

# Psychosocial and communication variables involved in mediating the individual experience of older adults following a severe weather event

interactive stressors, which intertwine to make them uniquely vulnerable to significant short and long-term adverse effects. This current article provides a brief introduction to the current literature in this area and highlights a gap in the research relating to communication tools during and after severe weather events.

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## Abstract

The recent floods in south-east Queensland have focused policy, academic and community attention on the challenges associated with severe weather events (SWE), specifically pre-disaster preparation, disaster-response and post-disaster community resilience. Financially, the cost of SWE was \$9 billion in the 2011 Australian Federal Budget (Swan 2011); psychologically and emotionally, the impact on individual mental health and community wellbeing is also significant but more difficult to quantify. However, recent estimates suggest that as many as *one in five* will subsequently experience major emotional distress (Bonanno et al. 2010).

With climate change predicted to increase the frequency and intensity of a wide range of SWE in Australia (Garnaut 2011; The Climate Institute 2011), there is an *urgent and critical need to ensure that the unique psychological and social needs of more vulnerable community members* - such as older residents - are better understood and integrated into disaster preparedness and response policy, planning and protocols. Navigating the complex dynamics of SWE can be particularly challenging for older adults and their disaster experience is frequently magnified by a wide array of cumulative and

## Introduction

Current forecasts for Australian climate change suggest a morbid future of rising oceans, biodiversity loss, water shortages, prolonged droughts and floods in many regions (Bindiff et al. 2007; Eby & Montenegro 2009; Higgins & Vellinga 2004). Various reports predict that the Australian continent will face a adverse greenhouse changes more rapidly than many other world regions. (Earth Observatory NASA 2007). It is predicted that parts of the east coast of Australia will become wetter and at increased risk of severe weather events (SWE) (Climate Change in Australia 2010). Some such weather Events can strike quickly magnifying the harm that is caused. These factors have combined to make the psychological consequences difficult to assess. (Bonanno et al. 2010). Such hurdles have presented a literature that cannot provide a consistent and entirely accurate account of such psychological outcomes (Bonanno et al. 2010). It is important to recognize that the severity of impacts is due not solely to extreme weather or SWE, but rather to the interaction between human systems, communication systems and these events (Doherty & Clayton 2011).

The author has completed a review of the key literature relevant to older adults experiences of severe weather events and communication strategies/tools which have impacted on their experiences. The review is brief in nature, designed to highlight the gaps in the current severe weather event and communications literature. Further research which is currently being undertaken by the author will seek to close this research gap and utilise practical strategies and proactive guidelines to assist older adults, government agencies and aid/support networks to prepare for, and subsequently manage, severe weather events.

## Brisbane Floods

In January 2011, the state of Queensland was devastated by the second highest flood of the last 100 years; an event that forced the evacuation of thousands of people from over 70 towns and cities (Apelt 2011). There was major flooding through most of the Brisbane River catchment areas. Flooding was most severely in the Locker and Bremer catchments where numerous flood height records were set and three quarters of the state was declared a disaster zone (Apelt 2011). The Brisbane City Council (and other organizations such as Red Cross, Bureau of Meteorology, Queensland Police Service) endeavoured to communicate with those affected, both before, and

after, the floods (via media, community service announcements, newsletters, SMS, Facebook, Twitter and advertising). However, the affects on the population were widespread and the burden fell most heavily on the most vulnerable. (Brisbane City Council 2011).

## Vulnerable Populations – Older Adults

Vulnerability can be defined as the ability of a person or group to anticipate, cope with, resist and recover from the impact of a natural hazard (Tuohy & Stephens 2011). The World Health Organisation (WHO) has identified older adults as a vulnerable population who are more likely to be at a greater risk during a disaster (Ardalan et al. 2009). Their high vulnerability has been related to personality characteristics which may increase their susceptibility to the impact of SWE such as: having chronic illnesses that need specific treatment interventions; changes in sensory and organ function, difficulties in adapting to and coping with exposure to heat, cold, sunlight, dampness and bad weather; slower reaction times; psychosocial issues specific to older age like transition; loss and difficulties seeking assistance (Ardalan et al. 2009). Research suggests that there is a negative correlation between the age of adult victims and the disaster recovery process (Quarantelli 1993) and that older adults experience higher mortality and morbidity rates than the rest of the population during a disaster (Cutter et al. 2003). Statistics from recent disasters support these findings: studies of Hurricane Katrina demonstrated disproportionately poorer outcomes for older adults (Fussell 2006); the Aceh (Indonesia) tsunami in 2004 recorded the highest death rates for those over 60 years (Tuohy & Stephens 2011) and the death rate was highest for those over 70 years during the Paris heat wave in 2003 (Tuohy & Stephens 2011).

