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Exploring older adults' understandings of
disaster preparedness: A New Zealand perspective

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Robyn Jean Tuohy

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Abstract

Individual preparedness for a disaster has centred on educating and encouraging people to protect themselves against injury and damage to assist with response and recovery after a disaster. Research on factors influencing individual disaster preparedness has focused on demographic and psychological variables, while socio-cultural contexts have received less attention. These omissions may help explain why more vulnerable population groups are disproportionately affected. Older adults are a rapidly increasing population group who are a vulnerable group at greater risk of negative effects during and after a disaster; however, little attention has been given to older adults' perspectives about disaster preparedness.

This thesis is presented as four papers written for submission to peer reviewed journals, and explores older adults' meanings and experiences about disaster preparedness from a social constructionist perspective. A series of 26 qualitative interviews using a narrative methodology was undertaken in 2012 with participants located in Wellington and Christchurch (median ages 84, and 80), New Zealand. Participants were recruited through a home support agency. Inductive thematic analysis of the data sets was undertaken, which attended to the influences of personal and socio-cultural contexts on disaster preparedness.

The first paper provides a conceptual argument for use of qualitative methodologies to further explore understandings of disaster preparedness. The second paper focuses on older adults' household disaster preparedness in Wellington, which identified that older adults accepted personal responsibility for assembling and maintaining their survival kits. Practical concerns such as the ability to refill water bottles, monitor stock rotation, and ensure adequate medication supplies were identified to be difficult for some. Preparedness was also associated with the quality of supportive social relationships that could provide

assistance. The third paper is also based on the Wellington study, and provides a broader discussion about everyday preparedness. Meanings and experiences of preparedness were concerned with managing health decline, preparing for death, and the interpersonal complexity of negotiating their personal and social needs to remain independent in the community. The fourth paper discusses older adults' experiences of preparedness during the Canterbury earthquake sequence (2010-2012). Disaster preparedness was primarily linked to the importance of social relationships; and a concern regarding a lack of age appropriate safety messages about personal protection. This thesis contributes to the literature on disaster preparedness by identifying age specific influences, which relate to managing personal health, social support and socio-cultural norms of independence. Some participants lacked informational, health and social resources, which would enable preparedness actions and the ability to respond effectively. The research from the Wellington and Christchurch studies identifies the need for coordinated, multidisciplinary age specific disaster preparedness planning to assist individual and community resilience.

Preface

This thesis is based on four research manuscripts. The first manuscript has been published in the journal, *Disaster Prevention and Management*. The second manuscript has been submitted to the *International Journal of Emergency Management*, and is under review. The third manuscript has been submitted to *Ageing and Society*, and is under review. The fourth manuscript has been published in the *International Journal of Disaster Risk Reduction*.

The ideas presented in this thesis are my own. My primary supervisor, Professor Christine Stephens helped me to structure my arguments and appears as a co-author on all papers that comprise this thesis. My secondary supervisor, Professor David Johnston provided further academic support and appears as third author on three of the papers.

Robyn Tuohy

Doctoral candidate

Massey University

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Chapter One: Introduction

One group at higher risk of experiencing negative outcomes during a disaster is independent community dwelling older adults. Over recent times, emergency management organisations have encouraged individuals to adopt disaster preparedness measures, which aim to reduce population level vulnerability, reduce negative outcomes, and facilitate community resilience. Underpinning disaster preparedness is the expectation that citizens will take personal responsibility by adopting preparedness behaviour and actions. For example assembling and maintaining food and water supplies for 3-5 days; undertaking practical actions such as securing bookcases to walls to prevent personal injury and property damage in an earthquake; and developing an emergency plan. Disaster preparedness education has assumed citizens will follow the recommended advice, which will contribute towards minimising risk and injury, assist in adapting to changed circumstances in the aftermath of a disaster, and promote resilience (Paton, Smith, & Johnston, 2005).

Supporting older adults to adequately prepare for a disaster has not been clearly explored in current research, although chronic health conditions and age related decline create personal and social vulnerabilities for many in this age group. In this thesis it will be argued that research to date has not adequately examined how the personal and socio-cultural circumstances of independent older adults' daily lives influence preparedness practices. To improve outcomes for those over the age of 65 years during and after a disaster, the context of preparedness must be considered from the perspective of older adults. The present chapter begins by: discussing disasters and population ageing; situates disaster preparedness and the role of public education in an historical and contemporary context; highlights the lack of age

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specific disaster preparedness research about community dwelling independent older adults; provides a brief review of the literature; and identifies the dominant realist quantitative perspective, which has informed current understandings of preparing for a disaster, but has not clearly considered socio-cultural influences.

Disasters and an ageing population

Natural hazard disasters become human disasters when communities experience loss of life and injury, damage to property, and peoples' way of life are adversely affected. Increasingly, the impact of disasters such as floods, earthquakes and tsunamis on people's lives and environments has become an important global concern (World Health Organisation, 2008). Furthermore, environmental threats to communities from climate related weather hazards have been predicted to increase worldwide, raising further concern about the threat of such disasters and their impacts (Intergovernmental Panel on Climate Change, 2012). Common characteristics associated with those who become vulnerable during a disaster are often reflections of existing social patterns operating within the everyday social environment. These social influences can be traced to more distant causes produced by social, economic and political processes, rather than the hazard threat alone (Wisner, Blaikie, Cannon, & Davis, 2004). For example people earning lower incomes are more likely to be vulnerable to flood related hazards; this settlement pattern can arise because housing is often more affordable near flood prone land. Other social factors, which have been linked to vulnerability, include access to knowledge and information about hazards and mitigation, age, disability, gender, ethnicity (Wisner, et al., 2004). Therefore, neither the natural hazard nor the wider social context can be separated from each other when considering disaster

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preparedness. It will be argued that understanding the social context of disaster preparedness for at risk groups such as older adults will contribute to reducing vulnerability to natural hazard events.

Recent disasters have shown that older adults experience higher mortality and morbidity rates (Bolin & Klenow, 1988; Perry & Lindell, 1997; Cutter, Boruff, & Shirley, 2003; World Health Organisation, 2008). During Hurricane Katrina, which devastated New Orleans in 2005, older adults experienced disproportionate negative outcomes compared to other population groups (Fussell, 2006). The World Health Organisation (2008) has also listed other disasters where the statistics for older adults have shown disproportionately poorer outcomes. For instance in the Kobe earthquake, 1995, over 50% of the casualties were older adults, who accounted for 90% of the subsequent deaths; during the Paris heatwave in 2003 the highest death rate occurred in those who were over 70 years; and the Aceh tsunami in 2004 recorded the highest death rate for adults over 60 years old. This age group is more vulnerable to negative impacts by nature of age-related physical and cognitive factors, and the influence of existing social factors (e.g., social inequalities and social relational factors). The recent Canterbury earthquake disaster, which was a sustained series of destructive earthquakes spanning 2010-2012, highlighted age specific challenges in the aftermath, which included: reduced access to shops and chemists (49 chemists out of 130 provided near normal services in the immediate aftermath); uncertainty of home support services; damage to essential infrastructure (water, sewage, electricity, roads); and a higher risk of social isolation as neighbours and support people left the area, which contributed to anxiety and depression particularly if health related conditions were present (Davey & Neale, 2012; Hendry & East, 2013; McColl & Burkle, 2012).

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Concern about older adults' vulnerability to a disaster has also gained impetus because the global population of older adults is increasing. Many countries are now experiencing the demographic transition (low birth rate and death rate). This demographic change has arisen because the numbers of older adults born during the post-war 'baby boomer' generation (1946-1964) have now begun to turn 65 years. The global population of persons over 60 years is projected to rise from 810 million in 2012, reach one billion within ten years and two billion by 2050 (United Nations Population Fund, and Help Age International, 2012). In New Zealand, the 2006 census population for older adults over 65 years was 510,000. These numbers are predicted to increase 2.8 fold by 2061 to reach 1.44 million (Statistics New Zealand, 2007). This has implications for household disaster preparedness, because within this age group there is a wide diversity of physical, cognitive and social capabilities, such as access to practical, informational, social, and financial resources, which can influence older adults' ability to prepare for and respond to a disaster. Furthermore, as the 'baby boomer' generation ages, a greater number of older adults are likely to become vulnerable (susceptible to harm) (Mechanic & Tanner, 2007) during disasters; and will be at greater risk of experiencing negative outcomes. Therefore, reducing negative impacts from natural hazards by attending to how preparedness is experienced and interpreted by older adults is highly relevant, and would contribute towards improving disaster outcomes.

Disaster preparedness and public education

Historically, organisations concerned with preparedness were set up to deal with civilian risk in wartime and reduce community vulnerability (Quarantelli, Lagadec, & Boin,

2007). During the late twentieth century, emergency management organisations extended their scope from wartime civil defence to the preventive role of identifying risks and threats in peacetime such as natural hazard related disasters (Quarantelli, et al., 2007). Paton, Smith and Johnston (2005) argue that being prepared “represents a significant predictor of the capacity to adapt to unforeseen circumstances” (p. 25). Preparedness is now based on the premise that actions taken in advance of a disaster will assist individuals to respond to the impacts optimally and reduce the need for actions at the last moment (Coppola, 2011). The promotion of public education messages about personal preparedness is seen as the most effective way of informing communities about how to reduce population wide vulnerability to major hazard risks (Coppola & Maloney, 2009). Public education therefore has focused on emphasising personal responsibility for self-protection, which can reduce negative outcomes, and assist individuals to remain independent and resilient during the post-disaster environment (Turner, Nigg & Heller-Paz, 1986). Importantly, disaster preparedness education has been viewed as central to facilitating community resilience prior to, during and after a disaster. In sum, disaster preparedness education is constructed as a life saving measure, by providing information that can assist in damage reduction during and after a disaster, as well as minimising the number of casualties and economic losses that would otherwise occur in unprepared communities.

Disaster preparedness research and independent community dwelling older adults

To date, much of the preparedness research has been gathered from general adult populations with little differentiation given to age specific differences. Ngo (2001) argues

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that older adults living independently in the community must be recognised as an at-risk group prior to a disaster event. However, pre-disaster consultation and research with older adults over 65 years as active contributors to age specific preparedness knowledge, has not been widely undertaken. The New Zealand Social Science Survey, 2012, found preparedness levels in New Zealand households were lowest for one-parent families than couples with dependent children; and for those living in rental accommodation compared with home-owners; however the level of preparedness for older adults was not identified (Statistics New Zealand, 2012). Preparedness research from general adult population samples has also been oriented towards quantitative methodologies such as questionnaires and surveys, rather than qualitative methodologies inclusive of personal and socio-cultural influences. For example, survey based disaster responses about participants' decisions to evacuate during Hurricane Hugo and Hurricane Andrew were identified by the researchers as difficult to put into categories, because some responses "did not fit a rational decision-making perspective" (Riad, Norris & Ruback, 1999, p. 932). Such findings imply awareness of risk from a natural hazard is not the same for all citizens. The nature of this research design was to categorise risk perceptions rather than provide subjective and contextual understandings about preparedness, which would acknowledge different meanings beyond the taken for granted views about preparedness. Paton, Smith and Johnston (2000) argue that community risk perceptions, goals, and needs, in public education programmes cannot assume homogeneity; and a reliance on such programmes will not be sufficient to promote and maintain preparedness for the whole population. This is borne out by studies that identified awareness of the hazard is insufficient to ensure that preparedness occurs (Lindell & Whitney, 2000; Duval & Mulilis, 1999; Paton, Smith & Johnston, 2005). Hence, attending to how

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independent community dwelling older adults view disaster preparedness is an important social concern, particularly as many older adults seek to live independently in the community (Rubinstein, Kilbride & Nagy, 1992). In the USA over 90 percent of older adults live at home (Peek, 2010), and in New Zealand by 2021, 62 per cent over the age of 65 years are predicted to be living at home, with a further 28 percent expected to be living alone (Statistics New Zealand, 2004).

A brief overview of research literature about disaster preparedness

Citizens do not always adopt preparedness actions expected by authorities, even when they recognise that they are at risk (Solberg, Rossetto, & Joffe, 2010). Research by Lindell and Prater (2002) suggests that individual households can do a lot to reduce their vulnerability to a disaster, however, household preparedness is often low and there is a poor understanding of which households will prepare. This section provides a critique of preparedness research on individual household mitigation, which provides an overview of how disaster preparedness has been conceptualised in the research literature, and proposes a new research perspective is needed to explore the context of disaster preparedness with more vulnerable populations such as independent community dwelling older adults.

A large body of research has focused on disaster preparedness and factors that influence individuals to prepare (Lindell & Perry, 2000; Solberg, et al., 2010). The relationship between subjective choices and how individuals estimate uncertain risk, and how such estimates differ from expert views about the same risk, has been theorised to have an influence on risk perceptions and disaster preparedness (Solberg, et al., 2010). Influences on risk perceptions and their effect on individual disaster preparedness have been identified in

research, and include: demographic influences (age, gender, household composition, socio-economic status); psychological influences (previous experience, fatalism, optimism bias); and social influences (normative influences and beliefs, trust, self efficacy, social support and empowerment). Demographic, psychological and social factors and their influence on disaster preparedness will be discussed in the following sections:

Demographic influences on risk perception and preparedness

Age

The willingness of older adults to heed warnings about impending disasters, and prepare has been the subject of much research debate, and a number of explanations have been proposed. Ngo (2001) attributed the reluctance of older adults to prepare for disasters to their strong sense of independence and life experience. Heller, Alexander, Knight, Gatz and Rose (2005) reported that those older than 72 years engaged in less earthquake preparation compared with younger people. The authors suggested older adults' lack of preparation was not because they were already prepared; rather they were less likely to perceive earthquakes as a risk. Turner, Nigg, and Heller Paz (1986) also found that the elderly (aged over fifty years) were poorly prepared. A review by Perry and Lindell (1997) indicated that there was no response difference between the elderly and non-elderly during the warning phase of disasters (which included floods and volcanoes). However, the authors suggest where older adults did not heed risk warnings and orders to evacuate, it was because they did not receive the warning, or they were in a residential institution and were unable to act on their own. These authors' conclusions were supported by a recent study by Tuohy and Stephens (2011), which described community dwelling older adults' reasons for lack of

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preparedness in a flood disaster in Kaitaia, New Zealand, because they were unaware of the danger they were in.

Gender

Studies of differences in disaster risk perceptions and preparedness between men and women have found mixed results. Mileti and O'Brien (1992) identified women are more likely to engage in protective actions than men. However, Turner, et al., (1986) established that earthquake preparedness did not differ between men and women. Research by Mulilis (1999) suggested risk perceptions about earthquake threat differed between males and females, and may influence earthquake preparedness and mitigation activities. Research by Kahan, Braman, Gastil, Slovic and Mertz (2007) described gender differences in risk perception, which they termed the "white-male effect", whereby men fear risks less than women. The authors proposed identity-protection cognition as an explanation to why risk is a threat to male cultural identity, which is cognitively managed by interpreting threats as less risky and manageable. Additionally, Flynn, Slovic, Mertz, and Carlisle (1999) identified white males' risk perception ratings were lower than females and non-white males. These findings suggest that social and cultural group membership has an influence on risk perception and disaster preparedness.

Household composition

Higher levels of earthquake preparations have been linked to marital status (Dooley et al., 1992; Turner, et al., 1986). Similarly, the presence of children in a household was found to foster higher levels of preparedness (Dooley, et al., 1992; Russell, Goltz, & Bourque, 1995; Statistics New Zealand, 2012; Turner, et al., 1986). While Turner, et al. (1986) suggested those living alone might be less motivated to protect themselves. Peek (2010)

highlighted how older adults living alone can receive a delayed warning and may be reluctant to evacuate. Furthermore, those living alone may not be aware of the risk, which may also affect whether action is taken (Tuohy & Stephens, 2011). However, household composition and influences on disaster preparedness has not clearly been examined from the perspective of independent community dwelling older adults.

Socioeconomic influences

Research conducted in earthquake prone regions such as California found long-term residence was predictive of individuals being more likely to make preparations, whereas those who had only been residing for a short term in their residence, and those who were highly mobile were at higher risk for under-preparing for an earthquake (Dooley, et al., 1992). Many researchers have confirmed that both home ownership and length of residence were predictors of preparedness (Heller et al., 2005; Mulilis, Duval, & Bovalino, 2000; Spittal, McClure, Siegert, & Walkey, 2008; Statistics New Zealand, 2012; Turner, et al., 1986). Higher household income has also been linked to higher levels of preparedness (Lindell & Perry, 2000; Statistics New Zealand, 2012; Turner, et al., 1986), and higher levels of education (Turner, et al., 1986). However, the influence of socio-economic status on preparedness behaviour does not clearly explain the context of preparedness actions and behaviours.

Psychological factors and risk perception

Previous experience

Research findings by Dooley, et al. (1992) and Heller, et al. (2005) found that after the 1994 Northridge earthquake, the oldest respondents (over 72 years of age) cited previous

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experience as a reason for not preparing. Reasons suggested for not preparing were because older adults subjectively perceived that earthquakes were just something to get used to, and therefore were accepting of negative outcomes (Dooley, et al., 1992; Heller, et al., 2005). Conversely, Turner, et al. (1986) found past earthquake experience associated with damage or loss of life lead to influencing risk perceptions and increasing disaster preparedness. Similarly, a questionnaire survey with 104 Christchurch participants (median age over 50) following the 2010-2011 earthquakes in Canterbury, New Zealand, found residents' judgments about earthquake risk to be lower prior to the earthquake disaster, and significantly higher after the 2010-2011 earthquakes; resulting in 79 percent of participants reporting household preparedness (McClure, Johnston, & Henrich, 2012).

Fatalism

Fatalism has been proposed as an explanation for why individuals are less likely to prepare for disasters. It is the perception that very little can be done to avoid or protect oneself from harm and therefore out of one's personal control. Fatalism has also been linked to passivity as a coping response to disaster threat (McClure, Walkey & Allen, 1999), and this attitude has been associated with lack of individual preparation for earthquakes (Lindell & Perry, 1992; McClure, Allen, & Walkey, 2001; Turner, et al., 1986). Acceptance of the inevitability of structural damage from an earthquake has also been attributed to fatalism and was commonly attributed to the physical forces rather than other more controllable factors such as building design (McClure, et al., 2001). In research by Turner, et al. (1986), fatalism was found to be negatively associated with education. Lower education was also associated with fatalistic beliefs about disasters (McClure, et al., 1999). Fatalism has also been linked with anxiety and concern, to explain why some people do not prepare (McClure, et al., 2001;

Turner, et al., 1986), which suggests that broader understandings underpinning fatalism are needed to understand influences on preparedness. In a review of predictors of household earthquake preparedness, Lindell and Perry (2000) proposed that broader socio-cultural contexts must be considered, and suggested fatalism can be interpreted as a lack of awareness about natural hazard threats, or the availability of resources to effectively prepare for a disaster.

Optimism bias

Optimism bias focuses on how individuals estimate uncertain risk, and how such estimates differ from expert views about the same risk (Solberg, et al., 2010). When individuals are asked to compare themselves to others at similar risk, they favourably judge themselves as less likely to be harmed. The personal judgment that negative effects are less likely to happen to oneself, but more likely to affect someone else, has been found to influence disaster preparation for an earthquake (Lindell & Whitney, 2000; Spittal, McClure, Siegert & Walkey, 2005). However, research by Spittal et al. (2005) found optimism bias to be less when respondents assessed that damage to their property was more likely to occur, which suggested that there are limits to optimism bias influencing risk perceptions. Research by Celsi, Wolfenbarger and Wald (2005) found that residents living in more distal areas from an earthquake's epicenter, tended to underestimate risk of potential damage from a publicly reported magnitude size, which the authors suggest contributed to residents' optimism bias and feeling less vulnerable. Failure to personalise earthquake risk was also reported by Mileti and Fitzpatrick (1993). The authors found that 80% of respondents believed they would experience an earthquake, but two thirds thought no harm to their families or property would result. Within individualised cultures, optimism bias has been attributed to

influencing perceptions of personal safety, which in turn assists to reduce the psychological stress associated with risk of harm. However research on cultural differences in Japan where interdependence versus independence was more prevalent, found there was less optimism bias to earthquake risk (Solberg, et al., 2010). This suggests that socio-cultural norms around independence, individualisation, and personal responsibility have an influence on optimism bias.

Social factors influencing preparedness

During non-disaster times, social factors also exert an influence on risk perceptions and preparedness decisions. The social perspective is largely missing from the technical/scientific discourse on risk communication, as identified in the previous sections. Smith (2006) states factors associated with expert judgments have tended towards evaluating risk in terms of assessing probability, financial costs and deaths. Whereas lay influences on preparedness behaviours arise from a complex interaction between risk perception and the broader social factors within which disaster preparedness is interpreted and enacted. Consequently there is a need to situate individual characteristics and influences on preparedness (e.g., age, gender, household composition, socio-economic situation, previous experience, fatalism and optimism bias), within a socio-cultural context, rather than as variables that are used as an explanatory heuristic to explain individual preparedness behaviour.

The following section discusses research that has considered social and cultural influences on preparedness and includes: normative influences, trust, self-efficacy, and culture and risk.

Normative influences and beliefs

Normative influences relate to the rules for behavioural expectations in a culture, which include perceptions of other's behaviours (either positive or negative) and whether attitudes to particular behaviours are evaluated positively or negatively (White, Smith, Terry, Greenslade, & McKimmie, 2009). Norms have been conceptualised as having an influence on preparedness behavior through the influence of others, for example, seeing preparedness behaviour such as cupboard latches being installed to ensure contents will not fall out in an earthquake. Similarly public education messages about earthquake safety: 'Drop, Cover and Hold' (a New Zealand earthquake message advising citizens to drop low to the ground and take cover under a table, and holding on during an earthquake), and storing food and water for three days, are examples of norms around the types of behaviours citizens are asked to engage in. However, Solberg, et al. (2010) argue that the adoption of preparedness messages is also influenced by how well individuals identify with the groups giving the message. For example, in the case of earthquake preparedness, when dealing with uncertainty, individuals use social reference groups to attend and respond to seismic risk information; and relatives, friends, neighbours, and co-workers have a positive influence on both risk perceptions and disaster preparedness (Solberg, et al., 2010). Research by Mileti and Fitzpatrick (1992) found risk communication was supported through additional social cues of seeing others preparing for a future earthquake (which supports a relational perspective in explaining how information about risk and preparedness is socially interpreted and acted upon). However, in the context of old age, the ability to act on normative beliefs and social cues may not be possible, for example reduced mobility and physical decline may influence the ability to follow conventional preparedness messages such as 'Drop, Cover and Hold'. This protective

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message may be perceived as socially exclusive for sections of the population if an alternative message is not provided. The importance of social reference groups, and social cues, also allows individuals to assess whether their responses match with socio-cultural norms and values. If norms are similar, then congruence between personal behaviour and society's expectations is achieved. However, further age specific understandings about preparedness norms and influences on preparedness behaviours and actions from the perspective of older adults are needed.

Race, gender and age can also contribute to selective information gathering, because inequalities, marginalisation and exclusionary practices can influence risk perception (Bolin, 2007; Mileti & Darlington, 1997). Social norms, which ignore the diverse circumstances of marginalized groups, can therefore affect decisions about preparedness actions (Solberg, et al., 2010).

