Manaaki Whenua
Landcare Research

# An application of the $I_3$ framework to feral cat control in Hawke's Bay

Prepared for: Hawke's Bay Regional Council

**June 2020**

# An application of the $I_3$ framework to feral cat control in Hawke's Bay

*Contract Report: LC3768*

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# Summary

The potential for landholders in rural areas to contribute to the control of feral cats is of interest to Hawke's Bay Regional Council. The $I_3$ Framework (Kaine et al. 2010) was used to predict the likely interest of rural landholders to a policy of using traps to reduce the population of feral cats in the region. The analysis is based on responses to a survey from 45 rural landholders in, or near, the Cape-to-City programme area in Hawke's Bay.

The results of the survey, which was based on Niemiec et al. (2017) and Kaine et al. (2010), indicate widespread support for a programme of trapping to reduce feral cat populations among rural landholders in, or near, the Cape-to-City programme area. Allowing for the small sample, the results of the survey indicate there could be widespread support among rural landholders for a programme of trapping to reduce feral cat populations in Hawke's Bay.

Support for reducing feral cat populations was primarily motivated by landholders' concerns for the potential for feral cats to have damaging effects on native birds and fauna. The potential for feral cats to affect livestock operations by spreading toxoplasmosis was very much a secondary consideration for the landholders in the sample. Consequently, attempts to encourage participation by landholders in a programme of trapping feral cats should concentrate on promoting the potential of trapping to reduce harm to native birds and fauna.

Most landholders appeared to be 'highly involved' (i.e. very interested) in the idea of reducing feral cat numbers, and with the idea of trapping. This means landholders would be likely to participate in a trapping programme provided traps were not too expensive or difficult to maintain.

Self-identity was not a major motivation for survey respondents to reduce the number of feral cats or to trap them. This suggests that attempts to encourage participation in a programme of trapping by emphasising the participation of neighbours or friends are unlikely to be successful.

A survey of a larger sample of landholders across the region, together with research using focus groups, would be worthwhile to confirm the conclusions made here concerning the motivations of landholders and their views on the use of traps and other control methods for feral cats and other predators.

# 1 Introduction

The potential for rural landholders to contribute to predator control, including control of feral cats, is of interest to Hawke's Bay Regional Council. The Council sought information on the willingness of rural landholders to support, or contribute to, a policy of using traps to reduce the population of feral cats in the region. In this study the $I_3$ Framework (Kaine et al. 2010) was used to predict the likely interest of rural landholders to a policy of using traps to reduce the population of feral cats in the region.

# 2 Theory

The $I_3$ Response Framework (Murdoch et al. 2006; Kaine et al. 2010) is based on social psychology and consumer behaviour theory (Derbaix & Vanden Abeele 1985; Laurent & Kapferer 1985; Zaichkowsky 1985; Dholakia 2001; Verbeke & Vackier 2004). The premise of the Framework is that people's interest in, and support for, predator control can be inferred from:

- their interest or involvement with the policy outcome (the idea of reducing feral cat numbers)
- their interest or involvement with, and attitudes about, the relevant instrument itself (the idea of using traps).

Once interest and support have been predicted, strategies to promote achievement of the policy outcome may then be identified (Kaine et al. 2010)

## 2.1 The $I_3$ Framework

Involvement is a measure of motivation (Assael 1998; Verbeke & Vackier 2004). The degree of involvement an individual has in a subject is a key determinant of the effort that individual will expend in making decisions in relation to that subject and then acting on them (Celsi & Olson 1988; Poiesz & Cees 1995). Involvement arises from functional needs in relation to comfort and security, experiential needs in relation to feelings of pleasure and reward, and identity needs in relation to self-expression and belonging (Laurent & Kapferer 1985). Involvement also tends to be higher the more the subject of interest is novel, complex, and entails substantial social and financial risks (Dholakia 2001). Consequently, involvement can be characterised in terms of functional, experiential, identity-based, risk-based, and consequence-based components (Laurent & Kapferer 1985).

A person's involvement with a subject will be greater the more they associate each of these component needs with the subject. Farmers, for example, should exhibit very high involvement with farming because it provides them with an income (functional involvement), with the opportunity to be physically active and work outdoors (experiential involvement), and to work independently of others (identity involvement). Farming is characterised by long production cycles that are sensitive to seasonal conditions, and product prices are highly variable. Consequently, production and revenue performance are

inherently unpredictable (risk-based involvement) with serious consequences for business success and family income (consequence-based involvement).

High involvement with a subject is associated with greater time and effort devoted to obtaining information about the subject, the formulation of strongly held beliefs and attitudes about the subject, and greater likelihood of acting regarding the subject. In contrast, low involvement in a subject is associated with little time and effort devoted to obtaining information about the subject, the formulation of weakly held beliefs and attitudes, if any, about the subject, and a lower likelihood of acting regarding the subject.

The two dimensions of involvement with the policy outcome and involvement with the policy instrument means that the reactions of people to a policy instrument can be classified into four quadrants (Kaine et al. 2010) as shown in Figure 1.

People in quadrant 1 exhibit low involvement in both the policy outcome and the policy instrument. These people are likely to have little knowledge or even awareness of the policy outcome. They are likely to have limited knowledge of the policy instrument and have weak attitudes towards it, if any at all. Non-compliance with the instrument is largely unintentional (Murdoch et al. 2006).

