
10-17-2016

A Moveable Beast: Subjective Influence of Human-Animal Relationships on Risk Perception, and Risk Behaviour during Bushfire Threat

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Recommended APA Citation

Trigg, J. L., Thompson, K., Smith, B., & Bennett, P. (2016). A Moveable Beast: Subjective Influence of Human-Animal Relationships on Risk Perception, and Risk Behaviour during Bushfire Threat. *The Qualitative Report*, 21(10), 1881-1903. <https://doi.org/10.46743/2160-3715/2016.2494>

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Abstract

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Keywords

Animals, Bushfire, Disaster, Pets, Risk-Perception, Risk-Taking, Thematic Analysis

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Acknowledgements

We are grateful each person who took the time to relate their experiences of human-animal relationships and bushfire threat in this research. The authors also declare no competing interests.

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This article examines how human-animal connections influence risk perception and behaviour in companion animal guardians exposed to bushfire threat in Australia. Although the objective role of psychological bonds with companion animals is well accepted by researchers, subjective interpretations of these bonds by animal guardians are relatively underexamined in this context. We argue that the ways in which connections with pets and other animals are represented influences different forms of safety-risk perception and behaviour when managing animals' safety in the face of disaster threat. Thematic analysis of 21 semi-structured interviews with South Australian residents in bushfire-affected areas supported the role of the human-animal bond in shaping risk perception, and influencing engagement in risk-behaviour. Influential factors included animals' "life value," "relative versus absolute" risk framing, the "constellation of bonds," and "action paralysis" when facing threat. Implications for future research in decision-making and risk propensities of animal guardians facing disaster threat alongside their pets are then discussed. Keywords: Animals, Bushfire, Disaster, Pets, Risk-Perception, Risk-Taking, Thematic Analysis

That people experience varied and influential connections with non-human animals is well understood, and has long been used as a means of examining motives and biases that inform the treatment of both humans and non-humans. In few contexts is the understanding of animals' perceptual and behavioural influence as important as during threat of disaster such as flood (e.g., Irvine, 2009) and bushfire (Taylor, Lynch, Burns, & Eustace, 2015), where risk-mitigation and survival decisions directly impact the welfare of humans and other animals. For many, animals exist both internally as relational experiences, and externally as traveling companions—as 'moveable beasts' carried with a person. Detailed understanding of the subjective value of these connections is needed to pre-empt and account for the highly varied decisions and behaviour of animal guardians around issues involving animal relocation. Research shows that aspects of the human-animal bond such as attachment (Heath & Linnabary, 2015), emotional closeness (Trigg, Smith, & Thompson, 2015a), and commitment to animals (Brackenridge, Zottarelli, Rider, & Carlsen-Landy, 2012) modify people's responses to disasters that present a threat to their animals. Indeed, there is a wealth of theoretical explanations relating to our affinity for other animals (Amiot & Bastian, 2014) that can be applied to the challenge of disaster response. However, there has been little effort to expand knowledge of guardians' subjective valuations of their animal connections and what for them constitutes motivators or barriers to self-protective and animal-protective action that includes an element of risk; a prominent example of which is the relocation or evacuation of animals.

Moreover, the role of this issue as a determinant of human and animal welfare, as well as of social resilience and economic benefits, is recognised at the level of national disaster-response planning both within Australia (World Animal Protection, 2015), and abroad (e.g., Garde, Pérez, Acosta-Jamett, & Bronsvort, 2013). In this article, we argue that for effective planning and communicative efforts to be created, there is a need to explicate a range of subjectively understood perceptual and behavioural influences of animal connections on disaster-risk understanding, mitigatory planning and decision-making. In Australia, given their frequency and impacts, bushfire accounts are one of the most salient contexts in which to examine this, and interviewing that targets this topic, a valuable approach.

The potential to identify new motives and barriers to disaster-response action by animal guardians means that planning and communicative principles may then be beneficially adapted. Consequently, the main aim of the current study was to examine the role of the human-animal bond in shaping disaster-risk perceptions of companion animal guardians, and in promoting certain forms of response behaviour when facing a bushfire threat. We additionally sought guardians' own accounts of animal-related risks that were most relevant to them, and the degree to which they exhibited insight and awareness about these. The central research question we posed was 'how are connections with animals represented as influencers of risk perception and safety-risk behaviour for companion animal guardians who have been exposed to threat of bushfire in South Australia?' No explicit hypotheses were stated, and a broad research question adopted, given the primarily inductive nature of the research. One benefit of doing this is the avoidance of interpretive constraint on findings by a dominant theory of human-animal relationships.

In the following, we draw together various domains of human-animal relationships to address this question. Given the ability for attitudes towards animals to frame perception and behaviour, this is presented first, followed by animals' roles within the interspecies family. Next, the supportive functions of companion animals in everyday life and during disasters are addressed prior to examining perceived responsibilities towards animals. These main themes are then examined in relation to their influence on guardians' risk perceptions and actual risk behaviours engaged in during bushfire experiences.

Study Context

As researchers with experience across a range of subjects in the "human-animal studies" space, we are keenly aware that the variety of interactions that people have with non-human animals leads, over time, to many different forms of interspecies relationships. The complex nature of these relationships, and particularly those with companion animals, can generate both positive and negative consequences for people and animals. We believe that how these relationships are represented in disaster contexts is of particular importance, given the inherent relational, welfare, and safety implications. Because of this, we have also focussed our efforts on these issues in research outside of the current study. As psychological and anthropological researchers of human-animal relationships, we appreciate that there are myriad ways that our close bonds with pets and other animals frame our thoughts and actions: both those focussed on ourselves, as well as those relating specifically to animals. There is a clear need to increase the use and application of qualitative methodologies within the natural hazards context, and in human-animal studies more broadly. It was our intention, in this study, to respect the highly subjective qualities of these close bonds, as well as the emotionally charged accounts of disaster experiences in the Australian environment. The information we accessed within this research will be used to inform more sensitive approaches to human and companion animal management: both by emergency services, and by animal guardians themselves.