Trust

Social interaction relies on trust and it is a central factor that influences levels of household preparedness (Paton, Bajek, Okada, & McIvor, 2010). However until recently it has not been considered in the context of individual and household disaster preparedness. Having trust in warnings given by experts, strongly influences whether warnings are taken seriously (Solberg, et al., 2010). Over the late twentieth and early twenty first century (late modernity) there has been a greater reliance on specialised and expert systems of knowledge; and expert knowledge has tended to become separated from the local context. Lupton (2013) argues that trust is necessary as a means of engaging people in such systems of expert knowledge. This is because trust mediates the relationship between risk perception, norms and attitudes to preparedness, and intentions to adjust. If information provided to citizens is

not in accord with lay perceptions and beliefs regarding preparedness expenditure, or if a powerful groups' interests are being privileged over other interests, then attempts to empower and engage with individuals will reduce levels of disaster preparedness (Slovic, 2000; Solberg, et al., 2010). To date older adults are an under-researched group and perceptions and influences on preparedness remain unclear. Therefore further research, which gives attention to age specific influences in partnership with this age group, would ensure that expert knowledge remains credible, relevant and trustworthy.

Self-efficacy, social support and empowerment

Lazarus and Folkman (1984) suggest that self-efficacy is a coping appraisal in a specific context and a general expression of control over one's life. In the specific context of threat, self-efficacy is the perception that one has the ability to decrease the threat, or control it (Solberg, et al., 2010). Self-efficacy is also linked to an individual's assessment of their knowledge, skill, ability, energy and financial resources in relation to the demands of the threatening event (Lindell & Whitney, 2000). In the context of the types of demands placed on a person and the resources needed to become prepared, beliefs about self-efficacy may tax or exceed personal resources (Lindell & Whitney, 2000). It is highly salient to consider disaster preparedness and the influence of self-efficacy in the context of older adults' capabilities and available resources, which may be compromised because of reduced functional capacity resulting from age related health decline.

Self-efficacy is also influenced by people's collective ability to identify risks and plan and prepare for such events (Paton, et al., 2010; Solberg, et al., 2010). Heller, et al. (2005) suggest that although people are likely to learn from the media about how to prepare, this information source alone is not enough to influence preparedness behavior. Longitudinal

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research by Heller et al. (2005) on the 1994 Northridge, California earthquake suggest that members (e.g., close family ties) within a supportive network who are already providing instrumental help were also likely to help others in their network to get prepared.

Furthermore, the authors state the influence of informal social networks, as a forum for discussing preparedness, was important for preparedness information to be acted upon.

Similarly, an important predictor of preparedness was the presence of others, and although individuals who live alone may not be motivated to undertake preparedness actions (as was described in the previous section on household preparedness), individuals were more likely to do so if they have family members present (Dooley, et al., 1992). Therefore, discussions with informal network sources are significant predictors of preparedness. In the context of older adults living independently in the community, some will have reduced levels of social connectedness, and social support, and not have the opportunity to discuss hazard related concerns and preparedness issues with others. The social context of influences on older adults' self-efficacy, empowerment and social support on disaster preparedness has not been examined.

Models of preparedness

The previous section has identified demographic, psychological and social influences on risk perception and individual disaster preparedness. Assumptions underpinning disaster preparedness have arisen from cognition and social cognition understandings of behaviour change and risk perceptions. The orthodox belief is well described by Coppola and Maloney, (2009, p.18) “once an audience is informed sufficiently and appropriately about a hazard,

they are primed to receive and process information that will help them take appropriate action to reduce their vulnerability”.

A number of models have conceptualised disaster preparedness behaviour, but primarily focus on how individual beliefs influence behaviour, rather than broader social contexts. These models also arise from a positivist research epistemology. Positivism assumes that what is observed through objective data collection becomes verifiable knowledge (Crotty, 1998). Consequently, constructs used to theorise intentions and predict behaviour have centred on understanding cognitive processes that will predict or change individual behavior (Ogden, 2007). The following section critiques cognition and social cognition models, which have been applied to conceptualising individual preparedness behaviour.

Cognition and social cognition models

The cognition models have focused on perception and decision-making factors concerned with information processing, which have described influences on preparedness behaviour. For example, the protection motivation theory (PMT) developed by Rogers in 1975, proposed that expectancy about mastery and effective coping is tied to the belief a particular behaviour will lead or not lead to a certain outcome, and the belief he or she will, or will not be capable of achieving the particular behavior (Lindell & Perry, 2000). However, this model has been criticised because it places a focus on the cognitive processing of information as a conscious decision-making process influencing behavioural intentions. Importantly, the model ignores social and economic inequalities, environmental influences, as well as emotional factors related to fear and denial (Ogden, 2003). Broader social influences on individual preparedness have not adequately been conceptualised in these

models, and marginalised groups within society who may experience social inequalities are ignored.

Social cognition models have also been used to examine beliefs and attitudes on decision-making, to predict preparedness and response behaviour. The person relative to event model (PrE) by Duval and Mulilis (1985) proposed that how a person cognitively appraised his or her total coping resources in the context of a stressful event, was critical to further understanding the influence of negative threat appeals on preparedness behaviour. The PrE model therefore made an important link, which theorised a relationship between level of appraised threat and appraised resources. This model predicted when a person's resources were appraised as sufficient to meet the threat then there would be increased problem focused coping. Likewise if a hazard related threat was perceived to be greater than resources available, there would be decreased coping. This model is useful as a conceptual framework that recognises the importance of appraisal of threat along the dimensions of person and event, and variables related to these two dimensions. However, broader social influences, which can influence older adults' appraisal of threat, are not clearly identified in this model. Recognising how social influences may impact on older adults' ability to respond to risks, is an important consideration. For example, a study conducted by Mack, Salmoni, Viverais-Dressler, Porter and Garg (1997) about perceived risks to independent living of older adults (mean age 73 years) sought to identify resources older adults would call on in times of need, examples included: financial difficulties, loss of social support, and change in surroundings. The authors found some respondents could not think of any resources to call on. This study is relevant when thinking about the social resources older adults who are vulnerable in the community have to call on. These social resources may

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influence how the threat is appraised and consequently influence his or her preparedness behaviour.

Citizens' responses to a threatening event have also been explained using the protective action decision model (PADM), (Lindell & Perry, 1992). The PADM model was originally developed to explain behavior in acute emergencies, but has also been used to explain how people respond to disaster preparedness. This social cognition model considers social context, such as involvement with family, and community, environmental cues, social information about preparedness, demographic characteristics (gender, age), and household resources (education and income) to have an influence on preparedness behaviour (Lindell & Hwang, 2008). Environmental cues influencing how risk was interpreted, included cues from others, hazard messages from informal sources, news media or official sources that were perceived as being expert and trustworthy (Lindell & Hwang, 2008). Earlier work by Lindell and Perry (1992) theorised that when a hazard threat is perceived, individuals search for appropriate responses to protect themselves and their property, while maintaining normal activities. However, this decision-making model provides little clarification about how the social, demographic and environmental variables influence preparedness behaviour (Lindell & Perry, 2000).

The theory of reasoned action (TRA) model has similarly positioned the individual within the social context and gives attention to the influence of attitudes as antecedents to behaviour rather than just behavioural outcomes. The model proposed that individual beliefs about the social world (subjective norms/perceived social pressures from significant others) and evaluations about these beliefs have an influence on attitudes towards behaviours, based on perceived risk probabilities and consequences (Lindell & Hwang, 2008). Research by

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Lindell and Whitney (2000) found behaviour was more strongly influenced by attitudes towards characteristics associated with preparedness actions (e.g., storing water), rather than attitudes toward the object (e.g., the perceived characteristics of the earthquake itself). The theoretical perspective of TRA places the person within the social context in contrast to a purely rational approach to behavior (Ogden, 2007). However, like other social cognition models TRA is not very specific in its conceptualisation of broader social and environmental factors.

Both cognition and social cognition models have positioned disaster preparedness as a rational choice. Smith (2006) has challenged the assumption that by communicating the efficacy of preparedness actions and citizens knowing the 'facts' about hazards and consequences, protective behaviour will follow. Paton (2003) argues that intentions to undertake preparedness behaviour must extend beyond information and considers wider influences on preparedness. For example, intentions to undertake emergency preparedness action may not be completed if resources are lacking for implementation. Paton (2003) further argues that preparedness must include an examination of resource efficacy in relation to individual self-efficacy. The social cognitive model proposed by Paton (2003) provides a broader perspective, which draws on social variables to predict actual behaviour. However, the social cognitive framework underpinning this model still remains focused on individual behaviour change and the social cognitive constructs of risk perception (probability, severity), response self-efficacy, and outcome efficacy.

Communicating emergency preparedness to people is not a value free endeavor. Guttman (2000) suggests that within any intervention process there are value positions embedded in the intervention process, which influence and justify the goals and objectives of

the intervention. Furthermore, emergency preparedness messages are communicated and presented as taken-for-granted values to be adopted, without examining how the influence of structural factors, which marginalise particular groups, compound existing personal and social vulnerabilities.

The models discussed in this section have not been inclusive of broader socio-cultural influences, nor do they attend to age specific differences. A decontextualised perspective without the acknowledgement of broader social influences is undoubtedly a factor in the accepted difficulty in raising sustained levels of hazard preparedness in susceptible communities (Duval & Mulilis, 1999; Lindell & Perry, 2000; Lindell & Whitney, 2000; Paton, Smith & Johnston, 2005). In considering older adults, their household preparedness is likely to be influenced by personal and social resources such as declining health, levels of social connectedness and organisational support in the wider community. Therefore a broader approach to preparedness inclusive of older adults' socio-cultural contexts (for example, individualisation; age related social norms of independence and self-reliance; changing family patterns; and cultural understandings of risk) must be considered if we are to improve outcomes for this group.

A socio-cultural approach to preparedness

Neither cognition nor social cognition models adequately capture the wider socio-cultural context of individuals and their lived experiences. These psychological models of behavior have tended to represent an objective view of risk from the perspective of experts (Lupton, 2013). There is a need to include a wider view about the influences on preparedness behaviour, to improve disaster outcomes. This means extending our research

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horizons beyond the individual, towards the inclusion of social and cultural influences, leading to a more dynamic and contextual understanding of influences on preparedness behaviours and actions (Douglas, 1982; 1992; Lupton, 2013; Solberg, et al., 2010). The following section introduces a sociological perspective, which argues that risk concerns about environmental hazards are socio-culturally and historically located. In western societies knowledge about risk has an influence on how individuals, others, and wider organisations are situated (Lupton, 2013). This socio-cultural perspective has implications for understanding how individuals are encouraged to conduct and adopt preparedness behaviours and actions.

Culture and Risk

Within western societies risk is increasingly seen as something to be “managed through human intervention” and is “associated with notions of choice, responsibility and blame” (Lupton, 2013, p. 37). Cultural influences on preparedness have progressively seen the shift from the traditional role of government responsibility of citizens’ welfare to individual responsibility and accountability (Douglas, 1992; Lupton, 2013). New demands and choices have become more complex, particularly with the breakdown of traditional certainties structured through age, gender, marital stability and family cohesion (Lupton, 2013). The breaking down of traditional norms and values has also seen a reduction in the influence of institutions, and a rise in the freedom of individuals to choose, yet conform to socio-cultural demands of personal responsibility. Douglas (1992) argues that the dangers or risks are not at issue, rather, it is how they are politicised. Douglas is critical of the move towards the individualisation of risk, and risk perception research, which focuses on cognition and choice rather than focusing on the social environment. She believes that risk

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perception research should include examining which risks are selected and the role of the individual within this broader perspective (Douglas & Wildavsky, 1982). A cultural approach can reveal what was less accessible from a cognition and ‘rational’ choice perspective, and can lead to the recognition of social influences that contribute to being ‘at risk’, such as inequalities relating to class, age, gender, ethnicity and socio-economic status.

In the context of attributions of responsibility for earthquake preparedness, there has been a shift from government to personal responsibility (Solberg et al., 2010). The promotion of individual responsibility therefore has serious implications for vulnerable populations who are expected to prepare and protect themselves against a future disaster. Research by Arlikatti, Lindell and Prater (2007) confirmed that respondents perceived that government agencies were the most knowledgeable and trustworthy, but self and family were seen as having the most responsibility for personal safety. Public acceptance of personal responsibility therefore accords with the aim of disaster preparedness education, which has encouraged citizens to provide for their own response needs (Coppola, 2011). However, Douglas (1992) argues that the lay public does not perceive risks in the same way as experts. This gap has given rise to a “new sub-discipline for communicating about and labeling risks... But the baffling behaviour of the public, in refusing to buy floodplain or earthquake insurance... and not listening to the education on risks, all that continues as before” (Douglas, 1992, p.11). This suggests that in order to increase our understandings about preparedness behaviour, we must consider wider social influences on individual responsibility for household preparedness. Importantly we must also consider life course influences on preparedness, and how risks for older adults are experienced. For example, the management of risks associated with changing life transitions in later life includes physical decline and

loss of close social networks through illness and death (Baltes & Baltes, 1990; Staudinger, Marsiske, & Baltes 1993).

The concerns identified in this section raise epistemological questions about the nature of knowledge, and highlight the need for wider theoretical perspectives inclusive of social context and subjectivities to be acknowledged within disaster preparedness research. These concerns will be discussed in my first paper (see Chapter Two) to highlight how qualitative research with vulnerable groups such as older adults could assist to improve disaster preparedness for this population group.

Limitations within the research

Globally there is a growing concern about the demographic challenges associated with an increased ageing population. In the context of disaster preparedness and concern about increasing extreme weather related events, this age group represents an important population to be considered. Within the current disaster preparedness research there is a danger of treating disaster preparedness as being separate from the perspectives, experiences and subjectivities of older adults. Wisner, Blaikie, Cannon and Davis, (2004) have argued that separating disasters from the influence of the social context may place too much emphasis on the natural hazards themselves, while neglecting the influence of the social environment. For example, the cognition and social cognition models have tended to ignore the social context of the individual and assume risk perceptions are appraised, rationalised, and recommended actions are initiated. In seeking to explore influences on older adults' disaster preparedness, there needs to be a clearer understanding of the complex interaction

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between personal and social vulnerability, inclusive of psychological, social and cultural resources in non-disaster times, and how these factors influence preparedness to a disaster.

A major strength of qualitative research is the ability to be flexible and exploratory, which can elicit in-depth, detailed understandings about phenomena produced within specific contexts. By gathering and analysing such data this thesis will further contribute to the literature on improving the well-being of older adults prior to, during and after a disaster.

This thesis is informed by three research aims

1. To explore influences on older adults' disaster preparedness
2. To situate disaster preparedness within the context of old age
3. To explore the need for age specific preparedness planning.

Thesis outline

This thesis consists of four research papers in which each research paper is linked by a series of reflections and embedded within a thesis framework. The thesis begins with the Introduction (Chapter One), and provides a literature review focused on disaster preparedness and an ageing population. Chapter Two is the first thesis paper, which complements the literature overview, and is entitled: "Qualitative research can improve understandings about disaster preparedness for independent older adults in the community". This paper examines existing research frameworks used to inform disaster preparedness; highlights some important methodological gaps; and provides a rationale for age specific qualitative research, to assist in understanding the social context of preparedness for community dwelling independent older adults. Chapter Three discusses epistemological, and methodological considerations that influenced my research framework. Chapter Four, explores older adults'

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perspectives on disaster preparedness based on a sample residing in Wellington, New Zealand, and is entitled “Disaster preparedness: Older adults’ perspectives”. This research provides rich detail about personal, social and cultural influences on preparedness and identifies age specific challenges. Chapter Five entitled “Older adults’ meanings of preparedness: A New Zealand perspective”, provides further analysis from the Wellington sample, and gives voice to a bigger story about personal preparedness and social relationships in the context of old age. Chapter Six examines how older adults assessed their disaster preparedness prior to and during the Canterbury earthquakes, which occurred in New Zealand between 2010-2012, and is entitled “Older adults’ disaster preparedness in the context of the September 2010 - December 2012 Canterbury, New Zealand earthquake sequence”. The paper provides contextual understandings about older adults’ preparedness based on experiences arising from the earthquake disaster. Chapter Seven, refocuses the reader on the research aims outlined in Chapter Three, and discusses the contribution this thesis makes to the disaster research literature, future research and limitations. The relationship of the four papers is shown in Figure 1 below.

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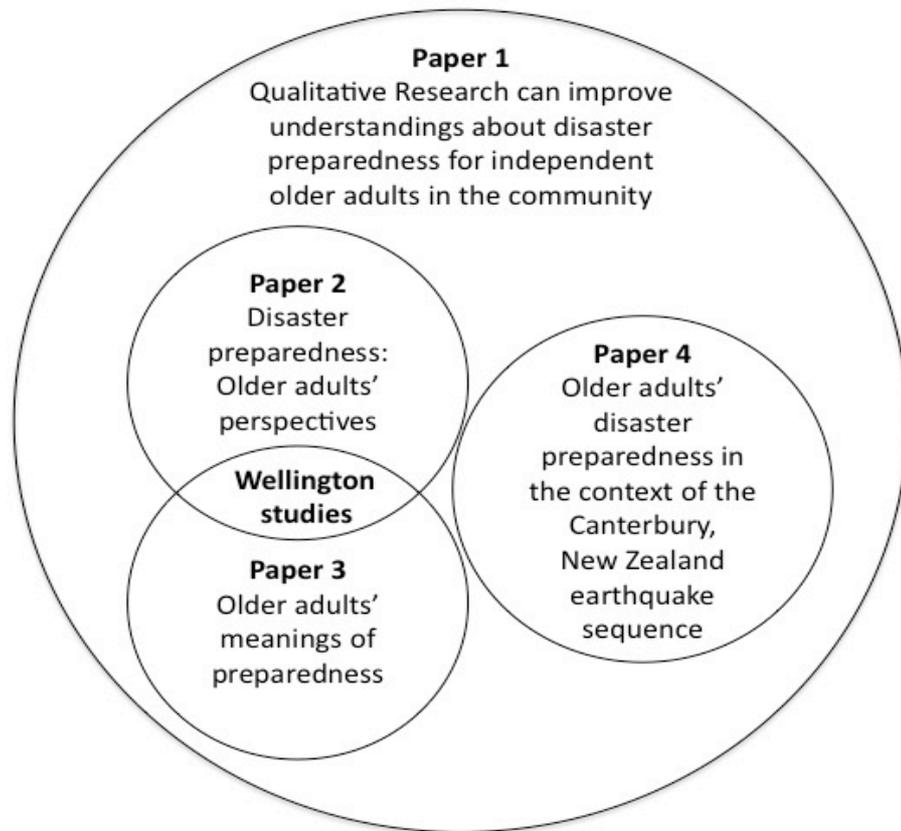


Figure 1. *The relationship of the four research papers comprising this thesis.*

Chapter Two: Qualitative research can improve understandings about disaster preparedness for independent older adults in the community

Tuohy, R., Stephens, C., & Johnston, D. (2014). Qualitative research can improve understandings about disaster preparedness for independent older adults in the community. Disaster Prevention and Management, 23(3), 296-308.

Abstract

Improving older adults' preparedness for disasters has become an important issue. Population ageing, together with concerns about increasing extreme weather related events, has added further impetus to the need to reduce older adults' vulnerability to disasters. To date much of the preparedness research has focused on organisational responses to preparedness, while perspectives from older adults have received less attention. Furthermore, social and environmental influences on community dwelling independent older adults have not been accounted for in models of hazard adjustment, which have invariably used quantitative research methods. Extending research to include qualitative methodologies, which recognises older adults as active participants in research about themselves, would contribute to increasing understandings about influences on disaster preparedness.

Keywords: older adults, disasters, disaster preparedness, qualitative research

Introduction

Over recent decades there has been a growing concern about the impact of disasters on people's lives, and developing environments and processes that will improve outcomes by minimising harm prior to, during, and after a disaster. There is also growing concern that climate change may lead to an increasing number of extreme weather events that will adversely affect individuals and communities (Intergovernmental Panel on Climate Change, 2012). One population group who is at increased risk during disasters and experience higher mortality and morbidity rates are older adults over the age of 65 years (Bolin & Klenow, 1988; Cutter, Boruff, & Shirley, 2003; Perry & Lindell, 1997; Powell, Plouffe, & Gorr, 2009; World Health Organisation, 2008). To date there has been little age specific disaster research on independent older adults living in the community, and there is a need to understand more about the influences on disaster preparedness for this age group. This paper begins by highlighting concerns about an ageing population and older adults' vulnerability to a disaster. Our paper then draws attention to a gap in current quantitative preparedness research, and presents a rationale for the use of qualitative research methodologies to improve outcomes for independent older adults, who can be less visible in the community, but who are at higher risk of being vulnerable to a disaster.

Older adults and disaster vulnerability

The number of older adults in the population and the anticipated care burden associated with population ageing has increasingly become a global concern. Currently western countries are experiencing the effects of a demographic transition (from a high birth

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rate and low life expectancy to a low birth rate and longer life expectancy) and the number of older adults is increasing as the post-war 'baby boomer' generation (born between 1946-1964) begins to turn 65 years old. This change has seen the global population of persons over 60 years in 1950 rise from 205 million to 810 million in 2012, and is projected to reach 1 billion within ten years and 2 billion by 2050 (United Nations Population Fund, and Help Age International, 2012). In New Zealand, the 2006 census population for older adults over 65 years was 510,000. These numbers are predicted to increase 2.8 fold to reach 1.44 million by 2061 (Statistics New Zealand, 2007). World wide, as the 'baby boomer' generation ages a greater number of older adults are likely to become vulnerable, which can be defined as being susceptible to harm (Mechanic & Tanner, 2007) during disasters.

The World Health Organisation (2008) has highlighted recent disasters in which statistics have shown disproportionately poorer outcomes for older adults. For example, Hurricane Katrina in 2005 killed an estimated 1330 people in the affected Gulf coast states. In Louisiana, (one of the affected Gulf states) the death toll for adults over 60 years was approximately 71%, of whom 47% were over 77; most of these people died in their homes and communities (Gibson & Hayunga, 2006). Within the city of New Orleans, Louisiana, the burden of harm was also disproportionate for older adults; although they comprised less than 15% of the New Orleans population, more than 70% of those affected were older adults (Fussell, 2006; Pekovic, Seth & Rothman, 2007). In the Kobe earthquake of 1995 over 50% of the casualties were older adults who accounted for 90% of the subsequent deaths; during the Paris heatwave in 2003 the highest death rate occurred in those who were over 70 years; and the Aceh tsunami in 2004 resulted in the highest death rate for adults over 60 years old.

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This age group is more vulnerable to negative impacts by nature of age-related physical and cognitive factors, and the influence of existing social factors (e.g. social inequalities and social relational factors). Within the ageing population there is a wide diversity of physical and cognitive capabilities. Physical and cognitive health changes in older adults can have a direct impact on health and well being outcomes before, during, and after a disaster. Pre-existing medical conditions and reduced mobility can place older adults in a vulnerable situation in which their reduced resources to respond to a disaster exceed their capacity. For example, this age group is more likely to have impairments that reduce the ability to plan, respond or seek help (Pekovic et al., 2007). Impairments may include decreased sensory awareness (smell, touch, vision, hearing), physical and mental ability, or chronic health conditions (Oriol, 1999). Age related decline may not prevent ongoing independence in the community in the everyday context of daily living, however in the context of an impending disaster, older adults' functional reserves may not be sufficient to ensure that they are aware of the warnings or able to adapt to the added demands required to prepare for and respond to a disaster event (Fernandez, Byard, Lin, Benson, & Barbera, 2002).

Social influences and vulnerability

Social and environmental influences also affect older adults' vulnerability, making them more susceptible to harm, and reducing their ability to respond to a disaster. Age related disabilities can combine with problematic social-environmental conditions to increase vulnerability and negative outcomes (Powell et al., 2009). For example, living in hazard prone geographical locations, poor housing areas with limited infrastructure, poor social environments (reduced access to practical, informational, or social resources), and reduced

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financial resources can adversely affect older adults' ability to prepare. During Hurricane Katrina, which had a devastating impact on the Gulf coast states of America in 2005, older adults were the most vulnerable through the influence of age related decline and social and economic factors (Pekovic, et al., 2007). In New Zealand, older adults living in a flood prone area next to a levee (stopbank) were given little warning to evacuate from their homes, lived alone, and many evacuated with limited assistance even as the water flowed into their rental accommodation (Tuohy & Stephens, 2011).

