


Does emotional closeness to pets motivate their inclusion in bushfire survival plans? Implications for emergency communicators

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ABSTRACT

As pet ownership influences responses to the threat of bushfire, current preparedness communication acknowledges the pet-owner relationship as a key reason for including pets in emergency plans. However, not all pet-owner relationships are the same. Some people are physically and emotionally 'closer' to their pets than are others, a difference that could impact survival plan intentions. This South Australian study examines how differences in pet-owner closeness affects owners' views of pets as a motivator for plan creation and of pet inclusion in planning across four survival-plan intention types: 'stay and defend', 'split the household', 'wait and decide', and 'leave early'. Of several pet-owner closeness indicators, family membership of pets and anticipated separation distress influenced whether pets were considered a motivator and were included in plans.

Intention-specific recommendations for creating motivating communications based on these effects are presented for emergency services communicators.

Introduction

Close relationships between people and their pets are an internationally acknowledged safety-risk factor with negative influences on owners' planning for and responding to environmental hazards including bushfire (Hall *et al.* 2004, Thompson 2013, Thompson *et al.* 2014). Currently, Australian emergency management practice reinforces that owners hold ultimate responsibility for pet welfare and safety during emergencies, including what they intend to do to protect pets as part of household planning (White 2012). In Australia, the model for facing bushfires, broadly separating planning intentions into 'prepare', 'go early', or 'stay and defend', incorporates the various characteristics known to influence risk perception

across people choosing each option (Mutch *et al.* 2010). Within these characteristics, many consider their pet's safety an influential element of bushfire survival planning, with post-bushfire research confirming that commitment to animals partly serves to justify the type of plan intention selected (Mackie, McLennan & Wright 2013, McLennan, Elliott & Beatson 2013, Trigg *et al.* 2014).

This influence is important to consider as 25 million pets are kept across 63 per cent of Australian households (AHAA 2013), many of which are susceptible to the increasing frequency and severity of fires driven by climate change (IPCC 2012). Moreover, the influence of pets extends to other forms of hazard such as flooding, where each additional pet increases the likelihood of evacuation failure by up to 30 per cent (Heath *et al.* 2001). Given the role that close pet-owner relationships play in planning intentions and ultimate outcomes, it presents a public health intervention point for emergency managers and communicators. As this closeness is uniquely characterised within each relationship (e.g. Blouin 2013), it can modify how different owners with different survival plan intentions perceive bushfire risk and planning.

Research supports that providing risk and preparedness information alone is insufficient to promote effective bushfire survival planning, given that household attitudes and beliefs modify intentions and preparedness outcomes (Paton *et al.* 2006). Pet owners are then likely to differ in their reasons for making survival preparations for pets. However, although 71 per cent of pet owners state that pets are included in their plans (Thompson, Brommer & Sherman-Morris 2012), and despite the risks, this issue still receives less focus than other household planning considerations. For emergency services communicators, this highlights a need to differentiate between types of pet-owner relationships when engaging owners, as differences in motivational concerns can influence their planning intentions. One such point of differentiation is the nature of pet-owner closeness as a motivator in plans.

Pet-owner closeness is frequently characterised as an emotional attachment akin to parental caregiving (Sable 1995, 2013), comprising ascription of family membership to pets (Walsh 2009), anthropomorphism

or animal personhood (Arluke 2010), as well as emotional support and seeing pets as a psychological safe haven for distress reduction (Keefer, Landau & Sullivan 2014). Under threatening conditions, anticipated loss of this relationship can provoke separation distress (Zilcha-Mano, Mikulincer & Shaver 2011) and motivate the risk of personal safety (Heath, Voeks & Glickman 2000). Thus, when a pet's safety is not assured owners are reluctant to leave without them (American Kennel Club 2006, Leonard & Scammon 2007). This emotional attachment—hereafter closeness—can be defined as having these five characteristics (Kurdek 2009). Closer pet-owner relationships are known to delay and reduce the odds of evacuation (see Brackenridge *et al.* 2012), and are associated with increased efforts to rescue pets and increased risk of personal harm (Heath, Voeks & Glickman 2000).