Methods

Methodology

Thematic analyses were framed by literature reviewing key theoretical representations of the human-animal bond in disaster contexts (see Thompson, 2013; Thompson, et al., 2014), including psychological attachment to animals (see Julius et al., 2013), animals as extensions of self-identity (Belk, 1996), as symbolic interactants (Sanders, 2003), or as self-objects providing valuable relational functions (Brown, 2011). These representations of human-animal relationships contributed to the interpretive power of the analytical approach, details of which are presented in the following sections. Both attachment to pets (Trigg, Thompson, Smith & Bennett, 2016a) and their role in maintaining an individual's sense of self (Trigg, Thompson, Smith, & Bennett, 2016b) have been linked to risk perception and risk-taking behaviour in current reviews, including in relation to natural disasters. In this study we sought to preserve a complex situation in a manner sensitive to, yet not constrained by, existing theory. Consequently, we approached the research question within a contextual constructionist paradigm (Madill, Jordan, & Shirley, 2000) where subjective values and perceptions of each animal guardian were taken as representing their 'objectively understood' reality. Within this, the researcher played an active role in achieving a common understanding of this between themselves and each participant. Parallels drawn between accounts of bushfire threat then represent the external perspective (*etic*) of the researcher and the revealed view (*emic*) of the interviewed subject (Berry, 1999).

Study Design and Participants

Interviewees were community members threatened by bushfire events that occurred in Sampson Flat, South Australia. This cluster of bushfires affected the general Adelaide Hills and outer metropolitan areas, spreading across residential, semi-rural, and conservation areas from January 2 to 9, 2015. Participation was opt-in and open to animal-owning community members aged over 18 years, and was promoted via social media channels (e.g., bushfire support groups), and via community notices (e.g., veterinary clinics). Researchers did not target participants with a strong *a priori* interest in animal welfare or disaster preparedness during recruitment. Interviews accessed information about human-animal relationships, risk perception, and risk behaviour, permitting examination of issues that animal guardians themselves considered relevant regarding *why* and *how* animals factored into bushfire accounts.

The 25 Australian participants included 19 females and six males across 21 separate interviews, four of which had two interviewees ($M_{\text{age}} = 30.08$, $SD = 12.41$ years). Findings from those completing a post-interview questionnaire ($n = 13$) indicated that most were employed in either professional or clerical roles ($n = 9$), earning over \$67,000 per annum (62.5%), with tafe or higher education ($n = 10$). Aside from the bushfire account, participants' views provided fairly typical descriptions of daily life ($M = 3.92$, $SD = 0.76$, self-rated 1 *extremely untypical* to 5 *extremely typical*). Most resided in separate peri-rural houses ($n = 12$). Compared to average South Australians, the sample was over-represented by females and the moderately-highly educated, was younger, and earned more income (Australian Bureau of Statistics, 2013).

Data Collection

Following research ethics approval by CQUniversity, prospective interviewees registered interest via an online form, and were contacted by researchers to further describe the project and participant inclusion criteria. Researchers conducted semi-structured interviews averaging 60 minutes at individual residences, along with five phone interviews. Companion and other animals were frequently present including dogs, cats, ducks, chickens, goats, cows, sheep, fish, a peacock, and a python. Researchers audio-recorded and transcribed interviews verbatim, and made written notes throughout. Prior to interviewing, participants were given a study summary, written consent was obtained, and confidentiality and participation withdrawal discussed. Semi-structured interviewing followed several main questions to elicit further information, addressing nine major areas of interest: (1) background information, (2) the human-animal connection, (3) the interplay of the animal's perceived identity characteristics with those of their guardian, (4) companion animal status within the family context, then (5) the perceived value of companion animal life, and (6) preparedness information sources, (7) experiences of living with companion animals, then (8) the subjective experience of the major disaster events, and lastly (9) their perceptions of animal involvement in these events, particularly regarding risk perception and motivation. Following this, interviewees completed an online survey capturing additional demographic data, information about the types of pets kept, and the nature of each participant's relationship with them. Where participants lived with multiple companion animals or pets to which they considered themselves closely "bonded," they discussed these animals separately. To minimise any potential mental discomfort a detailed psychological wellbeing resources document, including a non-diagnostic self-screening tool (Brewin et al., 2002), was provided as a guide to stress reactions, healthcare services, and to inform participation withdrawal.

Analyses

Interviewing elicited bushfire accounts using a critical-incident type framework, following a sequence of recent events within a defined experience, and incorporating both objective and subjective data (Flanagan, 1954). The interviewer first identified the critical incident (i.e., bushfire event/locality) and phenomena of interest (e.g., human-animal bonds and interactions, risk perceptions and behaviours) as the frame of reference for the interview: the researcher discussed this with participants at the outset. Interviewing involved a constant-comparative approach where interview schedule topics were adapted between sessions to access unforeseen relevant themes (Glaser, 1965; King, 2004). "Themes," in this case, were repeated descriptive similarities, thoughts, attitudes, feelings that supported participants' meaning when discussing the nine interview topics, as well as unforeseen yet recurring topics (see Aronson, 1994). Comparisons between interviewee perspectives led to reflexive modification of interview topics both between and within later interviews and coding (see Boeije, 2002), helping to identify further themes through constant comparison.

Interview transcripts were imported into NVivo 10 data analysis software (QSR International, 2012), where researchers coded data to multiple 'nodes' first on the basis of broader patterns in content (superordinate nodes), and then according to specific recurring themes (subordinate nodes). As the reviewed literature partly framed initial coding, this was separated into primarily deductively (*literature conceived*) and inductively (*novel inference*) derived patterns and themes—though in practice these overlap—with hybrid inductive-deductive approaches having been used in other research (Fereday & Muir-Cochrane, 2006). Coding followed Strauss's (1987, Chapter 1) analytical approach, which progressed from data familiarisation, and pattern identification to open theme generation, through axial sub-

theme identification, to selective coding, and then identification of interrelated themes (Braun & Clarke, 2006; Strauss & Corbin, 1988). Interrelated themes were identified through detailed comparison, merging, or splitting of nodes, as well as hierarchical arrangement, to most accurately describe their meanings. Further examination of interview transcripts identified segments exemplifying these central themes. Analysis ceased at the point where secondary themes were exhausted (see Chell, 2004). Data saturation, or redundancy in themes, was inferred after 19 interviews, and supported when two additional interviews provided no new relevant information (Creswell, 2013; Francis et al., 2010). Analytical rigor was monitored through discussion of preliminary and secondary coding between the researchers. Findings are presented and discussed according to the dominant themes identified in participant accounts, with some details modified to ensure anonymity.