If people in quadrant 1 present little risk in terms of achieving the policy outcome they can be ignored. Otherwise, their compliance may be encouraged by:

- linking the policy outcome to a subject they find more involving
- reducing the effort required to be compliant, and
- promoting awareness of the policy outcome and the policy instrument.

The last strategy is likely to be the least effective.

People in quadrant 2 exhibit high involvement with the policy outcome but low involvement with the policy instrument. These people are likely to have some knowledge about the policy outcome. They are likely to have limited knowledge of the policy instrument and may have weak or ambiguous attitudes towards it. Non-compliance with the instrument is largely unintentional (Kaine et al. 2010).

If people in quadrant 2 represent little risk in terms of achieving the policy outcome they can be ignored. If their compliance is important to achieving the policy outcome, then reducing the effort required for compliance (Thaler & Sunstein 2008) and promoting awareness of the policy instrument may be worthwhile.

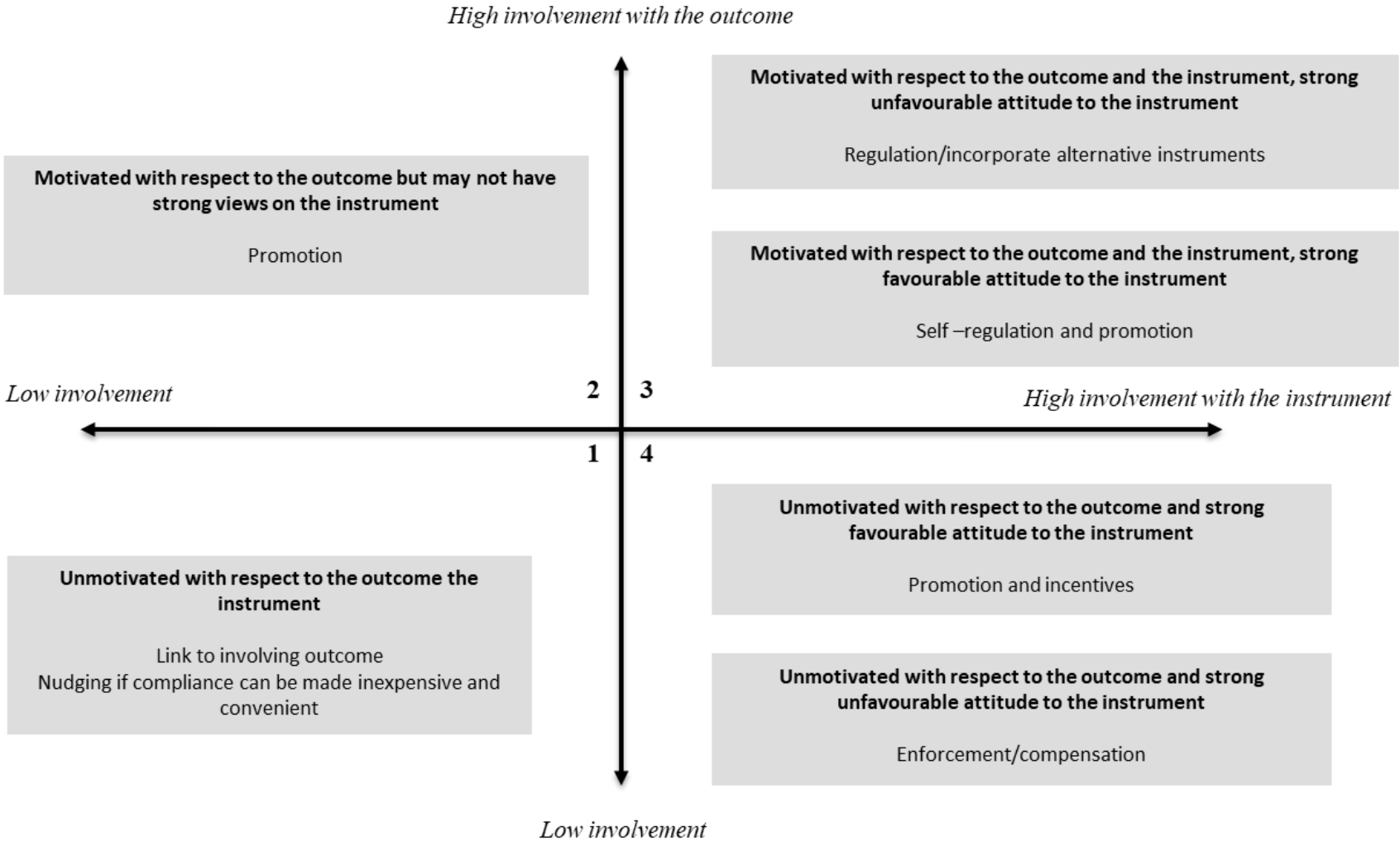


**Figure 1. $I_3$ Response Framework.**
**Bold text describes the strength of motivation with respect to the policy outcome (e.g. reducing feral cat numbers) and the policy instrument (e.g. provision of traps). Plain text describes potential policy measures to promote compliance with the policy instrument.**
**Source: Adapted from Kaine et al. (2010).**

People in quadrant 3 exhibit high involvement with the policy outcome and the policy instrument. These people are likely to have extensive and detailed knowledge of the policy outcome. They are also likely to have extensive knowledge of the policy instrument and strong attitudes towards it. If their attitude towards the policy instrument is favourable, then they will comply with the instrument and may even advocate for it (Murdoch et al. 2006).