For the purposes of protection, the vulnerability of older adults to poor outcomes in a disaster may best be understood in terms of social conditions, which includes the hazardousness of place (location), the vulnerability of the built environment, and social vulnerability (Durant, 2011). Existing social conditions prior to a disaster will affect outcomes and age, gender, socio-economic status, ethnicity have been identified as social factors that influence an individual or group's "capacity to anticipate, cope with, resist and recover from the impact of a natural hazard" (Wisner, Blaikie, Cannon, & Davis, 2004, p.11). Patterns of vulnerability are influenced by socio-cultural factors and personal characteristics, which interact with the unfolding nature of the disaster event (Bolin, 2006; Perry, 2007; Sorensen & Sorensen, 2007; Wisner, et al., 2004). Therefore, vulnerability to a disaster should not be seen as an attribute that belongs at the individual level, rather wider social processes can predispose certain population groups to being more vulnerable than others (Bolin, 2006). In other words, the inter-relationship of the hazard with existing personal vulnerabilities and social conditions creates the circumstances whereby some groups in society lack protective economic, and human resources to reduce vulnerability. A disaster

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therefore exacerbates existing inequalities in society and makes evident social factors that have an influence on negative outcomes for vulnerable individuals and groups.

Recent research about older adults has highlighted how disaster outcomes are related to broader social influences. Analysis of case studies about floods, hurricanes, a tsunami, heat waves, earthquakes, and ice storms, found that during the emergency response phase of each disaster older adults were not visible in the community as needing help, and there was difficulty locating older adults and assessing their requirements during an emergency (Powell, et al., 2009). Importantly, the authors claim that a major influence on older adults' negative outcomes after a disaster can be attributed to the failure to identify older adults in the preparation phase of a disaster. Powell, et al. (2009) also found that erroneous assumptions about older adults were made: that there would be family involvement to provide physical and financial care; and that older adults were not willing, or were not able to be included in consultation at an organisational level. Furthermore, the authors suggest that in some cases emergency responders were not trained to respond or were not aware of the needs and abilities of older adults (Powell, et al., 2009). Similarly, factors that contributed to the deaths of 12 older adults in the Niigata flood were also linked to a lack of awareness by older adults that an evacuation warning had been issued, and it was assumed that the elderly residents would evacuate themselves, however those who died needed assistance with walking (Tamura, Hayashi & Kimura, 2006). In an analysis of the 1995 Chicago heatwave, Klinenberg (2002) argued that the disproportionate high death rate of older adults was linked to physical decline, social isolation, as well as societal expectations around independence and self-sufficiency in old age. A review by Perry and Lindell (1997) also suggests that where

older adults did not act on risk warning and orders to evacuate, it was because they did not receive a warning, or were unable to act on their own. These examples provide a rationale for further in-depth research about the context of how older adults become vulnerable to a disaster.

Organisational perspectives influence research about older adults

Research that has been undertaken tends to take an organisational focus to identify the specific needs of older adults (see Pekovic, et al., 2007). Similarly, post-disaster evaluation assessments have tended to be undertaken by organisations and government agencies using a ‘lessons learned’ approach to inform the direction of future preparedness planning. With regards to improving outcomes for older adults the U. S. Senate Committee on Health and Education, Labor and Pensions, correctly concluded that at the local and state government level, agencies responsible for care of older adults did not have detailed plans for evacuating the elderly, and neither was it clear as to whom was responsible (Gibson & Hayunga, 2006). Similarly, questions seeking to improve outcomes for older adults arising from the Hurricane Katrina disaster focused on asking: “How can the needs of older persons be integrated into existing plans at the federal, state, and local levels?” and “How can first responders be trained in understanding the needs of vulnerable older adults and persons with disabilities?” (Gibson & Hayunga, 2006, p. 29). Organisational response actions that were proposed from the ‘lessons learned’ approach included: developing a coordinated response for the evacuation of older adults; the wider participation of different stakeholders both at the government and non-government levels to discuss role clarification; a greater focus on public education about emergency preparedness; creating a system to locate and identify

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older adults during a disaster; establishing clear lines of organisational responsibility during times of disaster at the federal, state, local, and institutional level with regard to the evacuation of older adults (Gibson & Hayunga, 2006).

Thus, research has tended to analyse vulnerability factors from sources beyond the first hand perspective of older adults. For example, Fernandez, et al., (2002) sought to inform emergency management in the development of specific strategies to assist this population by identifying the needs of vulnerable and frail older adults. The authors' suggestions included personal strategies such as distributing education material to older adults through their natural networks, as well as community based organisations and health care providers. The authors conclude that increasing awareness, promoting self-help, and educating family networks would contribute to disaster preparedness. Importantly, the authors stated that further research was needed to investigate assumptions about frail older adults, and to test the effectiveness of such strategies (Fernandez, et al., 2002). Although this research was 'about' older adults, the research methodology was based on a review of scientific literature, organisational reports and news items to assess disaster vulnerability. This suggests that further research inclusive of older adults was needed to tell their own stories about preparedness within their own social context.

The promotion of individual disaster preparedness by emergency management organisations has primarily been directed toward population level awareness. This public education strategy has been viewed as an important factor in enhancing community and individual resilience to natural hazards (Coppola, 2011). The assumption is that encouraging citizens to adopt preventive actions and behaviours, individuals' susceptibility to harm,

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damage and loss will be reduced (Paton, Smith & Johnston, 2005; Turner, Nigg & Heller-Paz, 1986). To this end, recommended hazard mitigation has focused on personal actions such as having an emergency kit, including a supply of food and water for three days, through to mitigation actions around one's home, such as strengthening exterior brick chimneys, securing heavy shelves to the wall, and purchasing home and contents insurance. In the case of earthquakes, preparedness recommendations provide both passive protection during impact (e.g., attaching heavy shelving units to walls before an earthquake prevents damage to property and reduces the likelihood of personal injury); and an active response following impact (e.g., supplies of stored water and food which can assist citizens to survive an interruption to the water supply and food distribution), (Lindell & Perry, 2000).

Underpinning personal preparedness from an organisational perspective is an expectation that individuals must take responsibility to heed expert advice about mitigation against hazards. Preparedness behaviours have been presented as being straightforward and rational choices for individuals to make. Lupton (2013) argues that individuals have been positioned as rational actors who are expected to manage undesirable outcomes (risk) and the dangers associated with hazards. However, citizens' beliefs and actions about risks and hazards do not always align with expert recommendations. Paton, Smith and Johnston (2000) argue that educating the public about risks and hazards cannot assume homogeneity and will not be sufficient to promote and maintain preparedness for the whole population. Lindell and Prater (2002) suggest that individual households can do a lot to reduce their vulnerability to a disaster, however household preparedness is often low and there is a poor understanding of which households will prepare. Furthermore, achieving sustained levels of

hazard preparedness in susceptible communities has been widely recognised as difficult (Duval & Mulilis, 1999; Lindell & Perry, 2000; Lindell & Whitney, 2000; Paton, et al., 2005). Research by Dooley, Catalano, Mishra and Serxner (1992) found that despite media coverage about the likelihood of earthquakes occurring along fault lines near California and the Midwest, basic preparedness behavior was achieved by only about 60% of the population. Knowledge about hazards and associated risks has also been extensively researched using samples from general populations, which found that individual awareness of the hazard was insufficient to ensure that the expected level of preparedness occurred (e.g., Duval & Mulilis, 1999; Lindell & Whitney, 2000; Paton, et al., 2005) and preparedness actions are not always adopted, even when individuals recognise that they are at risk (Solberg, Rossetto, & Joffe, 2010). This suggests that providing hazard specific information does not necessarily translate to personal responsibility and action. Furthermore, provision of a generic set of disaster preparedness guidelines may not be appropriate for vulnerable populations such as older adults.

Extending research paradigms beyond a quantitative approach

Much of the disaster research on preparedness has remained focused on measuring population characteristics that predict or influence individual behaviour and individual adoption of official recommendations. Characteristics include socio-economic factors (Heller, Alexander, Gatz, Knight & Rose 2005; Lindell & Perry, 2000; Mulilis, Duval, & Bovalino, 2000; Spittal, McClure, Siegert, & Walkey, 2008; Turner, et al., 1986), household composition (Dooley et al., 1992; Peek, 2010; Russell, Goltz & Bourque, 1995; & Turner, et

al., 1986), gender (Flynn, Slovic, Mertz, & Carlisle, 1999; Kahan, Braman, Gastil, Slovic & Mertz, 2007; Mileti & O'Brien, 1992; Mulilis, 1999), and age (Heller, et al., 2005; Ngo, 2001; Perry & Lindell, 1997; Solberg, et al., 2010). However, there is a need to adopt a critical and reflexive research perspective to further understand the multidimensionality of these factors and how they influence individual preparedness for a disaster. A more fine-grained research perspective would contribute to improving protection for at-risk populations. Vulnerable populations in particular need greater research differentiation through sensitive and contextual methodological enquiry to further understand influences on preparedness to hazard events.

To date, disaster research about household preparedness has been largely based on epistemological assumptions of a causal relationship between individual attitudes and beliefs about hazard risks, and preparedness behaviour. These assumptions have been further endorsed by social psychological theories of cognition and behaviour. Attitudes, perceptions, knowledge and beliefs about hazards and warning messages have been treated as taken for granted factors that influence preparedness and lead to rational response behaviours. Some models, such as the Protection Motivation Theory (PMT) developed by Rogers in 1975, have focused on the influence of intrapersonal beliefs and attitudes towards the hazard threat and response effectiveness. These cognitive models propose that effective coping is tied to mastery and belief related to a certain behaviour (Lindell & Perry, 2000), but the models ignore social, economic, and environmental influences, as well as emotional factors related to fear and denial (Ogden, 2003). Social cognition models have also examined beliefs and attitudes to predict preparedness behaviour: the person-relative-to-event model (PrE)

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proposes that when personal resources are appraised as sufficient to meet the threat then there will be increased problem focused coping, if the threat is perceived as greater than resources available there is decreased coping (Mulilis & Duval, 1995). This model assumes a rational appraisal of threat will be made along the dimensions of person (self-efficacy and response efficacy) and the threat (probability, magnitude, immediacy of an event), however broader social and cultural influences are not clearly identified. Individual responses to a threatening hazard event have also been explained using the Protective Action Decision-Making model (PADM) (Lindell & Perry, 1992). PADM theorises that an individual's attitude towards a threat (influenced by environmental and social cues) influences the adoption of protective action towards a perceived threat. The model is inclusive of social influences from family, neighbours, and co-workers, media and official sources that have an influence on threat perception. However, PADM is grounded in salient beliefs about the hazard and protective actions, which similarly neglect the wider social context.

In general, research enquiry has been oriented towards examining atomised components of the person and/or the threat, which has positioned individuals as independent and isolated from personal, social and cultural frameworks. An individualised cognitive perspective expects citizens to be accountable and responsible for their own preparedness actions and misses the opportunity to examine the contextual influences on preparedness. For example survey based disaster research conducted by Riad, Norris and Ruback (1999) found participants gave many reasons for not evacuating during both Hurricane Hugo and Hurricane Andrew. The authors state that reasons some participants gave for not evacuating were difficult to put into categories because they “did not fit a rational decision-making

perspective” (p.932). Such findings imply that awareness of risk from a natural hazard is not the same for all citizens, and a greater breadth and depth in research focus is needed. Social context was absent in a review of 23 quantitative research studies focusing on household adoption to earthquake hazard adjustment by Lindell and Perry (2000). The authors conclude that the social context was not considered in some existing theories of hazard adjustment and models. Furthermore, there were incomplete accounts of cognitive representations about earthquake beliefs, which overlooked prior experience and social influences. Similarly, an earlier study by Perry and Lindell (1997) sought to re-examine the evidence about older adults responses in the warning phase of disasters, which found that age alone was not the sole predictor of responding to disaster warnings. The authors suggest that cognition based decision-making variables such as individual risk perception; beliefs about the accuracy of the warning, and assessment of the efficacy of recommended protective actions, do not provide a complete picture of what influences warning compliance for older adults.

Variables must include characteristics of the threat such as warning time, characteristics of the message, environmental cues, age, gender, ethnicity and importantly social factors such as family and community networks (Perry & Lindell, 1997). The authors suggest that these variables should not be isolated within statistical modeling stages and consequently attributed to having a direct causal status within decision-making models; rather these variables must be examined to allow for a complex understanding of how they are interrelated and influence compliance.

To summarise, much of the quantitative research on disaster preparedness does not adequately capture age-specific influences such as personal capacity (mobility and health),

social resources (networks and community), and cultural norms (positive ageing and expectations to remain independent). Despite the large body of disaster related research, there is very little that is focused on older adults (Gibson & Hayunga, 2006; Ngo, 2001). Within the dominant positivist research paradigm of disaster preparedness, this age group has tended to be constructed as passive subjects for protective action. Furthermore, cognition and social cognition models have not accounted for social and cultural influences in the context of old age. Such epistemological and ontological stances reduce the visibility and views of older adults and their life world.

A rationale for age specific qualitative research

There is a need to extend research horizons beyond quantitative methodologies, which have focused on measuring behaviour change and predicting influences on preparedness, towards qualitative methodologies. Gathering rich, in-depth research data provides relational and subjective accounts, and brings personal, social and cultural knowledge into the research domain. Qualitative methodologies are reflexive and innovative, and these attributes can contribute towards more dynamic ways of developing theoretical understandings of disaster preparedness. For example, a recent study by Roberto, Henderson and Kamo (2010) used in-depth phenomenological qualitative techniques to analyse the data collected on the experiences of older women recovering from Hurricane Katrina. Arising from this methodology (symbolic interactionism, which positions the individual's sense of self as being influenced by social interaction and relationships), the authors identified four broad areas that reflected the challenges faced by the participants after the disaster: maintenance of social connections, family connectedness but loss of independence, and re-

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establishment of a sense of place and management of their health. In seeking to understand how recovery research can inform questions relevant to the context of disaster preparedness, it is significant to see the importance of social resources after the event, along with factors that support independence and the importance of a sense of place: physical (home and treasured possessions); emotional (having a sense of control such as planning for a change in circumstance); and practical concerns (issues to do with planning regarding health and access to health). The research by Roberto et al. (2010) is important for two reasons; first it has provided information about relational experiences of recovery, which can inform pre-event preparedness; and second, the methodology has extended disaster research beyond the commonly used methodology of surveys and questionnaires to provide rich detail and social context about individuals' lives. Another qualitative study based on older adults' experiences following a large earthquake in Bam, Iran in 2003 reported that older adults' needs were not taken into account during the relief phase (Ardalan, Mazaheri, Naieni, Rezaie, Teimoori & Pourmalek, 2010). Furthermore, the emergency services were inappropriate for older adults' personal needs, and socio-cultural expectations meant that they did not actively ask for help, which contributed to feelings of insecurity and emotional distress (Ardalan, et al., 2010). Research by Tuohy and Stephens (2011) used narrative interviews to gain understandings about older adults' experiences of a flood disaster. They found that the limited attention given to preparation and planning with older adults to reduce the impacts of a possible flood event, despite their proximity to a flood protection levee (stop bank) significantly influenced outcomes. Reduced social connectedness to the community, meant that these older adults were evacuated at the very last moment, which placed them at greater

risk, and many lost their homes and treasured possessions, which held sentimental and emotional value relevant to recovery (Tuohy & Stephens, 2011). This research highlights the need for greater attention to be given to older adults living independently in the community and consideration of age specific subjectivities and socio-cultural influences on preparedness for a disaster.

Identifying experiences and meanings

In this paper we suggest that qualitative research methodologies can provide rich accounts of experiences and meanings, which seek to understand how and why individuals perceive, reflect, and interpret their world. One research method that makes sense of people's experiences is narrative. Narrative conveys meanings from the perspective of the individual narrator that are socially located. Narratives are a culturally shared resource (Phoenix, Smith & Sparkes, 2010) and so the rich detail expressed in narrative enables personal, social, and cultural practices to be integrated to provide a more complete view of social life. Within gerontology, narrative research has provided insight into the diverse experiences and age related challenges of being an older adult (e.g. Featherstone & Wernick, 1995; Gubrium, 2001; Kenyon, Bohlmeijer, & Randall, 2011; Phoenix & Griffin, 2013; Tuohy & Stephens, 2012).

Narratives provide a meaningful way of communicating to others about the diversity of experiences, which can serve to highlight differences in ageing rather than entrenched, stereotypical storylines (Phoenix & Griffin 2013). In this way the use of narrative research to explore experiences and meanings and context is able to extend our knowledge about preparedness that goes beyond a social cognition perspective. Gaining a greater

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understanding about the concept of preparedness can be represented through storytelling, and is a natural way in which accounts of experiences are narratively constituted, and “modes of being” are expressed (Phoenix et al., 2010, p.2). In this way a story has the capacity to make life social (Frank, 2010) because experiences retold through stories can convey meaning about our lives, our social worlds and ourselves. The ‘how’ and ‘why’ questions about preparedness can become situated with the social realm of people’s lives. Mishler (1986) argues that in the standard interview structure (common in surveys and questionnaires), the inherent hierarchical nature separates relations between events and experiences, so that a personal coherency within the interview is obscured in favour of the methodology. The collaborative nature of co-construction means that the interviewee has greater control over the structuring of meaning related to personal circumstances (Hollway & Jefferson, 2000); and we can begin to comprehend the inter-relationships of hazard, social characteristics, and personal situation in a dynamic and reflexive way.

Narrative as a research methodology intersects with the context of everyday life and the gestalt of older adults’ lived experiences, and can also provide a critical reflexivity that can examine socio-cultural influences. Situating individual narratives within the wider cultural context can inform our understanding and ‘sense-making’ of our world. For example, a narrative study on ageism suggests that older adults may make adjustments to their lives to accommodate problems they are experiencing (Minichiello, Browne & Kendig, 2000). One participant in the study believed that her reduced mobility was her problem and was a result of ageing. Minichiello et al. (2000) suggest that “older people may simply ‘drop things out of their life’ once access becomes difficult rather than lobby for improved resources” (p. 263).

Furthermore the participants in this study expressed a fear of becoming a burden to both their families and society. Minichiello et al. (2000) provide contextual detail to the ways in which some older adults living independently in the community cope with challenges in their daily lives; and allows us an insight into factors that contribute to ‘how’ and ‘why’ older adults become vulnerable in disasters.

Conclusion

The growing number of older adults worldwide has created challenges for society with regards to addressing how best to protect and reduce disproportionate negative outcomes for this at-risk group in a disaster. Older adults’ vulnerability to poor outcomes may best be understood in terms of personal and social factors relating to health related functional decline, socio-economic capacity, environmental location and the availability of social network resources. Within disaster research, ageing has tended to be constructed within frameworks relating to demographic concerns, biological decline and organisational policy. Social cognition theories and models, and quantitative methods have dominated the preparedness literature; and older adults have not been included as active participants in the research process. Reducing older adults’ social vulnerability to a disaster can be further informed by focusing on the aged themselves, which has practical implications for a population group that is increasing worldwide.

From a theoretical perspective, the use of qualitative methodologies can reveal more about phenomena and can highlight the diversity of perspectives and experiences. Extending disaster research beyond quantitative methodologies would enable the dynamic relationships

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between the person, the wider social context and preparedness to be further understood. Use of qualitative research methods such as narrative can explore preparedness from the perspective of older adults to gain understandings about circumstances, and social relations that is rich in complexity and detail. Greater and more comprehensive information will contribute to improving outcomes for this socially vulnerable population. Qualitative research therefore can contribute to informing social policies and programmes, which will help to produce outcomes that are wanted (Phoenix & Griffin, 2013). Reducing social vulnerability to a disaster that is informed by research inclusive of older adults themselves has practical implications for a population that is increasing in numbers worldwide.

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Chapter Three: The research process

Chapter Two highlighted the predominance of deductive methodologies in current preparedness research, and how this research has conceptualised disaster preparedness as an individual endeavour. The lack of social context in preparedness research reflects the dominance of epistemological and ontological assumptions about how we understand human behaviour and actions. I identified this lack of social context as a methodological gap, which informed my decision to conduct qualitative research to investigate influences on independent community dwelling older adults' disaster preparedness.

Epistemology: Social constructionism

I approached the issue of older adults' disaster preparedness by critically examining the rationalist quantitative research processes that have been employed to investigate the topic. Approaches to inquiry about individual preparedness have utilised quantitative data gathering methods such as questionnaires or surveys to explain characteristics of individual preparedness in general adult populations. Preparedness research methods have therefore been primarily reductionist and atomistic. At the theoretical level disaster preparedness research has constructed categories such as risk perception, norms, attitudes and intentions, which have been conceptualised as independent variables and theorised to predict and explain preparedness behaviors. For example, risk perception approaches have primarily focused on static, intrapersonal models that view human thinking as information processing (Joffe, 2003). In seeking to answer why preparedness actions have not been widely adopted, explanations within the quantitative research literature have generally been attributed to the individual or characteristics of the threat. The epistemological approach underpinning this sort of

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quantitative research, presupposes there is objective truth, meaning and knowledge about the world (Crotty, 1998).

Currently there is a methodological research gap in existing disaster preparedness knowledge because the social context, inclusive of social, cultural and subjective meanings of behaviour, has received less focus. People live in social a world, where meanings, experiences, and practices are situated, and these meanings include risk perceptions. Douglas (1992) has argued “that ‘the public’ definitely does not see risks in the same way as experts” (p. 11), and the gap between lay and expert opinion has given rise to the psychology of risk; this includes a new branch of adult education for communicating about and labeling risks, as well as an industry for cataloguing risks. However, despite the rise of expert/technical risk and hazard communication, much of the variance about influences on preparedness in the general adult population remains unexplained. So while education on risks, and advice on how to undertake the recommended preparedness action is presented, not all members of society adopt such recommendations; consequently the gap between lay and expert opinion remains. Douglas (1992) argued that within risk research there is still a “commitment to methodological individualism” (p. 11), which does not adequately take into account personal experience and the social influences on decision making.

Social constructionism offers a research paradigm, which does not assume there is one version of reality (Burr, 2003). How we interpret the world suggests meaning making is inclusive of social, cultural, political, and historical contexts; therefore meanings and practices reproduced in our everyday social interaction become shared, constructed versions of knowledge (Burr, 2003). From this perspective, knowledge and meaningful reality is conditional upon human practices (Crotty, 1998). The epistemology of social constructionism, takes a critical stance by questioning how assumptions about

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the taken-for-granted world can be revealed (Burr, 2003). A social constructionist approach acknowledges that meaning is not objective; that knowledge is an inherently social process because meaningful reality is produced, interpreted and constructed within a social context (Crotty, 1998; Burr, 2003).

In seeking to explore the topic of older adults' disaster preparedness, a social constructionist perspective can allow for the taken-for-granted assumptions to be re-examined, not as atomised components of the person and/or the threat, but in a socially embedded context. Burr (2003) argues that everyday social interactions constitute shared knowledge, which is constructed, contingent and variable across time and cultures. Hence social constructionism does not assume there is a rational, and objective way of understanding the world; rather our understandings arise from social processes and interaction with others. Attending to how individuals explain and make sense of phenomena can assist us to understand broader perspectives, and acknowledge that there are multiple realities that play a role in influencing individual perceptions and actions. It is through language that we can gain understandings about everyday interactions and the lived experiences - including understanding the interconnectedness of personal, social and cultural influences on older adults' disaster preparedness.

