

Pet Bereavement Questionnaire. This 16-item measure ($\alpha = .85$; PBQ; Hunt & Padilla, 2006) assesses feelings of grief following the loss of a pet, and all items were written such that they asked participants to reflect on their experience at the time their pet passed away. Items are rated on a 4-point scale from 1 (*Disagree Strongly*) to 4 (*Agree Strongly*). An example item would be "My life felt empty without my pet."

Multi-Dimensional Social Support Scale. This 12-item measure ($\alpha = .94$; MDSSS; Zimet, Dahlem, Zimet, & Farley, 1988) was intended to assess one's perceived level of social support from friends ($\alpha = .91$), family ($\alpha = .91$), or a significant other ($\alpha = .90$) surrounding the loss of their pet at the time of the loss. The scale contained items such as "My family provides me the emotional support that I need", and all responses ranged from 1 (*Very Strongly Disagree*) to 10 (*Very Strongly Agree*).

In addition to the MDSSS, we also included two single-item measures (presented in counterbalanced order): one to assess the overall level of social support that participants felt surrounding the loss of their pet and one to assess how well supported they felt surrounding the loss of a human loved one (e.g., "Overall, how supported did you feel when your pet/human loved one passed away?"). These items were rated on a 1 (*Completely Unsupported*) to 7 (*Completely Supported*).

The State Shame and Guilt Scale. This 10-item measure (SSGS; Marschall, Sanftner, & Tangney, 1994) assessed one's state feelings of shame ($\alpha = .79$) and guilt ($\alpha = .87$) at the time of their pet's death. This scale ranged from 1 (*Not feeling this way at all*) to 5 (*Feeling this way strongly*).

Finally, we measured feelings of emotional closeness and attachment to a pet in two ways:

Inclusion of Other in the Self Scale. This scale is a single item measure that involves selecting a pictorial representation of how connected one feels to another, such that more overlap signifies greater psychological connectedness (IOSS; Aron, Aron, & Smollan, 1992). In this study, the "other" was the pet listed by the participant at the beginning of the study. Greater psychological connectedness will likely be positively related to greater reported grief surrounding the loss of the pet. The IOSS is a

widely-used and validated measure of closeness and has been applied to individuals, groups, the environment, and pets (e.g., Davis, Reed, & Green, 2009).

Pet Attachment and Life Impact Scale. This 35-item measure was used to assess overall attachment to one's pet, because it purports to assess several facets of the emotional bond and interdependence that owners may feel toward their pets ($\alpha = .93$; PALS; Cromer & Barlow, 2013). More specifically, the scale measures how close people felt to their pets and how much they viewed them as members of the family ($\alpha = .87$; love subscale), how much the pet helped them manage their emotions ($\alpha = .91$; regulation subscale), how much the pet influenced their personal growth ($\alpha = .85$; growth subscale), and how negatively the pet affected their life ($\alpha = .66$; negative impact subscale).

Results

Principal Dependent Measures

Hypothesis 1. We used a paired samples *t*-test to determine whether there were differences between the amount of support felt over the loss of a pet versus a human loved one. Given the nature of the questions, only participants who had experienced both types of loss were able to answer items in this section of the survey. However, approximately 91% of individuals fell into this category ($n = 281$), and nearly every eligible participant responded to all items in this section ($n = 266$). Participants reported feeling more supported after having experienced the loss of a human ($M = 6.02$, $SD = 1.25$) compared to the support received after losing a companion animal ($M = 5.41$, $SD = 1.56$), $t(265) = 7.01$, $p < .001$, 95% CI [.47, .83], $d = .43$. Notably, using the IOS self-other overlap measure, participants reported similar feelings of connectedness to their pet ($M = 5.62$, $SD = 1.29$) as to their human loved one

($M = 5.47$, $SD = 1.53$), $t(280) = 1.30$, $p = .19$, 95% CI [-.08, .37], $d = .11$.