If people in quadrant 3 have an unfavourable attitude towards the policy instrument, then they may comply, but reluctantly (Kaine et al. 2010). Non-compliance with the instrument will be intentional. Most likely they will prefer, and even advocate for, alternative instrument designs. Where practical, incorporating alternatives into the design of the policy instrument may encourage the compliance of these people. Alternatively, offering incentives to reduce compliance costs may neutralise unfavourable reactions.

People in quadrant 4exhibit low involvement with the policy outcome but high involvement with the policy instrument. People in this quadrant are likely to have limited knowledge of the policy outcome. They are likely to have detailed knowledge of the policy instrument and have strong attitudes towards it. If their attitude towards the policy instrument is favourable, then they will comply with the instrument (Kaine et al. 2010).

If people in quadrant 4 have an unfavourable attitude towards the policy instrument, then they will only comply reluctantly, or they may intentionally refuse to comply at all. These people will regard the instrument as imposing unwarranted costs upon them. Most likely they will agitate against the policy instrument (Kaine et al. 2010). Offering incentives to offset compliance costs may neutralise unfavourable reactions.

Where non-compliance may put implementation of the policy instrument at risk then modifications to the policy instrument may be required to neutralise this risk. The specific measures required will depend on the circumstances.

# 3 Methods

Manaaki Whenua-Landcare Research and the Eastern Institute of Technology were commissioned by the Cape-to-City programme to conduct a survey of rural landholders in Hawke's Bay to quantify a range of conservation behaviours. The survey was an adaptation of a survey of landholders conducted at the commencement of the programme by Niemiec et al. (2017). The new survey was undertaken with a view to identifying any changes that had occurred in landholders' beliefs about, and attitudes towards, the Cape-to-City programme since its' commencement. The new survey also provided an opportunity to quantify the involvement of rural landholders with the idea of reducing feral cat numbers using traps.

Following Niemiec et al. (2017), the survey questionnaire included questions in relation to attitudes towards mammalian predators, experiences with the Cape-to-City programme, and participation in predator control activities. Four questions were added to the original questionnaire. Two of these additional questions were designed to elicit respondents' involvement with the idea of reducing feral cat numbers and their involvement with the

idea of trapping feral cats. Involvement was measured using a condensed version of the scale developed by Kapferer and Laurent (1985) with respondents rating two statements on each of the five components of involvement: function, experience, identity, consequence, and risk.[1] Involvement was calculated as the average (mean) of respondents' scores across the five components.[2]

The other two additional questions measured landholders' attitudes towards trapping feral cats. One question measured their attitude using a simple normative scale, the other measured the strength of landholders' attitudes with respect to trapping using a 'forced choice' scale based on Olsen (1999).[3] The strength of landholders' attitudes towards trapping was expected to vary depending on the strength of their involvement with reducing feral cat numbers and their involvement with trapping.

Again, following Niemiec (2017), the questionnaire was mailed by Hawke's Bay Regional Council to 300 landholders within, or adjacent to, the area in which the Cape-to-City programme operated. The questionnaire was posted in October 2019. A total of 45 questionnaires had been completed and returned by post or completed online as of March 2020.

Participation in the survey was voluntary, respondents could leave the survey at any time, and all survey questions were optional and could be skipped. Survey responses were anonymous. Respondents could choose to be entered into the draw for one of two $150 gift cards.

# 4 Results

## 4.1 The sample

Niemiec et al. (2017) obtained a 23% response rate. We received 46 responses, which was a response rate of only 15%. While lower than the overall response rate obtained by Niemiec et al. (2017), it is similar to the response rate they obtained after excluding respondents who completed the questionnaire while being interviewed (19%).

Involvement theory suggests that, the more time and effort required to complete a questionnaire, the more likely the questionnaire will only be completed by people with an

[1] The statements concerned the importance of (functional 1) and caring about (functional 2) the objective or instrument; the reward from (experiential 1) and passion about (experiential 2) the objective or the instrument; opinion about objective or instrument reflecting on you (identity 1) and others (identity 2) as a person; the seriousness (consequence 1) or importance (consequence 2) of consequences arising from making a mistake in relation to the objective or instrument; and the complexity (risk 1) or difficulty (risk 2) of making decisions about the objective or the instrument. Complete statements are available on request from the author.

[2] Note that the second risk statement was accidentally omitted from the questionnaire with respect to reducing feral cat numbers. This mistake did not affect the results of the study.

[3] A normative scale consists of a series of statements about a subject, and respondents use a scoring system to rate their level of agreement or disagreement with each statement. Their scale score is the average of their ratings on all the statements. With a 'forced choice' scale respondents compare two or more desirable statements and pick the one they most prefer.

intrinsic interest in the subject matter of the questionnaire. For instance, other studies on predator control in New Zealand have shown that respondents who participate in a survey by phone interview are significantly more involved in the subject of pest control than those who are members of consumer panels and complete the same survey using the internet (Kaine et al. 2020; Kaine & Kirk 2020; Kaine & Stronge 2020). The latter have much greater flexibility than the former in being able to complete the questionnaire at their convenience (and receive a small reward for doing so).