Results and Discussion

Attitudes towards Non-Human Animals

Two main themes describing individual attitudes regarding the value of animal life and disaster risk were identified: the assumed primacy of human life, and relative worth of non-human life. Although many animal guardians voluntarily stated perspectives on the inherent value of animal life, the primacy of human life, an attitude held by most but not spontaneously stated, was a recurring theme: “Yeah, I’d never say that an animal is more important than a human” [Extract 1, female]. Notably, animals holding family member status did not generally change this perspective: “Pets are part of the family, and I always think if you’re not going to treat them like that you probably shouldn’t have them. But also they are animals, they’re not people, and people come first” [Extract 2, female].

On the surface, this anthropocentric, and potentially speciesist, attitude fits well with the near uniform perspective of emergency support services that humans take precedence, regardless of guardians’ values (see White, 2012). This has short-term welfare implications for animals left behind. Yet despite this apparent alignment of values, guardians’ attitudes towards animals in different roles or of different species suggests that the relative value of companion, utilitarian, and more intermediate animals is more complex, and potentially indicative of a person holding conflicting attitudes towards animal value. This disparity is clearly illustrated in motives for protecting animals. Animal guardians revealed a range of attitudes towards the relative value of non-human life in general, and both livestock and companion animals in particular. When asked for their primary motivation for protecting pets, guardians expressed—essentially as maxims—that their pets’ lives were held sacrosanct and of value in themselves: “I make a difference. They are living, thinking, feeling creatures...” [Extract 3, female], or views such as: “to us they are as important as our own lives, that’s us, that’s how we see things—we’re animal people” [Extract 4, female].

However, for those that did not fit the mould of ‘furry companion animal,’ namely more exotic species and individuated pet ‘livestock animals’, these relationships were treated as peripheral to more companionship-focused bonds, for example:

[The goat] just rocked up; we don’t know where it came from. We’ve never been close to it. We’ve seen it and if you stay quiet and remain relatively still, they just get used to you, but they don’t come that close. [Extract 5, female]

For some animal guardians, the usual boundary between commodified livestock and companion pet status was blurred, as in the case of a child selecting one animal for pet status, and the family accepting this:

Because it was hand reared it had a unique personality, we identify with that sheep, and so wouldn't consider eating that sheep, although we have no issues with eating our other sheep and our cattle in the past, when we had cattle. But that became a pet. [Extract 7, male]

In practice however, we see that this intermediate status, and in the case of more exotic pets a sense of “distance,” does not accord the animal's life the same form of worth as a ‘full’ companion pet, as seen in guardians responses to threat of animal harm during bushfire: “Two sheep stayed in the paddock... and I knew that they had to stay. I couldn't separate the pet sheep from the other sheep anyway, and I knew that they had to take their risks” [Extract 8, male]. For some, it was apparent that attitudes were modified by logistical concerns:

Well the fish, well in the end it's just the fish, I guess. Whatever happens, happens. You can't take them with you so whatever happened to them it was just like the rest of the house, you insure for it, I guess, and some things I guess you can't really do much about, but the dogs, yeah. [Extract 9, male]

A potential explanation for these views is found in the concept of “boundary work” (Arluke & Sanders, 1996), where the division between human and other animal, and between animals ascribed different roles, becomes blurred. Yet, the notion of ‘other animal’ does not adequately capture how people conceive of relationships with various pets, as this boundary is personally defined. A more common scenario where this occurs is in the keeping of poultry, particularly chickens, where animals hold utilitarian role, yet are simultaneously considered pets—more so by some than others: “The chicken is a very loved chicken... If you leave the door open she comes straight inside. She would like to be an inside chicken. Once again, the kids will go and pat her and cuddle her” [Extract 10, female].

This boundary blurring is well illustrated in cases where individuated poultry are relocated alongside companion dogs, and the remaining animals are left to fend for themselves:

I did have a goose. She was my little baby as well. I ended up chucking her in the car and I took her down to my friend's house... and we just opened the gates to the chickens. All the gates were open so they kind of just had to run. The dogs came with us as well. [Extract 11, female]

This relative value again divides actions involving different animals:

[the] dogs came inside. Chickens were pretty much going to cope on their own unfortunately... so you just do the best you can and you know that if something happens you could lose those animals, and you just mentally prepare for it a little bit. [Extract 12, female]

It was uncommon for those recounting their human-animal connections to extend the generalised attitude regarding “life value” to animals, excluding horses, that did not closely match the image of a companion pet as a furred mammal permitted entry into the home (Thomas, 1984). This has implications for the welfare and safety of these animals during survival planning, potentially due to their less prominent roles in family life. It is then closely linked to risks associated with leaving animals behind, preoccupying concern, and the

possibility that guardians will return despite safety risks (Trigg, Thompson, Smith, & Bennett, 2015b).

As is evident in the excerpts presented, animal guardians frame response actions according to two aspects of animals' life value: relative to human life, and relative to other animal life. However, we can see a clear conflict of stated values: pets' lives were appraised as being of lesser life value than humans'; yet, when asked about their motivations for protecting companion pets, absolute terms were given. This was further complicated by comparisons between pets, and with less traditional or 'intermediate status' pets such as fish or individuated livestock animals, as boundaries between companion, utilitarian, and commodity animals are inherently subjective. One approach to understanding life value is through decisions about moral worth. Laham (2009) found that those adopting an exclusionary mindset—why shouldn't I, rather than why should I care—exhibited a wider "circle of moral concern." Reasons for this may include affective connections and perceived instrumental value (Serpell, 2004), themes reflected in interviewees' justifications for more, less, or no risk-mitigating action aimed at securing animals' welfare. More recently, this construct of 'moral expansiveness' has been found to predict differences in willingness to sacrifice one's life for non-human animals (Crimston, Bain, Hornsey, & Bastian, 2016).