Recently, Bonanno and colleagues (2010) called for more research into the age-specific needs and vulnerabilities of older adults during SWE and for further serious consideration of communication tools in disaster policy development. Also driving the need for research into older adults' experiences of SWE are two broad social issues: the increasing concern over climate change and weather extremes in the 21<sup>st</sup> century and the growing demographic of older adults (aged 65 years and above). In Australia, the same age demographic is predicted to increase by an average of 3.5% to 4 million by the year 2022 (ABS 2011). The increasing ageing demographic in the western world and Australia means a greater proportion of those over 65 years will experience disaster situations, which will occur with greater frequency than in the past (Cutter & Emrich 2005).

## Outcome Variables

Long-term studies of disaster populations suggest that people exposed to SWE can display a myriad of psychological difficulties including: PTSD, grief, depression, dysthymia, phobias, anxiety, substance abuse, suicidal ideation, along with profound personality changes and increased physical morbidity (Bonanno et al. 2010). The majority of published studies on SWE have focused on trauma reactions, most typically PTSD (McFarlane et al. 2009) and as a result, there has been restricted investigation of other patterns of outcome, such as what individual and social factors may lead to patterns of healthy adjustment or resilience.

An individual's reaction to a Severe Weather Event depends on a combination of social and individual and resilience variables such as: previous physical/mental health, attribution styles, whether severe weather victims have chronic illnesses that need specific treatment interventions, difficulties in adapting to and coping with exposure (to heat, cold, sunlight, dampness and bad weather); slower reaction times, psychosocial issues specific to older age like transition, loss and difficulties seeking assistance (Ardalan et al. 2009). Research also suggests that social factors such as class, gender, ethnicity, socio-economic status (SES) and age can contribute to increasing both individual and community potential for adverse outcomes after a natural disaster (Bankoff et al. 2004). Severe Weather Event outcomes depend on a combination of social and individual risk and resilience variables, including, the context in which the SWE occurs, the proximal exposure to the SWE and exposure to the SWE's aftermath. Multivariate studies indicate that there is no one single dominant predictor of SWE outcomes, with most variables exerting a small to moderate effect, and it is the combination or additive total of risk and resilience factors that inform SWE outcome (Bonanno et al. 2010). Thus, an understanding of disasters as a social phenomena includes both personal and social vulnerabilities within the realm of the social system as a whole.

## Social Support

A well-studied contextual variable in SWE research pertains to the support survivors experience before, during and after the event. Support may come in the form of emotional reassurance, tangible products, instrumental help with the immediate tasks of daily living, or the provision of necessary information (Kaniasty & Norris, 2009). One of the most noteworthy directions to emerge from the research in this area is the distinction between that of actual support provided, or *received support*, and the subjective experience of being

supported, or *perceived support*. The literature has consistently positively associated *perceived support* with better post event adjustment (Bonanno et al. 2005; Norris & Kaniasty 1996). Importantly, several studies have linked *perceived social support* with resilience after a disaster, even after controlling for potentially confounding demographic and predictor variables (Kaniasty & Norris 2009).

The receipt of social support is an important factor in maintaining psychological well-being following exposure to flood events. Research has shown older adults with higher levels of social support experience lower levels of depressive symptoms following exposure to flooding (Tyler & Hoyt 2000). It is important to note that the very nature of flooding disasters can influence the availability of support in either positive or negative directions (Freedy et al. 1993). A possible negative factor relating to disasters is that a person's entire support network (friends, family, health professionals) may experience impact. This means that, during SWE the persons who are typically sources of support for older adults may themselves be in need of support. (Tyler 2006). Currently in Australia, and other western cultures, "positive ageing" challenging ageing stereotypes around dependency and cognitive and physical decline (Tuohy 2009). In the context of older adults living independently within the community, identifying and providing them with relevant information and support, before, during and after a SWE may be compromised as their connection to the community is reduced (Tuohy 2009) and therefore, access to vital information may be cut.