Hypothesis 2. We used standard multiple regression analyses to examine the relationship between circumstances surrounding the pet's death and feelings of grief, shame, and guilt participants experienced. We expected stronger feelings of grief, shame and guilt to be associated with pets that died due to euthanasia ($n = 85$) or accidental death ($n = 46$) than those who died of natural causes ($n = 152$). The circumstances surrounding the pet's death were dummy coded and entered into the model as predictors, and grief, shame, and guilt were assessed as outcomes. This hypothesis was partially supported: there was a significant difference between the groups on the outcome of grief, $R^2 = .05$, $F(2, 280) = 8.04$, $p < .001$, with participants feeling significantly more grief if a pet's death were the result of the decision to euthanize ($M = 2.63$, $SD = .48$), $\beta = .14$, $t(280) = 2.05$, $p = .042$, and the highest levels of grief if the death was unexpected ($M = 2.85$, $SD = .50$), $\beta = .27$, $t(280) = 4.01$, $p < .001$, relative to if it were due to natural causes ($M = 2.48$, $SD = .50$). Pet owners also reported differences in their feelings of shame depending upon the circumstances surrounding their pet's death, $R^2 = .02$, $F(2, 273) = 3.09$, $p = .047$. They felt most ashamed when a pet's death was accidental ($M = 2.85$, $SD = .95$), relative to when their pet had to be euthanized ($M = 2.47$, $SD = 1.01$), $\beta = .14$, $t(273) = 2.27$, $p = .024$ or died due to natural causes ($M = 2.42$, $SD = .95$), $\beta = .14$, $t(273) = 2.32$, $p = .021$. Interestingly, guilt did not vary as a function of the circumstances surrounding the death of a pet, $R^2 = .02$, $F(2, 271) = 2.56$, $p = .079$. This suggests that while people may not consider blameworthy specific decisions and behaviors related to the death of their pets (thus the lack of a significant relationship with guilt), they may feel bad about not being able to do more to have prevented an

accidental or unexpected death from occurring. Future research should investigate this possibility and examine the potentially unique aspects of shame versus guilt in these experiences.

As a more stringent test of the hypothesis, we also used a hierarchical linear regression to assess the differences in grief and shame after controlling for the length of ownership and the length of time since the pet’s death. Both of these covariates were assessed as continuous variables and entered into the first step of the model. The relationship with grief remained significant even when controlling for these variables, $\Delta R^2 = .04$, $F(2, 278) = 5.94$, $p < .001$. Grief was stronger when a pet died unexpectedly or accidentally, even when accounting for how long the person had owned their pet and how much time had passed since the pet had died, $R^2 = .08$, $F(4, 278) = 6.16$, $p < .001$. However, the relationship between shame and circumstances surrounding a pet’s death was no longer significant when the covariates were entered into the model, $R^2 = .03$, $F(4, 271) = 2.15$, $p = .08$.

Hypotheses 3a and 3b. We used a hierarchical multiple regression analysis to assess the relationship between our predictors (anthropomorphism, social support, guilt,

shame, and attachment) and grief, while controlling for length of pet ownership and how much time had elapsed since the pet’s passing. In this model, attachment was assessed via the overall mean scores of the PALS scale (See Table 1 for full descriptive statistics).

Overall, the duration of pet ownership and the length of time since the pet’s death significantly predicted how much grief pet owners reported feeling, $R^2 = .06$, $F(2, 288) = 9.30$, $p < .001$. Their grief was stronger when the death of the pet was more recent, $\beta = .20$, $t(288) = 3.55$, $p < .001$. Interestingly, however, length of ownership negatively predicted grief, $\beta = -.16$, $t(283) = 2.80$, $p = .005$, suggesting that owners who had their pets for shorter periods of time may not have been as prepared for the emotional ramifications of the loss. To examine this finding further, we used a chi-square analysis to determine whether there was a difference between the manner in which a pet died and the amount of time they had with their owners. Data on length of ownership was collected on an ordinal scale ranging from 1 (Less than one year) to 7 (More than 10 years). Thus, a chi-square analysis was appropriate to further examine the differences between groups. We found that

Table 1. *Correlations and Descriptive Statistics*

	1	2	3	4	5	6	7
1. Anthropomorphism	–						
2. Pet Bereavement	.42**	–					
3. Multi-Dimensional Social Support	.31**	-.04	–				
4. Guilt	.14*	.41**	-.03	–			
5. Shame	.29**	.51**	-.04	.65**	–		
6. Self-Other Overlap	.61**	.33**	.21**	.06	.24**	–	
7. Pet Attachment Life Impact Scale	.70**	.44**	.24**	.25**	.38**	.58**	–
<i>M</i>	7.86	2.62	5.56	2.50	2.56	5.60	4.08
<i>SD</i>	1.46	0.51	1.29	1.11	1.01	1.28	0.57

Note: * Correlation is significant at the 0.05 level (1-tailed), ** Correlation is significant at the 0.01 level (1-tailed); $N = 309$.

there was a significant difference in ownership length when participants were grouped based on the manner in which their pet had died, $X^2(12) = 91.37, p < .001$. Further, among those who reported that the death had been unexpected, approximately 80.4% had owned their pet for less than 6 years. However, most pet owners whose pets were euthanized or died of natural causes reported owning their pets for 10 years or more, at rates of 60.0% and 49.3%, respectively.