Willig (1999) argues that social constructionist research can examine the material features of society, while also "allow[ing] us to move beyond appearances" (p.49-50), and provides a way to explain constructions and address their limitations. In the context of personal responsibility for disaster preparedness, social ways of talking about household preparedness, such as expectations around storing survival items in advance of a potential emergency, have developed. Therefore attending to narratives and stories that arise from social practices and social actions, can give voice to how individuals experience their social world (Harré, 2001).

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Thus, in seeking to explore the topic of older adults' disaster preparedness, a social constructionist perspective can further assist to situate personal meanings and practices within a social context. Furthermore, this perspective can also explore how societal expectations "and taken for granted conventions...to which we jointly produce" (Harré, 2001, p. 29) influence disaster preparedness.

Research methodology

A research methodology that accords closely with a social constructionist perspective is narrative. Narrative approaches have been widely used in social science research to explore the meaning of events from the perspective of the individual narrator. Narrative researchers such as Mishler (1986) and Riessman (2008) have emphasised the importance of enabling participants to spontaneously provide narratives about their experiences in the context of the interview; whereas, a structured interview, or a structured questioning style presented by the interviewer potentially suppresses such stories. A key feature of narrative is the storying of events and experiences by the storyteller, which provides a meaningful whole, and is visible and compelling (Frank, 2010), and provides a way of telling and knowing about our lives (Phoenix & Griffin, 2013). Mishler (1986) suggests that the narrative interviewing style should encourage the communication of experiences through the stories told. While Riessman (2008) suggests that the interviewer's engagement and reciprocity with the storyteller encourages a more equal partnership in the conversation. This means the interviewer has less formal control within the interview, however, narrative as a device can facilitate individuals to externalise experiences and indicate which elements of those experiences are most significant and meaningful. Therefore, narrative research can provide information about

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the everyday lives and meanings which individuals attach to their experiences (Mishler, 1986).

Within the field of gerontology research, narrative has provided rich detail and insight into the diverse experiences of ageing. Such stories provide a meaningful way of communicating to others about the diversity of experiences, which can serve to highlight differences in ageing rather than entrenched, stereotypical storylines (Phoenix & Griffin 2013). Similarly, Randall (2001) adds that the use of narrative can reveal issues that were previously unseen; while Phoenix and Griffin (2013) point to the importance of understanding what stories can offer, which can positively contribute to informing social policies and programmes.

Use of narrative interviews to extend current understandings about disaster preparedness allows for rich detail about meanings of disaster preparedness from the perspective of old age to be expressed. Narrative offers an inductive approach, which is flexible and responsive to participants' personal accounts about experiences, explanations and meanings within a social context. Narrative interviews can provide an opportunity to follow up on unanticipated disclosures made by participants. In sum, narrative enables multiple perspectives, which are inclusive of social context, to be heard.

Developing interview questions: theoretical concepts

Two theoretical concepts assisted me to develop flexible, open-ended questions to provide a clear focus to my Wellington and Christchurch interviews (see Appendices 1 and 2). The theoretical concepts informing my questions were: the conservation of resources model (COR) (Hobfoll, 1989) and social representations theory (SRT) (Joffe, 2003).

Conservation of resources model

Hobfoll's COR model was relevant to the development of my questions. The model proposed individuals endeavor to "retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources" (Hobfoll, 1989, p. 516). The COR model was influenced by Abraham Maslow who conceptualised a hierarchy of human needs, which were essential to reduce stress and increase successful outcomes for wellbeing (Maslow, 1999). These needs were directed firstly towards seeking physical resources, then, social resources and lastly psychological resources. Fundamental to Hobfoll's stress model was the relationship between personal and social resource loss (real or anticipated) and the psychological stress experienced by the individual. Resources were defined as "those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies" (Hobfoll, 1989, p.516). Resource examples include mastery, self-esteem, learned resourcefulness, socio-economic status, and employment. Hobfoll (1989) defined psychological stress as a response to the environment when "there is (a) the threat of a net loss of resources, (b) the net loss of resources, or (c) a lack of resource gain following the investment of resources" (p.516). Both perception of loss, and actual loss or lack of gain, were proposed to be sufficient for producing stress. In particular he identified four kinds of resources that have an influence on stress and wellbeing: first, 'object resources', which relate to an aspect of their physical nature or status based on their rarity or expense, for example a home has value not only for the shelter it provides, but can also be linked to socio-economic status (which has been shown to be an important factor in stress resistance); second, 'conditions', which relate to situations and roles that are valued, for example marriage, tenure, seniority. Hobfoll argued that situations and roles are

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important to understanding stress resistance capacity; third, ‘personal characteristics’, which relate to seeing events as predictable and occurring in one’s best interests, and includes the role of social support in promoting self-efficacy; and lastly, ‘energies’, which include resources related to time, money and knowledge that can aid in acquiring other kinds of resources. Central to Hobfoll’s model is the proposition that resource loss can be stressful, especially if other resources are not available to limit the loss. Whereas maintaining and building resources can provide psychological and social resilience.

The COR model can provide an understanding about factors that may have an influence on older adults’ disaster preparedness with regards to resource gains and losses, as older adults who seek to remain independent in the community will inevitably face resource challenges (practical, financial, personal and social) in their day-to-day living. For the purpose of framing questions about disaster preparedness, the model provides a framework that is context sensitive and inclusive of wider resource factors. For example, when considering influences on older adults’ preparedness, the added challenge of planning and coping with an unpredictable environment such as a disaster will require utilisation of personal and social resources, and may be highly relevant to understanding influences on older adults’ individual disaster preparedness in the community.

Social representations theory

Social representations theory (SRT) provided me with an orientation about how to conceptualise research questions about risk (Joffe, 2003). Joffe (2003) suggests that risk is interpreted and made sense of within a social context, rather than risk perception via cognition, social representations emerge from phenomena particular to social networks. For Joffe (2003), SRT does not individualise risk, but directs our attention to how identity, emotions and symbolism influence the meaning of risk messages, and the functions these meanings have for people. A social representations perspective provides a dynamic focus,

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which takes into account social processes rather than scientific probabilities and individualising risk (Douglas, 1992). In the context of seeking to understand broader influences on older adults' preparedness for a disaster, SRT assisted me to frame open-ended questions oriented to eliciting how older adults made meaning of risk messages within specific social contexts, and how this may influence their understandings of disaster preparedness.

Method

Older adults may be vulnerable and marginalised in their communities. For this research I sought to recruit older adults living in the community who were more likely to be vulnerable because of declining health, and who might experience reduced community connectedness through loss of social networks due to ill health, reduced mobility, and death of same age networks. These factors have been identified to have an adverse influence on disaster outcomes in older adults (Fernandez, et al., 2002; Oriol, 1999; Powell et al., 2009). I sought the help of a home support agency as way of identifying and having access to more vulnerable older adults living in the community. The receipt of assistance for task specific home help for one or two hours per week is often an indicator that living independently in the community is becoming more difficult to maintain. Receiving formal help can assist ongoing independence in the community to be maintained, and for some, delay moving to assisted living and institutional care, where assistance is available twenty four hours per day. Although this care agency was supportive of my research, no formal preparedness assistance or education had been offered by this organisation to their clients prior to or during my research project. Ethical considerations also informed my rationale for using a home support agency for

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recruitment of participants. This was because I did not want to recruit anonymously from the community without knowing that there was a level of organisational support older adults could call on in case participation in my research project caused distress and concern about the nature of disaster preparedness and response. I also wanted to interview more frail older adults where possible, which was achieved, and the median age of the Wellington and Christchurch samples was over eighty years. All participants' names that appear in this thesis have been anonymised. The names of participants from the Wellington study have been changed again in the second Wellington paper to further protect their identity because these two papers arise from the same Wellington sample.

Wellington Study

Recruitment of Wellington participants

I enlisted the help of a care agency that provided home support services to older adults living independently in the community. I had obtained the name of the agency from discussions with a local emergency management organisation, which informed me of the care agency's interest in improving disaster preparedness for their clients in the community. I visited the manager to discuss my study about disaster preparedness, and she agreed to assist with the recruitment process. To ensure anonymity during the recruitment phase, the manager selected possible participants that fitted the criteria of being over 65 years, with preference for selecting those who were older and likely to be frailer, and sought to include Maori. The manager wrote a brief introductory letter to selected participants about my study and enclosed my letter containing information about the research study, (see Appendices 3 and 4) along with a reply form (see Appendix 5) to send directly back to me in a prepaid envelope. The manager undertook three mail outs to 39 possible participants. The first mail out (16 letters), netted five replies, a second mail out (12 letters) resulted in a further six replies and a third mail out (11 letters)

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provided five replies. The staggered mail out was designed to monitor the response rate, which was 41%, and I was able to conduct 16 interviews. The age range of respondents was between 65-90 years, and median age was 84 years. Once response letters were received back from respondents, I rang and arranged an interview time. All participants were asked if they would like to invite a support person to be with them during the interview, however no one requested a support person.

Participant interviews

Semi-structured narrative interviews (16) were conducted with a sample of older adults from the Wellington region. All participants were interviewed in their own homes. The open-ended questions were oriented towards gaining in-depth understandings about older adults' perceptions and accounts about disaster preparedness in the context of their daily lives (Appendix 1). The rationale for selecting a Wellington population was because this region is recognised as being at increased risk of experiencing a significant earthquake disaster, and for practical reasons because I lived in Wellington.

Christchurch Study

Recruitment of Christchurch participants

I recruited participants for my Christchurch study from a branch of the same care agency I used in Wellington. I initiated telephone discussions with the Christchurch manager of the agency to discuss my research project, and used the same selection criteria as for the Wellington study. Information letters about my research project (see Appendix 6 and 7) and reply form (see Appendix 5) were sent to participants who lived in the worst affected suburbs, or had relocated from those suburbs, as well as letters sent to less physically damaged areas of Christchurch. The agency posted three separate mail outs over a period of one month to 37 older adults, and I received a total of 10 responses, which was a response rate of 27%. The first mail out was sent to 15 possible participants,

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and I received four replies; a second mail out (12 letters) was then sent, and two replies arrived; and the last mail out (10 letters) netted a further four replies. The staggered mail out was designed to monitor the numbers of participants who would reply, because I wanted to conduct 10 interviews for my study, and was not sure of the response I would get. The age ranges of participants were between 66-86 years, and mean age was 80 years. Once response letters were received back from respondents, I rang and arranged an interview time. All participants were asked if they would like to invite a support person to be with them during the interview, and one widow had her neighbour present during the interview.

Participant interviews

Semi-structured narrative interviews (10) were conducted with a sample of older adults from Christchurch who experienced the prolonged earthquake sequence beginning 4 September 2010. All participants were interviewed in their own homes. The open-ended questions were oriented towards gaining in-depth understandings about older adults' perceptions and accounts about disaster preparedness in the context of their daily lives (Appendix 2). The same methodology used in the Wellington study was also used to explore influences on older adults' disaster preparedness both prior to the 4 September 2010 earthquake, and after the earthquake sequence commenced.

Interview procedures with Wellington and Christchurch participants

I arrived at each participant's home on time. After the formal introductions, I thanked each participant for agreeing to be in the study and explained again what my research was about, its purpose and why I was interested in this topic, and assured each person that his or her anonymity would be protected. Each participant was asked permission to audiotape the interview; given the option of having their recorded interview returned to them, and their transcripts for editing and release; and asked to sign a

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permission form agreeing to be interviewed (see Appendix 8). During this introductory time I focused on building a rapport with my participants. I emphasised that I was interested in their views, and hearing what they had to say, and I did not have a long set of yes/no questions, rather some broad questions to ask them.

At the conclusion of the interview, the audio-recorder was turned off and I answered any further questions that participants raised about the study or general questions about disaster preparedness. A brochure on emergency household preparedness was offered to each participant if they wanted further information. No participant experienced distress during the interview.

My research questions were framed using everyday language, and were used as a guide during the interview. I focused on being a good listener by encouraging elaboration of participants' responses, which was an indication to each participant that their responses could take their own course. I did not want to set an expectation that participants should provide short responses on the expectation there were many questions to get through as in a questionnaire format. I avoided interrupting their stories, and used silence as a way of waiting for participants to think about a question I had asked, or to wait in case a participant's response was going to be elaborated on. I also used 'mm' and 'ah-ha' as a way of conveying I was actively listening to them. When appropriate, I also followed up on participants' responses to get them to elaborate further.

In sum, my open-ended questions sought to elicit older adults' personal accounts about disaster preparedness. Within the narrative interviews, I listened for gaps in stories, and asked further questions in a timely and sensitive manner to encourage a fuller narration of the complexities of the story being told (Chase, 1995; Weiss, 1994). The focus remained on allowing the voices of older adults' views and experiences to be central to understanding subjectivities of disaster preparedness. At the conclusion of the

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interview each participant was given a colourful pot plant to thank them for the time they had given me.

The interviews were audio-recorded, transcribed, and returned to participants for checking and release. All participants allowed the release of the transcripts, some also wrote thank you notes back to me and hoped their interviews were helpful to my research.

An important ethical consideration that needed to be addressed prior to the interviews, related to the potential for distress because I would be interviewing more vulnerable older adults about disasters. Ethical approval for the Wellington and Christchurch studies was gained from Massey University Human Ethics Committee: (MUHEC): Southern B Application-11/77 (Wellington study) and Southern B Application-12/22 (Christchurch study) (Appendix 9).

Data analysis

The transcribed interviews were entered into a qualitative software programme (Atlas.ti) to assist in managing the qualitative dataset (Friese, 2012). Repeated readings of the transcripts from each participant was undertaken to gain an understanding of the complete data set, with the aim of identifying patterns of meaning, utilising an inductive approach across the whole data set. Thematic analysis is a contextual analytic method whereby recurrent patterns of meaning within the dataset are identified and coded and used to identify key themes across the entire data set (Attride-Stirling, 2001; Boyatzis, 1998; Braun & Clarke, 2006).

The coding process enabled possible patterns relevant to my research questions to be considered, while also attending to participants' meanings of their experiences, and the context of their social world. Therefore, identifying the central organising themes was an active and interpretive process, which sought to reflect and represent the complete data set.

Summary

To date disaster preparedness research not clearly considered influences on older adults' disaster preparedness, and has linked individual preparedness behaviour to social structural features (e.g. social inequality, gender). Previous research has also focused on risk perceptions and theoretical models that predict influences on preparedness behaviours and actions for general adult populations. Furthermore, preparedness research has utilised quantitative methodologies to measure characteristics; thus research has neglected meanings and subjectivities of more vulnerable groups in the community such as older adults. Consequently preparedness research has largely ignored contemporary structural features relating to individualisation that emphasise personal responsibility and choice. A social constructionist perspective, which situates the centrality of participants' subjectivities, meanings and experiences, informed my decision to conduct narrative interviews. Thematic analysis was used as a research method to assist in the analysis of my data set. This research process aimed to contextualise independent community dwelling older adults' understandings of preparedness and provide an age specific, qualitative research perspective.

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Tuohy, R., Stephens, C., & Johnston, D.

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Abstract

This paper focuses on age specific disaster preparedness for older adults in order to reduce the disproportionate negative outcomes experienced by older adults during and after a disaster. Semi-structured interviews (16) were conducted in New Zealand with independent older adults living in the community. Thematic analysis provided rich detail about older adults' personal, social and cultural influences on preparedness. Age specific challenges revealed practical and functional demands around the nature of preparedness actions associated with caring for a dependent spouse, reduced physical mobility, and loss of driving skills. Social networks and opportunities for interaction, together with socio-cultural norms of independence influenced how older adults negotiated disaster preparedness in non-disaster times. These results are discussed within a socio-cultural context, and suggest that age specific planning for this vulnerable population group needs to account for the dual challenges older adults face: managing everyday independence and personal responsibility for adopting and maintaining disaster preparedness.

Keywords: independent older adults, disaster preparedness, emergency management, vulnerability, qualitative, social networks

Introduction

Public education about preparedness for and response to a disaster is an important emergency management and civil defence strategy that is focused on informing citizens about protective actions prior to, during and after a hazard event. For example, individuals are asked to stockpile household supplies of emergency food and water for three days, secure heavy furniture to walls, develop an emergency response plan and identify relevant natural hazards (Lindell & Perry, 2000; Paton, McClure & Bürgelt, 2006; Ronan & Johnston, 2005). Despite public education campaigns, community level disaster preparedness still remains low (Johnston et al., 2013; Ronan & Johnston, 2005).

The conventional message approach has assumed that providing information about the risk would lead to individual action plans, but this has not been shown to be an effective strategy (Paton & Johnston, 2001). Findings from a review of 23 mostly cross-sectional surveys on earthquake preparedness (Lindell & Perry 2000) identified four classes of variables: risk perceptions (probability of occurrence, expected damage) demographic characteristics (education, income, age, gender, children in household, marital status, ethnicity, housing tenure) personal experience (past experience) and social influences (community bondedness, information seeking, observation of others). However, the authors highlighted a lack of theoretical clarity between the inter-relationship of cognitive factors and social influences, and concluded that influences on preparedness at the individual level remained unclear, and more rigorous theorization and analytic reporting was needed. Therefore, a clearer understanding of the personal and social context of preparedness is likely to inform more effective strategies to improve the readiness of households and communities, including those which are more at risk of becoming vulnerable in a disaster (see Bankoff, Frerks, & Hillhorst, 2004; WHO, 2008).

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One population group that disproportionately experience negative outcomes from disasters compared to the general population is older adults over 65 years (Cutter, Boruff, & Shirley, 2003; Perry & Lindell, 1997; WHO, 2008). For example, recent disasters such as Hurricane Katrina, 2005; the Paris heat wave, 2003; and the Kobe earthquake, 1995, have disproportionately affected older adults (WHO, 2008). There has been debate about the willingness of older adults to heed warnings about impending disasters, which has been linked to a strong sense of independence and life experiences having an influence on reduced preparedness (Ngo, 2001). In a comparative study, adults over the age of 72 years were less likely to engage in earthquake preparedness compared with younger adults (Heller, Alexander, Gatz, Knight & Rose, 2005). Research on older adults has identified that both personal and social vulnerability prior to a disaster will have an influence during a disaster event (Klinenberg, 2002; Powell, Plouffe, & Gorr, 2009; Tuohy & Stephens, 2011).

The need to improve outcomes for this age group has also been driven by concern about the growing numbers of adults over 60, which will globally increase from 810 million in 2012 to a projected 2 billion by 2050 (United Nations Population Fund, and Help Age International, 2012). In New Zealand, by 2021, 90 percent of adults over 65 years are expected to be living at home, and 28 percent to be living alone (Statistics New Zealand, 2004). Similarly, the numbers of older Americans currently living at home is 90 percent (Peek, 2010), Americans aged 75 years and over who lived alone in 2006 were more than five million (Portacolone, 2011). Faced with the greater number of older adults living in the community there is a need to recognise this group as being at-risk prior to a disaster event (Ngo, 2001), and consider influences on age specific disaster preparedness.

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The effects of age related decline is likely to influence older adults' ability to prepare for, respond to and recover from a disaster. For example, age related changes that may impact on physical and cognitive health include chronic illness, reduced mobility, and sensory impairment. Social factors also impact on older adults' ability to initiate and maintain recommended preparedness activities. For example social networks, social isolation, socio-economic status, and access to resources may be insufficient to meet older adults' needs (Fernandez, Byard, Lin, & Barbera, 2002; Ngo, 2001; Peek, 2010; Wisner, Blaikie, Cannon & Davis, 2004; WHO, 2008). From a broader research perspective, social norms of independence may also influence individual disaster preparedness actions, and contribute to negative outcomes, because for some older adults independence brings isolation, and disengagement (Plath, 2008; Portacolone, 2011), which can contribute to social vulnerability in a disaster.

Understanding how older adults shape their sense of selves in the context of ageing and independence is increasingly relevant to disaster research, given concerns over the current demographic transition and the types of ageing identities that are being socially encouraged (Rudman, 2006). Over recent decades, western societies have used social policies that promote community dwelling older adults to remain independent and self-reliant, and state welfare has become individualised within a market economy. In addition, health and well-being has been framed in terms of lifestyle and personal responsibility (Murray, Pullman, & Rodgers, 2003), while biological ageing processes and decline have tended to receive less prominence in favour of maintaining independence and encouraging images of positive ageing (Biggs, 1997; Townsend, Godfrey, & Denby, 2006). The social imperative to remain independent, together with older adults' endeavours to remain self-sufficient at home can create personal hardships

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that are not clearly visible to others (Portacolone, 2011). Within this social context, understanding how independence and ageing interact with preparedness is highly relevant.

There is very little work that specifically addresses older adult's perspectives despite the importance placed on encouraging citizens to prepare for disasters. A social cognitive perspective has been predominantly utilised to provide explanatory and predictive pathways to hazard prevention behaviours in the general adult population (e.g., Paton, 2003). Disaster research has utilised surveys of general adult populations to explore individual cognitive and behavioural characteristics of preparedness and extrapolated the findings to older adults. These findings are used to develop understandings of the nature of effective warning messages and individual cognitions, which influence preparedness (e.g., Ronan & Johnston, 2005), however, contextual influences have not been included. Hobfoll's theory of Conservation of Resources (COR) offers a conceptual framework for the influence of age related resource gains and losses on older adults' ability to cope with the personal and social demands of independently managing disaster preparedness (Hobfoll, 2001). Resources identified in COR theory include: objects (physical possessions), conditions (social roles, marriage), personal resources (age, knowledge, skills, self esteem, locus of control), and energy (money). Hobfoll (2001) proposed the maintenance and building up of such resources provided the capability to be resilient to both challenging and unpredictable environments, while loss of resources contributed to personal distress, and reduced adaptive adjustment. Furthermore, the theory includes the role of personal and socio-cultural influences on the nature of adaptation. Therefore, COR suggests a focus on older adults' circumstances with regards to the types of resources that may influence their capability to adopt and maintain preparedness behaviour.

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The purpose of the present research was to explore older adults' personal and social resources, to contribute to broader understandings of age specific disaster preparedness. By attending to older adults' social and cultural worlds rather than atomistic determinants of behaviour, a more complex and coherent view about age specific disaster preparedness is advanced. The use of qualitative research to inquire about the nature of preparedness, allowed for the richness and detail of older adults' experiences to be openly expressed and critically reflected upon.

Method

The participants

Semi structured, in depth, narrative interviews were conducted with 16 adults aged between 65-90 years. This sample was recruited from the greater Wellington region, which has a history of ongoing seismic activity. All lived independently in the community, except one couple who had recently moved into an independent unit within the grounds of a retirement complex. Participants were recruited through an independent agency that provided home care support in the community. The agency distributed the research information letter and invitation to participate to male and female clients over the age of 65 years, who volunteered to participate by responding to the researcher.

Respondents comprised 7 men (4 were widowed, 1 man's wife was in care for Alzheimer's Disease, another had a disabled wife who was not present during the interview), and 1 man whose partner was at work; 5 women, all were widows; and 4 married couples. Participants were generally aged between 78-90 years, while one participant was aged 65 years (median age was 84 years). Participants were living across a range of high, middle and lower decile suburbs, and while most participants paid for

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their home help services, two received welfare assistance. The nature of their support care was domestic assistance, which included household cleaning and shopping.

The interview questions were open-ended to encourage participants to talk broadly about disaster preparedness in the context of old age, and oriented towards gaining understandings about the influences of personal and socio-cultural contexts. In this way, preparedness generated expressions of lived world contexts and allowed for experiences to come into a social context. Narrative theory (Bruner, 1990; Riessman, 2008) provided a methodological framework oriented towards encouraging extended talk to allow older adults to tell their own stories about disaster preparedness. Narrative is sensitive to social context, subjectivities and meanings, therefore rich detail can be elicited to gain contextual understandings beyond demographic characteristics and social cognition factors, which to date have framed research findings.