Presently there is a clear need to understand how these characteristics of closeness are linked to the original survival plan intentions of pet owners, as this likely determines how prepared they ultimately will be in the event of an emergency. Understanding this link assists emergency communicators in constructing motivating risk and preparedness messages for pet owners with the goal of improving community bushfire safety and pet welfare. This can be done by promoting pet inclusion in survival planning and reducing the logistical complications of pet-ownership when confronting a bushfire. The purpose of this study, therefore, was to examine pet owners' intentions to determine whether pet-owner closeness is useful in targeting motivations for including pets in survival planning across four bushfire survival-plan intentions: stay and defend (Defend); some leave, some stay (Split); wait and decide (Wait); and leave early (Leave). We argue that pet-owner closeness differs as a motivator at the level of these planning intentions.

Method

Background

This study was conducted as part of a larger project by the Bushfire and Natural Hazards Cooperative Research Centre and South Australia Country Fire Service (CFS) investigating perceptions and actions of South Australian communities directly and indirectly affected by three large bushfires in January 2014 (see Trigg *et al.* 2014). The research, conducted between April and June 2014, was promoted by the CFS and targeted residents in bushfire-affected areas of the Southern Flinders Ranges, Murray Lands, and Barossa Valley communities, but was also open to all residents of South Australia. Household members were invited to complete an anonymous online survey by means of notices in public locations, and online promotion by the CFS.

Survey questionnaire

The survey instrument was completed online only, with all responses optional, and stated that findings would

be used to better understand householder experiences of bushfire threat and safety. The 108 items for the larger study, taking approximately 45 minutes to complete, addressed perceptions, intentions, and actions regarding bushfire threat and survival planning, as well as how these related to pets and the pet-owner relationship. Pet-owner closeness items were based on past studies examining pet attachment (Kurdek 2009), family membership (Walsh 2009), and anthropomorphism (Arluke 2010). Following questions regarding owner and pet demographics, respondents indicated their level of agreement with five statements about the one pet they considered themselves closest to (rated 1, 'not at all', to 4, 'very much so'):

- Feel they are a member of the family (family membership)
- Feel that they are 'person-like' (anthropomorphism)
- Would keep them close-by when you are distressed (safe-haven)
- Would be distressed if separated from them (separation distress)
- Would risk your safety to protect them from harm (willing to risk safety).

Perceived risks of bushfire threat to family and pets were each rated as single items (1, didn't consider to 7, extreme), and the degree to which respondents felt prepared to face the recent fires from 1 (well prepared) to 4 (not prepared at all). Survival-planning items were based on previous bushfire taskforce research instruments (Mackie, McLennan & Wright 2013). These items (scored 'yes/no') covered:

- format of the plan ('no plan', 'written plan', or 'mental plan'), where a mental plan referred to a set of unwritten general intentions
- primary plan intention ('Defend', 'Split', 'Wait', or 'Leave')
- whether the plan made provisions for pets
- whether emergency supplies and safe routes were arranged for pets
- whether survival of pets was a key factor motivating plan development.

Results and discussion

Respondents

Out of the 606 respondents, 422 identified as pet owners (58 per cent female, 42 per cent male). The majority was employed (fully, 59 per cent; partly, 20 per cent), aged 35-44 (30 per cent) or 45-54 years (28 per cent), and included families with children aged 13-18 (26 per cent), 6-12 (26 per cent), 2-5 (13 per cent), and under two years (seven per cent). Bushfires affected the residential areas of 68 per cent of respondents and burned near 15 per cent of their properties. For nine per cent these reached or crossed the property boundary. Respondents kept pet dogs (77 per cent), cats (50 per cent), fish (16 per cent),

equines (13 per cent), non-poultry birds (16 per cent), chickens (31 per cent), ducks (six per cent), and uncommon species [e.g. reptiles].¹ Dog owners kept, on average, two dogs, and cat owners, two cats.