In this instance, to participate respondents needed to: (1) be sufficiently interested in pest control to open the envelope and decide to participate, (2) complete the questionnaire by hand, and (3) post the completed questionnaire in a stamped, self-addressed envelope. Given this level of effort, theory suggests that landholders who have lower involvement in the idea of predator control are less likely to complete the questionnaire than landholders with higher involvement. In terms of the $I_3$ framework, this means most respondents could be expected to be from quadrant 3, with very few from quadrant 1. The consequences of the resulting bias in the sample are unclear.

## 4.2 Involvement with trapping and reducing feral cat numbers

Respondents were mapped into the $I_3$ Response Framework (see Fig. 2) based on their involvement with the idea of reducing feral cat numbers and with the idea of trapping feral cats. A score of one indicates the minimum possible level of involvement, and a score of seven indicates the highest possible level of involvement. Statistical tests indicated that the scales were reliable, that is, internally consistent in the sense that scores on each statement within a scale were highly correlated (see Table A1 in the Appendix).

Respondents were classified into quadrants based on their involvement scores relative to the scale mid-point. For example, respondents with involvement scores more than four for reducing feral cat numbers and using traps were classified into quadrant 3.

Inspection of Figure 2 reveals that most respondents exhibited moderate to high involvement with reducing feral cat numbers, and moderate to high involvement with using traps. Consequently, as expected, most respondents were classified into quadrant 3, with the remaining respondents classified into quadrant 2 (see Table 2). The complete absence of any respondents from quadrants 1 or 4 is unusual, especially when compared with the results of similar studies with larger samples (Kaine & Kirk 2020; Kaine & Stronge 2020) This suggests the sample could be biased towards landholders with relatively high involvement in reducing feral cat numbers.

Bearing in mind the sample is small, and could be biased, the moderate to high involvement of respondents with the idea of reducing feral cat numbers indicates many rural landholders in or near the Cape-to-City programme area in Hawke's Bay would support a policy to eradicate feral cats in rural areas (see Table 3). The moderate to high levels of involvement most respondents had with the idea of trapping suggests many landholders in the area would support the use of traps, and would be likely to invest some of their time and energy in trapping.

**Table 1. $I_3$ classification of respondents**

| Quadrant | Proportion of sample % |
|---|---|
| 1 – indifferent | 0 |
| 2 – involved with reducing feral cat numbers | 7.9 |
| 3 – involved with reducing feral cat numbers and with using traps | 92.1 |
| 4 – involved with using traps | 0 |

**Table 2. Mean involvement of respondents by $I_3$ quadrant**

| | Involvement with reducing feral cat numbers[1] | Involvement with using traps to reduce feral cat numbers[2] |
|---|---|---|
| Quadrant 1 | - | - |
| Quadrant 2 | 4.48 | 3.60 |
| Quadrant 3 | 5.70 | 5.21 |
| Quadrant 4 | - | - |

Notes: [1] Test for difference in means across quadrants ($F=5.6$, $p<0.05$)
[2] Test for difference in means across quadrants ($F=12.3$, $p<0.01$)