Ethical approval was gained from Massey University Human Ethics Committee as participants were likely to be vulnerable through physical or health related decline, and it was assessed that there could be a level of distress associated with asking about this subject. The interviews were audio-recorded with the permission of each participant and interview times ranged from 30-55 minutes. A copy of the interview transcript was sent to each participant for checking and release. No participant was distressed during the interview and at the conclusion participants were offered New Zealand Civil Defence emergency preparedness pamphlets produced by the Wellington Region Emergency Management group, and the interviewer answered any questions raised by the participants about preparedness.

Data analysis

The research focus aimed to provide a broad inductive analysis of the data about preparedness from the perspective of older adults. The interview data was transcribed and analysed by the first author and recurrent patterns of meaning were identified within the data set and coded (Braun & Clarke, 2006). Thematic coding is an interpretive, and insightful process, which seeks to analyse and make sense of the data set, where meanings are created from the context of events, subjectivities and stories told (Boyatzis, 1998). To assist in managing the dataset, and develop a basic coding scheme for interpretation of thematic patterns, the transcriptions were transferred onto a database using the software programme Atlas. ti. (Scientific Software Development, GmbH), which followed the method of Friese (2012). Working from a social constructionist perspective (see Burr, 2003; Crotty, 1998) the analysis acknowledged participant's subjective meanings together with situating the influence of social context on those meanings.

Results and discussion

All participants had thought about preparedness for a disaster; accordingly, most had gathered together recommended survival items, while some had considered how they would respond to the threat of a disaster. Three themes were identified in the analysis: heeding the message (including survival preparations); the influence of social networks on preparedness; and social exchange.

Heeding the message

The conventional message of individual responsibility for preparedness was frequently emphasised by these older adults. "I do take care to obey the rules for

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preparedness,” said one man in his mid eighties. Many identified passive sources of civil defence and emergency management advice, which had informed their disaster preparedness actions. Sources of information included the back page of the telephone book, general information in the newspapers, household pamphlets, radio information, and media coverage of the Canterbury earthquakes 2010-2012, which was assessed by some as an important reason to ensure household food and water was stored. One couple and a widow who had attended a community organisation meeting about disaster preparedness identified an interactive source.

Three important concerns about these messages were identified: responsibility to ensure the care of a dependent spouse: their physical ability to evacuate independently, and loss of a driver's licence. The following excerpts illustrate these concerns. One woman, Mrs O aged in her late seventies heeded a tsunami alert issued by the local civil defence organization. Her actions demonstrated the level of planning she undertook for herself and her dependent husband, and gives insight into the types of physical and emotional challenges independent older adults might face when responding to a hazard warning:

And one night, probably during last year, there was a slight possibility [a tsunami] might hit the east coast of New Zealand in the night and I did keep my radio on, and that night before I went to bed I stayed up wondering what to do. I umm, I put a certain amount of essential things for him in the car and I did go to sleep but I slept easier knowing that there was only him then to get into the car.

Others situated their ability to evacuate in the context of physical limitations: “well you realise as you get older that you'd be in bigger trouble than when you were young and fit”. Some also stated they would just stay at home, and some explained the

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reasoning was because they did not want to put others at risk, as illustrated by Mrs B, a woman aged in her eighties:

One must be prepared to die frankly, everyone must be prepared to die, one hopes that it is quick, you're not going to evade it, and if I'm not walking fast let alone not running, it seems pointless to impede neighbours thinking, are they going to help me? No I think I would stick at home and see it out.

Eight participants identified the loss (or potential loss) of their driver's licence as an influence on their disaster response. One woman in her late seventies anticipated that this would impact on her evacuation decisions: "I realise I won't always drive and that's a nice security feeling that I too could hop in my car and go to wherever I was directed" [by civil defence messages]. Heeding the public preparedness messages was clearly interpreted as an independent endeavour, and a personal responsibility. As one man in his late eighties stoically expressed: "unless you prepare yourself, I don't think the authorities do much to help you".

Survival preparations

Generally, disaster preparedness was linked to having a survival kit. These older adults unquestioningly accepted that they were personally responsible for managing and assembling their own survival kits. Most participants had heeded the message to have supplies of canned food, water, battery radios, and torches, while some also identified several additional important items. Some male participants saw their preparations in terms of personal survival skills or "money in the bank", while admitting that they had not heeded official preparation messages.

Although having survival items was considered important, some made reference to survival items being depleted over time as batteries were taken from their kit for

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everyday use, or cans of food had been used but not replaced. Others revealed that survival items had not been checked very frequently over recent years, for example, cans of food had expired use-by dates. One woman was uncertain about whether a landline telephone would operate in a power cut, which illustrated her unfamiliarity with technology that could assist her in contacting others.

Health related preparedness was an important concern and many of the participants talked about having a supply of medications to ensure ongoing treatments in the face of disruption. These included drug treatment for cardiac, respiratory and diabetic conditions. Two couples also identified having a written record of medications as being important, however, it was not regularly updated.

The responsibility of caring for a dependent spouse also had an influence on the nature of survival items. The following excerpt from Mr A, aged 89 years described the planning he had done when his wife was alive to ensure that survival items were sufficient for his wife's ongoing care and comfort during a disaster:

There was always an emergency kit available for Mary because there were clothes, napkins, and things that she would need. There is some compulsion to try and be prepared for what might happen, knowing that she would be helpless, now how could I overcome that?... I didn't like leaving anything to chance

For some, assembling and maintaining survival items had less purpose if there was no longer any responsibility for children or dependent partners. Others had assembled survival items in the past when their spouses were alive, but had not lately reassessed supplies in their survival kits.

Survival preparations also reflected how age and reduced physical strength were considered. For example one man had his son move heavy items to a lower level, while a

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widow identified a picnic gas cooker and cylinder as a useful survival item, however, she would need assistance to use it. Women living alone identified the physical difficulties they experienced in lifting water containers heavier than a 1.5 litre capacity. The following extract from Mrs H, a woman in her late seventies, exemplified physical concerns about loss of strength and how she would manage post disaster:

I should change it more often [water in 1.5 litre containers] but they are heavy to lift and I can't stand for very long now, so it's a job that I really don't feel I can do very easily now, which is really you know why I haven't changed the water.

In sum, older adults accepted and heeded the message to be prepared. Most had gathered together survival items promoted as contributing towards reducing adverse impacts on citizens during and after a disaster as well as additional items as found in previous research (Haddow & Bullock, 2006). However, older adults' accounts about practical management of survival items described age specific challenges, which extended beyond the taken-for-granted assumptions about household capability. They identified difficulties associated with lack of strength, restocking and maintenance of emergency items, ensuring supplies of medications, safe and accessible storage of survival items, and loss of interest in preparation.

Although conventional messages are able to provide guidance for best practice, such messages ignore the context of age specific resource loss, and ongoing adaptation to changing needs to maintain independence in old age. Many older adults are faced with additional personal and social challenges because ongoing age related changes such as physiological, sensory and cognitive changes associated with chronic disease and disability adds to the complexity of disaster preparedness (Aldrich & Benson, 2008). Furthermore, many are also attending to the health needs of a more dependent partner.

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Previous research has linked influences on preparedness to: belief in efficacy adjustment factors (e.g., Lindell & Whitney, 2000; Russell, Goltz & Bourque, 1995); risk interpretation (e. g., Lindell & Prater, 2000); and trust in credibility of information for preparedness (e.g., Paton, Bajek, Okada, & McIvor, 2010; Slovic, 1993). Such elements were identified in the theme 'heeding the message'. However, the social context of older adults' household preparedness extended beyond these cognitive influences to the influences of social expectations of personal responsibility, and to the age related challenges and concerns older adults face in their everyday lives.

Social norms of independence have implications for household disaster preparedness because household mitigation actions have been positioned as an individualized task (e.g., Mulilis & Duval, 1995). Yet for many older adults, declining health and personal resources reduce their ability to cope and are a threat to ongoing independence. Plath (2008) found that older adults identified characteristics of independence including doing things alone, decision-making, and having resources (practical, personal, social). Older adults face the need to maintain independence with reduced personal and social resources. These same resources are needed when undertaking household mitigation actions, and influence ability to prepare for a disaster. Therefore, older adults face a dual challenge. Despite reduced physical health, and age specific challenges related to mobility and strength, older adults in our study remained stoic in heeding the message, with little expectation of assistance.

The influence of social networks on preparedness

Social networks were identified as having a positive and interactive influence on household preparedness. The presence of supportive social relationships assisted Mrs B,

a widow in her early eighties to respond to hearing an early civil defence tsunami warning (she had been rung by her sister):

So with great trepidation I rang my neighbours across the road terribly apologetic, and the neighbours at the back of me because I know they had children... and of course I dialed my close neighbours. Of course this was early in the morning for me I don't like to be up before eight o'clock... and I had to say to them this has been a warning that has been put out on the radio it's going now, so one didn't sound as though one had just lost one's marbles

A few participants identified the role of family in helping them to increase their level of disaster preparedness in practical ways. Both men and women enlisted adult children to assist with securing or shifting heavy items. Other participants (all in their eighties) identified the influence of supportive informal support networks such as neighbours and community organisations, which helped to improve preparedness. Mr and Mrs L talked about how after hearing about survival kits at a community meeting they encouraged their widowed neighbour to purchase one:

And she bought a kit from Probus...and she didn't have anything like that and we said, well for you on your own it would be good you know, to have all these things

The success of the same Probus club meeting (a community service club) is also expressed in the following excerpt from Mrs B, which further illustrated the importance of peer support networks and the role of community organisations in providing opportunities for older adults to participate and have the opportunity to talk with others about preparedness.

At a Probus meeting they said they had Rotary emergency packs... so there out in the kitchen is the Rotary pack and I was amazed at what

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was in it, the winding battery charged lights, radio, right down to a needle case, and a warm foil thing, all packed in a nice neat case and I thought, well it's there

In contrast, Mrs H, a widow in her late seventies, was also willing to purchase a pre-assembled emergency survival pack, from a door-to-door salesman. However, the context of her survival kit purchase was very different, as it was an opportunistic commercial transaction without support from social networks.

A few years ago a nice young man who I think was another university student earning a bit of money in the holidays, came to the door, 'door to door' selling a haversack, full of everything you could possibly want in an emergency. I've never had to use it, I know there's a tiny, tiny little stove in it, and there are horrible looking biscuits. He said the American armed forces used them and they look like dog biscuits (laughs). But he was such a nice young man that I bought it from him (laughs) and I have no idea how I will use it you know but it's there, somebody can use it, and there are flare lights and all sorts of things in it

Mrs H was pleased to be able purchase preparedness survival items from a door-to-door salesman because she was homebound and frail. However, a lack of familiarity with the survival items and their use, suggested Mrs H's preparedness was limited despite her efforts; she lacked an opportunity for supportive interactive discussion, which increased her vulnerability in the community. Reduced opportunities to independently discuss preparedness were identified by others, which suggests that this topic does not arise easily in everyday conversation, and is neglected as expressed by Mr B, aged 88 years:

Oh only in a general way for two or three sec...moments, you know you ask one question and they give you an answer, or I answer their

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question, and then the conversation turns to something else, well you don't know what to ask, until the emergency strikes what is the emergency going to be, how severe?

Mrs H also found that asking for family support for disaster mitigation was difficult. Therefore, reduced social opportunities to discuss disaster mitigation had an impact on her knowledge. In the following excerpt Mrs H talked about how she had requested her son to secure her china cabinet to the wall, which he had done. However, her china ornaments were still unsecured on the shelves, and a question from the interviewer about use of flexible adhesive (blu tack), revealed her unfamiliarity with this preventive measure and the difficulty of shopping independently:

Mrs H: I don't know where you would get that, in some hardware shop or something?

I: Well blu-tack, you could get at a stationery shop.

Mrs H: You see shopping is a great difficulty for me now, and really since I haven't been able to drive and since I can't walk very far either.

Mrs H's opportunity to shop independently was restricted. The extra challenge of shopping for ordinary everyday items, as well as having knowledge about, and sourcing 'extra-ordinary' items for emergency preparedness was an added burden.

The second theme of social networks identified the value of supportive social relationships and social interaction in assisting older adults to respond to emergency management advice. In general, both media and the influence of social interaction have been found to positively influence household preparedness (Solberg, Rossetto, & Joffe, 2010) while interactive learning through discussions with informal sources has also predicted preparedness (Heller, Alexander, Gatz, Knight, & Rose, 2005). Similarly, receiving information about what to do to get ready for an earthquake and seeing others

prepare influenced preparedness behaviour (Mileti & Darlington, 1997). However, age specific studies with older adults have not examined the influence of the social environment on preparedness actions. A small qualitative study with a sample of ten older adults in the USA found that despite acknowledging there was a need to be informed, participants perceived a lack of opportunity to become better informed about preparedness information, (Duggan, Deeny, Spelman, & Vitale, 2010).

Although, some older adults in our study did have the opportunity to discuss preparedness recommendations with others and altered their behaviour accordingly, a general lack of opportunity to initiate discussion with others about disaster preparedness was also identified. Older adults may approach the topic carefully because initiating such discussions may be interpreted as creating extra demands on social networks, particularly family, and this idea was developed in our participants' talk around social exchange.

Social exchange

The final theme depicts how giving assistance and making requests of others was expressed. One couple viewed the community assistance they had given to others over the years as a legitimate and reciprocal social resource to call on if help was needed during a disaster.

Mrs L: We've got a very caring neighbourhood

Mr L: Especially as we age, we like to be able to return the ah you know if there is a problem that we can return the you know, to help them sort of thing

Mrs L: I think that we've tried to do it when we were younger, that we've tried to do it for the older people, you know in the area

I: Yes, so reciprocation

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Mrs L: Yes, yes

Mr L: That's right, that's what it's all about

Mrs L: Yeah, it's payback time

In the aftermath of a disaster some older adults also wanted to contribute to assisting their communities. Their offers were practical and concerned with how others in the wider community might have fared in the aftermath. A couple aged 83 and 90 years suggested that their own resources such as a swimming pool would be useful. Mr and Mrs W (aged 88, 86 years) suggest their caravan would help others:

We've got basic items in our caravan that we could use...and as well it would enable us to get out perhaps and help others who are in bad situations and that would be a great advantage, and being a campervan with centre space, and we could put injured people on the floor in the van and transport them like that or we could pull the bed out and have people on the bed while we travel, which of course we never normally do, but in an emergency like that, that could be done

In the following excerpt, the nature of giving and receiving assistance from others who were a similar age was expressed in the context of post disaster response by Mr and Mrs A (aged 90, 83 years):

And if the earthquake was really bad I am sure we could share with our neighbours...because we're just lucky, if you call it that, ahm a number of the... most of the people in this street are close to our age... so it's not as if we are just with young folk, we're mainly with older folk...yeah... so they'd be in the same position wouldn't they? Wanting to perhaps share the gas [BBQ]

The nature of social exchange suggested making social demands of others the same age during the response phase of a disaster was assumed to be a shared view, which

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would be interpreted in a similar way by other older adults. Thus, in the aftermath of an earthquake, social relations among older adults were anticipated to be an equal social exchange compared with younger people.

In a post disaster context, the social balance between making a personal contribution to others, remaining independent and evaluating personal requests for assistance, was also viewed as an important concern. The following excerpt from Mrs B aged 82 years, highlighted the interpersonal complexity of social exchange:

It's the fringes; the aftermath that you are picking up the bits and pieces isn't it? Can you contribute, can you be independent, can you not overload services with your own requests, one can't tell can one?

The theme, social exchange was also linked to participants' views about belonging and trust within their neighbourhood communities and expectations of post disaster assistance. The following excerpts about community illustrated how Mrs O and her husband (now deceased) experienced her local community:

We've always looked out for anyone coming in new and invited others in to meet them... wherever you walk there's someone to say hello, good day, who would just take that further I am sure in an emergency, and say how are you, and do you need anything, sort of thing

However, not all participants lived in supportive environments, where everyday social exchange was experienced. In the following excerpt Mr A, aged 89 years, talked about his anonymous local neighbourhood. Childhood experiences of positive community reciprocity were recalled, which were compared to his present situation, where he experienced a reduced sense of community connectedness and social exchange with neighbours:

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I don't know the person next to where I live. The only person I know is the person who lives next door here, and yet it's not an everyday conversation, its not an everyday meet, it's once a month perhaps hello from where I am in my bedroom, I can see her putting the washing out, I tap on the window, 'hello', and that's about all you know, there's no afternoon teas or morning teas or come in for a cup of tea, or anything nothing like that

I: So it is not as easy to be together before a disaster?

Mr A: No, I can remember how to be friends when I was a child, because my mother, if she saw any council workers or public works workers working on the road she'd offer them a billy of tea (laughs).... Ah there are some people who work out here [road contractors] where I will break the ice and I will go and say hello to them, thinking of what my mother used to do, you know, and suddenly it gells, oh, he's a nice chap.

I: So, perhaps it's not as easy to make friends nowadays?

Mr A: No, not nowadays no, no, you try to, but sometimes you get a blank look, you know, I often strike it down at the supermarket, I will offer to take a trolley out for a lady, she says, "no thank you, that will be all right, I'm all right"

Similarly Mrs H identified that her community support was problematic because her neighbours were frail, and supportive relationships had not developed:

Well my neighbours are very elderly too and he's not at all well and we don't get on very well either, so I wouldn't be able to rely on him at all

The transient nature of neighbours who do not reside in communities for long, or who were away all day and some distance from home also impacted on the quality of social exchange and available neighbourhood assistance:

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You know even though we've been in the area thirty years, they change all the time...it's one of these streets (Mr G, 88 years)

Well Alex, next door would always come and help if he was here but he works in Wellington and he's out seven to seven you know on the train everyday, and next door, well I don't really know them, I will have to get in touch with them, I tried once, they are rental tenants (Mrs McA, 83 years)

Social exchange was also associated with having a lack of knowledge about community assistance in a disaster. Some participants in our study expressed a level of uncertainty about what organisational help would be available such as the presence of the local Red Cross. A lack of information about civil defence at the community level was also raised:

We know that there is probably somebody appointed as a co-ordinator...but who he is or where he is, and what he is, I wouldn't know... you would have thought that a civil defence co-ordinator would have made himself more available and known about (Mr and Mrs A, 90, 83)

One is dependent on the infrastructure and the people around you. I am assuming and I am sure rightly, that the civil services, the ambulance and council and road people and police and in our case with the harbour master, are aware of these sorts of things (Mrs B, 82 years)

The theme, of social exchange has outlined how family, neighbours and lifeline agencies were identified as having an influence on older adults' considerations about preparedness. Some older adults had established interpersonal relationships within their communities whom they could ask help from. While others in the study experienced a reduced sense of community, and their knowledge of community networks to support them was less certain. These excerpts suggest that addressing the social context of

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preparedness at the community level would help to reduce uncertainty, encourage community participation, and facilitate social bonds within neighbourhoods and organisations. A survey about the role of voluntary community based preparedness organisations in Japan found that having personal knowledge about disaster planning contributed to the reduction of social vulnerability and community isolation (Mimaki, Takeuchi, & Shaw, 2009). The creation of stronger mutual communication between organisations and individuals would benefit communities, including older adults (who determinedly wish to remain independent) and further contribute to creating resilient communities. In a post disaster context neighbours and communities are a vital part of recovery as seen in the Kobe earthquake, where having a tradition of community activities enabled positive recovery (Nakagawa & Shaw, 2004). Likewise, a predictor of disaster preparedness was being embedded within a community in non-disaster times (Ronan & Johnston, 2005).

There is a need to ensure adequate preparedness planning with older adults, which includes engagement with community organisations tasked with community preparedness. Assisting older adults to be prepared will have an impact on their ability to remain independent and assist the community in the post disaster phase. Findings from the Hanshin-Awaji (Kobe) earthquake of 1995, suggested that older adults' vulnerability during the response phase of the disaster was linked to not making their needs known, which led to a pattern of neglect (Ngo, 2001). The author questioned the role of cultural variables, combined with age related needs and the magnitude of the earthquake in contributing to negative outcomes. Similarly, Huerta and Horton (1978) suggest that accessing services may be perceived as a threat to independence and sense of older adults' autonomy. An important characteristic of older adults' relationships with others is related

to how meanings of social exchange and the notion of reciprocity are used to manage independence and asking for assistance from others (Breheny & Stephens, 2009).

However, for some older adults who are less able to manage, they may avoid asking for help, because they cannot equally give back, and seek to avoid being a burden to others (Breheny & Stephens, 2009). In our study, negotiating social exchange and managing reciprocity was seen as highly relevant to older adults in the context of understanding influences on preparedness.

Conclusion

Currently public messages about household preparedness assume that individuals will take personal responsibility for readiness. Our research showed that older adults did consider preparedness to be a personal responsibility, despite age related challenges associated with declining health; management of ongoing health needs; caring for a dependent spouse; and living alone. However, the participants' experiences of preparedness revealed the practical challenges they faced in being able to undertake ongoing preparedness planning. For example, ensuring stock rotation, replenishing water stores, coping with the weight of water bottles, shifting heavy items, and concern about medication supply. Some older adults were faced with the dual challenge of preparedness both in the context of managing their age related decline and resource loss, and managing disaster preparedness with little interactive assistance.

Planning for age-specific disaster preparedness to assist this independent older age group must take into account socio-cultural norms around independence in old age, and consider how older adults negotiate and manage asking for assistance from their social resources. In the context of disaster preparedness, cultural norms of independence need to be acknowledged and integrated into age specific planning for older adults, to reduce

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their vulnerability during a disaster. Older adults generally wish to remain independent in the community and their attempts to ensure household preparedness is a reflection of their desire to maintain their independence in the everyday. However, age related decline, health challenges, care of a dependent spouse, and reducing social resources can combine to create an environment whereby access to preparedness knowledge and ability to perform recommended actions diminish over time. Access to health care and welfare is available to support ongoing independence, however, there is an evident gap in how older adults are supported to maintain preparedness. For many older adults resource loss (physical, psychological, social and economic) creates greater vulnerability prior to and during a disaster. Many older adults living independently in the community may require support to manage preparedness, which could positively influence their ability to adapt to age related changes, and reduce vulnerability to negative outcomes.

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Link between Chapters Four and Five

The narrative interviews with participants from the Wellington study provided detailed understandings and meanings about disaster preparedness from the perspective of older adults. The research methodology provided the opportunity for older adults' to express their views about preparedness beyond the focus of a disaster event. Most participants also shared their experiences about the broader concept of preparedness in later life and extended preparedness meanings beyond the context of disasters.

The second paper from the Wellington study will provide further interpretive analysis of the data to show older adults' subjectivities about preparedness and old age, and will examine the multiple and complex meanings linked to preparedness. From an epistemological perspective, using a social constructionist approach, and the thematic analytic method, I was able to further identify interpretive or latent themes to examine the underlying ideas expressed within the narratives (see Braun & Clarke, 2006). This exploratory paper focuses on meanings about age related preparedness, which is salient to understanding socio-cultural influences on adults' disaster preparedness.

Chapter Five: Older adults' meanings of preparedness:

A New Zealand perspective

Tuohy, R., & Stephens, C.

(under review) *Ageing and Society*

Abstract

Contemporary western social policy encourages older adults to maintain independence in the community. Socio-cultural norms of independence have recently become associated with successful ageing. Personal autonomy and self-responsibility are cultural markers by which older adults increasingly define their lives and identity. Many older adults seek to remain independent within their communities, while coping with age-related decline, and living alone with decreased social connectedness. These characteristics have also been associated with personal and social vulnerability and explain why older adults are at higher risk of experiencing disproportionate negative outcomes during disasters. This paper describes findings from narrative interviews with a sample of independent community dwelling New Zealand older adults. The interviews sought to explore their views about disaster preparedness. Their accounts became a collective and bigger story about personal preparedness, and social relationships in later life, which extended beyond the context of preparing for a future disaster event. Age-specific preparedness was identified by older adults, as a way to maintain independence in the everyday context of their lives. Concerns about health influenced their choices and actions as they evaluated and prioritised goals and strategies to maintain independence and well-being. Social relationships were also considered an important resource to support independence. Understanding the role of preparedness in the everyday lives of older adults has implications for improving the disproportionate negative outcomes this

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vulnerable age group can experience during a disaster. Therefore health, gerontology and emergency management have much in common when considering older adults' preparedness during non-disaster times.