Consequently, attitudinal frames of reference are known to shape assumptions about how animals are valued (Blouin, 2013). And this has implications for how guardians choose to manage non-human life in disaster preparedness planning, as well as for in situ decision making in disaster contexts, namely, "*how is this animal valuable to me, what is their life value to me, and how does this influence my decisions regarding them?*" One context where multiple value perspectives and affective bonds operate is the family unit.

Preserving Connections within the "Interspecies Family"

A Member of the Family

Situating an animal's value within the family context requires stepping outside of the individual. Literature supports that companion and other pets are not only accorded family membership, but form an integral part of family relational dynamics, particularly during crises and transitional experiences (Walsh, 2009a, 2009b). Consequently, the family role influences how pets are incorporated into disaster threat responses (Trigg, et al., 2015a). But, beyond reinforcing that "they are family" in the current study, different facets of animals' family membership were revealed by interviewee attitudes and actions. Animals represented very different relationships to different people, and these roles in family structure were often described in terms of human family members, for instance: "The dog, she is part of the family, whereas the pony's sort of a close cousin" [Extract 13, female]; and in another family, "Tango is a partner, Zeta is a son, and Spot could be the baby. He's like an adult child trying to be a baby" [Extract 14, female]. Others noted animals' roles as grandchildren, and in another case even stated: "it would be like leaving a sibling behind..." [Extract 15, female].

An argument exists for the powerful role of neoteny—infantile physical and behavioural characteristics—as a releaser of caregiving behaviour towards pets (see Archer, 1997; Estren, 2012), and this is reflected by those who felt that viewing their companion animals as diminutive, vulnerable, and infantile, consequently created a responsibility towards their welfare: "They're like kids: if you've got kids you'd do anything for them" [Extract 16, female]. However, for others, the aforementioned boundary and primacy of human life was upheld: "I know I said that my dogs and birds are part of our family, but I still see them as animals and pets, and my family are my human family" [Extract 17, male].

These views reiterate the issue of conflicting value statements, but in this case across animal guardians, as although the “animal family” motif is easily identified, those who have explicitly contemplated their own human-animal boundary, and where different animals lie relative to it, are aware of the result of this demarcation. They know how—for them—it relates to “acceptable” disaster-risk exposure and mirrors their own risk concerns, for example:

Living there has put ourselves, our children, and our animals at risk... we are prepared to put them at that risk that we share with them. At the same time, we figure [out] what to do with them as much as what we figure what to do with ourselves. The idea is that [the dogs] come with us or they evacuate with us, unlike the poor sheep and the cows. [Extract 18, male]

This viewpoint demonstrates that the perceived relative value of animal life, and consequent survival and planning responses, are partly determined by the interspecies social context of the family. This includes unique patterns of human-animal connections, where the boundary for companion pets, intermediate pets, and “other” animals lies, as well as their position in the family, and roles, for different individuals.

Unique Constellations of Bonds

Risk perceptions and responses to disaster will vary *within* pet-keeping families, as each individual can maintain connections to different animals with whom they share habitual activities, incorporating them into the structure of daily family life. In the lives of children, this close involvement often forms a key component of companion pets’ embeddedness in family life:

She always sleeps with Bingo [Labrador] because he’s big and she likes to have Lady [Terrier-cross], and whoever’s got Lady usually has Vinnie [Corgi], but of course my daughter starts off with them but he’ll always end up with me anyway. She always brings Earl [Terrier-cross]. Psychologically for her, getting the dogs all settled in bed is an important part of her life. [Extract 19, female]

Moreover, the supportive nature of bonds with pets becomes a stabilising and protective factor that can be greatly benefit a child during disaster event—providing pet loss does not occur (Travis, 2014). This is also reflected in the role of pets in established daily rituals of adults, who view their animals’ presence as part of the normality of everyday activities:

I guess in terms of “they’re-part-of-the-family” we incorporate them into what we do, so when we’re sitting down and watching TV they’re down with us. If we’re outside we’re outside with them. We walk them each night... so they just become part of our lifestyle. [Extract 20, female]

The roles of different animals for different family members implies that within each household a unique and irreplaceable *constellation* of human-animal connections exists, one constituting more than dyadic relations of person to pet. The marked importance of sociality as a revealed motive for preparing and protecting companion animals from bushfire threat

suggests that this too should be made explicit in risk mitigation dialogue: both within families, as well as between guardians and emergency services.

This involvement of companion and other animals in daily life of multiple family members represents a supportive function that comes under threat by disaster events. And people's animals, companion or otherwise, are more susceptible to the severe impacts of disasters than their humans, that is, they are simultaneously uniquely valued and uniquely vulnerable members of these relational constellations (Potts & Gadenne, 2014). By altering these patterns, such as through harm to or loss of a beloved animal, family functioning can be further disrupted. This is particularly so given the extent to which guardians turn to their companion animals for their own supportive needs (Brown, 2011; Trigg et al., 2016a, 2016b). When addressing the constellation of human-animal connections within each household or family, it is then beneficial to ask "*how important is the pattern of who values each animal (and how) to survival decision-making?*"

Supportive Functions of Companion Animals

The role of companion and other pets in facilitating human social support (Wood, et al., 2015), and in providing a source of social and emotional support themselves is well documented (McNicholas & Collis, 2006), and is a function particularly relevant to highly disaster-vulnerable individuals (Thompson et al., 2014). Continuing on from the idea of unique constellations of human-animal connections, guardians reinforced that they also viewed animal involvement in these structures as providing unique psychosocial support:

What they give me, well it's just unconditional... you've got someone who is full of happiness and that's all they care about. The emotional side with the dogs... I can't look past that. The horses: I have a very big bond with the old mare. [Extract 21, female]

This perspective reveals how guardians acknowledge that the support pathway is bidirectional, and that the intuitive exchange between guardian and pet comes with the responsibility of supporting the animal:

The emotional attachment that we have with them just makes it seem like it is our responsibility to make sure in certain situations that they are safe, for our psychological reasons I guess, for our emotional health—to make sure that they're not at risk. [Extract 22, female]

There is also the obligation to promote wellbeing beyond harm avoidance: "my whole life is in his hooves, and that trust relationship is crucial to my living—I owe it to him to look after him and make sure he feels as free as he can feel" [Extract 23, female].