Bushfire risk and survival plan intentions

Plan type, intention, and pet inclusion

The majority of pet owners had a mental plan for bushfire survival (65 per cent), few had a written plan (19 per cent), and fewer had no plan or did not give a response (eight per cent each). For pet owners, the proportion of written plans is nearly double that of the general population, and for mental plans approximately 24 per cent higher (Trigg *et al.* 2014). Almost half of pet owners with a mental plan (44 per cent), and those with a written plan (49 per cent) indicated that survival of household animals was a key factor in their decision to create the plan.

For pet owners with a survival plan, both mental and written, the most commonly reported intention was to leave as an intact household (36 per cent), and the least was to passively shelter in place (one per cent). The latter was excluded from further analyses. Intention to defend (20 per cent), wait and decide (22 per cent), and to split the household (22 per cent) were comparably reported. This indicates that pet safety is a planning priority that does influence the likelihood of having a written or mental plan. The high frequency of mental plans also suggests that community engagement programs seeking to 'convert' mental to written plans might increase this likelihood. The caveat is made that although pets ranked highly as a planning consideration, less than half of those with plans indicated that pets were an important motive for planning. This reinforces the need to consider *if* pets act as a motivator for planning, and *how* they do so in preparedness communications.

Most owners with mental (78 per cent) and written plans (87 per cent) reported they had made provisions for pets. This was high across all intention types (>81 per cent). However, of those who had survival plans, 62 per cent had identified a safe destination and evacuation route and only half (53 per cent) had readied emergency supplies for household animals. Owners intending to leave more often had a safe route planned for pets (68 per cent) than did those intending to split (61 per cent), defend (59 per cent), or wait (52 per cent). Emergency supplies for animals were most often kept by those defending (59 per cent), leaving (50 per cent), or waiting (48 per cent), and less often by those intending to split (43 per cent). This suggests that some pet owners feel more prepared to manage pets during a bushfire than they may actually be. Particularly for those intending to defend or wait, many owners are neglecting two essential elements of household bushfire safety relevant to backup survival planning: safe evacuation routes and arranging emergency supplies for pets.

These requirements should be explicitly outlined for owners likely to choose these two intentions given the risks associated with insufficient evacuation planning for pets. To do this, prefaces to current guidelines for the care and transport of pets before, during, and after bushfire impact can be modified to stress that the same requirements are likely to take different forms depending on the chosen plan intention: changes in viable evacuation routes, pet relocation kit requirements.

Perceived risk to family and pets

Pet owners recalled feeling moderately at risk of bushfire threatening their family ($M = 3.82$, $SD = 1.58$) and pets ($M = 3.73$, $SD = 1.67$) on first moving to their area. Understandably, for those with properties directly threatened by bushfire, perceived risk to family ($M = 4.10$, $SD = 1.88$) and to pets ($M = 4.24$, $SD = 1.92$) was slightly increased. Importantly, for pet owners who felt threatened by bushfire, most felt 'adequately' though not 'well' prepared to face one ($M = 2.19$, $SD = 0.85$). From this we can see that perceived risk of bushfire threat to family and to pets is near equivalent both when under threat and when not, which further reinforces the notion that pets are considered family members.

Between plan intentions, perceived risk to family on first moving to the area was significantly lower for pet owners having no plan ($M = 3.00$, $SD = 1.28$) than in those intending to either defend ($M = 4.15$, $SD = 1.55$), split ($M = 3.90$, $SD = 1.68$), wait ($M = 3.86$, $SD = 1.56$), or to leave ($M = 3.80$, $SD = 1.57$), all $ps < .001$. Pet owners with no plan also reported significantly lower perceived risk to pets ($M = 2.88$, $SD = 1.39$) than those intending to defend ($M = 4.18$, $SD = 1.49$), split ($M = 3.63$, $SD = 1.85$), wait ($M = 3.84$, $SD = 1.61$), or to leave ($M = 3.65$, $SD = 1.70$), all $ps < .001$.² These contrasts in risk perception highlight the need to actively target pet owners who do not consider bushfire a potential risk factor for harm to their family and pets under non-threat conditions (i.e. non-fire season), particularly as these factors are associated with having no form of mental or written bushfire survival plan. Community engagement campaigns are one means of achieving this. Understanding the five pet-owner closeness characteristics can influence bushfire risk perception and motivation to include pets in survival planning.