Keywords: ageing, older adults, independence, preparedness, disaster preparedness, health

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Recent disasters have shown that older adults are at increased risk of experiencing higher mortality and morbidity rates in a disaster event (Bolin & Klenow, 1988; Perry & Lindell, 1997; Cutter, Boruff, & Shirley, 2003; World Health Organisation, 2008).

Globally there is a growing concern about the demographic challenges associated with an ageing population. In the context of increasing extreme weather related events (Intergovernmental Panel on Climate Change, 2012), this age group represents an important population to be considered with respect to disaster preparedness. To date, much of the preparedness research has focused on general adult populations with little differentiation given to age specific differences. Ngo (2001) argues that older adults living independently in the community must be recognised as an at-risk group prior to a disaster event. However, pre-disaster consultation and research with older adults over 65 years as active contributors to age specific preparedness knowledge, has not been widely undertaken. This paper draws on the narratives of the older adults who participated in a qualitative study, which sought to explore older adults' understandings about disaster preparedness (Tuohy, Stephens, & Johnson 2014, in press).

During the analysis of our interview data, we found that a bigger story about ageing was interwoven with older adults' accounts of disaster preparedness; their understandings about preparedness were linked to talk about maintaining independence. This paper provides a view of how a sample of older adults living in the community actively managed their independence in later life. Their meanings of being prepared for a disaster included wider cultural stories of contemporary ageing in the community.

Independence in later life may be seen as a relatively new focus for older people. In many western countries, neo-liberal social policy on ageing has been influenced by concerns about the growing ageing population, and the anticipated burden of health and social welfare costs to government (Biggs, 2001). Advances in medical care, has further

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shaped a perception of ageing away from images of decline and dependency towards ageing policy that seeks to encourage active, healthy lifestyles (Katz & Laliberte-Rudman, 2005; Smith, Braunack-Mayer, Wittert, & Warin, 2007). Petersen and Lupton (1996) argue that encouraging personal autonomy is a neo-liberal strategy aimed at reducing the role of the state, whereby citizens are encouraged to become more self-regulating, and conform to monitoring and taking responsibility for self-control of their body. Within social policy, the demands on older adults to maintain independence have been constructed to be both a personal, and self-caring endeavor focusing on independence and health (Katz & Marshall, 2003).

The possibilities to manage ageing therefore offer older adults new representations of old age (Gilleard & Higgs, 2000). However, these contemporary concepts of ageing have created a paradigm that encourages personal autonomy and self-responsibility, which lead to practices such as self-reflection and risk management to achieve and maintain self-reliance (Rudman, 2006; Katz & Marshall, 2003). Self-reliance and independence, rather than reliance on others have become cultural markers by which older adults increasingly define their lives (Minichiello, Brown, & Kendig 2000; Smith et al., 2007). Thus, the value of being independent and self-reliant, and not becoming a burden to others has become a moral imperative, and marker of identity (Biggs, 1997; Townsend, Godfrey, & Denby, 2006); and remaining independent in old age has become a socially valued achievement (Portacolone, 2011). As a consequence older adults must pay greater attention to managing their independence in the community.

Critical gerontology has drawn attention to the apparent simplicity but potentially damaging aspect of social policy about active ageing. The practical policy focus on ability to live independently in the community has primarily been on functional criteria such as physical and cognitive capability (Holstein & Minkler, 2003; Mack, Salmoni,

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Viverais-Dressler, Porter, & Garg, 1997). Critics point out that active engagement with life is problematic as a cultural image of ageing, because it primarily draws attention to health and physical activity (Holstein & Minkler, 2003). This critical perspective argues that maintaining functional health in old age represents a normative standard against which successful ageing is measured, which in turn influences older adults' choices and actions (Holstein & Minkler, 2003; Minichiello, Browne, & Kendig, 2000). Holstein and Minkler (2003) argue that this perspective ignores genetics, and the influences of social factors such as gender and income on health in later life. Yet, the preoccupation with healthy ageing and the prevention of ill health remains (Secker, Hill, Villeneuve, & Parkman, 2003). Therefore older adults manage their health needs within the cultural discourse of personal responsibility and independence in the community so as not to be seen as a social or financial burden. In this way, not only are the norms of ageing perpetuated but meaningful experiences of physiological, emotional, and contextual adjustment and transition remain neglected (Holstein & Minkler, 2003). It is against this background of promoting independent ageing within the community that the context of older adults' concerns about their health can be understood.

Currently, 90 percent of older Americans live at home (Peek, 2010); and similarly in New Zealand, 90 percent of adults over 65 years are expected to be living at home, of which 28 percent are predicted to be living alone by 2021 (Statistics New Zealand, 2004). However, despite older adults ageing independently in the community they are exposed to risks and vulnerabilities associated with the physical realities of ageing (Stephens, Breheny, Mansvelt, 2014). The individualised nature of ageing can create personal and social vulnerabilities as older adults experience age related decline such as disability and chronic disease and living alone (Katz & Laliberte-Rudman, 2005; Portacolone, 2011; Smith et al., 2007). Loss of traditional forms of social assistance that previously could be

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relied upon can also become a challenge to older adults' ability to maintain independence (Lupton, 2013). For example, family employment patterns (women in the workforce), and family relationships (divorce, remarriage, geographic spread) can impact on the availability of family networks as a resource for older adults to call on (Kemp & Denton, 2003; Lupton, 2013). Consequently, both declining health and reduced social assistance can threaten independence, which older adults must confront and manage.

In times of threat such as a disaster, older adults experience a greater risk of negative outcomes, and attention to age specific preparedness using a qualitative research approach, has not been widely explored from the perspective of older adults (Tuohy, Stephens, & Johnston 2014a; Tuohy, Stephens & Johnston, 2014b). Both personal and social vulnerability have been identified as factors linked to poorer outcomes, which in a disaster are likely to be exacerbated (Bolin, 2007; Tuohy & Stephens, 2011). Consequently older adults are more likely to experience higher morbidity and mortality rates (Cutter, Boruff, & Shirley, 2003; Perry & Lindell, 1997; WHO, 2008). For example in the Kobe (Japan) earthquake, 1995, more than 50 per cent of the casualties were older adults, but more than 90 per cent of subsequent deaths were older adults; in Hurricane Katrina, USA, 71 per cent of the deaths in Louisiana were aged over 60 years WHO, 2008). In the Chicago heatwave, 1995, the high death rate of older adults was related to physical decline and social isolation (Klinenberg, 2002). The author also suggested socio-cultural norms of independence and the importance of self-sufficiency, also contributed to the high death rate.

Bearing in mind the social influences that have shaped how older adults in the community are expected to age independently, autonomously and responsibly, with particular attention to managing bodily ageing, this paper now draws attention to how accounts about disaster preparedness became a collective and bigger story about personal

preparedness, and social circumstances. Both personal and social factors framed how independence was managed in old age and provided a perspective from which to understand influences on disaster preparedness.

Method

This study used a narrative approach, which is sensitive to social context, subjectivities and meanings, and provides rich detail and broader understandings about human experience (see Riessman, 2008). The narrative approach enables the telling of stories, which present and transmit social norms and cultural representations, and provide a map about our social world (Pollner & Stein, 1996; Bruner, 2004). Furthermore, stories can also re-conceptualise and re-present unfamiliar narratives about social practices and disseminate knowledge (Pollner & Stein, 1996). In this way asking older adults about disaster preparedness, a subject that has received very little research attention from a qualitative perspective provides contextually sensitive expressions of everyday social life. Hence, broader understandings from independent older adults about how their lives are socially situated provides an important perspective that extends the concept of preparedness.

The participants

We recruited older adults who were receiving home care assistance from a private agency providing aged care support in the community. The agency's clients were a mixture of fee-paying and welfare funded older adults. The agency distributed the research information letter and invitation to participate to their male and female clients; participant replies were posted to the researcher. The agency manager undertook three mail outs and the response rate was 41 percent.

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The study was conducted in 2012 and is based on 16 interviews with older adults aged between 65 and 90 years: seven men (four were widowed, one man's wife was in care for Alzheimer's Disease, another had a disabled wife who was not present during the interview), and one man whose partner was at work; five women, all were widows; and four married couples. This resulted in 12 interviews with individuals and 4 with couples. Participants were living across a range of high, middle and lower income suburbs, and while most participants paid for their home help services (household cleaning and shopping), two received welfare assistance. All lived in the community except one couple who had very recently moved to a villa in the grounds of a retirement complex.

Participants were interviewed about their views on disaster preparedness. The interviews were undertaken throughout the region of Wellington, New Zealand by the first author. At the conclusion of the interview participants were offered a civil defence preparedness booklet and the interviewer answered any questions raised by participants about disaster preparedness. The interviews were audio-recorded, transcribed and returned to participants for checking and release. Participants gave consent for their information with the knowledge that their personal names and other identifying information would be anonymised. Ethical approval for the procedures was gained from Massey University Human Ethics Committee. No participants were distressed during the interview.

Data analysis

The analysis of narrative accounts attended to meanings of talk about 'being prepared' in the context of age related threats and challenges of living independently in the community. The interview recordings were transcribed and analysed by the first author and the transcripts were read many times to develop an understanding of the data. Recurrent patterns of meaning were identified within the data set and coded (Braun &

Clarke, 2006). Thematic analysis assisted in the interpretive, and insightful process to analyse and make sense of the data set, as meanings are created from the context of events, subjectivities and stories told (Boyatzis, 1998; Braun & Clarke, 2006). To assist in managing the dataset, and develop a basic coding scheme for interpretation of thematic patterns, the transcriptions were transferred onto a database using the software programme Atlas.ti (Scientific Software Development, GmbH) after the method of Friesse (2012). The key themes were identified whereby the analysis sought to give voice to older adults' subjective meanings together with the influence of social context on those meanings.

Results and Discussion

Initially, participants talked about aspects of conventional disaster preparedness, which included assembling survival items and knowledge about protective actions to take. However, the narrative approach of the study allowed for stories about preparedness in later life to be told. In this way the individual autobiographical narratives, became bigger life stories (Phoenix & Sparkes, 2009), which were socially and culturally located.

Asking about disaster preparedness enabled a new story of preparedness to be told; one that was highly relevant to older adults in the community. Older adults' disaster preparedness became stories about age specific preparedness, which focused on health and social relationships. Throughout the interviews older adults discussed their age specific needs, which were related to physical decline and personal adjustment to old age. They discussed their medical health and their reduced mobility in the context of the need to be prepared for such changes in later life. Older adults also talked about personal challenges and adaptation. In sum, their 'bigger' life stories were about how they responded to managing independence in the community. This paper illustrates how

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concerns about managing age related independence within a New Zealand context shaped understandings about being prepared.

Health concerns

Preparedness for declining health was talked about within the day-to-day management of independence. Len, aged 65 years was unable to walk without physical aids. In the following extract he appraised his reduced functional mobility:

You actually think through situations, whereas once upon a time you wouldn't have, I'd automatically think I would cope, but it is just like walking. I have to work out instinctively and know where the next hand holder is...and I wouldn't have thought that way five years ago, ten years ago...you get a real shock and you're suddenly helpless.

Another participant, Ron, aged 90 years, who lived with his wife, assessed his risk of falling to be very high. His mobility was now a threat to his independence and needed to be managed. Consequently, he was very careful when walking, and always relied on his walking frame. Preparedness to manage his personal risks, which he associated with physical decline, was addressed by doing the recommended physiotherapy exercises to try and strengthen his muscles to get them "back into a state of fitness".

For Nell, aged 86 years, even going shopping was assessed as a potential threat to independence. Therefore an evaluation of everyday routines and their attendant risks was also considered to be necessary to anticipate. Nell identified the importance of managing her husband's chronic health condition (diabetes), and stressed the need to prepare for unexpected health threats before they left the house:

Whenever we go out anywhere, even just going down to the shops he always takes his insulin with him...because anything can happen...like a car can knock you over on the street, or anything else, kids on skateboards can send you flying, and land you up in hospital.

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Many participants identified the importance of supportive technologies to assist in maintaining their independence. Cell phones and medical alarms were identified to be important aids for managing future health threats such as heart attacks and strokes. One couple in their late eighties had pre-programmed emergency contact numbers (ICE, In Case of Emergencies), which they had learnt about when attending a cell phone course for seniors. Consequently the couple had phone numbers for the chemist, doctor, and family contacts on their cell phones.

Increasing frailty and the desire to maintain control over managing independent status was a further expression of preparedness. Fred and Joan aged in their late eighties had recently moved to a townhouse within the grounds of a retirement complex. In the following excerpt the couple talk about their need for greater personal care because of declining health:

Joan: We wanted to stay in our own home didn't we?

Fred: Yes...

Joan: We were very happy there, but Fred has advanced prostate cancer, and ah both of us are in our eighties, and we are very well aware that something could happen to...well like my problem with my heart three weeks ago. I wasn't aware that it was in as bad a state as it was, and we ah just have to be prepared for anything to happen...so ah I feel it's wise to think ahead and be prepared to make the sacrifice necessary. Let expedience take precedence over nostalgia.

The centrality of health concerns in later life, constructed preparedness to be a reflexive and ongoing endeavor because health needs for independent older adults old age can change quickly (Smith et al. 2007). Peterson and Lupton (1996, p. ix) argue that within the western world, "health status and vulnerability of the body" has now become an individual responsibility. This suggests that the independent self must calculate and

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evaluate risks in an ongoing way. In this theme, health needs were characterised by personal regulation and self-responsibility. Older adults utilised the concept of preparedness to assist them to anticipate risks and adapt to change. Yet preparedness was also interpreted to be a reflective embodied process about understanding decline and finitude. Responding to health conditions in old age was an active response to managing independence; and reflected the dominant view that ageing was defined in terms of one's health status (Holstein & Minkler 2003). The stories were also bigger social stories about social norms of independence, and the endeavours of participants to live by these social understandings. Managing an ageing and vulnerable body illustrated how older adults increasingly adopted and prioritised preparedness strategies to monitor their everyday health to assist in remaining independent older adults within their communities.

Preparing for death

Rita, an 82 year old widow, told a story that provides a very clear illustration of the way in which participants' interpreted norms of independence, while preparation was not for survival but rather for death. In answering questions about her preparedness for disaster, Rita first showed that she was determined to adapt to being old, despite her difficulties in remaining mobile. Rita's desire to be independent in the community was steadfast. Thus, as an older adult she wanted to remain self reliant and responsible.

From my point of view having had a life that was extremely healthy - didn't have to think about my health, suffered what turned out to be a twisted muscle in a leg when I was gardening, and ahm badly diagnosed, I thought it would go away. It has left me with years of walking badly for the first time in my life and getting up out of chairs, I can do it, but it is slow and my main aim is to remain as independent as possible, I am taking osteopathy and various things to improve, but one's physical ability for the first time in my life is a consideration....

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The outstanding difficulty is the lack of strength and the lack of speed, you're not doing what you used to do and you have taken time to adjust to this period of your life...my neighbour when he saw that I was struggling with my gardening leg and struggling to get it right again lent me a walking stick...and I now find that I've got to train myself to give it up if I possibly can, but while I'm doing that I notice that my feet are much slower, the knees don't turn me round as quickly and all of that is going to be a hindrance to yourself or anyone else trying to assist you [in a disaster] and therefore as I say, I feel as much as anything, as much as attending to your physical environment and your physical health, you'd better work on your philosophy of life and death.

Rita's bigger story was about preparedness for managing declining physical health in order to maintain her independence in the community, but she had a more overarching concern which she moves toward at the end of her narrative. As much as she is working on maintaining physical capacity (training herself to walk again without a stick), Rita knows that this will not help in an emergency situation and her more important preparation task is preparing philosophically for death.

Helen described this preparation more succinctly. Rather than work toward preparation for death as the climax of her account, this was at the forefront of her mind:

Oh I suppose at my age... you see at my age we're really more thinking about preparedness for death than anything else, and our own deaths, not general death you know and that sort of thing crops into your mind much more and ah you know, thinking of how we would cope if you sort of had a stroke on your own. So with that in mind I've got one of these help phone things you know.

Helen, a widow aged 78 years was concerned about her recent hospitalisation for a seizure, and the implications it had for her to stay independent in the community. She could no longer drive, relied on family to take her shopping, and had invested in a

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medical alarm. But for Helen, preparation was based on her immediate concerns about the manner of her own death.

These two accounts exemplified how preparedness with regards to functional health (e.g. Rita), and chronic health conditions (e.g. Helen) were linked to considerations about their own death. Cicirelli (2006) suggests older adults' views about death change as their health declines and they sense themselves to be closer to death. Results from a longitudinal study of older adults over 85 years, conducted in San Francisco over a six year period found that as older adults' health declined, many had considered and made preparations for death, such as writing a will, planning funeral arrangements, and other practical tasks (Johnson & Barer, 1997). Furthermore, older adults in the study were increasingly aware of their finitude and were philosophically accepting and prepared for their end of life (Johnson & Barer, 1997). In the context of preparations for disasters and survival, personal meanings of death emerged as a central concern. Our study suggests that at some point older adults will consider health problems, loss of spouse and others, to signal life is drawing closer to an end. Preparedness for end of life therefore becomes a more global and over-riding concern. Therefore, preparing for a disaster, and preparing for survival takes on different meanings for some older adults living independently in the community.

Social preparedness

Many in the study also expressed a second story: that of social preparedness to support independence. Older adults talked about a range of relational situations where preparedness was storied as a response to life course events and situations now being faced. Their challenges reflected the dynamic interpersonal complexity of managing ageing in the community and were reflections of contemporary socio-cultural norms of independence.

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Nine older adults in this study were widowed, and many talked about the death of their spouse and their adjustment to living alone. Being prepared was linked to maintaining independence and re-evaluating their everyday challenges in the context of living alone. In the following excerpt Jim, aged 88 years had assessed his risks now that he was alone, and deliberately undertook preparedness actions that enabled his family to have easy entry to his house in case of a future health emergency:

Well, I am on my own now, my wife died late last year, so I've got different things to think about...if I have a heart attack you know, can my sons and daughters get into the house? That's why I take the key out at night now, other than breaking windows and that type of thing. I try and anticipate what could happen.

Jim recognised his social vulnerability, and ensuring his family had access to his house was one practical measure that gave him confidence now he was living alone. Similarly, Jean, aged in her late seventies also linked preparedness to the experience of being alone “because it is just myself suddenly to look after”, making decisions on her own without her husband to share discussion with was something she was now adjusting to. Another participant, Rita, aged 82 years, illustrated meanings about being on her own with regards to how she evaluated needing assistance with her car: “and I suddenly thought well I am helpless without this assistance now”, and subsequently re-evaluated the importance of being mindful of the value of maintaining her breakdown car insurance because she was now on her own.

Social preparedness was also associated with a sense of disconnectedness to neighbours, and highlighted factors that extend beyond health, which can support independence. The following excerpt illustrated how being independent and alone in the community was an isolating experience, in terms of having people to call on in times of need. Jim, aged 89 years had been widowed two years, and had no close family alive:

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I don't know the person next to where I live. The only person I know is the person who lives next door here, and yet it's not an everyday conversation, its not an everyday meet, it's once a month perhaps hello from where I am in my bedroom, I can see her putting the washing out, I tap on the window, hello, and that's about all you know, there's no afternoon teas or morning teas or come in for a cup of tea, or anything, nothing like that.

In the following excerpt, Helen, aged 78 years did not have contact with her neighbours, and had limited support from her son, whom she did not like to bother unnecessarily. In response to the interviewer asking how she would cope with unexpected demands she replied:

Helen: I don't know, you see the older you get the less confidence you have, and when you are losing your mobility and things like that you lose an awful lot of confidence...

I: When you said, as you get older you lose your confidence, is there an example you can give me?

Helen: Oh well you see, well its just a lack of mobility, I've had several broken bones and each time that slows you up a bit more and ...well, I'm not allowed to drive for a year since I had this seizure.

Helen constructed her independence as now being more difficult. Factors that support independence were problematic: isolation in the community, reduced social support and physical decline, all contributed to her loss of confidence and her ability to cope with unexpected demands.

Older adults also made personal assessments regarding their need for further assistance to manage their independence. In the following excerpt, Joan and Fred, aged in their late eighties, linked preparedness to reappraising their personal and social needs in later life:

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Joan: That's one of the persuasive points I think about moving into a [retirement] village, we've got friends who say no I'd never want to go into one of those places, but I think it can be very short sighted, and ah not knowing what's going to happen today or tomorrow, ahm you're unprepared if you are just in a house on your own...unless you've got lots of things in place ready to communicate. We wanted to stay in our own home, didn't we?

Fred: Yes...

Social preparedness was also storied to be an important factor that supported independence in the community. Numerous participants gave examples of how neighbours were available to offer help, and the confidence they had in knowing assistance would be available:

Joe: Yes we don't have a car now, ah we are completed ah grounded so, mmm...yeah...so it's quite awkward really but ah we can still get around here around the place, around the section and in the garden....

Nell: our neighbours are very good...

Joe: yeah that's another important thing...

Nell: The lady next door, she will take us anywhere where we want to go and she usually ah contacts us nearly every morning to see if we've got any medical appointments or if we want to go shopping or anything.

Joe: she's lovely, yeah and people across the road, there are several in the street that ah we know.

Similarly one couple aged 88 and 90 years, identified sources of social support for independence, which included each other, relatives and neighbours. In the following story spontaneous assistance, which had been given to help carry in a heater was interpreted as social preparedness; because help was available when it was needed:

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Ron: And neighbours if they're fit and well would help, I am sure they would. I was impressed over this thing yesterday [assistance to carry heater into house] how much spare capacity we had in the way of human material...

I: To help you with the heater?

Liz: Yes

Ron: Yes, to help us with the heater...

Liz: And once they had got it in, in the big box, shall we get it out of the box? The fellow who helped Ron, who was the first one on the scene, you see he's never been in the house before and the very fact of having neighbours in your house, they know where Ron might be in his chair you know, that he's not down in his study.

Concerns about managing independence in old age shaped understandings of being prepared. Older adults in our study were making assessments about how they would cope on their own and assessing their social preparedness, which reflected norms of independence and personal responsibility. This theme can be interpreted to reflect contemporary age specific social expectations and cultural representations, which encourage decreased dependency by older adults on public welfare systems. Kemp and Denton (2003, p. 757) urge consideration of social constructions of independence, which represents a shift from “collective to individual responsibility”, because many older adults will not remain independent, despite expectations of individual responsibility. Independence in later life is generally perceived as a required condition to enjoy life through feelings of being in control and not being a burden to others (Portacolone, 2011). However, fear of being a burden can shape how older adults experience their lives, both in material and emotional ways (Kemp & Denton, 2003). This theme situates preparedness as a strategy that assists adaptation to being independent on one's own.

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However as Plath (2008) suggests, older adults' independence can be negatively experienced, because reduced financial, personal and social resources can contribute to neglect, isolation, and reduced safety. The influence of personal and social vulnerability, and its negative consequences on older adults in disasters (Cutter et al., 2003; Klinenberg, 2002; Tuohy & Stephens, 2011; World Health Organisation, 2008) provides a specific context to Plath's view.

