

Understanding the Factors that Influence Resilience in a Cyclone Prone Population

M.D Scovell, C.J McShane & A.L Swinbourne

College of Healthcare Sciences, James Cook University (Townsville);
HABITT (Health and Behaviour Change in the Tropics Research Group)



Introduction: Research in the field of climate change has identified that the severity of extreme weather events is likely to increase. As these events can have detrimental effects to both physical and mental health, it is important to understand the factors that promote resilience. Past research suggests that social resilience to hazards encompasses both the avoidance of losses (through preparation) and the ability to recover with minimal social disruptions if disaster occurs. The purpose of this research was to identify the psychosocial factors that influence social resilience in a high risk population in North Queensland.

Methods: Participants (n=356) living in Townsville (n=309) and Cairns (n=47) were recruited via social media to participate in a questionnaire. The questionnaire assessed variables including: age, homeownership, social capital, self-efficacy, preparedness, resilience, psychological distress. Hierarchical multiple regressions were used to identify factors that predicted preparedness and individual level resilience.

Results: No significant relationship was found between preparedness and psychological resilience. However, it was found that self-efficacy (although not related to preparedness) was correlated to both resilience and psychological distress and was the strongest predictor in the multiple regression model.

Conclusions: These results suggest that in populations where weather threats are relatively severe and common, different factors influence different components of social resilience. As high risk populations are usually more prepared (through experience) there should be a separation of focus between preparing for the event and preparing for the outcome. This study suggests that preparing for the outcome (promoting individual resilience) may be facilitated by increasing self-efficacy, locus of control and decreasing psychological distress.

Background

Social Resilience

The ability to survive and cope with the consequence of a disaster². Includes both **reducing or avoiding losses** and **recovering with minimal social disruptions**^{4,11,20}.

Self-Efficacy

Perceived ability to perform tasks, activities and behaviours¹. Promotes both psychological resilience and preparedness behaviour^{13,14}.

Social Capital

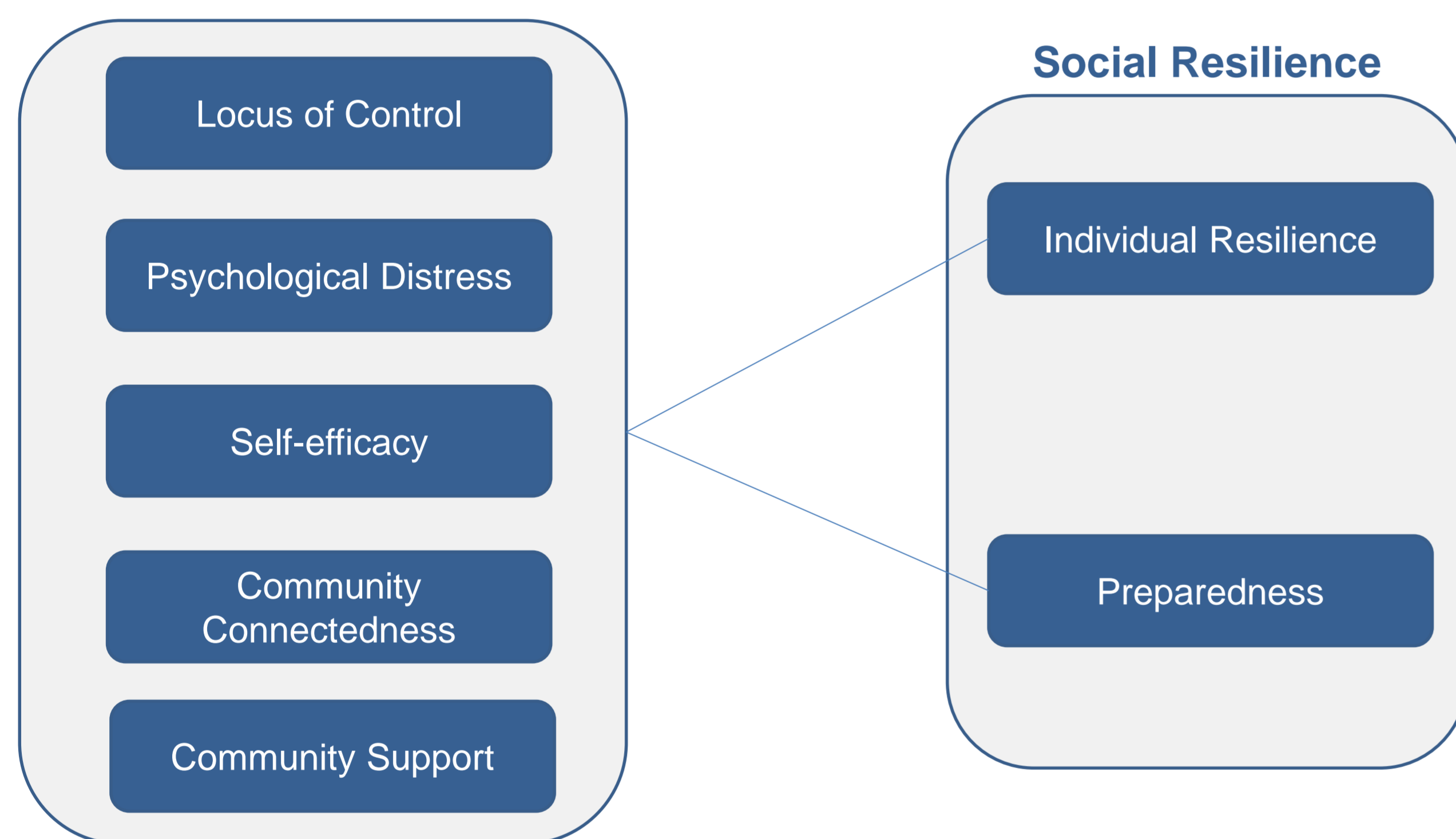
Social connectedness is important for both preparedness⁹ and resilience¹⁵.
Social support also predicts psychological resilience³.