The mental health effects of surviving SWE and the breakdown of an individual community has particular significance to older Australians who are relatively more dependent on social systems (Saniotis & Irvine 2010). The reduction of social support for older adults places this population group at an increased risk of not receiving information regarding possible disasters. Social networks can also become diminished due to illness, death of friends, family and other support people and lack of accessibility (Tyler 2006). Additionally, not only do older adults tend to have fewer support networks, but they may tend to rely more on people from their outer circle (such as GP's, support workers and Psychologists), rather than close friends and family (Tyler 2006). However, social communications which utilise social media (such as social networking sites), are growing (Bunce, Sharon, Partidge, Helen & Davis 2012) as a means for providing additional support, often through the dissemination of critical information between family, friends and aid organisations (Queensland Police Service, Red Cross, LifeLine). The importance of social support and communication preferences of older adults cannot be minimized, particularly in the face of a SWE. The

author of this current paper is currently undertaking further research in this area.

### **Risk Communication**

The ultimate goal of risk communication is to motivate individuals to take appropriate action to avoiding an impending threat. Social media has become a powerful tool in the sharing of information during natural disasters, with the Brisbane 2011 floods providing a unique opportunity to explore this information dissemination tool (Bunce Partridge & Davis 2012). A pilot study conducted by Bunce and colleagues (2012) explored the experiences of four Brisbane residents who used social media during the 2011 Brisbane floods. This research suggested four main categories (or types) of information use; Monitoring information (ongoing monitoring of the news for the purpose of staying informed); Community and communication (communication with individuals or organisations in matters relating to the flood event); Affirmation (the seeking of assurance/affirmation e.g., safety and location of family or property); and Awareness (developing or expansion of individual awareness of the flood event). This pilot study also identified the variation of social media requirements during different stages of the flood crisis. Unfortunately, few studies have explored the most effective way to communicate risk to the elderly.

Furthermore, Saniotis and Irvine (2010) have called for more research into the impact of social communication networks (and forms of media) on the mental health of older Australians before, during and after a SWE. Mass media and the way in which SWE information is disseminated can be a significant mediator or moderator of responses to SWE (Doherty & Clayton 2011). Particular research attention has been placed on the social context (face-to-face networks and mass communication) and the way these affect access to information, framing of that information, and vulnerability in response to that information (Doherty & Clayton 2011). Due to the ever expanding communication network and social media, the internet has become a predominant means of communication among survivors, experts, volunteers and agencies (Doherty & Clayton 2011). Personal characteristics and age will also affect the amount and type of information an individual will seek out, which is particularly relevant when reviewing the way SWE information is communicated with older adults. Research suggests that older adults generally collect their information from television news programs, radio stations or newspapers. Unfortunately, the majority of these information channels can be severed during a SWE, specifically during the

2011 Brisbane floods, (with the exception of an essential continuous emergency service on radio provided by the national broadcaster, ABC) . This lack of communication can lead to a sense of loss and confusion and can significantly hinder the immediate recovery process. However, when available the media and other mass communication methods can also moderate the response to a SWE, for example, by encouraging people to seek assistance and counseling services, and providing information on how to access these services (Doherty & Clayton 2011).

### **Previous research on older adults experience of floods**

Only a small handful of studies have explicitly explored older adults' experience of floods. The reality is that despite older adults' ability to remain independent and cope in everyday situations, a SWE may push them over their coping threshold, making them at risk of becoming more vulnerable to the disaster (Tuohy & Stephens 2011). In addition, older adults living independently in the community may not be as easily identifiable as needing assistance because they are not as visible as a rest home/hospital population, yet their connection to the community is reduced (Tuohy 2009). For example, in exploring older adults experience of Niigata (Japan) floods of 2004, Tamura, Hayashi and Kimura (2005) found many older adults were unaware of the evacuation warnings issued and were unprepared for rapidly rising flood waters. There had been an assumption that residents of their community would manage to self evacuate because older adults living alone were presumed to be self sufficient and able to access critical evacuation information during the disaster. Unfortunately, this community expectation of independence placed older adults in a more socially vulnerable position than anticipated, as 12 of the older people who died in the Niigata floods needed assistance with walking.