Receiving psychosocial and emotional support from companion animals is then not generally described only as a beneficial by-product of pet keeping. Rather, it is a process that occurs in partnership, where each plays an active reciprocal role in supporting the other, where "each animal is special to us for reasons unique to the animal, the person, and the situation, but each fills a role that would otherwise go wanting, or they fill it in a way that nothing else can" (Anderson, 2008, p. 73). The preceding extracts represent what might be expected of guardians' descriptions of 'unconditional acceptance' and assumed reciprocity, however there are further forms of psychosocial support, such as experiencing comfort and reassurance in their independent presence, and simply knowing that they are there:

We don't depend on the dogs for companionship... they don't come inside with us; they have their own lives. Even though we are with them a lot, we don't depend on their companionship. They're there but we don't need them to be with us, we just need to know that they're enjoying their lives like we're enjoying ours. [Extract 24, male]

Other guardians stated that despite appreciating supportive connections with animals, they see an inherent imbalance in benefits: "It's just, if I'm having a hard day or something I'd go up and sit with them... I [feel] to a certain degree I get more out of the relationship than them" [Extract 25, female]. This role of companion and other pets within the supportive partnership was a consistent theme explaining guardians' recollections of why they had prepared their animals for relocation under conditions of bushfire threat. Most notably, the irreplaceability of this constellation of supportive connections in the household served as a motivator of animal preparedness:

At the end of the day your possessions and that can be replaced, but you can't replace an animal and that bond you have. The two cats I had, I had very different bonds with them and you can't replace that, and same with my dog, it's about them. [Extract 26, female]

From this we can conclude that close connections to animals are not simply a motivator of actions to mitigate risk to animals, but that guardians in some way recognise the need to preserve the functions that the patterns, or gestalt, of human-animal connections serve throughout disaster experiences (Trigg et al., 2016a, 2016b). One further step in understanding why people might preserve this partnership involves looking directly at perceived responsibilities to pets and other animals.

Perceptions of Responsibilities to Animals

Autonomy, Control, and Vulnerability

A strong motivator of concerns about taking action on animals' behalf was the reality that people have ultimate control over all aspects of animal welfare, both in daily life and in disaster contexts. Some guardians even equated this with the role of a 'benevolent captor,' by virtue of both domestication and immediate control over animals' behaviour and environment:

They're slaves to humans because they don't get a chance to go and roam the wild like they should, what they're built for. And their lives are completely entangled with yours. So every mistake that you make makes a huge impact on their lives. And that means feeding, that means what kind of paddock you put them in, what you do with their feet, what you do with their teeth, how you vet them, how you ride them, how safe they are when you're out and about, how you float them. It is all entirely up to you for the welfare of that animal, and they don't get a say in anything. [Extract 27, female]

This dependency creates vulnerability for the animal that can only be met by action on the part of the guardian, a point they often acknowledged. Guardians indicated that they knew of this responsibility, and how consequent actions are shaped by their perceived role as

controlling caregiver: “Obviously we have confined them to our lifestyle, so they have to be cared for within those boundaries” [Extract 28, female]. And more specifically:

Our responsibility for our pets is we take animals on for life. We don't just have an animal for a short period... so our job aside from general day-to-day caregiving to make sure that they're fed, sheltered and in good health is to make sure that in a circumstance such as a bushfire they are safe and not at risk of harm. [Extract 29, female]

The theme of responsibility and control is a means of connecting both attitudes and value judgments to survival decisions involving animals at two levels: the sense in which humans domesticate and ethically consider non-humans (distal); and the more immediate (proximal) control over the animal's life (e.g., containment). Both perspectives influence why guardians act to protect pets from harm, as for many control is equated with an obligation to provide not only nurturance, but also safety in the event of a bushfire. It is also probable that the sense of purpose derived from fulfilling control and welfare responsibilities contributes to guardians' sense of self-worth (Chandler, Fernando, Barrio Minton, & Portrie-Bethke, 2015). Disaster planning for pets should then acknowledge that “*there is a connection between people and pets through the control guardians have over their lives, and the felt obligation to counter vulnerabilities that this introduces into the animals' lives.*”

Control, Animal Unpredictability, and Guardian Coping

Within disaster contexts, guardians' ability to cope is closely linked to both their desire and ability to control the behaviour of their animals. This formed a theme of “competing concern” in that understanding and enacting control over animals freed guardians up mentally and physically to focus on more immediate risk-mitigation actions, for example:

You couldn't be out hosing down everything and have the dogs running around. They might have got panicked, and then they might have gone somewhere else like next door or across the road, and then you wouldn't have known where they are, and then I would have dropped my bundle and gone looking for the dogs rather than fighting the fire. [Extract 30, female]

Overriding concern about being able to control animal behaviour, and consequently welfare, in some cases overwhelmed guardians to the point where control was, in a sense, relinquished, potentially placing the animal's welfare in jeopardy:

Even though it's probably about a ten acre paddock there was considerable grass in there and we weren't really happy about that, but we couldn't do anything about it, it was a really hot day and we just thought we were stressing [the sheep] too much trying to run them all over the place so we left them there. [Extract 31, female]

Concerns about animals' ability to cope were also strongly linked to guardians' ability to cope, as there were recurring themes identified around animals potentially harming themselves (e.g., during restraint), animals harming others (e.g., at relocation sites), and the sheer unpredictability of animals as sentient and willed creatures that experience fear and novel situations differently. The connection of this to animal welfare again goes back to control. A key example of this was in the capturing and restraining of cats, where guardians

knew that this would be difficult and could result in cats weathering the bushfire inside homes or hiding places:

By that stage it was pretty time critical. Your cats were well and truly in hiding, not in their usual spots. Not under the doona in the bed, or anything. I don't know where they were... [I thought of them] a lot. Regularly. Not all the time, but when I'd think of what might be happening at the property I'd think of them... [Extract 32, female]

A further example directly illustrates how animals' sense of fear, and guardians' intuitive connection to this, serves as a partial basis for controlling them:

I think [the dogs] knew. They could feel the panic in us both. We just had to hit the ground running... it didn't hit us until Saturday afternoon or something like that, Saturday morning, so it was a big solid day for them just sitting in the lounge being frightened. [Extract 33, female]

From herding cats to feeling dogs' fear, the observed connections between unpredictability, control, and coping can be placed within a broader theme of 'diverted attention' or potential distraction from immediate risk-mitigation actions.

