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Born to roam? Surveying cat owners in Tasmania, Australia, to identify the drivers and barriers to cat containment

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ABSTRACT

Free-roaming domestic cats, *Felis catus*, are a major public nuisance in neighbourhoods across the world, and have been linked to biodiversity loss and a host of community health problems. Owners who let their cats roam, also place their cats at risk of serious injury. One management strategy that is gaining considerable support involves encouraging cat owners to contain their pets within their property. Contemporary behaviour change models highlight the importance of identifying drivers and barriers that encourage and discourage target behaviours such as cat containment. Results from a random dial phone survey of 356 cat owners in northern Tasmania identified four distinct cat containment profiles: owners who contained their cat all the time, owners who only contained their cat at night, owners who sporadically contained their cat with no set routine, and owners who made no attempt to contain their pet. Our results indicated that cat-owners' decisions to contain or not contain their cats were guided by a range of factors including owners' beliefs about their ability to implement an effective containment strategy and their views about the physical and psychological needs of their cats. The results are discussed in terms of improving the behavioural effectiveness of cat containment interventions by selecting appropriate behavioural change tools for the identified drivers and barriers, and developing targeted engagement strategies and messaging.

1. Introduction

Campaigns urging cat-owners to limit their cats' movements have been running in Australia since the 1990s. Advocates for cat containment use a range of reasons to support their argument, including: (i) health and welfare benefits for the cats, such as the reduction in the risk of serious injury from traffic, fighting, dogs and acts of cruelty by humans, the reduced spread of cat-specific diseases and the prevention of unwanted pregnancies; (ii) community benefits with the reduction of nuisance disturbances and neighbour disputes; (iii) conservation benefits, with the predatory nature of any free-roaming cat, regardless of their ownership status, being implicated in the decline of local wildlife populations; (iv) and public health benefits with the reduction in the transmission of diseases, such as *Toxoplasma gondii*, and faecal pollution of waterways (Courchamp et al., 2000; Rochlitz, 2000; Dabritz et al., 2006; Holmes, 2006; Dabritz and Conrad, 2010; Hellard et al., 2011; Dickman, 2014). Campaigns advocating cat containment have had some success, with around a third of cat-owners now keeping their cats contained within their property at all times, and also a 20% increase in the number of cat-owners who partially restrict their cats movements by locking them up at night (Headey, 2006; Toukhsati et al., 2012). Despite these successes, there are still a large number of cat-owners who continue to let their cats roam freely and have clearly not changed their behaviour.

The primary aim of most cat management interventions is to convince cat-owners to modify their behaviour or adopt new behaviours towards their cats. Current domestic cat interventions depend heavily on the provision of information to educate and persuade individuals to change their current behaviours (McLeod et al. unpublished). These educational campaigns assume that the main barrier to action is the lack of knowledge; when cat owners are adequately informed, they will develop supportive attitudes and modify their behaviour (Kollmuss and Agyeman, 2002). The provision of information is important to create awareness and form attitudes. But having a positive attitude towards a particular behaviour is no guarantee that the behaviour will actually

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occur. There is considerable evidence that causal links between attitudes and behaviour are often weak or non-existent (Hini et al., 1995; Kollmuss and Agyeman, 2002). Many studies have found that providing information by itself is often insufficient to bridge the gap between attitudes and behaviour (Costanzo et al., 1986; Geller, 1989; Andreasen, 1995; Schultz, 2014). To initiate behaviour change, practitioners must understand the main perceived drivers (benefits) of the target behaviour, as well as the barriers that prevent the behaviour from occurring. Once drivers and barriers of behaviour are properly understood in context, appropriate behaviour change tools can be identified and implemented (McKenzie-Mohr, 2011; Michie et al., 2011; Schultz, 2014; Hine et al., 2015).

Despite a growing literature on the benefits of cat containment, little research has been conducted to understand the factors that motivate cat owners to engage or not engage in this behaviour. One recent study found that beliefs relating to the importance of containment (e.g. the protection of native wildlife, or safeguarding cats from injury) predicted the containment practices of cat-owners, as well as support for this management practice from non-owners (Toukhsati et al., 2012). These results were discussed in the context of the Theory of Planned Behaviour (Fishbein and Ajzen, 1974; Ajzen, 1991), which postulates that intentions to perform a specific behaviour (in this case containing your cat) are influenced by attitudes (a function between an individual's beliefs about a behaviour and the value of outcomes arising from that behaviour), subjective norms (the product of an individual's normative beliefs about how 'important others' want them to behave, and their motivation to comply with those expectations), and perceived behavioural control (the extent to which an individual feels able to enact a behaviour, a product of how confident they are at performing the behaviour and how much personal control they have over the outcomes). Toukhsati et al. (2012) highlighted the need for further research on psychological factors influencing cat containment decisions, a central aim of the current study.