When anthropomorphism, social support, guilt, shame, and attachment were added to the model, they significantly improved the prediction of grief, $\Delta R^2 = .35, F\Delta(5, 283) = 33.92, p < .001$. All variables together significantly predicted grief $R^2 = .41, F(7, 283) = 28.40, p < .001$, accounting for 41% of the variance in how severely one experienced grief surrounding the loss of one's pet. Both parts of Hypothesis 3 were fully supported, as each of our predictors was significantly related to grief in the expected directions. More specifically, higher levels of anthropomorphism ($\beta = .21, t(283) = 3.24, p = .001$), guilt ($\beta = .15, t(283) = 2.38, p = .018$), shame ($\beta = .27, t(283) = 4.19, p < .001$), and attachment ($\beta = .16, t(283) = 2.42, p = .016$) all predicted greater feelings of

grief. In addition, receiving greater social support when a pet died negatively predicted experiencing grief, $\beta = -.12, t(283) = -2.56, p = .011$.

Hypothesis 4: the explanatory role of anthropomorphism. *Why* does greater attachment to a pet lead to feeling more grief? We wanted to further explore the role of anthropomorphism in the relationship between attachment to a pet and grief surrounding the pet's death. We conducted a bootstrapping analysis to examine the indirect effect of attachment to one's pet on grief via anthropomorphism using PROCESS (Hayes, 2012). We used a mediation model, whereby attachment was modeled to affect grief through anthropomorphism. The overall model was significant, $R^2 = .22, F(2, 297) = 41.83, p < .001$, accounting for 22% of the variance in grief (see Figure 1). Feelings of attachment to one's pet shared a strong positive relationship with levels of anthropomorphism ($\beta = .71$) and with grief ($\beta = .40$, both p 's $< .001$). Anthropomorphism was also positively related to how strongly pet owners experienced grief following the loss of their pets ($\beta = .21, p = .004$). This model, conducted with 5,000 bootstraps, yielded a mean bootstrap estimate of the indirect effect of 0.13 (SE = 0.05). Because

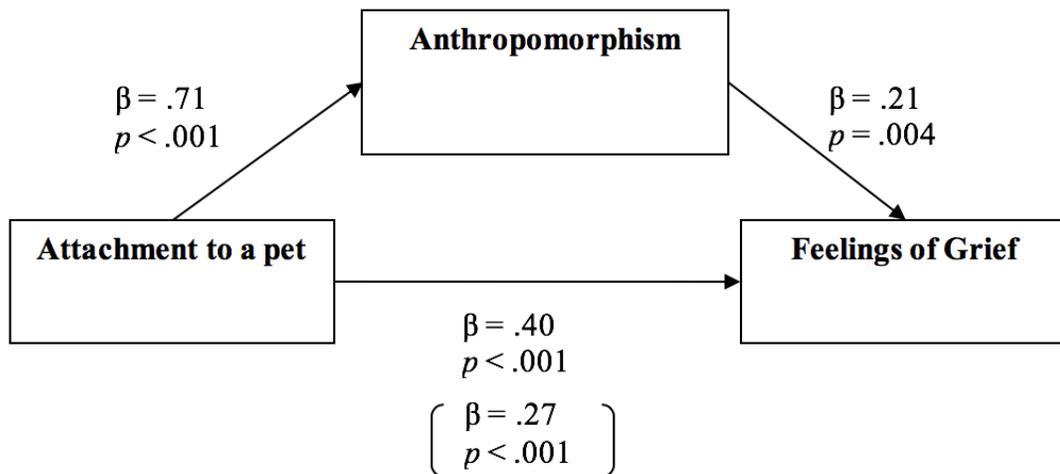


Figure 1. Mediation analysis depicting the relationships between attachment to one's pet, and self-reported levels of grief via anthropomorphism.

the 95% confidence interval did not include 0 (0.04 – 0.22), we concluded that the indirect effect of anthropomorphism on the association between attachment and grief was significant. That is, greater attachment predicted higher levels of anthropomorphism, which, in turn, led people to experience more severe grief when their pet died.