Portacolone (2011) argues that the desire for independence is now a form of self-regulation that fosters personal control, and that a reduced institutional presence conveys "an ideology of freedom" which requires individual initiative for further assistance (p. 808). However, old age presents many challenges that may become a threat to independence, which must be personally managed. A study by Mack et al. (1997) on older adults' perceived risks to independence found personal health problems were of highest concern, which this study has also elucidated.

Age related change in later life has been conceptualised to be a dynamic balance between negotiating resource loss and gain. Resource loss, such as declining functional ability may influence how older adults consider and reappraise their personal and social resources in order to support and maintain independent living. From this perspective, adjusting and adapting to change can assist everyday function in later life (Baltes & Lang, 1997; Lang, Rieckman, & Baltes, 2002). Baltes, & Baltes (1990) have suggested that the maintenance of everyday function involved three adaptive processes, which positively contributed to enabling independent living. Their model of selective optimisation with compensation (SOC) proposed that as older adults seek adaptive and successful ageing, they may reduce activities (selection); spend more time and energy on specific tasks or priorities (optimisation); and use new ways of reaching a goal (compensation). In understanding the role of preparedness, older adults were selecting ways of adapting to

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their changed levels of personal and social resources, which included thinking about preparedness for end of life.

Our findings suggest that preparedness was a fundamental part of older adults' everyday experience, and was consequently a practice which was actively used to address health and independence. The centrality of preparedness within older adults' day-to-day lives has provided a more detailed map about ageing in an independent world and presents narratives about social practices concerned with adapting and managing age related change. Any significant change in everyday circumstances of older adults lives has the potential to threaten independence. Consequently, many older adults must frequently re-evaluate, adjust, and develop compensatory ways of reaching goals to maximise quality of life. In this way anticipating and managing age related challenges situates the concept of disaster preparedness within a broader framework of age specific preparedness as older adults evaluate and prioritise goals and strategies to maintain independence and well being.

Conclusion

Preparedness in the context of ageing is an adaptive concept that extends beyond disasters. Our findings suggest that older adults' meanings of preparedness were linked to managing physical health needs and social resources within the community to support preparedness in the context of old age. Health concerns informed preparedness, which was associated with anticipating health decline and the need for assistance. Examples of preparedness included actions such as purchasing medical health alarms, carrying medication when going out, using a walking frame to prevent falls. Social preparedness was concerned with levels of assistance from family and neighbours, which could additionally support independence.

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Older adults in our study monitored their activities, which were influenced by health concerns; and they focused their priorities on maintaining independence and autonomy. Understanding the primary goals of older adults, and how they are accomplished, is an area of relevance in the context of preparedness and ageing. Therefore, future research to extend understandings about the socio-cultural role of preparedness and how best to complement preparedness practices would assist older adults to remain autonomous, independent and integrated in their communities; and ultimately improve outcomes in a disaster context.

It is highly relevant for disciplines such as health, gerontology and emergency management to work collaboratively and consider the bigger story of ageing in the community. Situating emergency preparedness goals within a health perspective is likely to be more cogent for older adults, and taking a multidisciplinary perspective has the potential to significantly improve disaster outcomes for older adults.

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Link between Chapters Five and Six

The previous two papers based on research from a sample of older adults provided participants' perspectives within a socio-cultural context: first, in the context of preparedness for a disaster, and second in the context of how understandings of preparedness were linked to adapting to and managing age related change. Together, these two papers provided age specific meanings about the dynamic context of preparedness in later life. Although the Wellington sample had not experienced a recent disaster, they all had experienced minor earthquakes over the years. Some participants also identified flooding as a hazard concern, while a few talked about the difficulties of evacuating during a tsunami if they no longer could drive, or had difficulty walking. However, the primary focus of their talk about disaster preparedness was preparing for an earthquake disaster. Although the research sought to take an all-hazards approach to understanding disaster preparedness, most participants identified an earthquake to be a relevant threat. The salience of the threat of earthquakes can be attributed to the recent catastrophic Canterbury earthquake sequence, which occurred in New Zealand during 2010 and 2011, and the catastrophic earthquake in Fukushima, Japan, which also occurred in 2011. Additionally, earthquakes have long been recognised as a hazard threat to Wellington, New Zealand, as it is a region that experiences ongoing seismic activity from both the Wellington and Wairarapa fault lines. The Wellington interviews therefore provided me with valuable insights into older adults' preparedness, which formed the basis of the next set of interviews with older adults who had experienced the recent sequence of catastrophic earthquakes in Christchurch, New Zealand.

The first earthquake, which affected Christchurch on 4 September 2010, occurred early on in my thesis planning when I was considering how best to explore the topic. I decided that interviewing older adults from Christchurch who had experienced the

September 2010 earthquake would provide a contemporary research opportunity, and fitted well with my research topic. Tragically, five months later, the more devastating 22 February 2011 earthquake occurred in Christchurch, which confirmed to me the importance of conducting research with a sample of older adults living independently in the community. The chance to research disaster preparedness in the context of a disaster event, (which became an ongoing sequence of earthquakes spanning about two years), was a unique research opportunity in my own country to understand influences on preparedness in the context of an ongoing disaster event. The following paper presents findings from the Christchurch interviews, which were conducted during September-December 2012, two years after the first earthquake in September 2010. Two years was considered sufficient time after the acute recovery phase, while allowing an explanation of the influences on older adults' disaster preparedness over time. This paper extends age specific research findings identified in the Wellington research to reveal contextual and age specific understandings and meanings about earthquake disaster preparedness.

Chapter Six: Older adults' disaster preparedness in the context of the September 2010 - December 2012

Canterbury earthquake sequence

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Abstract

Older adults are a population group identified to be at greater risk to negative outcomes in a disaster. However, there is limited contemporary research about independent older adults' disaster preparedness from an age specific perspective. The Canterbury earthquakes, which occurred in New Zealand, provided an opportunity to conduct 10 qualitative narrative interviews with a sample of participants aged between 66 and 86 years. Thematic analysis assisted in coding and interpretation of patterns across the dataset, and three central themes were identified: personal protection, practical preparedness, and social preparedness. The findings provide future practical direction for age specific preparedness planning during non-disaster times, which will also assist with improving outcomes for independent older adults during and after a disaster event.

Keywords: older adults, ageing, disaster preparedness, Canterbury earthquakes, emergency management

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Disaster preparedness is an important public education strategy, which conveys information about hazards, risks and actions to the general public (Haddow & Bullock, 2006). There is an expectation that households will adopt protective actions and store essential survival supplies to last up to three days, which would make surviving in the aftermath more comfortable until formal assistance became available (Heller, Alexander, Gatz, Knight, & Rose, 2005; Lindell & Perry, 2000; Paton, McClure, & Bürgelt, 2006; Ronan & Johnston, 2005). Much research on how to encourage individual preparedness has tended to focus on risk perceptions and influences on communication. Research methods used for this work have focused on predicting behaviour using social cognition frameworks, which focus on risk perceptions about the threat or hazard, beliefs about the warning at the individual level, and what behavioural intentions can be predicted (see Lindell & Perry, 2000). Such research methods provide a measurement of individual level cognitions, which have been theorised as explanations or predictors of population level behaviours and targeted in community or population level interventions. Despite interventions based on this work, levels of individual preparation remain low (Duval & Mulilis, 1999; Lindell & Perry, 2000; Ronan & Johnston, 2005).

Objective and deductive quantitative methodologies used in disaster research have not provided rich detail about broader social contexts and lived experiences and there has been little attention given to the wider social context and social influences on individual preparedness (Lindell & Perry, 2000; Tuohy, Stephens, & Johnston, 2014). Bolin (2007) has argued that studies focusing on factors influencing disaster preparedness need to pay more attention to the socio-cultural influences, which put people at risk. Generalising research findings to population groups in society without consideration of differences in social dimensions such as age, gender, ethnicity/race and socio-economic status, which contribute towards increased vulnerability in disasters, can mean that the circumstances

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of vulnerable groups are not considered in preparation advice (Bolin, 2007; Enarson, Fothergill, & Peek, 2007; Quarantelli, Lagadec, & Boin, 2007).

One vulnerable group that has been under researched is older adults. Within preparedness research in general adult populations there has been little age related differentiation in regard to influences on preparedness behaviour, which could contribute to understandings of preparedness. For example, little is known about how older adults interpret preparedness information (Peek, 2010; Phillips & Morrow, 2007). Research on earthquake preparation following the 1994 Northridge, California earthquake found that adults aged 55-65 years had not undertaken preparedness actions prior to the earthquake and nor did their subsequent experience of damage motivate them to prepare (Heller, et al., 2005).

The richness of qualitative research approaches can highlight the diversity and differences within data (Braun & Clarke, 2013) and provide 'how' and 'why' understandings about influences on preparedness by taking its meanings into account. A finer grained approach, which considers the social context of specific population groups and their particular situations, is needed so that preparedness becomes meaningful and inclusive. This encompasses personal and social factors during non-disaster times and the recognition that these same factors can have greater consequences on individuals and their communities during times of extreme social stress such as a disaster (Wisner, Blaikie, Cannon, & Davis, 2004).

Understanding influences on older adults' preparedness is an important area to address because in recent disasters, mortality and morbidity outcomes for older adults have been disproportionately higher compared to most other age groups (Klinenberg, 2002; World Health Organisation, 2008). Factors that have an influence on older adults' personal and social vulnerability to negative outcomes in a disaster include age-related

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frailty, levels of income, and reduced social connectedness (Powell, Plouffe, & Gorr, 2009). This paper provides an age specific perspective on disaster preparedness, which seeks to understand the meanings of preparedness for older adults who have experienced the Canterbury earthquakes that occurred in New Zealand between 2010-2012.

Background to Canterbury earthquakes

The earthquakes, which severely affected parts of Christchurch city, are named after the regional area, Canterbury. Almost 460,000 people lived in the affected areas of Christchurch city, Selwyn and Waimakariri (Parker & Steenkamp, 2012). The first severe earthquake occurred near Christchurch on 4 September 2010 (magnitude 7.1). On 22 February 2011 Christchurch city experienced another significant earthquake (magnitude 6.2), which killed 185 people, destroyed many buildings in the city centre, and made houses uninhabitable due to structural and land damage (Bannister & Gledhill, 2012). Approximately 150,000 homes were damaged (around three quarters of Christchurch's housing stock), and 30,000 sustained serious damage (Parker & Steenkamp, 2012). The cost of this damage is currently estimated to be over NZ\$40 billion (New Zealand Treasury, 2013). A major feature of the severe earthquakes was the extensive liquefaction, which contributed to the severity of the building damage (Bannister & Gledhill, 2012). During the most destructive earthquake, many areas of the city lost water and power supplies, and sewage pipes were broken. Some areas were extensively damaged from the effects of the earthquake and liquefaction, so that residents' homes in some suburbs were designated to be uninhabitable. Those affected were faced with relocating to another area of the city or moving out of Christchurch. In the following two years, Christchurch experienced over ten thousand aftershocks between 4 September 2010 and 3 September 2012: 4468 earthquakes were in the magnitude range of

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3.0 -7.0 and above; 4, 411 were in the magnitude range of 3.0- 4.9; 53 earthquakes were in the magnitude range of 5.0 -5.9; and 4 earthquakes in the magnitude range of 6.0 -7 and above (Geonet, 2013).

It is against this background of seismic activity that we posed the following research questions: What is the meaning of disaster preparedness to older adults? What are the influences on disaster preparedness in the context of the ongoing disaster sequelae that Christchurch residents faced? What was considered important to older adults' understandings of preparedness in the face of ongoing earthquakes? How do these experiences contribute to more general understandings of older adults' disaster preparedness?

Method

The participants

Semi-structured in-depth narrative interviews (10) were conducted with adults aged between 66-90 years (median age 80 years). The sample was recruited from Christchurch, and all participants had been residents in Christchurch during the Canterbury earthquakes. Participants were recruited through an independent care agency, and the agency manager distributed the research information letter and invitation to participate, to male and female clients over the age of 65 years. Those who wished to participate responded to the researcher. Respondents (11) comprised four men who lived alone, four women who lived alone, one married couple, and a married woman who was interviewed on her own. The nature of care they received from the agency was domestic assistance, however, one man aged 72 years, who worked full time, had received assistance from the care agency for his wife (who had subsequently died). The locations of participants were from the suburbs of Christchurch city, while one participant was

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from a township north of Christchurch city that suffered severe damage during the 4 September 2010 earthquake. Two participants' homes had been structurally damaged and their land had been designated as unsuitable for rebuilding on; at the time of the interview, one participant was still living in her damaged home and awaiting resettlement, and another (married couple) had moved into new accommodation. Two participants' homes had structural damage, but their land had been assessed as suitable for rebuilding on and they were awaiting insurance claims to be settled before repairs could begin; and six participants' homes and land had sustained minor damage.

Procedures

The interview questions were open ended and focused on allowing participants to express their views about disaster preparedness in the context of being an older adult living in Christchurch during the Canterbury earthquake sequence, which at the time of the interviews spanned two years. The length of each interview lasted between 25 minutes and 55 minutes. Narrative theory informed our methodology, which sought to elicit extended talk from older adults and enable them to tell their own stories about disaster preparedness (Bruner, 1990; Riessman, 2008). A narrative approach enables social context, subjectivities and meanings to be expressed. Therefore rich detail can be storied and contextual influences beyond demographic characteristics and social cognitive explanations can be gained.

Participants were interviewed in their own homes and at the conclusion of the interview participants were offered a civil defence preparedness booklet and the interviewer answered any questions that were raised about disaster preparedness and aspects of the current study. The interviews were audio-recorded, transcribed, and returned to participants for checking and release. Ethical approval for this study was

gained from Massey University Human Ethics Committee, and no participants were distressed during the interview.

Data analysis

The interview recordings were transcribed and data analysed by the first author. The transcribed interviews were entered into a qualitative software programme (Atlas.ti) to assist in managing the qualitative dataset (see Friese, 2012). A process of repeated readings of the transcripts from each participant was undertaken. Analysis of the narrative interviews utilised an inductive approach and actively attended to older adults' meanings associated with preparedness. Thematic analysis in which recurrent patterns of meaning were identified and coded was used to identify key themes across the entire data set (Attride-Stirling, 2001; Boyatzis, 1998; Braun & Clarke, 2006). The coding process enabled possible patterns to be considered which were relevant to our research questions. Identifying the central organising themes was an active and interpretive process, which sought to reflect and represent our data analysis (see Braun & Clarke, 2013).

Results and Discussion

Three themes were identified in our analysis. These themes were labeled, attending to personal protection, practical preparedness, and social preparedness: the role of social relationships. Each theme is described, illustrated with extracts from the data, and discussed below.

Attending to personal protection

Preventing personal injury during an earthquake was considered to be an important preparedness focus for older adults living in Christchurch, and many discussed the protective actions they took during the earthquakes. All participants stayed in bed during the first severe earthquake on 4 September 2010, which occurred during the early

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hours of the morning at 4.25. However, the daytime earthquakes presented the greatest concern to participants. Most expressed actions taken to protect themselves from falls. For example: holding onto the kitchen bench, leaning against something, or sitting down. For other participants, their beds were seen as the safest place to prevent "getting thrown around" and that bed coverings could offer protection.

If the ceiling was going to fall down it would only be the plaster and I would have enough protection under the blankets and the duvet, especially over your head, 'cos if anything's going to get really hurt it will be your head; arms and legs can be fixed (Harry, 69 years)

Similarly, finding somewhere low to the ground when outside during an earthquake was also considered. Anne aged 86 years had experienced the severe 22 February 2011 earthquake while she was outside in her garden. Her immediate reaction was to deliberately sit on the edge of a raised garden bed "and rolled over into the vegetables with me legs dangling over".

However, some participants perceived that their actions did not follow recommended emergency advice. Anne's talk about her preparedness was centred on ensuring her safety because she had reduced mobility:

And you know they say get out of the house, oh bother that, I would only break something if I tried to get out of the house. When there were other ones [earthquakes], which there had been before that, and I'm in the house, and if it's a bad one I sort of hold onto anything I can see and wait until it stops shaking, but if its anywhere near the bedroom, my dog and I make a beeline for the bed (laughs) and we'll get into bed and pull the clothes over our heads.

Anne thought her safety decisions were neither in accordance with friends' advice nor that of civil defence. However, her decisions were influenced by age related physical concerns:

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Friends say you're supposed to be getting out, and I say bother that...If you are a bit rocky on your feet, which most elderly people are and if it's in the middle of the night and you think oh what's it like outside, and ah can I get outside and will I fall down outside? It's falling down that frightens people... you think about falling over because...its such a...break your hip, and you know, you might as well sign yourself off, and so I would say try and get in a place that is away from windows and keep...I'm sure they [officials] would say 'no you shouldn't do that', but lie down somewhere comfortable on the floor or on the settee or go to bed and pull the curtains.

The advice she would give to others her age illustrated the importance of avoiding injury, and the implications of a broken hip. The importance of maintaining mobility and remaining injury free was central to understanding the role of personal protection.

Lack of earthquake protection messages for older adults were also exemplified by one man, who identified that the 'Drop, Cover, Hold' message of recent public campaigns in New Zealand, was not relevant to him because of his reduced physical mobility. This earthquake message advises citizens to drop low to the ground and if possible take cover under a table, and hold on during an earthquake.

It's all very well saying go under the table if you can't bend down to get under, or if you get down and you can't get up...it's all very well having these things ['Drop, Cover, Hold' message] but a lot of old people can't do that...they are only put out for those that are able...you know they keep advertising on what to do, but there's nothing around the elderly and frail.... they are not putting out an alternative, and how does that make the old people feel? (Jack, aged 72 years).

Jack highlighted how civil defence preparedness messages excluded less physically able older adults. Similarly Edith aged 83 years considered that recommended

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protective actions for a tsunami alert also did not take into account older adults' physical abilities, and rhetorically asked: "well how do elderly people get to higher ground"?

The inability of older adults to follow civil defence messages also had a distressing impact on those who were able to physically comply, and highlighted the ways in which older people are excluded by messages in public safety campaigns. In the following excerpt, Lorna aged 83 years tells of being taken to her daughter's house after a strong earthquake, where yet another earthquake occurred. The whole family quickly went under the table, except Lorna. The young children who were present were distressed that their Nana had not got under the table with them:

And they were saying what about Nana, what about Nana, so I said to them [adult family members] take me home, and sort of take that out of the question...they'd heard tales of buildings coming down, a table was going to save them. But me sitting there on the couch, I couldn't move because I'd have fallen with it [the earthquake] going, and I was causing that 'under the table screaming for Nana'.

The theme personal protection has described how reduced physical mobility was a central concern to many older adults, and was linked to fear of falls, and the implication it had for a change in physical status. Concerns about falls were also identified in a Christchurch survey conducted eighteen months after the September 2010 earthquake (Hendry, & East, 2013). In this study, nurses and health care workers who provided home based community care to older clients, identified safety concerns about their clients' risk of falling due to living in a damaged environment. Protecting functional status is closely linked to older adults' ability to remain independent and to live in one's own home in non-disaster times. Falling down, especially for frail older adults often results in hospitalisation, which may have serious consequences for independent living (Johnson & Barer, 1997). Hester and Wei (2013) found that loss of functional strength and balance

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were the primary causes of disability and injury-related deaths for older adults. A phenomenological study with seven older widows aged between 75 and 84 years, found that participants actively reduced their risks in their home environment; had thought about movement such as losing one's balance and falling; and exercised caution by monitoring their surroundings as they walked, because they were concerned about risks of falling (Porter, 1995). Baltes and Baltes (1990) argue that older adults face the adaptive task of ageing by selecting and focusing on domains that contribute to ageing well. In the context of personal protection during an earthquake, fall prevention was an important domain that was prioritised, and would be relevant to many other older adults in a changing and unpredictable environment.

In our Christchurch study, two participants had suffered fractured wrists through tripping on uneven ground outside their homes due to earthquake damage, while a third person had fractured his hip. Therefore, addressing fall prevention by providing information about managing personal safety is highly salient for older adults, and would indicate inclusive age specific disaster preparedness. In the context of attending to personal protection it is highly relevant that the physical capabilities of older people are taken into account in public campaigns.

Practical preparedness

Conventional preparedness messages have encouraged citizens to store emergency supplies such as food and water for three days after a disaster (Haddow & Bullock, 2006; Tuohy, et al., 2014). A few participants in our study had not assembled the recommended survival items, while others who had thought they were prepared prior to the first severe earthquake (4 September 2010), discovered that their survival supplies were inadequate (e.g. low supplies of water, flat torch batteries). Some participants had heeded the additional civil defence preparedness messages beyond survival items. Anne, a widow

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aged 86 years had arranged for her heavy furniture to be secured to the wall prior to the earthquakes:

They had been warning us and warning us, and warning us, and they were saying get your heavy furniture, have it fastened against the wall

However, our participants' practical disaster preparedness was strongly affected by the earthquake experience itself and this is shown in the following sub-theme:

Revising preparedness

Survival items were still considered to be an important aspect of preparedness following the earthquakes and most participants re-evaluated and extended their range of survival items. For example one man used a 'life tube' (canister that is kept in the refrigerator) to record the names and phone numbers of his doctor, next of kin, and medical conditions. A married couple in their mid eighties who were initially unprepared for the first earthquakes, subsequently stocked their freezer with food, however during the 22 February 2011 earthquake they lost all their food supplies; and their house was categorised to be in the residential red zone (land unsuitable for residential use). A sense of helplessness was expressed by this couple, and "since the earthquakes [John's] memories from the Korean War seems to have resurrected the trauma of that time...and he's on a lot more medication than he's ever been". Consequently, Meg appraised that there were limits to being prepared:

You can't second-guess everything... there is a limit to when you get something so extreme...there's no way that you can prepare for that... So it was harder the second time around, it was a far worse earthquake...we immediately came into a red zone...and because the house was damaged, it was bulldozed down.

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Meg's conclusion provided a dramatic climax that demonstrated the limits to conventional personal preparedness that she and her husband faced. They subsequently shifted to a retirement complex, which they "had not intended moving to so soon". This couple evaluated practical preparedness in light of their age related needs: they were living in a structurally safe home, and in a supportive institutional environment, which was providing them with a higher level of assistance.

Preventing items in the home from falling became a central concern. Many of the participants talked about cleaning up the mess made from cooking oils, liquids, and dry foods, which had fallen out of their kitchen cupboards, which also included broken glass. Loss of treasured china was also an important aspect of practical preparedness. Tess, aged 66 years, had china fall off shelves during the 4 September 2010 earthquake and lost more china after the 22 February 2011 earthquake, which she now lamented:

I shouldn't have put it back without blu-tacking it, but I didn't expect there would be another earthquake and that was worse than the first, so I wasn't prepared for that and I lost a lot.

After the 22 February earthquake Tess made the decision to pack her treasured possessions away for over fifteen months:

And I lived like that for all that time...Its been the most terrible, terrible time, and I couldn't bear to lose anything... and then I just thought I can't bear to live like this anymore, so I bought blu-tack, I had stacks of it and seismic wax...and everything is blu- tacked...I can't lose anything else... but my grandmother's china, I've never brought myself to put back, 'cos I couldn't bear to lose it...so that is preparedness... it shows where my priorities lie...I pinned cabinets to the wall with proper brackets...I've got bands around the books and bookcases now.