This study aims to identify the main factors that lead cat-owners to contain or not contain their pets, and then discuss how this information can be used to develop more effective engagement strategies that will result in long-term behavioural change. This research extends current knowledge by investigating a broad range of potential drivers and barriers, not just attitudes and beliefs. Audience segmentation is used to better understand how these drivers and barriers between owners with different cat containment behavioural profiles. The results are discussed in terms of improving the behavioural effectiveness of intervention designs by selecting appropriate behaviour change tools and developing targeted engagement strategies and messaging.

2. Materials and methods

2.1. Procedures and participants

A random dial telephone survey was conducted targeting cat owning households across seven local council areas in northern Tasmania, Australia. Of the 2246 households that were contacted, 1734 did not own a cat and 156 refused to engage. Responses were thus collected from 356 cat owning households (17% of households in this area). The incidence of cat ownership is below the level reported in the south of the state (24%) (Myriad Research, 2013) and the Australian average figure (29%) (Animal Health Alliance, 2013). The sample consisted of 60% urban and 40% rural households. The majority of respondents were females (71%). The age of participants ranged between 18 and 75 (mean 54.01, standard deviation 13.52).

2.2. Measures

A questionnaire was created to identify current cat containment practices, and to assess relevant drivers and barriers. We assembled our driver and barrier questions from a combination of previously identified factors in the cat and dog management literature (e.g. Grayson et al., 2002; Rohlf et al., 2010a,b; Finkler and Terkel, 2012; Rohlf et al., 2012), as well as from the results of reviewing relevant behaviour theories from the social psychology literature (McLeod et al., 2015). The variables included beliefs, social and personal norms, perceived behavioural control (self-efficacy) and affective associations, as well as facilitating external conditions, and are described in more detail below. Demographic information related to sex, age, locality and education level was collected from all respondents. The questionnaire also provided an opportunity for respondents, in the form of an open-ended question, to indicate what they considered to be the main barrier(s) to cat containment.

Respondents' current cat containment behaviour was assessed by seven items assessing how often their cat was indoors at night, outdoors at night, indoors during the day, and outdoors during the day, and whether cats that spent time outside were confined, supervised or on a lead. All responses were recorded using a 5-point scale (1 = never, 2 = rarely, 3 = sometimes, 4 = mostly, 5 = always). The perceived impact of containment on cat quality of life was measured by three items: "how confinement at night would influence a cat's quality of life; how confinement indoors all the time would influence a cat's quality of life; and how confinement within an outdoor cat-proof enclosure would influence a cat's quality of life". Each question was assessed on a 5-point scale (1 = very harmful, 5 = very beneficial).

Expected consequences of roaming cats were measured by asking two items pertaining to cat welfare (protection from serious harm) and local wildlife impact. Social normative influence was measured through two items, each addressing a different scenario on whether they would contain their cats: "if the local council made it compulsory" (injunctive norm), and "if most other people in community did so" (descriptive norm). Personal norm was measured through a single item question asking the respondent's feelings of "moral obligation to contain their cat". Respondents' perceptions of personal control over the outcomes of cat containment, their confidence in their knowledge of how to contain their cat and their confidence in their ability to contain their cat were each measured using a single item question. The influence of two specific external barriers, financial cost of containment and the possibility to contain their cat given their current residential circumstances (e.g. units, rental property) were measured by asking two single item questions. All of these questions was assessed on a 5-point scale (1 = strongly disagree, 5 = strongly agree, with six items reverse scored).

Affective association with roaming cats was assessed using an approach developed by Peters and Slovic (1996). Respondents were asked to record one main thought or image that came to mind when presented with the cue phrase "roaming cat", and then to rate it on a 5-point scale (1 = very negative, 5 = very positive).

2.3. Statistical methods

We used latent profile analysis, implemented in MPlus 7.0 (Muthén and Muthén, 2014) to classify respondents into homogenous subgroups based on their responses to the current cat containment questions. Relative model fit was assessed using the Bayesian information criteria (BIC; Schwartz, 1978), relative entropy (Ramaswamy et al., 1993) and the Lo–Mendell–Rubin likelihood ratio test (LMR; Lo et al., 2001), with a significant p value from this LMR test ($\alpha = 0.05$) indicating that the given profile