As an alternative explanation for the experience of grief, we examined whether assessing attachment as a mediator would provide a better fitting model than our original mediation. Thus, we assessed whether anthropomorphism affected grief through attachment. When considered this way, the indirect effect was smaller, at just .07 (*SE* = .02, 95% CI [0.02, .12]), suggesting that our original model provided a stronger explanation for the relationship among these variables and the experience of grief.

Exploratory Analyses

We conducted several exploratory analyses regarding gender differences on our measures related to closeness (self-other overlap, anthropomorphism, and attachment to a pet), bereavement, and social support, as women are more relationally interdependent than men (Gabriel & Gardner, 1999; Cross, Gore, & Morris, 2003) and thus may exhibit differences in how they are bonded with their pets and their resulting grief when the pet dies. We found that women reported greater scores on all measures of closeness to a pet, felt more severe grief after the pet’s death, and perceived greater social support after the

pet’s death (see Table 2). However, it was interesting to note that both women (*M* = 5.44, *SD* = 1.55) and men (*M* = 5.60, *SD* = 1.47) reported feeling equally close to their human loved ones, *t*(268) = 0.66, *p* = 0.51.

Discussion

Participants recalled and assessed, via online questionnaire, the grief they had experienced after losing an animal companion. Participants selected a specific pet at the start of the survey, so that every item was autopopulated to be specifically about the identified pet. This was a key strength of our study, as it was intended to facilitate recall, increase the vividness of the experience, ensure that participants identified a pet whose death had a significant impact on them, and confirm that they were thinking about the same pet for each response.

Most of our hypotheses were supported, providing empirical evidence that pet loss has a profound emotional and psychological impact on pet owners and helping to further our understanding of the role pets play in people’s lives. To be specific, we provided quantitative evidence that grief over the loss of a pet is comparable to grief that is experienced surrounding the loss of a human, in large part due to the human-like qualities that owners attribute to their pets. As expected, anthropomorphism played a major role in the severity of a pet owner’s grief following the loss of their pet. Specifically, anthropomorphism not only predicted stronger feelings of grief, but actually mediated the relationship between

Table 2. Sample Descriptives Using t-test for Equality of Means

	Women		Men		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Self-Other Overlap (Pet)	5.69	1.26	5.15	1.36	2.96	.003
Self-Other Overlap (Human)	5.44	1.55	5.60	1.47	0.66	.51
Anthropomorphism	7.96	1.39	7.31	1.55	3.18	.002
Pet Bereavement	2.66	0.51	2.42	0.47	3.35	.001
Social Support	5.65	1.28	5.17	1.26	2.57	.011
Pet Attachment Life Impact Scale	4.14	0.54	3.86	0.48	3.48	.001

attachment and grief. This was a particularly significant finding, as it suggests that ascribing human-like qualities to our pets results in our considering them to be just as important as human companions, and that the death of a pet may be felt similarly as the loss of a human friend or family member to the bereaved.

Despite the importance of the human-animal bond, our sample of pet owners felt less supported by others when grieving over the death of a pet relative to a human, providing converging evidence with previous research on disenfranchised grief (Packman et al., 2011; Cordaro, 2012). We also provided evidence that social support plays a significant role in reducing feelings of grief surrounding the loss of a pet, underscoring the importance of validating a person's emotions when their pet has died, just as when a human loved one has passed. This converges with research regarding the grief process following the death of a human loved one, which suggests that adequate social support is crucial in one's ability to move forward and strive for growth following the trauma of a loss (Bellet, Jones, Neimeyer, & McNally, 2018).

Interestingly, individuals reported less guilt and more shame over the loss of a pet, suggesting that while they may not feel responsible for their animal's death, they may question whether they did enough to prevent it. Future research should attempt to replicate and investigate more closely the experience of these two self-conscious emotions in the context of grief. In addition, women reported higher feelings of bondedness than men, providing evidence that converges with previous research (Cohen, 2002). However, women also reported greater feelings of grief over the loss of their pets than men, and more severe grief overall. It may be interesting to further examine the differences in how men and women perceive their relationships with their pets, and to explore the different ways

in which they look to their pets as a source of comfort, support, and connectedness. Taken together, our results speak to the fact that grief is a complicated emotion, especially when it is not fully recognized or validated by those around us.