Pet-owner closeness and risk perception

Five pet-owner closeness indicators were examined in relation to having a bushfire survival plan, including

2 Kruskal-Wallis differences were identified between intentions for both risk to family ($\chi^2_{(4, N=372)} = 18.305$, $p = .001$) and risk to pets ($\chi^2_{(4, N=370)} = 17.466$, $p = .002$). Those with no plan perceived lower bushfire risk to family than those intending to: Defend ($U_{(1100)} = 625.00$, $p < .001$), Split ($U_{(1071)} = 766.50$, $p < .001$), Wait ($U_{(106)} = 793.00$, $p = .001$), or Leave ($U_{(156)} = 1293.00$, $p < .001$). Those with no plan also perceived lower bushfire risk to pets than those intending to: Defend ($U_{(1100)} = 597.00$, $p < .001$), Split ($U_{(1051)} = 843.50$, $p = .005$), Wait ($U_{(1071)} = 791.00$, $p = .001$), or Leave ($U_{(155)} = 1421.50$, $p = .002$).

1 Poultry categories included those considered pets (< 20 birds).

pets in survival plans, and the primary plan-intention type chosen. These five indicators were ascription of family membership to pets, anthropomorphism, safe haven, separation distress, and willingness to risk personal safety for pet welfare. A global closeness score was also derived by summing the five scores (Cronbach's alpha = .88). For pet owners with a survival plan, correlations among the five closeness indicators showed that perceived risk to family increased alongside perceived risk to pets (Table 1). Risk to pets was also positively associated with considering a pet a family member, with turning to pets to alleviate distress, with anticipating distress if separated from the pet, and with willingness to take risks to protect pets.

Inspection of Table 1 suggests that owners who felt closer to their pets indicated they were highly likely to risk their safety to protect the animal from harm when facing a bushfire. Therefore, communicating the need for pet-preparedness in a manner that is sensitive to this link between pet-owner closeness and potential risk taking is recommended. To address this, communicators can promote explicit discussion of pets as a part of the family, that they may have 'honorary personhood', and that keeping them close by is a potential means of reducing distress during and after bushfires. The potential for experiencing separation distress might also be discussed given its relationship with increased risk-taking intentions, and the potential for later impacts in psychological wellbeing (Rujoiu & Rujoiu 2013). This will contribute to pet owner insights into these links and will inform choices between different plan intentions.

Pet-owner closeness and survival plan intentions

Pet owners with a survival plan did not differ significantly from those without one on any pet-owner closeness indicators (Mann-Whitney, $p > .160$). For pet owners with survival plans who incorporated pets, differences were identified across intention types for considering a pet a family member and degree of anticipated separation distress, though not for

anthropomorphism, safe haven, or willingness to risk personal safety for a pet.³ Differences in these two indicators of pet-owner closeness between intention types showed that the level of closeness was associated with the type of survival plan intention chosen.

Pets were significantly more strongly considered to be family members by owners intending to wait (M = 3.91) rather than to split the household (M = 3.55) (U(122) = 1496.00, $p = .001$). Stronger ascription of family membership to pets may also potentially be present in owners intending to wait rather than to defend, and in those intending to leave rather than to split the household, though in this study significance was not attained for these comparisons.

Owners were significantly more likely to feel they would be distressed if separated from a pet when they held the intention to leave (M = 3.43) rather than to split the household (M = 2.97) (U(169) = 2409.00, $p = .001$), and if they intended to wait (M = 3.54) rather than to split the household (M = 2.97) (U(122) = 1261.00, $p < .001$). This suggests that the degree of anticipated separation distress influences survival plan intention, although this would benefit from further predictive analysis.

Overall, the results indicate that pet owners are highly likely to consider pets as members of the family and to feel they would be very distressed if separated from them during a bushfire. This tentative conclusion suggests that the degree to which pets are seen as family members is associated with choosing survival plan options that keep pets within the family unit, rather than those that separate pets from family members. Furthermore, higher levels of anticipated separation distress are also associated with choosing survival plan intentions that keep the household unit intact.