### **USA Midwest Floods**

A study by Tyler and Hoyt (2000) used longitudinal data to examine the potential moderating effects of social support and age amongst older adults exposed to the Midwest floods, utilising a sample of 651 older adults from the Iowa Health Poll (statewide mental and physical health survey). This poll was administered (coincidentally) six months prior to one of the worst floods in Iowa's history, and approximately 60 days after the peak floods, participants were re-contacted and data recollected. Results indicated a negative association between social support and post-flood depression. Even

after controlling for prior levels of depression, there was a positive association between flood exposure and post-flood depression in the 55 to 69 year age group. Notably, the flooding that these older adults experienced was not as severe as the Brisbane floods.

### **Kaitaia (New Zealand) Floods**

In an attempt to understand how older adults made sense of the 2007 Kaitaia floods in New Zealand, nine older adults (half living in a rest home; half living independently in the community) were interviewed about their experiences (Tuohy 2009). All were aged in their late 60s or older and had been evacuated from their homes because of rising flood waters. The interviews used open-ended questions that focused on the narratives (the story) of each individual's experience of the flood, then evacuation and the aftermath (e.g., *"Tell me about your experience of the floods"*, *"Tell me what happened the night you were evacuated"*, *"Tell me what has happened since the evacuation"* and *"[tell me about] social networks after the flood"*). A thematic analysis revealed a difference as a function of residence: independent living older adults spoke about coping with limited assistance, communication breakdowns, the importance of treasured possessions, social support and the community; whereas rest home residents highlighted ageing and dependency, communication breakdowns and the importance of protection, care and trust.

### **Hurricane Katrina (New Orleans)**

The greatest mortality during and immediately after the 2005 hurricane and subsequent flooding was among the elderly (Adams et al. 2011). Those aged over 60 years (15% of the New Orleans population at the time) accounted for approximately 75% of the bodies found immediately after. In the year following Hurricane Katrina, the health of survivors aged 65 years and over declined nearly four times that of a national sample of older adults not affected by the disaster (Burton et al. 2009). However, those who did survive beyond the first year reported coping with the long term disaster aftermath better than the generation below them (Adams et al. 2011). Data from a multi-year qualitative study by Adams and colleagues (2011) suggest differences in how older adults cope with SWE. At the time of the disaster, older adults of New Orleans were at greater risk than other groups, with Adams and colleagues (2001) suggesting that the high mortality rates can be

attributed to several factors, including lack of evacuation facilities, difficult evacuation options, and isolation.

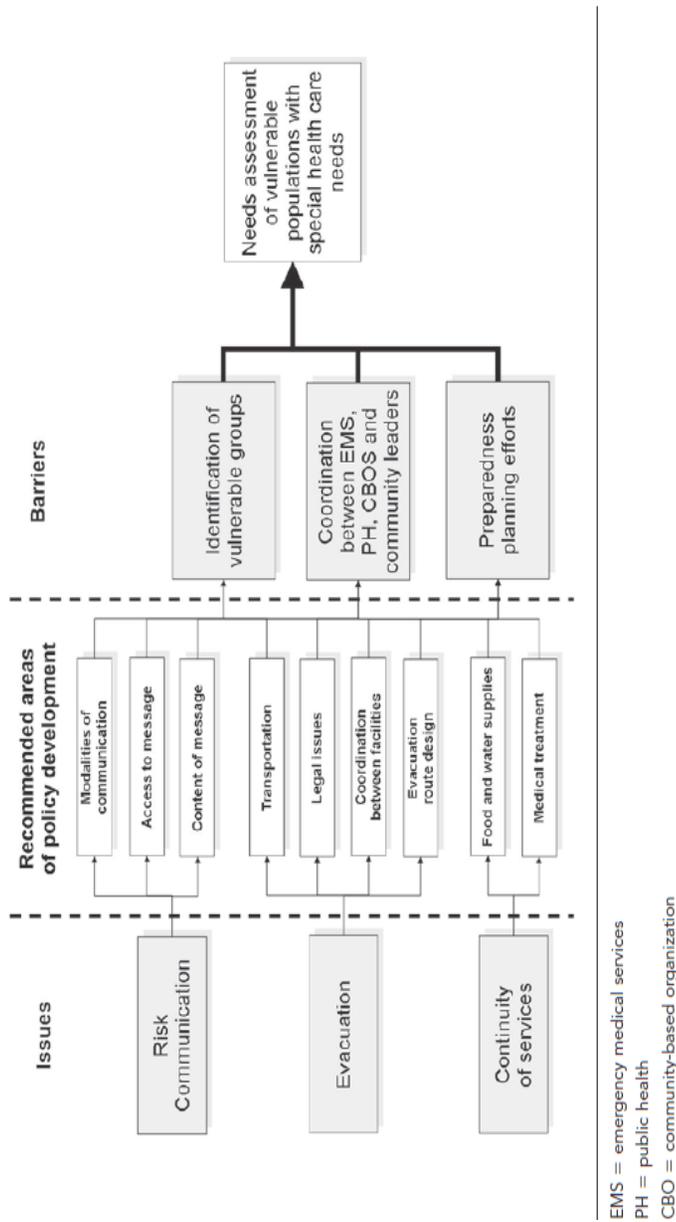
The Baylor College of Medicine (2006) reported that 65% of the older adults in New Orleans who lived in their own homes lacked transportation options to efficiently evacuate. Many more were without family, and in some cases, without the physical or mental ability to evacuate on their own. Brodie and colleagues (2006) stated that shelter personnel from the area reported inadequate care and facilities for caring for older adults, although over half of all health services provided were for people aged 65 years and older. The lack of government infrastructure for caring for older adults who were evacuated, and the absence of effective communication systems for locating these older adults, remains as a unfortunate hallmark of Hurricane Katrina (Adams et al. 2011).

