Promoting Community Bushfire Preparedness:

Bridging the Theory – Practice Divide

by

Mai Frandsen

BPsych (Hons.) University of Tasmania

Submitted in fulfilment of the

requirements for the degree of Doctor of Philosophy (Psychology)

University of Tasmania, August, 2012.
Declaration of Originality

This thesis contains no material which has been accepted for a degree or diploma by the University or any other institution, except by way of background information and duly acknowledged in the thesis, and to the best of the my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, nor does the thesis contain any material that infringes copyright.

Signed:……………………………………………...            Date:……………….
Statement of Ethical Conduct

The research associated with this thesis abides by the international and Australian codes on human and animal experimentation, the guidelines by the Australian Government's Office of the Gene Technology Regulator and the rulings of the Safety, Ethics and Institutional Biosafety Committees of the University.

Signed:……………………………………………... Date:……………….

Statement of Authority of Access

This thesis may be made available for loan and limited copying and communication in accordance with the Copyright Act 1968.

Signed:……………………………………………... Date:……………….
Publications and Statement of Co-Authorship

Paper 1:


Paper 2:


Paper 3:


Paper Presented at Conference

Abstract

The present study adopts a mixed-methods action research approach to examine the validity of a model developed to predict adoption of bushfire preparedness measures, and to subsequently apply the motivational factors found in this model to develop more effective and sustainable community bushfire preparedness initiatives. The research focuses on how individual, social, and societal factors interact to influence the adoption of protective measures against bushfire hazards. The premise upon which the Social Attachment Model of Bushfire Preparedness (Model) is based argues that it is not perception of threat or information *per se* that determines action, but rather how residents interpret this in the context of experiences, beliefs, and expectations that are developed and enacted in their social environment. These influential social processes were thus integrated into the development and implementation of a fire agency community bushfire preparedness pilot. The goal of this pilot was to increase the adoption and sustainment of community bushfire preparedness behaviour.

The first component of the present study was therefore to develop and test the theoretical Model of bushfire preparedness to assess the underlying individual, social, and societal influences of preparing for bushfires. Data for this analysis were collected from questionnaires delivered to participants living in four bushfire risk areas in Tasmania, Australia (Bagdad, Binalong Bay, Fern Tree, and Snug). Findings demonstrated that individual, community, and agency components of the Model interact to influence residents’ decisions to adopt bushfire mitigation strategies.

The second component of the study utilised qualitative data obtained from telephone interviews with a sample of 34 residents living in the four target areas. Thematic analysis was used to elicit further insight into residents’ bushfire preparedness decision making processes. These data were also used to validate the Model with major findings including the significant
influence of place attachment and responsibility on residents’ decisions to prepare for bushfire.

The third component of the study involved the application of the Model to inform the development and implementation of a community bushfire preparedness program. The collaboration of the researcher with the Tasmania Fire Service’s Community Development Officer, and the trialling of the Bushfire Ready Communities Tasmania Pilot (Pilot), provided an opportunity to conduct action research to determine how the Model findings could be practically applied to a bushfire preparedness promoting community initiative. This action research therefore bridges the theory-practice divide that commonly plagues hazards research.

The efficacy of the Pilot, and the value of the applied model findings, was evaluated by collecting data from feedback surveys, focus groups, and interviews with participating residents. Longitudinal qualitative data obtained from re-interviewing the original 34 participants following their participation (or not) in the Pilot activities, provided data on the long-term benefits and sustainability of its initiatives.

The findings indicate that developing community bushfire preparedness programs based on community engagement and empowerment principles results in more effective, sustainable, and economical ways of delivering preparedness education to communities. By utilising a community engagement approach, residents were more receptive of bushfire protective information and more likely to adopt these measures as information provided was more specific and contextualised, and communicated in a manner eliciting ‘shared responsibility’.

Overall, the findings indicate that the conceptual Social Attachment Model of Bushfire Preparedness can be successfully applied to develop and implement more effective
community bushfire preparedness initiatives. These findings have important implications for emergency management agencies who wish to employ more effective community engagement strategies, and for communities themselves who aspire to increase the collective bushfire preparedness of their communities.