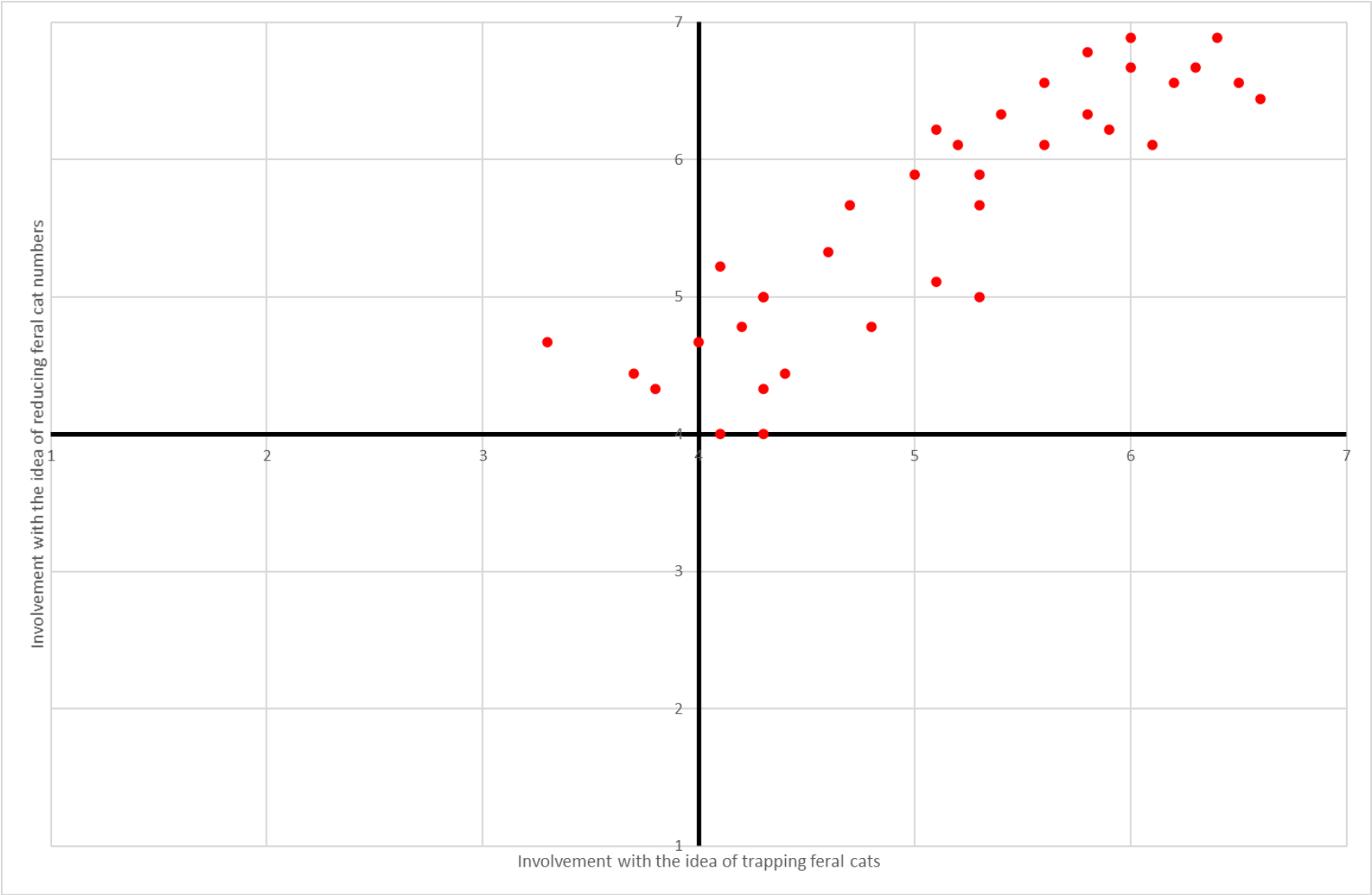


**Figure 2. $I_3$ mapping of respondents' involvement of with the idea of reducing feral cat numbers and the idea of using traps.**

Consistent with reporting only moderate to high involvement with the idea of trapping feral cats, a high proportion of respondents (60%) had a strongly favourable attitude to trapping. None of the respondents had an unfavourable attitude towards trapping (see Table 3).

There was a statistically significant and strong correlation between involvement with the idea of reducing feral cat numbers and attitude towards trapping ($r=0.46$, $p<0.01$), and between involvement with the idea of using traps and attitude towards trapping ($r=0.37$, $p<0.05$).

The sample was too small to test for any associations between involvement and strength of attitude towards trapping (see Table 4) or between quadrant membership and attitude towards trapping (see Table 5).

## 4.3 Involvement profiles

The involvement profiles of respondents with respect to the idea of reducing feral cat numbers are reported in Figure 3. The profiles represent the average score, for each of the involvement statements, of the respondents in the sample.[4] On average, respondents exhibited higher involvement with reducing numbers of feral cats than with using traps to catch feral cats (see Table A2 in the Appendix).

On average, respondents exhibited high to very high functional, experiential, and consequence involvement, and moderate to high identity and risk involvement, with reducing feral cat numbers. This implies their involvement with the idea of reducing feral cat numbers stems from concerns about the potentially unfavourable impact feral cats can have on their material well-being and the satisfaction of preventing those impacts.

The involvement profiles of respondents with respect to the idea of using traps to reduce feral cat numbers are also shown in Figure 3. Again, the profiles represent the average score, for each of the involvement statements, of the respondents in the sample. On average, respondents exhibited high functional and experiential involvement, and moderate identity, consequence, and risk involvement, with the idea of using traps to reduce feral cat numbers. This suggests they perceive traps as an effective and safe method for catching feral cats, and they may experience feelings of mastery and achievement if they were to successfully trap feral cats.

[4] As most of the sample were in quadrant 3

**Table 3. Attitude of respondents towards trapping feral cats**

| Attitude | Proportion of sample % |
|---|---|
| Right thing to do | 63.2 |
| Doesn't matter to me, not sure, haven't given it much thought[1] | 36.8 |
| Bad thing to do | 0 |

Notes: [1] Given the small size of the sample these three categories were combined.

**Table 4. Involvement and attitude of respondents towards trapping feral cats**

| Attitude | Involvement with reducing feral cat numbers[2] | Involvement with using traps to reduce feral cat numbers[2] |
|---|---|---|
| Right thing to do | 5.83 | 5.10 |
| Doesn't matter to me, not sure, haven't given it much thought[1] | 5.37 | 5.06 |
| Bad thing to do | - | - |

Notes: [1] Given the small size of the sample these three categories were combined.
[2] Test for difference in means across categories was not significant

**Table 5. $I_3$ classification and attitude of respondents towards trapping feral cats[1]**

| Attitude | Quadrant 1 | Quadrant 2 | Quadrant 3 | Quadrant 4 |
|---|---|---|---|---|
| Right thing to do | - | 100.0 | 60.0 | - |
| Doesn't matter to me, not sure, haven't given it much thought[2] | - | 0 | 40.0 | - |
| Bad thing to do | - | - | - | - |

Note: [1] Values are proportion of respondents in each quadrant. Test for differences in proportions across quadrants was not significant.
[2] Given the small size of the sample these three categories were combined.