Psychological distress

Absence of psychopathologies is important for resilience⁷.

Locus of Control

Perceived ability to control events and outcomes predicts level of cyclone preparedness¹⁷.



Adapted from Paton and Johnston (2001) & Sattler, Kaiser, and Hittner (2000)

Method

Participants from the Townsville (n=309) and Cairns (n=47) regions were recruited through social media and student recruitment software.

Participants responded to a questionnaire measuring preparedness behaviour¹⁶, psychological resilience¹⁸, self-efficacy⁶, social connectedness^{12,20}, social support⁵, locus of control¹⁰ and psychological distress⁸.

Age (years)		Sex		Total
Range	Mean	Male	Female	
17 - 71	27.56 (SD = 11.57)	105	251	356

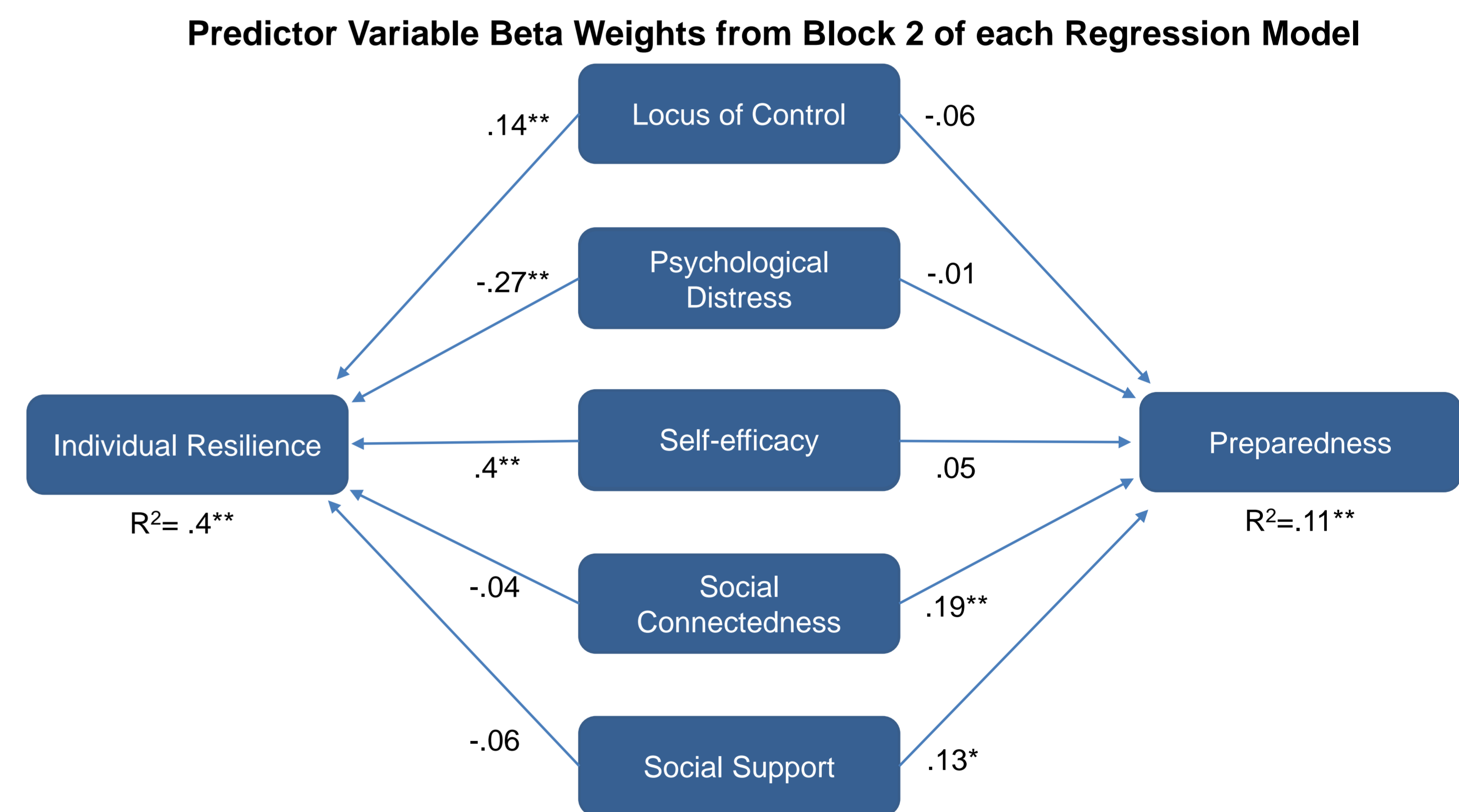
Results

Non-significant correlation between preparedness and individual resilience

Two separate hierarchical multiple regression analyses for each dependent variable.

Block 1: Age, sex and home ownership

Block 2: Proposed model variables



*p<0.05, **p<0.01

Discussion

Preparedness and individual resilience were unrelated constructs in a North Queensland sample.

Different predictor variables for both individual resilience and preparedness. Social factors predicted preparedness whereas individual factors predicted individual resilience.

Feeling socially supported and connected to the community was associated with increased individual preparedness.

Perceived ability to control outcomes and perform tasks effectively predicted individual resilience. Feeling psychologically distressed was associated with less individual resilience.

Low predicted variability in the preparedness model likely due to a relatively high level of preparedness in the North Queensland region. A region that is experienced with similar threats.

Future research should construct a measure of individual resilience for use with cyclone prone populations.

Important to differentiate between pre-event preparedness and outcome preparedness to promote holistic social resilience.

Implications for Risk Reduction

Tailor messages to promote preparedness and recovery independently

Encourage social connectedness and support for preparedness

Increasing individual levels of self-efficacy and locus of control, while keeping psychological distress low, should improve the recovery process

- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health, 13*, 623-649.
- Berke, P. R., & Campanella, T. J. (2006). Planning for Postdisaster Resiliency. *The ANNALS of the American Academy of Political and Social Science, 604*(1), 192-207. doi:10.1177/0002716205285533
- Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *Journal of Consulting and Clinical Psychology, 75*(5), 671-682. doi:10.1037/0022-006X.75.5.671