The thesis concludes with the caveat that for positive outcomes of these community engagement programs to be realised, fire agencies need to first realise the potential of community engagement principles to foster community bushfire preparedness, ensure that these messages filter down to their volunteer fire brigades (who represent the front line of this ‘dual process community engagement approach’), and provide support and training to the volunteer fire fighters to ensure that the effective implementation and sustainment of these initiatives are achieved. If these feats are realised, community bushfire preparedness, fostered through the reciprocal and complementary relationship between the community and the fire agency, will ensure that these measures are sustained and resilience to future hazards promoted.
Acknowledgements

Over the last three and a half years so many people have influenced, inspired, and supported me in completing this PhD journey.

This journey however, would never have been possible if it were not for the belief and support of my supervisor, Douglas Paton. Not only did his guidance make my PhD experience relatively pain free and arguably enjoyable, but through his mentoring I feel I have developed into a self-confident, capable, and independent researcher and individual. Thank you for this empowering opportunity.

Thank you must also go to the Bushfire CRC for the financial support which made this research possible.

To my secondary supervisor Kimberley Norris, I watched you go through your own PhD journey and you therefore became somewhat of a role model for me. Thank you for setting a high standard, being a sounding board, for your advice, and your support.

To the School of Psychology staff, and especially those in Launceston: Thanks Greg for your dad jokes and sometimes more serious advice; Mathew for telling me what I didn’t always want to hear; Pete for letting me vent and then telling me to get on with it; and Anthea, for getting stuff done, and making sure I got stuff done, for the last 7 years. Thank you.

To my fellow postgrads: Too many to individually mention but to everyone who helped me procrastinate, provide an excuse to make and eat cake and drink coffee, this journey was made that much more enjoyable and ‘do-able’ because of your candid advice, support, and presence. Thank you especially to Shannon in the latter half of this journey, for being a fantastic friend, and my ‘Annexe mates’ Suez, Brad, Quinny, Jason, and Mel, at the start.

To the residents who participated in this study: Thank you not only for filling out surveys, talking for hours with me on the phone, and for inviting me into your communities; but thank you for your motivation, inspiration, and often friendship. This thesis is dedicated to you.

To Kerry: This research would not have been completed or as enjoyable without you. I miss our trips to beautiful Binalong Bay, our ‘meetings’ at Jackman and McRoss, and your warm and sincere friendship. Thank you so much for being a part of this journey.

Finally to my family and friends for putting up with me, keeping me grounded, and supporting me through, they would say, a stupidly big assignment. Thank you for asking me ‘have you finished yet?’, not waiting for the answer and then passing me a glass of wine (or three) at our regular ‘communals’.

And to Alex, without whom I would not have had the courage to start, continue, or complete this journey. Without you, and later our pride and joy Targa Farm, I would have gone ‘insane in the mind’. Thank you for always believing in me, supporting me, and being in my life.

Jeg elsker dig.
Table of Contents

Declaration of Originality ........................................................................................................ ii
Statement of Ethical Conduct .................................................................................................. iii
Statement of Authority of Access ............................................................................................. iii
Publications and Statement of Co-Authorship........................................................................ iv
Abstract .......................................................................................................................................... v
Acknowledgements ................................................................................................................... viii
Table of Contents ....................................................................................................................... ix
List of Tables ............................................................................................................................... xiv
List of Figures .............................................................................................................................. xvi

Chapter One ................................................................................................................................. 1
  1.1 Statement of the Problem and Aims of the Present Study ................................................... 5
  1.2 Overview of the Study ......................................................................................................... 9