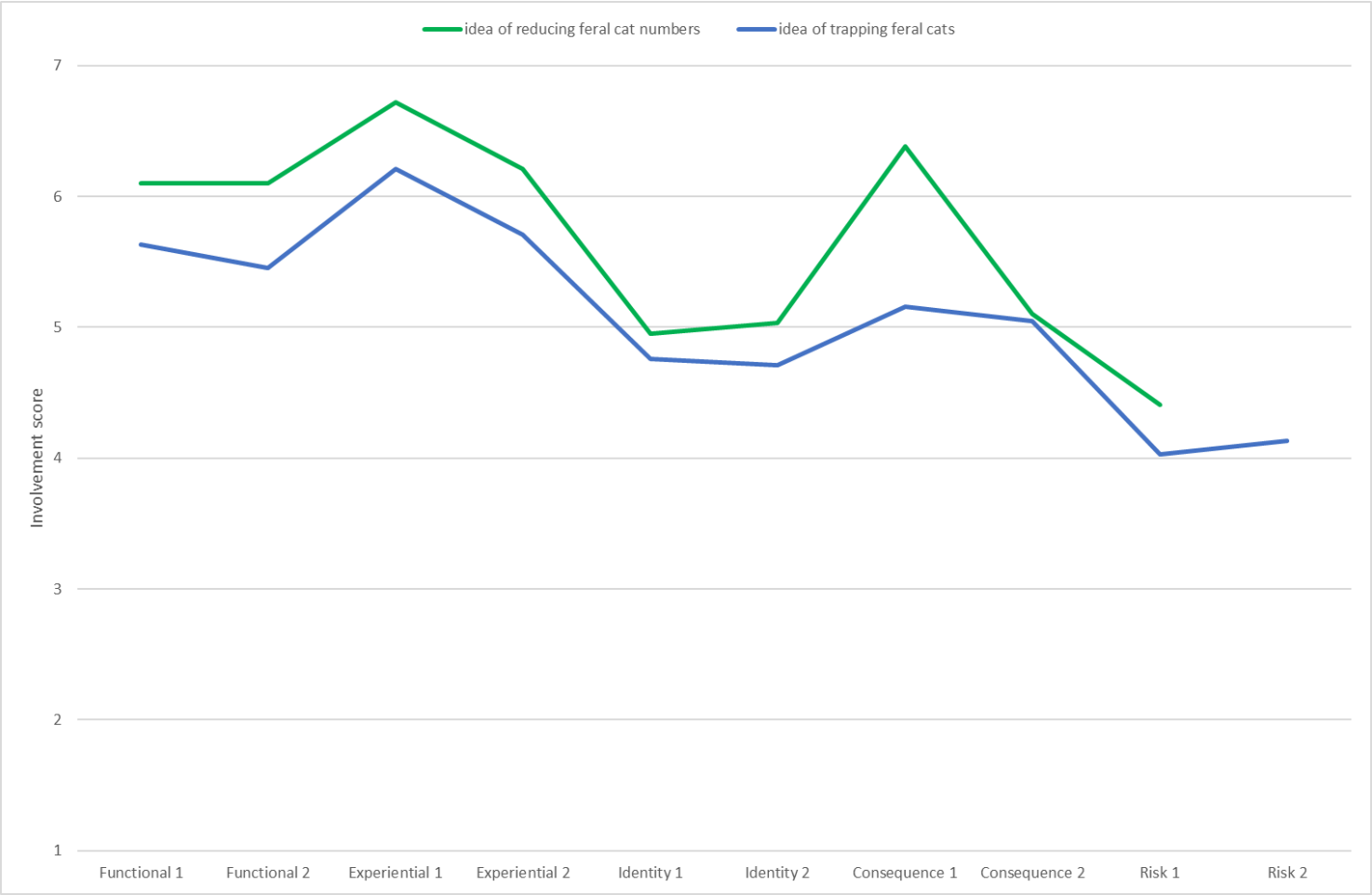


**Figure 3. Respondents' involvement profiles for the idea of reducing feral cat numbers and the idea of using traps.**
**Note: The statements concerned the importance of (functional 1) and caring about (functional 2) reducing feral cat numbers/trapping; the reward from (experiential 1) and passion about (experiential 2) reducing feral cat numbers/trapping; opinion about reducing feral cat numbers/trapping reflecting on you (identity 1) and others (identity 2) as a person; the seriousness (consequence 1) or importance (consequence 2) of consequences arising from making a mistake in relation to reducing feral cat numbers/trapping; and the complexity (risk 1) making decisions about reducing feral cat numbers/trapping or difficulty of making decisions about trapping (risk 2). Note that the second risk statement was accidentally omitted from the questionnaire with respect to reducing feral cat numbers. Complete statements are available on request from the author.**

## 4.4 Involvement, attitudes and opinions about feral cats and predator control

Following Niemiec et al. (2017), respondents answered several questions about their attitudes and beliefs regarding feral cats and predator control generally. The correlation between these variables and respondents' involvement with the idea of reducing feral cats, the idea of using traps, and their attitude towards trapping, are reported in Table 6.[5] Involvement with the idea of reducing feral cat numbers was not correlated with beliefs about:

- whether Toxoplasmosis was a major concern for the respondent
- reducing the number of feral cats in the region would provide economic benefits to the respondent, or
- reducing the number of feral cats in the region would provide economic benefits to other farmers in Hawke's Bay.