3 Kruskal-Wallis tests for differences in pet-owner closeness across intention types were as follows: family membership ($\chi^2_{(3, N = 295)} = 13.521, p = .004$), anticipated separation distress ($\chi^2_{(3, N = 295)} = 16.391, p = .001$), anthropomorphism ($\chi^2_{(3, N = 295)} = 0.155, p = .984$), safe haven ($\chi^2_{(3, N = 295)} = 5.461, p = .141$), willingness to risk personal safety ($\chi^2_{(3, N = 295)} = 2.747, p = .432$). Bonferroni-corrected alpha was .004.

Table 1: Inter-correlations between pet-owner closeness indicators and perceived bushfire risk to pets and family upon moving to area.

	1	2	3	4	5	6	7	8
Family membership	-							
Anthropomorphism	.50**	-						
Safe haven	.62**	.50**	-					
Separation distress	.62**	.52**	.75**	-				
Willing to risk safety	.51**	.48**	.61**	.66**	-			
Global closeness	.66**	.79**	.81**	.85**	.82**	-		
Risk to pets	.19**	.11*	.23**	.20**	.17**	.20**	-	
Risk to family	.10	.07	.13*	.13*	.08	.13*	.83**	-

Note: Two-tailed Spearman's correlation used. * $p < .05$ ** $p < .01$.

Table 2: Family membership of pets and anticipated separation distress as predictors of pet-based motivation and pet inclusion in survival plans within plan intention types.

A. Protecting pets as key consideration in plan development (outcome)

Intention	Variable	B	SEB	Wald χ^2	OR	95 per cent CI	p
Defend	FM	-0.24	0.57	0.17	0.79	[0.26, 2.39]	.676
	SD	0.92	0.37	6.38	2.51	[1.23, 5.14]	.012
Split	FM	-0.01	0.35	0.01	0.99	[0.50, 1.97]	.978
	SD	0.61	0.34	3.24	1.84	[0.95, 3.57]	.072
Wait	FM	1.86	0.81	5.32	6.45	[1.32, 31.46]	.021
	SD	0.25	0.40	0.39	1.28	[0.59, 2.79]	.532
Leave	FM	0.22	0.42	0.26	1.24	[0.54, 2.85]	.613
	SD	1.33	0.31	18.50	3.77	[2.06, 6.91]	<.001

B. Bushfire survival plan makes provisions for pets (outcome)

Intention	Variable	B	SEB	Wald χ^2	OR	95 per cent CI	p
Defend	FM	-0.45	0.73	0.36	0.64	[0.15, 2.74]	.546
	SD	0.29	0.57	0.26	1.34	[0.44, 4.11]	.608
Split	FM	-0.41	0.40	1.05	0.66	[0.30, 1.46]	.305
	SD	-0.58	0.42	1.88	0.56	[0.25, 1.28]	.171
Wait	FM	-2.23	0.92	5.93	0.12	[0.02, 0.65]	.015
	SD	0.48	0.64	0.57	1.61	[0.46, 5.61]	.452
Leave	FM	-0.36	0.39	0.83	0.70	[0.33, 1.50]	.361
	SD	-1.11	0.39	8.06	0.33	[0.15, 0.71]	.005

Note: OR = odds ratio; CI = confidence interval; FM = family membership; SD=separation distress. Unadjusted odds ratios used.

Pet owner closeness as a motivator of pet inclusion

For each of the plan intentions, logistic regression was used to predict the likelihood that protecting one’s pets was a key consideration in plan development and that provisions were made for pets in the plan.⁴ These tests presented in Table 2, with all effect sizes moderately small ($R^2 = .18$ to $.36$), and summarised in Table 3 for discussion.

For pet owners intending to defend, viewing their pet as a family member had no influence on whether they considered the pet a motivator for planning, or whether their pet was actually included in their survival plan. However, for each one-point increase in separation distress, the odds that pets were a planning motivation were 2.51 times as high. It is feasible to suggest that risk and preparedness communications aimed at owners defending can more effectively position pets

as a motivator for creating a plan when emphasising potential for separation.