Chapter Two – Background ......................................................................................................... 14
  2.1 Bushfires and the Tasmanian Context ............................................................................ 14
  2.2 Present and Predicted Bushfire Risk to Tasmania ............................................................. 17
  2.3 What to Expect in a Bushfire ......................................................................................... 20
  2.4 Bushfire Alerts and Fire Danger Ratings .................................................................... 24
  2.5 Preparing for Bushfire ................................................................................................. 27
    2.5.1 Planning .................................................................................................................. 29
    2.5.2 Property maintenance ............................................................................................ 30
    2.5.3 Fire fighting equipment .......................................................................................... 31
    2.5.4 Structural ................................................................................................................ 31
    2.5.5 Survival .................................................................................................................... 32
    2.5.6 Community ............................................................................................................. 33
    2.5.7 When bushfire threatens ........................................................................................ 37
    2.5.8 Diversity of preparing for bushfires ....................................................................... 39
2.6 Why Do People Not Adopt Protective Measures? ..............................................41
  2.6.1 Interpretive influencers of preparedness adoption ....................................42
  2.6.2 Why traditional means of promoting preparedness do not work ..........46
  2.6.3 The complexity and uncertainty associated with bushfires.......................48

Chapter Three – The Social Cognitive Context of Bushfire Preparedness.............51
  3.1 Social Cognitive Models to Explain Preparedness Decision Making ...............51
    3.1.1 Attachment to ‘place’ .................................................................................60
  3.2 Place and Bushfire Preparedness: Developing a New Conceptualisation ..........65
    3.2.1 Individual factors .......................................................................................66
    3.2.2 Community factors ....................................................................................71
    3.2.3 Societal factors ............................................................................................75
  3.3 Bridging the Theory-Practice Divide ..............................................................84
    3.3.1 Principles of community engagement .......................................................84
    3.3.2 Australian fire agencies’ ‘community engagement’ examples ..................86
    3.3.3 The TFS’s past and present education strategies ........................................90

Chapter Four – General Methodology .................................................................96
  4.1 Introduction ....................................................................................................96
  4.2 Action Research .............................................................................................98
  4.3 Mixed-Method Approach ..............................................................................99
    4.3.1 Quantitative methods ...............................................................................101
    4.3.2 Qualitative methods ...............................................................................102

Chapter Five – Assessing Bushfire Preparedness ...............................................112
  5.1 Introduction ..................................................................................................112
  5.2 Methods .......................................................................................................112
    5.2.1 Participants ..............................................................................................112
    5.2.2 Materials .................................................................................................117
    5.2.3 Procedure ...............................................................................................130
Chapter Six – Modeling Bushfire Preparedness ........................................ 139

6.1 Introduction ......................................................................................... 139

6.2 Method................................................................................................. 141

6.2.1 Data, missing data, and sample size .................................................. 141

6.2.2 Outliers .......................................................................................... 142

6.2.3 Assumptions of normality, linearity, and homoscedasticity .............. 143

6.2.4 Multicollinearity .............................................................................. 143

6.2.5 Goodness-of-fit indices .................................................................... 145

6.3 Results ................................................................................................. 148

6.3.1 The measurement model ................................................................. 148

6.3.2 The structural model ....................................................................... 151

6.3.3 The revised model ........................................................................... 152

6.4 Discussion ............................................................................................ 154

6.4.1 Place attachment ............................................................................. 156

6.4.2 Outcome expectancies .................................................................... 158

6.4.3 Psychological sense of community and community involvement .... 161

6.4.4 Responsibility .................................................................................. 164

6.4.5 Empowerment ................................................................................ 166

6.4.6 Intention to prepare and actually preparing for bushfires .............. 167

Chapter Seven - Individual and Community Differences in Bushfire Preparedness .......... 169