Knowing the Status of Animals

For most interviewees, knowing their animals' status, and how much control they had over their welfare, was an essential factor that either permitted them to concentrate on facing immediate bushfire risk, or that disrupted their efforts towards this. This recalls the notion of animals being incorporated into the psychological family through the role of "ambiguous loss." This phenomenon takes two broad forms: physical absence with psychological presence, and physical presence with psychological absence, both of which can impair coping and decision-making (Boss, 2007). The former occurred where the safety status of companion animals was unknown, and harm anticipated:

It was the time of not knowing that was really hard, and not being able to access them to check on them or feed them. It was the days in between... that [were] the hardest part for the kids too, not knowing. And then even after we knew that the house was okay, we didn't know about the chicken or the pigeon. [Extract 34, female]

This extended to concerns about animal death: "I did worry the whole time I was there I was thinking, 'God.' I was convinced; I was actually convinced that they'd be gone" [Extract 35, female].

Conversely, knowing that animals were safe, reduced the likelihood that guardians' attention would be diverted to animals, as illustrated. The ability to focus more clearly on present threat may be explained in part by the secure-base effect of psychological attachment on responses to threat (cf. Ein-Dor, 2014; Trigg et al., 2016a). The physical presence but psychological absence of animals, also a form of ambiguous loss, may apply to the earlier discussed animals with utilitarian or intermediate roles (e.g., poultry), though the impact of this did not form a clear theme regarding risk perception. The desire for status information (e.g., are they safe? are they secured?) was exhibited nearly as often as the desire for physical proximity to the animal. Guardians may then need to *establish a means of tracking the status*

of their animal(s) during a bushfire to reduce the impacts of diverted attention when under threat. An example of this might be promoting the use of telephone or social media ‘trees’ explicitly for this purpose.

Influence of Animals on Disaster Risk Response

Risking People for Animals

Animal guardians exhibited a strong tendency to speak in terms of “relative risk” when it came to both their own and their animals’ welfare throughout bushfire threat, despite earlier casting the value of companion animal life in more ‘absolute risk’ terms. To prompt discussion of potential and actual risk responses, guardians were explicitly posed the following scenario: “If presented with the opportunity, would you risk the life of a person to ensure the safety of your pets, and what reasons would you give for this?” Responses supported that risk-taking in practice is likely to be considered relative to the likelihood of harm to another person rather than to their animal:

It just depends on the situation. One could say that if I saw my dogs at threat of a fire that I’d be more concerned about protecting my dogs than possibly running next door to help my neighbour who might be fighting the same fire. On the other hand, if I had a phone call from my neighbour saying ‘I can’t keep this fire off my property, can you help’ I would go and help them, knowing that my dogs might be at risk. [Extract 36, male]

Boholm (2003) reminds us that context—including relational, power, and cultural aspects—modifies how individuals understand risk as a framework for considering and acting upon potential harm outcomes. Comparison of the following two excerpts indicates that what guardians say they would do, and what they end up doing, are often at odds when considering the degree of safety risk they will expose close human others to for their animals. One interviewee chose not to risk the life of a family member:

We drove out towards my town and the smoke was going away from my town but I would have gone and got Sam [horse] then at that time but my son, bless his socks, talked me out of it... If I’d had a bit more spine to sort of tell him to shut up I’d just do what I know is in my gut, I would have gone and got Sam then. [Extract 37, female]

Another interviewee chose the opposite:

[The barricade] was so backed up and there were people crying and screaming and walking in... I was scared to death for my teenage son because he was walking our gelding out who was just too panicked to get on the float. [Extract 38, female]

A subtheme identified within this described the importance to guardians of being free to make the decision to risk their own safety by returning to their property to check or retrieve animals that were under threat of potential harm.

I would have risked a lot to get him. And when they had blocked off one of the roads to him I just fell to pieces. I thought I had failed him... So I [made] an

enormous effort to go in, and I did actually go in another way that wasn't blocked yet, and I went and got him and I'm so glad I did. [Extract 39, female]

The priority of being able to access animals when needed can likely be explained not only by the desire to protect the aforementioned supportive functions, but also by considering companion animals a comforting presence, a safe haven and means of reducing distress, and as part of a secure and reliable relationship, all of which are components of pet-attachment relationships (Zilcha-Mano, Mikulincer, & Shaver, 2011, 2012). Within attachment theory, *proximity maintenance* refers to the experience of comfort and familiarity in the presence of the animal as a justification for keeping them close by, for instance:

[I'm] very attached to my animals and they're a strong part of my life as far as I don't want to leave them home, or with my friends I'll say, "Well I actually have to go and do this," so kind of to a certain degree I think my life revolves around them and making sure that they're happy and when they're upset, or they're in pain, that obviously impacts me. [Extract 40, female]

Considering animals a *safe haven*, or a relational means of reducing distress when encountering a threat, as well as experiencing *separation distress* when unable to access a companion animal were processes also seen in guardians strongly bonded to their animals. Illustrating safe haven: "It was quite difficult, especially for the kids. If they're feeling stressed or upset, or there's something of change, they go to their animals" [Extract 41, female]. And illustrating separation distress:

He went and checked Cody [horse] as soon as basically it was light... [and] when he rang me at quarter to seven he said to me "Cody's fine" and was relieved because I was so distraught the fact that I left that horse behind. I was very distraught about that. I felt so bad. I had so much guilt. [Extract 42, female]

This theme was connected to the supportive functions that relationships with animals offer both the individual and the family. Attachment theory also posits that pets provide a supportive relationship that permits novel, exploratory, and beneficial risk-taking behaviour, or a *secure base* (see Zilcha-Mano et al., 2012), a trait characterising most pet-keeping relationships (Julius, Beetz, & Niebergall, 2010). However, its presence was less noticeable in accounts of animals helping or hindering guardians' coping, which may be attributable to the competing concern and attentional focus issues discussed earlier. Of particular note are the actual risks that guardians experience, which of these matter most, and their degree of awareness of these.