Conversely, using approaches that emphasise pet family membership and potential separation distress are unlikely to have any effect on pet-based motivation and plan inclusion in those intending to split. Despite this, anticipated separation distress approached significance for predicting increased odds of pets being a key plan consideration (1.84). These effects highlight that alternative tactics need examination within this group, particularly as family membership of pets is often used to frame this type of communication.

For pet owners intending to wait, for each one-point increase in family membership ascription, the odds that pets were a key consideration in planning were 6.45 times as high. However, the odds that pets were actually provided for in plans were 0.12 times as high (88 per cent decrease). This reciprocal effect is consistent with the earlier point that pet owners intending to wait are less prepared to manage pets during a bushfire than they feel, as pet-based motivation is not accompanied by actual pet-preparedness. Consequently, this group will likely benefit from communication tactics that focus on

⁴ Two sets of regressions were conducted: four for prediction of considering pets a key consideration in plan development; and four for prediction of actual pet inclusion in the plan. Predictor variables were ascription of family membership to pets, and anticipated separation distress. Good fit (Hosmer-Lemeshow, $ps > .05$) and model significance ($\alpha < .05$) were achieved for all but predicting pet inclusion by those intending to defend.

Table 3: Considerations for communicating pet preparedness needs based on ascription of family membership to pets and anticipated separation distress within each plan intention type.

Intention	Pet as Family Member (FM)		Anticipated Separation Distress (SD)	
	Pet as motivator	Pet in plan	Pet as motivator	Pet in plan
Defend	No effect	No effect	Higher SD predicts increased likelihood of seeing pet as a key plan motivator	No effect
Split	No effect	No effect	Higher SD predicts increased likelihood of seeing pet as a key plan motivator	No effect
Wait	Higher FM predicts increased likelihood of seeing pet as a key plan motivator	Higher FM predicts decreased likelihood of including pet in plan	No effect	No effect
Leave	No effect	No effect	Higher SD predicts increased likelihood of seeing pet as a key plan motivator	Higher SD predicts decreased likelihood of including pet in planning

alternative reasons for pet preparedness, for example, freeing up time and resources to prepare and protect other people and assets. This alternative focus aligns well with the lack of an effect of anticipated separation distress in those intending to wait.

Conversely, anticipated separation distress was a strong predictor for pet owners intending to leave. For each one-point increase in separation distress, the odds that pets were a key consideration in plan development were 3.77 times as high. However, this increase was also associated with a 67 per cent decrease in likelihood of including pets in survival planning (0.33). Those intending to leave early were more likely to consider their pet as a planning motivator as their anticipated separation distress increased, but were less likely to actually prepare their pets for a bushfire. For this group, pet family membership had no influence on regarding pets as a motivator or preparing them for bushfire.

Conclusion

This study offers new support for intention-based differences in pet-owner closeness: as a motivator of pet preparedness and as a concept that informs emergency services communication policy and practice. Although family membership of pets is used to frame pet bushfire preparedness communications (CFS and South Australian Metropolitan Fire Service 2012) it appears to operate more so on those intending to wait and decide. Potential for separation distress, however, also has important relevance to all pet owners except this group. Because of this, the tentative recommendations provided are given as a starting point for communicators to frame information about how pets should be included in household bushfire preparedness with the different reasons why pet

owners are motivated to do so. Reframing of existing communications may include new photographic representations of particular characteristics of pet-owner closeness most relevant to each intention group, such as minimising ‘pet family’ images, or finding alternatives, for owners intending to wait and see. This might also be achieved through modification of the introductory text in pet-preparedness guides to specifically address each intention group. For example, in the defend and split groups these might explicitly discuss the need to translate motivation from pets into behaviours that actually mitigate bushfire risk to them. Findings from this study are applicable to South Australian communities at some degree of bushfire risk. Lastly, research is needed to extend these recommendations to flood and other events, to other states and territories, as well as to other facets of human-animal relationships.

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