Furthermore, in the months and now years following the flooding, some older adults are dealing with frustrations relating to insurance companies and financial inefficiencies, similar to reported difficulties of many residents of Brisbane after the 2011 floods. Researchers continue to study the long-term impacts of Hurricane Katrina and conceptualise the link with older populations. Iverson (2008) stated that older adults appear to have suffered disproportionately during Hurricane Katrina, partly due to the vulnerabilities of age, lack of effective, efficient and supportive communication, medical and other infrastructure.

### **A model of research**

In an attempt to advance planning and protection for vulnerable populations (such as older adults) during emergencies in Boston, a symposium lead by Gilbert Nick (2009) identified a conceptual framework for understanding the experience of SWE for vulnerable populations. As Figure 1 illustrates, three common issues were identified (risk communication, evacuation procedures, and continuity of services), along with the main barriers for addressing these issues, such as difficulty in identifying vulnerable groups; lack of coordination among emergency medical services, public health, Community Based Organisations, and community leaders; and lack of emergency planning. Nick's (2009) conceptual framework provides the building blocks upon which the author of this paper will design and develop major research projects in an attempt to close the significant research gap relating to communication before, during and after a severe weather event and older adults.

**Figure 1. Issues, barriers, and policy development areas in emergency planning for vulnerable populations**



**Conclusion**

There is overwhelming evidence that disasters and SWE have a significant negative impact on individuals and communities, affecting individual psychological and physical health, as well as the physical infrastructure and social functioning of exposed communities (Doherty & Clayton 2011). Yet, whilst contemporary research primarily has focused on identifying predictors of individual and community resilience and adaptation (Norris et al. 2008), relatively little empirical work has focused explicitly on the experience and effects of disaster, or SWE, on vulnerable populations - those who have less "capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard" (Blaikie et al. 1994, p9).

Navigating the complex dynamics of disasters and disaster management can be particularly challenging for vulnerable populations – such as older residents - who suffer disproportionately during SWE because they lack the community infrastructure or personal resources to protect themselves (Fernandez et al. 2002; Garnaut 2011). Their disaster experience is frequently magnified by a wide array of cumulative and interactive stressors (e.g., social isolation, poor health, reduced mobility, reliance on carers, psychosocial factors, life histories), which intertwine to make them uniquely vulnerable to significant short and long-term adverse effects. Unfortunately, to date, only a relatively small body of research has explored the impact and management of SWE (Peek 2010), with very little known about how vulnerable populations in Australia prepare, experience and subsequently manage SWE. The presented review of the literature is brief in nature, designed to highlight the gaps in the current severe weather event and communications literature. The author has used this review of the literature to design and undertaken a further study aimed at more deeply exploring the experiences of older adults (aged 65 years and above) of the 2011 and 2013 Brisbane floods. The findings from this study have the potential to inform older adults and their support workers of best practice proactive strategies to prepare for, and subsequently manage, severe weather events. Furthermore, it is hoped that the study findings will benefit information services and government departments involved in disaster management and emergency/evacuation response to improve communication with this older population.

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