Limitations and Future Directions

The proposed study is limited in that it is non-experimental, using self-report data. Given the variables being assessed (i.e., grief over loss of a pet), experimental research may be neither feasible nor ethical, though other methodologies (e.g., longitudinal) should be employed. Future work might continue to examine the parallels between the grief experienced by pet owners who are faced with the decision to euthanize, and individuals having to make end of life decisions for their human loved ones. It may be that the guilt and shame surrounding the loss of a pet may be exacerbated depending on a person's view of their pets' agency, and the fact that pets cannot communicate their wishes ahead of time nor provide reassurances (or be verbally reassured) at the end in the way that a human loved one might.

Another limitation of the study was that we chose to include only cat and dog owners. This is not because other types of pet owners do not experience attachment to their pets or grief over a pet's loss. Rather, we expected and found that dog and cat owners would anthropomorphize their pets to a relatively high degree, especially given that pet owners are able to engage with these animals more often and more directly. However, broadening the types of pets included in research could be a potential avenue for future work.

Future research also might explore how children experience the death of a pet, and how these events may be seen as significant teaching periods in a child's development. Specifically, how does a child experience grief, and what may be the role of anthropomorphism? In addition, research

might examine whether the presence of children in a household predicts a decreased grief response for pet owning parents, as attentional resources may be reallocated towards childcare responsibilities, thus reducing the time spent ruminating over the death of a pet.

Affective forecasting, or how individuals predict their future emotional experiences, may also influence the experience of grief (e.g., Green et al., 2013). While affective forecasting typically involves overestimating our anticipated feelings in a particular situation, it is possible that pet owners may be more susceptible to inaccurate forecasting in the opposite direction (i.e., underestimate the forecasted grief, particularly compared to anticipated grief over the loss of a human companion). They may be under the impression that “it’s just a pet,” a refrain commonly heard by pet owners experiencing loss (Cowles, 2016), and therefore be less aware of how connected they have become to their pet or how significant the changes will be after the pet’s loss. Thus, this forecasting inaccuracy may result in a lack of emotional preparedness when the pet dies, and a decreased ability to properly cope with the feelings of loss, especially if the owner is faced with the decision of having to euthanize their pet without preparation, or if the pet dies unexpectedly. Indeed, our results show that pet ownership was inversely related to feelings of grief, suggesting that the less time an individual owned a pet, the more they reported feelings of grief. In such instances, social support would likely be even more invaluable for the bereaved pet owner.

Another avenue for continued exploration is how pets, like children, influence relationship satisfaction among romantic partners. Pets may increase or inhibit relationship satisfaction, either strengthening the bond between partners or inhibiting it if both members of the dyad are

not equally invested in caring for the pet. The death of a pet in these situations may exacerbate existing tensions, especially if one partner does not provide adequate support for the other after the pet has died.

Conclusion

Our participants reported similar feelings of bondedness and bereavement to their animal companions as to their human loved ones. Importantly, our results are the first to provide quantitative data suggesting that anthropomorphism actually accounts for the relationship between attachment and grief: greater attachment to animal companions is associated with ascribing more human qualities to them, and this, in turn, is associated with more grief in the aftermath of their loss. Put another way, individuals may experience the same levels of grief regarding departed pets as they do human companions because they see those pets as having human qualities. Despite these feelings, however, individuals may not experience the same levels of social support, underscoring the importance of seeking out connection with others who value human-animal bonds in the same manner. Ultimately, we contend that high anthropomorphism coupled with a lack of appropriate social support interact, leading to a more difficult experience of grief over a pet.

Footnotes

¹ An *a priori* power analysis was conducted using G*Power software (Faul, Erdfelder, Buchner, & Land, 2009). Assuming a small effect size for even our most complex regression model ($r^2 = .04$), we found that 265 participants would be sufficient to detect an effect (power ≥ 0.90 , alpha ≤ 0.05). A separate *post-hoc* power analysis was conducted for Hypothesis 4 (Kenny, 2017), as we wanted to ensure that the mediation analysis was sufficiently powered based on our sample size and obtained effect sizes. We found that power ranged from .81-.99 for all paths in the model.

² We used the mean scores of the overall PALS scale in accordance with how the scale's creators have used the scale in previous research (Barlow et al., 2012).

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