Involvement with the idea of reducing feral cat numbers was correlated with believing:

- stoats, ferrets, and feral cats pose a significant threat to native birds and other fauna in the region
- that New Zealand's native birds and other fauna were very special to the respondent
- the respondent's decisions to engage in predator control on their property in the next year would make a difference to New Zealand's native birds and fauna
- people the respondent knew cared about whether the respondent did control predators on their property, and
- New Zealand should invest more resources into predator control.

These correlations suggest that landholders' involvement with the idea of reducing feral cat numbers is unrelated to concerns about toxoplasmosis and the associated unfavourable the economic effects of feral cats. Instead, landholders' involvement with the idea of reducing feral cat numbers is mainly related to concerns about the unfavourable impact feral cats have on native birds and fauna, and whether they believe they can reduce this impact by controlling predators on their property.

Involvement with the idea of using traps to reduce feral cat numbers was only correlated with beliefs about whether stoats, ferrets, and feral cats pose a significant threat to native birds and other fauna in the region, and whether native birds and fauna were special.

[5] An analysis of differences in attitudes and beliefs across quadrants was unnecessary as nearly all the respondents were classified into quadrant 3.

**Table 6. Correlations between involvement, attitudes, and beliefs of respondents**

| | Involvement with the idea of reducing feral cat numbers | Involvement with the idea of using traps to reduce feral cat numbers | Attitude towards the idea of using traps to reduce feral cat numbers |
|---|---|---|---|
| Reducing the number of feral cats in the region will provide economic benefits to me | - | - | 0.38* |
| Reducing the number of feral cats in the region will provide economic benefits to Hawke's Bay farmers | - | - | 0.41* |
| Toxoplasmosis is not a major concern for me | - | - | - |
| Stoats, ferrets, and feral cats in the region pose a significant threat to native birds and other fauna | 0.54** | 0.39* | 0.62** |
| New Zealand's native birds and other fauna are very special to me | 0.32* | 0.32* | 0.69** |
| I often wish there were more native birds and other native fauna on or near my property | - | - | 0.54** |
| The removal of predators will allow rabbits to flourish | - | - | - |
| I am concerned about my household pets being harmed by any widespread predator control efforts | - | - | -0.32* |
| My decisions to engage in predator control on my property in the next year will make a difference to New Zealand's native birds and fauna | 0.40* | - | 0.70** |
| I don't have the time to get involved with any efforts to reduce predators | - | - | - |
| Most landholders I know are involved in predator control on their property | - | - | - |
| Many landowners in the Hawke's Bay region come to me for advice | - | - | - |
| I share information with groups of landholders who would not otherwise communicate with each other | - | - | - |
| Most people talk to each other about predator control | - | - | - |
| New Zealand should invest more resources into predator control | 0.44** | - | 0.68** |

Notes: - Correlation was not significant.

* Correlation significant $p<0.05$.

** Correlation significant $p<0.01$.

Respondents' attitudes toward the idea of using traps to reduce feral cat numbers were correlated with the following beliefs:

- Whether reducing the number of feral cats in the region would provide economic benefits to the respondent
- Whether reducing the number of feral cats in the region would provide economic benefits to Hawke's Bay farmers
- Whether stoats, ferrets, and feral cats in the region pose a significant threat to native birds and other fauna
- If New Zealand's native birds and other fauna were very special to the respondent
- The respondent often wished there were more native birds and other native fauna on or near their property
- The respondent thought their decision to engage in predator control on their property in the next year would make a difference to New Zealand's native birds and fauna, and
- Whether the respondent thought New Zealand should invest more resources into predator control.

These correlations suggest that landholders' attitudes towards using traps to reduce feral cat numbers are related to concerns about toxoplasmosis and the associated unfavourable the economic effects of feral cats as well as their concerns about the unfavourable impact feral cats have on native birds and fauna, and whether they believe they can reduce this impact by controlling predators on their property. Their attitude towards trapping was also related to their concerns about the safety of their pets.

# 5 Discussion

Bearing in mind the small sample of respondents, these results have several implications for a programme to control feral cats in rural Hawke's Bay. The first implication arises from the nature of respondents' involvement with reducing feral cat numbers and trapping, and their beliefs about the harmful effects of feral cats. The primary sources of involvement with reducing the number of feral rats were functional and experiential as well as consequential. The results suggest landholders' desire to reduce feral cat populations in or near the Cape-to-City programme area in Hawke's Bay are particularly motivated by concerns for the damaging effects of feral cats on native birds and fauna. The economic risks feral cats pose for livestock production appeared to be very much a secondary concern for landholders. Consequently, attempts to encourage participation by landholders in a programme to reduce feral cat numbers should concentrate on promoting the potential of trapping to reduce the harmful effects of feral cats on native birds and fauna.

Self-identity was not a strong source of involvement with reducing the number of feral cats or with trapping. Also, involvement with reducing the number of feral cats or with trapping was not significantly correlated with beliefs about predator control by other landholders and knowledge sharing with other landholders. This suggests attempts to

encourage participation in a programme of trapping by emphasising the participation of neighbours or friends are unlikely to be particularly successful.