Action Paralysis

Among other risk behaviours, companion animal guardians are known to delay evacuation and relocation when the welfare and fate of their animals cannot be assured (Thompson, 2013). And these challenges are being met at the level of government and animal emergency services across the disaster management lifecycle (e.g., Heath & Linnabary, 2015). However, a number of risk themes were identified in the current study that appear not to be directly discussed in literature addressing animal issues. For instance, what can be termed "action paralysis" was a risk concern for guardians who felt mentally or physically overwhelmed by the simultaneous presence of fire threat and competing response options

whilst managing their animals (e.g., securing). This is somewhat comparable to the concept of “analysis paralysis” in organisational crisis-management contexts, where thought trumps action, and flooding of information slows response (cf. Bonn, & Rundle-Thiele, 2007, but at an individual level:

People were putting out calls on their Facebook page at that time about horse floats and things like that so I just put, “can anyone help me? I've got no way of getting my horse out.” Because I was going up there and I'm like, “what do I do? Do I walk her down?” which is a four or five kilometre walk and she's still going to have to be walking through the smoke. I'm like, “there's no way she's possibly going to fit in my car. What am I doing?” [Extract 43, female]

Despite this, a subset of animal guardians suggested that they were aware of their potential coping difficulties in a disaster situation, demonstrating insight that may reduce the likelihood of succumbing to action paralysis, for example:

And I know that that's who I am; that I will panic in an emergency. I don't have a cool head. I'm quite emotional. So knowing that there are things that I have to do, just knowing that in my mind all the time and rehearsing that in my mind... [means] I still manage to do it. [Extract 44, female]

And for self-efficacy limitations:

The reality of it is that it's not as easy as that, you're thinking, and you've got to face up to the fact that you can't do it and you've got to get out.... It's a psychological thing that you have to recognise your inadequacy. [Extract 45, female]

This insight was identified in the forms of psychological preparedness and self-efficacy understanding, both of which influence a person's ability to effectively manage animals. Examples of this were represented as both physical capability to perform actions, as well as confidence in being able to rise to the demands of the situation (e.g., experience, fear). Yet, there need not be any known limits to self-efficacy for guardians to recognise the value of personal insight to this process: “There's still a little bit of innate behaviour there that says, okay, if you get panicked or stressed you're not going to be as effective as you could be if you just move at a certain pace” [Extract 46, female]. The converse of this process is seen when people dissociate from their actions to some extent, and engage in ‘autopilot behaviour’ where thought is subordinate to action: “I'm aware that my thinking has shut down and I just need everything to hand” [Extract 47, female].

To this end, it is essential for animal guardians to consider the connections between how they might respond under conditions of uncertainty, their susceptibility to action paralysis, and likelihood of engaging in autopilot behaviour. One means of achieving this is by communicating that not only is there inherent uncertainty in disaster events such as bushfire (cf. Khan & Kelman, 2012), but also in how guardians respond to these events. Animal guardians should then *assess their mental readiness, physical preparedness, and social resources for assistance when considering how they may react when personally overwhelmed by disaster response requirements*. The importance of this lies in the potential for these aspects of self-efficacy to influence their response to disaster, how they apply resources for risk mitigation, and their risk taking or inaction propensity involving animals.

Forms of Risk Behaviour Identified

One prominent risk behaviour theme was the subversion of authority, particularly at roadblocks, to check the status of animals that were intentionally left at the property, and to retrieve animals to be relocated. Guardians either did this themselves, or had others do this for them:

There were just police blocks everywhere. The officer said to us “if you want to run the roadblock you can but you'll get a fine” and I was like “put it on my license, I don't care, I want to get home, I want to go see the horses”.... We ended up going back and around, and there wasn't a roadblock there, and it took us straight back up this road. [Extract 48, female]

As noted during earthquake and flood (Glasse, 2010; Irvine, 2006), guardians enter high-risk areas by intentionally misinforming authorities, breaching and circumventing roadblocks, and risk their safety for their animals. Installing more police is unlikely to be as effective as discussion of preparedness actions that reduce the occurrence of these scenarios (e.g., mapped alternate safe routes). A second risk behaviour was postponing animal management actions until closer in time to the impact of the fire, or at least until an action trigger for response occurred that informed the guardian of approaching threat to the property itself:

We didn't take any risks because I went down opening gates and things well before the fire came—got the horses loaded two or three hours before the fire came. Which is still, you're meant to do it the day before. [Extract 49, male]

This form of risk behaviour fell within a theme of “threat over time” that highlighted that pet guardians could be aware of the time requirements of enacting survival plans for their animals, yet not deliberately factor this into their actions:

Just opening gates and checking out the areas that you can leave them in, adds time to how you can respond to things.... if I had say come home from work at 4:00 or 5:00 in the afternoon and then put that plan into action, I would have run out of time... [Extract 50, male]

A corollary of risk associated with potential overestimation of available time to complete survival actions is risk associated with underestimation of the time of threat exposure. Few guardians anticipated being blocked from their properties for multiple hours or days, altering the consequences of initial decisions to leave animals: “It was a good four to four and half days before I could actually get up here, sneak up through, and then it wasn't until we had the power that [my partner] and the dogs came back up...” [Extract 51, male].