- Buckle, P., Mars, G., & Smale, S. (2000). New approaches to assessing vulnerability and resilience. *Australian Journal of Emergency Management, The, 15*(2), 8.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267.
- Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a new general self-efficacy scale. *Organizational Research Methods, 4*(1), 62-83.
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change, 18*(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., ... Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*(6), 959-976.
- Kim, Y.-C., & Kang, J. (2010). Communication, neighbourhood belonging and household hurricane preparedness. *Disasters, 34*(2), 470-488. doi:10.1111/j.1467-7717.2009.01138.x
- Levenson, H. (1981). Differentiating among internality, powerful others, and chance. In H. M. Lefcourt (Ed.), *Research with the locus of control construct* (Vol. 1, pp. 15-63). New York: Academic Press.
- Manyena, S. B. (2006). The concept of resilience revisited. *Disasters, 30*(4), 433-450. doi:10.1111/j.0361-3666.2006.00331.x
- Ouyes, J., & Bullen, P. (2000). Sources of social capital. In I. Witter (Ed.), *Social Capital and Public Policy in Australia* (pp. 105-135). Melbourne: Australian Institute of Family Studies.
- Paton, D., & Johnston, D. (2001). Disasters and communities: vulnerability, resilience and preparedness. *Disaster Prevention and Management: An International Journal, 10*(4), 270-277. doi:10.1108/EUM000000005990
- Poussin, J. K., Wouter Botzen, W. J., & Aerts, J. C. J. H. (2015). Effectiveness of flood damage mitigation measures: Empirical evidence from French flood disasters. *Global Environmental Change, 31*, 74-84. doi:10.1016/j.gloenvcha.2014.12.007
- Reich, J. W. (2006). Three psychological principles of resilience in natural disasters. *Disaster Prevention and Management: An International Journal, 15*(5), 793-798. doi:10.1108/09653560610712739
- Queensland Government. (2011). *Be Prepared for Disasters*. Retrieved 20 March 2013, from <http://www.qld.gov.au/emergency/dealing-disasters/disaster-prepare.html>
- Sattler, D. N., Kaiser, C. F., & Hittner, J. B. (2000). Disaster Preparedness: Relationships Among Prior Experience, Personal Characteristics, and Distress. *Journal of Applied Social Psychology, 30*(7), 1396-1420. doi:10.1111/j.1559-1816.2000.tb02527.x
- Smith, B., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine, 15*(3), 194-200. doi:10.1080/10705500802229272
- Tierney, K., & Bruneau, M. (2007). Conceptualizing and measuring resilience: A key to disaster loss reduction. *TR News*(250), 14-17.
- Woodhouse, A. (2006). Social capital and economic development in regional Australia: A case study. *Journal of Rural Studies, 22*(1), 83-94.