7.1 Exploring Individual and Community Differences ............................ 169

7.1.1 ANOVA results of sub-group comparisons ..................................... 172
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2</td>
<td>Discussion</td>
<td>180</td>
</tr>
<tr>
<td>7.2.1</td>
<td>Localities and preparedness</td>
<td>180</td>
</tr>
<tr>
<td>7.2.2</td>
<td>Previous experience and preparedness</td>
<td>181</td>
</tr>
<tr>
<td>7.2.3</td>
<td>Others’ bushfire preparedness and own preparedness</td>
<td>184</td>
</tr>
<tr>
<td>7.2.4</td>
<td>Gender, ‘leaving early’, and preparedness</td>
<td>185</td>
</tr>
<tr>
<td>Chapter Eight</td>
<td>Exploring the Factors that Promote Bushfire Preparedness</td>
<td>189</td>
</tr>
<tr>
<td>8.1</td>
<td>Introduction</td>
<td>189</td>
</tr>
<tr>
<td>8.2</td>
<td>Method</td>
<td>189</td>
</tr>
<tr>
<td>8.2.1</td>
<td>Recruitment</td>
<td>189</td>
</tr>
<tr>
<td>8.2.2</td>
<td>Interview procedure</td>
<td>191</td>
</tr>
<tr>
<td>8.3</td>
<td>Results of Interview Data</td>
<td>192</td>
</tr>
<tr>
<td>8.3.1</td>
<td>Individual/cognitive factors influencing preparedness</td>
<td>193</td>
</tr>
<tr>
<td>8.3.2</td>
<td>Social/community factors</td>
<td>219</td>
</tr>
<tr>
<td>8.3.3</td>
<td>Salient themes from community/agency interaction</td>
<td>232</td>
</tr>
<tr>
<td>8.4</td>
<td>Revisiting Types of Community</td>
<td>252</td>
</tr>
<tr>
<td>Chapter Nine</td>
<td>Application of Theory to Practice through Action Research</td>
<td>261</td>
</tr>
<tr>
<td>9.1</td>
<td>The TFS and University of Tasmania Collaboration</td>
<td>261</td>
</tr>
<tr>
<td>9.2</td>
<td>The TFS Bushfire Ready Communities Tasmania Pilot</td>
<td>262</td>
</tr>
<tr>
<td>9.2.1</td>
<td>Target areas</td>
<td>263</td>
</tr>
<tr>
<td>9.2.2</td>
<td>Consultation</td>
<td>264</td>
</tr>
<tr>
<td>9.2.3</td>
<td>Phase 1 community engagement</td>
<td>269</td>
</tr>
<tr>
<td>9.2.4</td>
<td>Disparity between volunteer fire brigade and residents’ beliefs</td>
<td>274</td>
</tr>
<tr>
<td>9.2.5</td>
<td>Phase 2 community engagement</td>
<td>278</td>
</tr>
<tr>
<td>Chapter Ten</td>
<td>Targeting Women’s Bushfire Preparedness</td>
<td>295</td>
</tr>
<tr>
<td>10.1</td>
<td>Rationale</td>
<td>295</td>
</tr>
<tr>
<td>10.2</td>
<td>Approach</td>
<td>296</td>
</tr>
<tr>
<td>10.2.1</td>
<td>Developing the Women’s Bushfire Preparedness Workshop</td>
<td>297</td>
</tr>
</tbody>
</table>
10.2.2 Morning tea........................................................................................................299
10.2.3 Women’s Bushfire Workshop - Findings.......................................................305
10.2.4 Discussion.......................................................................................................307
10.2.5 Further developments ....................................................................................308

Chapter Eleven - Longitudinal Study Component: Follow-up Telephone Interviews ......309
11.1 Individual and Community Preparedness Change as Result of Pilot ...............309
11.2 Barriers to Preparing Affecting Even the Prepared ........................................317

Chapter Twelve - When Relationships Do Not Foster Empowerment......................321
12.1 Fire Agencies and Communities .......................................................................321
12.2 Other Agencies and Communities .....................................................................334

Chapter Thirteen – General Discussion ....................................................................339
13.1 New Conceptual Social Attachment Model.......................................................343
13.1.1 Place attachment ...........................................................................................346
13.1.2 The individual/community interface ..............................................................350
13.1.3 The community/agency interface .................................................................353
13.2 Bridging the Theory – Practice Divide: The Pilot ............................................355
13.3 “Cotton-wool Culture” Disempowering Communities .......................................359
13.4 Implications and Recommendations ...............................................................363
13.4.1 Agency transition to community engagement ...............................................363
13.4.2 All-hazard approach to preparing ...............................................................366
13.5 Limitations of the Present Study and Directions for Future Research ...............369

Chapter Fourteen – Concluding Remarks ..................................................................376

References ................................................................................................................379

Appendices .................................................................................................................402