Some pet guardians noted that the decision to stay and defend was mentally and physically taxing over a period of prolonged threat, even after animals were relocated and no longer an immediate concern. Frequently, guardians had not planned for being unable to return to their property and the impact of this on their pets, or for being restricted to the property with no access to additional resources:

A1: We didn't plan not to come back. A2: Yeah, that was the thing for us, a big learning curve for us. A1: We didn't take dog food with us and all that sort of stuff. A2: Didn't have leads... dog food, didn't have water, and didn't have

horse feed... A2: I think [for] long-term planning, what we learnt is to plan for about a week. [Extract 52, (A1) male, (A2) female]

Potential safety risks, and impairment to plans, resulting from threat-time considerations, were a prominent theme in accounts of pet guardians who had been momentarily complacent in their estimations of how long they needed to relocate and provide for themselves and their animals. Less common potential sources of risk were also identified: having infrequently checked animal relocation equipment and food, inability to relocate effectively due to the number and type of animals kept, and risks associated with adjoining properties. This final risk is important to consider, as often disaster survival plan intentions will overlap and even conflict between animal guardians, such as in combined families, property neighbours, as well as boarding or agistment arrangements involving multiple animals. Undoubtedly, survival decisions involving companion and other pets are very emotionally charged, and may produce conflict, given that the majority of interviewees expressed a high level of intuitive connection and co-identification with their animals, for example:

I can get very stroppy with Sam [horse] because he's quite dangerous and he scares me a lot, but at the same time... I've just got to control myself. He teaches me how to be the bigger person, the calmer one, the one who's confident no matter how scared I am. [Extract 53, female]

In this final excerpt, a guardian emphasises the role of this connection in understanding and managing risk in daily interactions. It is unsurprising that these supportive non-human interactants become more than a companion or pet, and a focal point at moments of disaster risk mitigation decisions.

Conclusion

The present study demonstrates that guardians' subjective representations of their connections with a diverse range of companion and other pets influences both the risks they perceive to themselves and their animals, as well as the actions they are willing to take to mitigate potential harm during bushfires. Although we drew upon certain theoretical representations of the human-animal bond, the aim here was not to expand upon or derive new theory, but to give voice to the subjective and inherently variable value that guardians place on these unique relationships. The critical incident and thematic analysis approach applied to animal guardians' bushfire accounts provided an organising set of themes that can be applied in understanding the influence—both motivational and inhibitory—of close pets in bushfire contexts.

Consistent with past research, we found that guardians exhibiting a 'strong attachment' to their companion animals were more likely to refuse to evacuate, re-enter dangerous areas, and take personal safety risks to ensure the wellbeing of their animals (e.g., Brackenridge, Zottarelli, Rider, & Carlsen-Landy, 2012; Thompson, Brommer, & Sherman-Morris, 2012; Thompson et al., 2012; Trigg, et al., 2015a). However, the present study identified a number of factors that problematise this assumed attachment link. Namely, relativity in the perceived value of animal lives and human lives (i.e., animal vs. animal, animal vs. human), the interconnected nature of human-animal bonds in families (i.e., "unique constellations") and the irreplaceability of supportive functions these serve, guardians' control over and by animals, and perceptions of animals' autonomy and vulnerability all play a role. Each of these themes modifies how a single guardian-pet dyad

can influence risk perception and justify risk-taking decisions. Moreover, there is the potential for various forms of pet-attachment and other relational dimensions to further modify this “link” (Trigg et al., 2016), particularly given that the putative ideal form of human-animal bond—*secure attachment*—although common, is not the only extant form (Julius, Beetz, Kotrschal, Turner, & Uvnäs-Moberg, 2013; Julius, Beetz, & Niebergall, 2010). Because of this, more questions need to be posed about how these various relational lenses can be used to understand why, for example, one pet might be evacuated, one restrained, another released, and other “less pet” animals abandoned: in short, the role of the *human-animal relational context*.

This research suggests a new need to promote discussion of the *variable value* of human-animal relationships within the household or family, between family members, and across animals of different species, roles, and ascribed purposes. The decision of what to do with our influential animal companions can be considered in relation to generalised and personal attitudes regarding the value of animal life, where pets sit in relation to other household animals in perceived life value, and how decisions around these factors inform the lengths we will go to protect them in the face of bushfire. Lastly, the notion of “relative” and “absolute” risk in relation to attitudes, as well as the concept of “action paralysis” require further research to support dialogue between emergency services and the pet-keeping public. Insight into guardians’ motives can then be translated into effective animal management practice during disaster.

Though the human-animal bond and pet-attachment are well studied, these are not uniformly described in disaster-specific research, often making findings difficult to generalise beyond initial samples. In the current study, a cohesive sample was obtained, and data saturation reached. As a result, findings are limited to Australian pet guardians at risk of bushfire, giving clear scope to expand the demographic, cultural, disaster risk, and pet-species characteristics of future samples to see how themes shift and apply across others. Additionally, future research will need to consider how the guardian-pet bonds might change through disasters over the short- and long-term, as much research is retrospective and cross-sectional. Despite some studies examining such temporal changes for pets (e.g., Nagasawa, Mogi, & Kikusui, 2012), these are methodological and ethical considerations for future research.

Our research has a clear implication for disaster emergency response groups that interface with pet guardians: understanding and accounting for potential motives and barriers for preparedness actions, and risk behaviours. For guardians, risk and preparedness communications that are framed according to thematically identified values concerning their animals may resonate more effectively with them and, ideally, prompt reflection and action towards managing animals in disasters. A next step we can take to promote the welfare and safety of animals and their people during disasters is to triangulate qualitative findings with experimental research to hone in on the most powerful zoocentric motivators and inhibitors of thought and action during disasters.

With this, researchers might begin to untangle the subjective aspects of risk perception and behaviour of animal guardians and apply this to effective relocation and protection decisions of what to do with a “movable beast,” as these factors inform how far people will go to protect them in the face of bushfire.

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We are very grateful each person who took the time to relate their experiences of human-animal relationships and bushfire threat in this research. The authors also declare no competing interests.

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Article Citation

Trigg, J. L., Thompson, K., Smith, B., & Bennett, P. (2016). A moveable beast: Subjective influence of human-animal relationships on risk perception, and risk behaviour during bushfire threat. *The Qualitative Report*, 21(10), 1881-1903. Retrieved from <http://nsuworks.nova.edu/tqr/vol21/iss10/9>