The primary sources of involvement with the idea of trapping were functional, experiential, and consequential. Involvement with the idea of trapping was correlated with beliefs about the harmful effects of predators on native birds and fauna. Attitudes towards trapping feral cats were correlated with beliefs about the harmful effects of feral cats from an economic and environmental perspective. Attitudes towards trapping feral cats were also correlated with beliefs about being able to make a difference and (negatively) correlated with risks to pets. Attitudes towards trapping feral cats were not correlated with having time to engage in predator control.

This suggests that landholder participation in a programme to trap feral cats could be encouraged by emphasising the sense of achievement that accompanies success, that the efforts of individual landholders do make a difference, and that traps can be effective and safe with respect to pets.

Nearly all respondents were classified into quadrant 3. These respondents exhibited high involvement with the idea of reducing the number of feral cats using traps. The majority had a favourable attitude toward the idea of using traps. None indicated they had an unfavourable attitude towards using traps. From these results, and allowing for the small sample, we can infer that many rural landholders in or around the Cape-to-City programme area would support, and advocate for, a programme to trap feral cats in rural areas. The results also suggest a high proportion of these landholders would participate in the programme.

There is a possibility that the sample was biased towards respondents with high involvement with the idea of reducing feral cat numbers and with the idea of trapping feral cats because the questionnaire was distributed by mail. This bias would mean there could be landholders on the programme area with low involvement in these ideas. Theoretically, landholders with low involvement would be less motivated to participate in a programme to reduce feral cat numbers, would be less certain of the benefits of reducing feral cat numbers, and would be unsure about trapping feral cats. However, because of their low involvement it would be unlikely that they would strongly oppose a programme to reduce feral cat numbers by trapping and may well permit trapping on their properties provided they were not inconvenienced and could be assured of about the safety of trapping.

# 6 Conclusion

The potential for people in rural areas to contribute to predator control is of interest to Hawke's Bay Regional Council. This potential can, in principle, be tapped by using policy instruments such as education, incentives, and regulations to stimulate interest, encourage participation. and change behaviour. The potential responses of landholders to a policy of using traps to reduce the population of feral cats in Hawkes' Bay was investigated using survey questions based on Niemiec et al. (2017) and the $I_3$ Framework (Kaine et al. 2010).

Allowing for the small sample, and the possible bias in the sample, the results of the survey indicate there could be support among rural landholders for a programme of trapping to reduce feral cat populations in Hawke's Bay. This support was primarily motivated by landholders' concerns for the potential for feral cats to have damaging effects on native birds and fauna. The potential for feral cats to affect livestock operations by spreading toxoplasmosis was very much a secondary consideration for the landholders in the sample. Consequently, attempts to encourage participation by landholders in a programme of trapping feral cats should concentrate on promoting the potential of trapping to reduce harm to native birds and fauna.

Many of the landholders surveyed appeared to be highly involved with, that is, very interested in, the idea of reducing feral act numbers, and with the idea of trapping. This means landholders would be likely to participate in a trapping programme provided traps were not too expensive and or difficult to maintain.

Self-identity was not a major motivation for survey respondents to reduce the number of feral cats or to trap them. This suggests that attempts to encourage participation in a programme of trapping by emphasising the participation of neighbours or friends would be unlikely to be successful.

A survey of a larger sample of landholders, together with research using focus groups, would be worthwhile to confirm the conclusions made here concerning the motivations of the wider population of landholders and their views on the use of traps and other control methods for feral cats and other predators.

## 7 Acknowledgements

I would like to express my thanks to the survey respondents, who kindly gave their time. I would like to extend a special thanks to Ben Wiercinski and Grant Norbury for reviewing the document. Thanks also to Melissa Brignall-Theyer at Hawke's Bay Regional Council, Rebecca Niemiec at Colorado State University, and to Richard Edwards and Pippa McKelvie-Sebileau at the Eastern Institute of Technology, Napier.

This project was funded by Predator Free Hawke's Bay and Manaaki Whenua – Landcare Research.

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# Appendix

**Table A1. Reliability of involvement scales**

| | Involvement score | Reliability coefficient |
|---|---|---|
| Involvement with reducing numbers of feral cats | 5.67 | 0.76 |
| Involvement with using traps | 5.08 | 0.72 |

Notes: Involvement score is sample mean. These were significantly different ($p \leq 0.01$) using paired-sample t-test (Cooksey 1997).
Reliability coefficient is Cronbach's alpha (Carmines & Zeller 1979)

**Table A2. Involvement profiles for reducing numbers of feral cats and using traps**

| Involvement component: | Reducing numbers of feral cats | Using traps |
|---|---|---|
| Functional 1 | 6.10 | 5.63[a] |
| Functional 2 | 6.10 | 5.45[b] |
| Experiential 1 | 6.72 | 6.21[b] |
| Experiential 2 | 6.21 | 5.71[b] |
| Identity 1 | 4.95 | 4.76 |
| Identity 2 | 5.03 | 4.71 |
| Consequence 1 | 6.38 | 5.16[b] |
| Consequence 2 | 5.10 | 5.05 |
| Risk 1 | 4.41 | 4.03 |

Notes: Values are sample means.
[a] Denotes statistically significantly difference in means ($p \leq 0.05$) using paired-sample t-test (Cooksey 1997).
[b] Denotes statistically significantly difference in means ($p \leq 0.01$) using paired-sample t-test (Cooksey 1997).