In the context of a post disaster environment it is also relevant to consider the emotional impact of cultural destruction and environmental change, and how these

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experiences influence personal preparedness. Tess, aged 66 years was affected by the widespread and extensive damage to many of Christchurch's historic buildings, and revealed that damage to the city after the severe February 2011 earthquake had reduced her motivation to secure her china:

It's been an awful time... because I love heritage stuff, and what we've lost is basically everything [referring to the destruction of much of Christchurch's heritage buildings] ...and then you lose that enthusiasm for a while, but I got it back and did it [secured her ornaments]

Post disaster environmental change at the community level also influenced Peter's decreased interest in re-evaluating and restocking survival items. After the 4 September 2010 earthquake, Peter a widower, aged 80 years had a few items such as a radio, torch and cell phone ready, but stated he was uninterested in preparing further. He suggested it was because of "old age and laziness". However, Peter's ambivalence about preparedness can also be interpreted in the context of widowhood, living alone, and independence in the community. Peter was coping with the impact of living in a severely damaged street following the 22 February 2011 earthquake; the security of his once stable and familiar community environment was no longer present. Peter had lived in the same street almost 50 years, however the other side of the street had been severely damaged, and many people he knew in his neighbourhood had moved out because their land had been assessed as unsafe for rebuilding on. Peter's damaged house was on the edge of the red zone, his land had been assessed as safe, and he was waiting for repairs on his house to begin, which

...to the elderly is not a very wonderful thought, that you are going to come out of this place somewhere for a while and then they'll build this again and you will be back in this place again, if you are still alive.

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It wasn't until the invitation letter asking Peter to participate in our disaster preparedness study, that he began to reassess and assemble survival items, which he considered to be relevant to his needs. On the morning of his interview with the first author, he had just completed assembling his survival kits:

One backpack and a bag in each hand... So now I've got together three containers, which have the things I might need for several days, it's not complete, but your letter triggered it... I'll show you the list of things that I have in those bags, which I finally completed this morning (laughs) ...my hearing batteries ran out last night, and I didn't have any spares, so I rang... to see that they were open this morning, so this morning quite early, I went over to the hearing aid place and got these hearing aids in, so now I can hear very clearly.... I've got a wind up torch and radio, which is great... I feel better for having your letter and putting that stuff together in the bags.

The influences on Peter's preparedness highlighted the post disaster challenges he was coping with in his neighbourhood. Furthermore he was negotiating his house insurance claim, and insurance claims relating to loss of treasured possessions belonging to his deceased wife. Our research letter to Peter about older adults' disaster preparedness highlighted concern about older adults' welfare, which helped motivate him to update his survival items.

Practical support was also linked to reduced ability to securing shelving units to the wall. Edith aged 83 years (whose husband was not present during the interview) did not have family close by to provide practical assistance, and this couple's treasured possessions remained in boxes. She confided: "my husband said he was going to screw the bookcase to the wall but it's never been done". A lack of action to address the need to secure shelving and return personal objects to the shelves again, suggested that reduced age related physical capability, and gender had an influence on preparedness.

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This theme identified the ways in which older adults' practical preparedness was influenced by their earthquake experiences, which played a role in decisions about ongoing preparation. Decisions included, reassessing household survival items and practical actions, and for one couple the need for a higher level of care in a retirement complex. Practical preparedness was also storied within the context of social support. The influence of our disaster preparedness research letter indicating our interest in older adults' welfare was a form of social support, and was instrumental in helping to motivate Peter to assemble emergency items that he considered to be important. Norris and Kaniasty (1996) found that both received support (helping behaviour) in the immediate aftermath of a disaster and perceived social support (belief that help would be available if needed) have a positive effect on well-being by reducing the impact of stress. However, reduced perceptions of social support may occur as social networks and activities are disrupted, and supportive networks become overloaded with practical demands, stories and experiences of the event, and community disruption. Older adults' value the importance of maintaining independence in old age (Minichiello, Brown, & Kendig, 2000); and may struggle with maintaining preparedness, especially if traditional forms of support becomes less available as family networks and geographic spread reduce supportive resources to call on, which appeared to be a factor that explained why Edith and her husband had not restrained their shelving. Reduced motivation to maintain preparedness also was linked to loss of treasured possessions. Tess had lost part of her treasured china collection and stored her undamaged china away for 15 months to protect her treasured possessions. Treasured possessions are imbued with symbolic meanings, provide a connection with the past, and provide a sense of continuity and self-identity (Kroger & Adair, 2008; Tobin, 1996). In a sample of older adults who experienced the Canterbury earthquakes, psychological malaise, which included loss of motivation, was

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identified (Annear, Wilkinson, & Keeling, 2013). Similarly, our study has highlighted personal and environmental influences on some participants' reduced motivation to address practical preparedness. This suggests that responses to risk and decisions to prepare are not linear (Lindell & Perry, 2000), and mental health impacts (e.g., trauma and adjustment) on older adults' disaster preparedness following the earthquakes must be considered. In sum, this theme has highlighted how earthquake experiences, environmental change, personal capability, and relational influences all had an influence on participants' practical preparedness. The importance of social support is developed in the final theme in which social relationships were inextricably linked to the meanings of being prepared.

Social preparedness: the role of social relationships

The presence of ongoing social relationships in the post disaster phase was important for well-being, and was a fundamental dimension of participants' understandings of preparedness. In the initial aftermath of an earthquake many participants immediate response was to contact family by phone. However, contacting family was described as stressful because communication was disrupted: one man was unaware that his landline phone could still be used during a powercut and some participants' cell phones were not easily locatable or were not charged (which has implications for practical preparedness).

Assistance from extended family in Christchurch was also identified as an important resource. In the following extract Anne aged 86 years reflected on the assistance she received from her wider family:

I feel terribly sorry for people like me [older adults] who have children who've lost touch, or like so many of them they've gone to Australia or Auckland, it must be terribly hard for them because really, for some of

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them, especially me, all this jargon about CEO and ESQ's [referring to post earthquake insurance and recovery organisations] and I'm making them up, but you know what I mean, and all the different people trudging around and the engineer saying one thing and the insurer would say another thing

Anne assessed her family's support enabled her to remain independent in the community, because she could rely on her family to provide practical, emotional and advocacy support in the aftermath of the earthquakes. In contrast, a lack of relational support was identified as the reason Edith and her husband, aged in their mid eighties were considering leaving Christchurch. They wanted to be closer to family support networks.

A sense of community assistance from organisations was also linked to social preparedness. Some participants had received preparedness assistance, for example: wind up radios from an electricity company; deliveries of fresh water to their homes, and enquiries about their welfare from community agencies. Thus some participants linked social preparedness to a sense of inclusion and support from the wider community.

At the neighbourhood level, all participants linked neighbourhood social relationships with the immediate support they received. They had all met their neighbours in the immediate aftermath of the 4 September 2010 earthquake, in the dark, outside on the street, as they gathered to support each other. Examples of support included sharing a cup of tea, being assisted to communicate by phone with family members. Tess, aged 66 years lived alone in a very supportive neighbourhood, and described the importance of neighbourhood networks during the earthquakes.

You look after each other, and we all did. We spent a day, there were four of us going around all of our houses and each cleaned up each other's house...we just went from one to the other. But it is what you

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nurture and grow by the time a disaster happens, because it doesn't, if you haven't got it then its not there... and you can't grow it on that day, because that wonderful rapport isn't there...

A reduced sense of social contact and supportive social relationships was also highlighted. In the following extract Peter talked about the loss of established neighbourhood friendships, because many houses in his street had become uninhabitable, and his neighbours had moved away. The social occasions of having “meals together on a Friday night and a natter and a drink” no longer happened. Consequently, Peter's social support networks had diminished. In the following extract he described the importance of social contact in the context of being an older adult living independently in the community:

One of the things you notice when you are on your own is the number of people who come into your house... and ah you're [researcher] the first person to come into this house since Sue [younger acquaintance]... she came in the other day and ah apart from her there hasn't been anyone else who has come into this house for two weeks... I think that the older you are, the more need there is for personal contact with other people (Peter, aged 80 years).

Peter's appraisal highlights the importance of social preparedness, which in the context of a disaster may become less available.

Alan, aged 72 years old, also identified the importance of social relationships subsequent to the September 2010 earthquake. Alan's wife, who suffered from Alzheimer's Disease had died in 2011, and although he appreciated having regular contact with his adult children, and still worked full-time, he was comfortable being on his own. Alan had little contact with his neighbours before the earthquakes: “I don't mix”. However, the ongoing uncertainty following the earthquakes, and the substantial

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damage to his neighbourhood resulted in his initiating new social relationships. His lifelong prudence with money, and belief that strong financial savings was an important form of disaster preparedness was used as a platform in which to develop stronger social relationships with a family in his street:

...and these boys have each got a, when I first met them ah two years ago, they had a plastic elephant on their window sill for money, and I had a look, and it had a bung at the bottom...I said righto we are throwing all these money boxes out...and I am going to get you four steel ones and the mother said [to me] that is going to cost you. I said it doesn't matter what it costs this is terrible they can take the bung out. So we threw them away in the rubbish tin you know, and I got them four other ones, its got a wee crack at the top you can put money in and they can't get it out...

I: So these relationships [with this family] that you talk about, is that something that has increased since the earthquakes?

Alan: Yes, no question...no question, no question, it has its got us closer, and I was never close anyway but I'm closer than I was

Alan also provided other stories about his relationship with the family of boys, which included geography lessons, teaching the boys to play chess, caring for his cat while Alan was on holiday, sitting in the evening sharing wine with the boy's parents. There was no doubt that Alan valued the opportunity to develop meaningful social relationships within his neighbourhood following the September 2010 earthquake. The development of neighbourhood relationships supported social preparedness. Doreen aged 80 years was also very clear about the value she placed on having a supportive neighbourhood:

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I love my neighbour, yes, Connie especially. Connie's great, she either rings me every day or comes to see me (laughs)...I wouldn't shift because my neighbours are so good

Social involvement and the relational support arising from family, friends, neighbours and communities, is commonly referred to as social support. Stroebe (2000) outlines four types of functional social support that can contribute to how individuals cope with stressful events: emotional support provides a sense of caring, and belonging; practical support provides tangible assistance such as help with physical tasks, money, and food; informational support provides advice; while appraisal support provides information that can contribute to learning more about the situation, or what resources are available. In our study social preparedness was a relational resource encompassing the four types of functional support described by Stroebe (2000). The relational focus of this theme suggests that social preparedness was an important resource, which for most adults was available from friends and family. However, a few participants had reduced social resources. For example, Peter had experienced a loss of networks in his community because many in his street had moved away because their houses were uninhabitable. Another man perceived himself to be living in a neighbourhood in which it wasn't easy to make friendships. High health needs (including a recent fracture sustained from falling on uneven ground) combined with a family living away from Christchurch had created social vulnerability for Edith and her husband. Reduced social resources were also identified in a survey of 168 nurses and support workers who provided care for vulnerable older adults living in the Christchurch community (Hendry & East, 2013). This survey was conducted eighteen months after the first major earthquake in September 2010. These home-based care-givers reported concerns about their clients' wellbeing following the disaster, which included: earthquake related population change, social

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isolation and loneliness, uncertainty of transport and roading conditions, all of which contributed to their reduced socialisation (Hendry & East, 2013).

The role of social relationships has implications for older adults and available social resources, both in non-disaster times and in the context of a disaster. Some of our participants were embedded within existing strong family and social networks, while others had reduced connectedness. Social relationships within a community setting supported psychosocial aspects of being prepared. Therefore, it is salient to think about how social preparedness and communities can provide a synergistic balance in the context of a disaster event.

Social preparedness must be considered foundational to community resilience, and inclusive of all living in the community, including older adults. Buffel, Phillipson and Scharf (2012) argue that a central concern for social and public policy is developing 'age-friendly communities', driven by factors relating to demographic change, and ageing in place. Age friendly environments support 'active ageing' (promoted by the World Health Organisation, WHO) for older adults by encouraging social engagement and independence through community participation in "social, cultural, spiritual, economic and civic affairs" (WHO, 2002, p.12). The future possibility of facilitating social preparedness within age friendly urban environments offers a way of creating inclusiveness within the built environment (WHO, 2007). Furthermore, older adults' adaptive life skills and experiences can be a support for families as well as providing a valuable community resource, which in the context of disaster preparedness would contribute to emotional well-being and resilience at the community level.

Conclusion

These findings present a contemporary understanding of age specific disaster preparedness in the context of older adults' experiences of a disaster, influenced by the prolonged sequence of earthquakes that occurred in Christchurch during 2010-2012. The three themes identified were linked to personal protection, practical preparedness and social preparedness. The first theme, personal protection highlighted how participants discounted the current earthquake preparedness messages as being inappropriate for them. The inappropriateness of the "Drop, Cover, and Hold" slogan, revealed a gap in safety messages, which ignore the impaired physical capacity of many older adults, and their fear of falling. The second theme confirmed that many older adults in our study did undertake practical preparedness before the earthquakes, and subsequently re-evaluated their earthquake preparedness after the first severe earthquake. This theme illustrated how practical preparedness became problematic for some participants who were unable to adopt further household mitigation because of decreased functional capacity, or delayed further preparedness actions because of psychosocial reactions to the disaster. Thirdly, older adults placed emphasis on social preparedness, which highlighted the importance of social relationships and social support as important for maintaining well-being during the ongoing earthquake sequence. A greater co-ordination between health, welfare and emergency management agencies concerned with the well-being of older adults is needed; to work towards the promotion of social relationships at a neighbourhood, community and organisational level.

These three themes expressed a nuanced concept of preparedness that is both personal and social. The findings provide future practical direction for age specific preparedness planning that would contribute to improving outcomes during and after a disaster event for community dwelling independent older adults. Consideration of age

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specific preparedness to improve older adults' safety would signal community inclusion. Furthermore, enhancing community inclusion would support older adults' social connectedness and strengthen social relationships in their everyday lives. Addressing age specific preparedness along the dimensions we have identified would also contribute to personal and community resilience, because older adults have much to offer by way of life skills and experience to others in the community following a disaster.

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Chapter Seven: Discussion

This section refocuses on the research aims outlined in the introduction and discusses the research findings and the contribution this thesis has made to the disaster research literature about community dwelling independent older adults' disaster preparedness. Lastly, future research directions and research limitations are discussed.

Research aims

To explore influences on older adults' disaster preparedness

The extent to which older adults prepare for a disaster has been the subject of concern (Heller et al., 2005; Ngo, 2000; Perry & Lindell, 1997; Turner, et al., 1986). For example Heller et al., (2005), proposed that older adults engaged in the least amount of earthquake preparation and had the least preparedness items, suggesting that they were comfortable about surviving the impact of an earthquake.

The predominant research perspective, which has situated influences on preparedness at the level of the individual, has informed research findings about older adults' preparedness. This research has tended to assess individual characteristics using categories such as age, gender, and socio-economic status to describe influences on preparedness. Cognitive and social cognition factors, which have also been theorised as influencing disaster preparedness, include intrapersonal characteristics: previous experience, fatalism, optimism bias, mastery and beliefs around self-efficacy, and response efficacy (Lindell & Whitney, 2000). This rationalist perspective has made assumptions about the taken for granted ways of understanding the world, which assumes that observation of the world is both objective and unbiased (Burr, 2003).

In contrast, the qualitative research approach in this thesis provides a social constructionist perspective whereby the consideration of the social context, which

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includes experiences and meanings expressed through language, can generate multiple ways of understanding the world (Burr, 2003). The strength of this research was the recruitment of two sample populations of a similar age from two different New Zealand cities, Wellington and Christchurch. This research was conducted between about two years after the internationally significant disaster event in Christchurch. The two sample populations comprised similar aged cohorts who were mostly aged in their late seventies and eighties. Together the two cohorts provided an approximate ‘before and after’ sequence, as the Wellington participants had not experienced a devastating earthquake, while the Christchurch participants had. The interviews in this study demonstrated that older adults do consider disaster preparedness to be important, but also revealed that age related priorities were important influences on participants’ preparedness. Most participants had assembled survival items, and understood disaster preparedness to be a personal responsibility. They generally accepted the public education messages about disaster preparedness; however, there was differential access to information, which demonstrated that the delivery of public education preparedness messages overlooked some more vulnerable independent older adults in the community. Although most participants had adopted the recommended emergency advice and stored a range of emergency items, achieving and sustaining the practice of disaster preparedness was problematic both at the practical level of ‘doing’ preparedness (assembling items, securing heavy items) as well as at the informational level where accounts about preparedness highlighted gaps in knowledge.

At a policy level, disaster preparedness is considered to be an individual responsibility, and this responsibility is explicitly described in the National Civil Defence Emergency Management Strategy (Ministry of Civil Defence and Emergency Management, 2007). Lupton (2013) has drawn attention to contemporary western societies’ expectations

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that individuals will attend to their personal protection. Both Lupton (2013) and Douglas (1992) highlight how western societies have positioned risk to be a personal responsibility, which has seen the shift from government responsibility for welfare to personal responsibility and accountability. Personal responsibility has been further individualised for older adults because the breakdown of traditional certainties has meant that support structures such as family networks may no longer be available to provide assistance.

My research findings clearly demonstrated that personal responsibility influenced how these older adults undertook disaster preparedness. Participants perceived there were hazards and risks to prepare for and had assembled a range of survival items. This finding accords with previous studies that found disaster preparedness was primarily linked to having survival items, rather than having an emergency plan, or undertaking mitigation actions such as securing heavy items, and survival skills (Heller, et al., 2005; Spittal, et al., 2008). However, having survival items is only one component of preparedness, actions taken to reduce the impact (mitigation) and the ability to respond must also be considered. For older adults in this study, these aspects of preparedness were influenced by both physical difficulties in managing practical preparedness because of health related needs, and relational factors linked to being alone and having reduced social support. For some participants, there was limited supportive assistance, and minimal interactive opportunities to develop and maintain practical preparedness; and the lack of mitigation actions and response planning revealed their vulnerability to a disaster. In the aftermath of a disaster both personal and social factors have been shown to explain older adults' vulnerability and the resulting disproportionate negative outcomes they experience (Fussell, 2006; Klinenberg, 2002; Peek, 2010; Pekovic, et al., 2007; Tuohy & Stephens, 2011).

Paton (2003) argues that while providing information may influence risk perception about the threat and encourage the adoption of preparedness actions, this

information may not have an influence on self-efficacy and empowerment to adopt preparedness recommendations. The findings in this thesis indicated that older adults' disaster preparedness also included age related concerns about preparations for health and medications, the responsibility for care of a frail spouse, including evacuation planning for themselves and a dependent loved one. These age-related concerns, when situated within the socio-cultural expectation of personal responsibility for preparedness, highlighted how some older adults had reduced ability to participate in household emergency management practices. Although public education messages may heighten awareness, the focus on hazard information and actions to be taken by the public, aimed at encouraging decision-making and risk perception has generally ignored age related challenges, which can be barriers to action. In this thesis, age related mobility difficulties were identified to be a reason for not evacuating, which arose from some participants' concerns about not wanting to put others at risk, rather than believing there was no risk of harm.

This thesis adds to the disaster literature by providing a broader understanding about socio-cultural influences on older adults' disaster preparedness, and provides further contextual detail to considering how self-reliance and personal responsibility influences disaster preparedness behaviour and actions.

To situate disaster preparedness within the context of old age

This research asked older adults about disaster preparedness, and elicited stories about frailty and social vulnerability in that context. Their accounts of preparedness were linked to adapting and managing age related decline, which encompassed wider social processes. In recent decades, personal autonomy and self-responsibility for an independent self in old age have become cultural markers of successful ageing (Biggs, 1997; Minichiello, et al., 2000; Townsend, et al., 2006). Neo-liberal policies on ageing,

which promote older adults' independence, have been influenced by demographic concerns about the growing numbers of older adults and the anticipated health burden (Biggs, 2001). Consequently, there has been a shift away from images of decline and dependency towards active ageing policies, which have encouraged individual self regulation and personal responsibility to manage and monitor ageing (Katz, et al, 2005; Petersen & Lupton, 1996; Smith et al., 2007). At a policy level, a range of objectives designed to achieve independent ageing in the community have been developed and implemented (see Ministry of Health, 2002; Ministry of Social Development, 2001). However, while health and welfare support contributes to enabling independence, supporting disaster preparedness in the community is not clearly identified in the policy objectives from these agencies.

This research created the opportunity for older adults to express meanings about disaster preparedness, which many associated with a more global concern of experiencing and managing ageing. These findings provided a more complex view, which situated disaster preparedness within the context of age specific preparedness to maintain independence in the community. For example health concerns were linked to reduced functional mobility in the context of everyday activities. Monitoring health was an ongoing endeavour associated with calculating risks and threats to independence. Some participants also described preparedness in terms of a philosophical appraisal about health decline and death. Social preparedness was also identified as critical for maintaining independence, and the loss of spouse and neighbourhood connections were influences on the quality of relationships, which impacted on understandings about being prepared. These age specific social processes provide new perspectives and meanings associated with disaster preparedness.

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Older adults in this research experienced personal and social challenges, which were used to story how they managed ageing in the community. Hobfoll (2001) has proposed that actual or potential personal and social resource loss is stressful, especially if other resources are not available. In the context of managing personal independence, older adults reappraise and reprioritise their resources to adapt and assist with independence (Baltes & Lang, 1997; Lang, Rieckman & Baltes, 2002). Thus the importance of managing threats to health and independence becomes highly relevant in old age.

Staudinger, et al. (1993) suggest that compensatory coping processes, which include both personal and socio-cultural resources, can contribute to assisting older adults to recover from and adapt to change, as well as creating the potential for growth in selected domains in later life. Older adults are adapting to both personal age specific risks and threats within their everyday lives; they are also able to draw on their cumulative experiences of dealing with risks and threats over a life time, which can contribute towards their ability to negotiate adversity (Wild, Wiles & Allen, 2013). Therefore, older adults' experiences of adapting and coping with resource loss in later life provide insight into age specific resilience. Wild, et al. (2013) suggests the concept of resilience can be viewed as an everyday practice of human adaptation, and central to our human experience. The personal capacity of older adults and their experiences in negotiating and managing adversity, therefore can offer insights into how this age group could contribute toward enhancing community resilience and further developing and strengthening community preparedness.

This research identified that priority to manage independence in the community was a central concern; therefore assisting older adults to prepare for a future disaster

within the context of age specific preparedness would be more meaningful both at the individual, community and societal level.

To explore the need for age specific disaster preparedness planning

This qualitative research has highlighted the need for age specific disaster preparedness initiatives. Participants' ongoing preparedness was associated with adapting to changed circumstances, which focused on health needs and social relationships; because for most participants, age related preparedness was an everyday practice. Older adults' desire to maintain independence in the community aligns closely with emergency management's expectations of individual self-sufficiency in the community in the immediate aftermath of a disaster (see Ministry of Civil Defence and Emergency Management, 2007).

Most participants revealed they had not talked about disaster preparedness with others, and the opportunity to participate in my research project was a chance to discuss the status of their household disaster preparedness. Although the Christchurch participants had immediate experiences of a disaster, which can influence preparedness actions (McClure, et al., 2012; Turner et al., 1986), some participants revealed that this was not a strong influence. An important finding was that social relationships significantly influenced disaster preparedness. Examples of this included talking with others in their social networks, attending community meetings, and having others who were available to assist with household mitigation actions.

Based on this research, age specific disaster preparedness planning for older adults would contribute to improving personal preparedness, both for a disaster and for everyday independence. Socio-cultural norms of independence are encouraged and broadly accepted, and research has found that older adults do not wish to become a burden to others (Kemp & Denton, 2003; Plath, 2008; Portacolone, 2011). For some

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older adults age related decline can create personal and social vulnerabilities in the community. Therefore incorporating age specific disaster planning within a social, interactive context would be one effective way of reaching independent older adults who live in the community.

Access to health care and welfare is available to support ongoing independence, however, there is an evident policy gap in how older adults are supported to maintain disaster preparedness. For many older adults resource loss (physical, psychological, social and economic) creates greater vulnerability prior to and during a disaster. Many older adults living independently in the community will require support to manage preparedness, which would positively influence their ability to adapt to age related changes, and reduce vulnerability to negative outcomes.

The centrality of situating disaster preparedness within frameworks oriented around health and disability concerns would appropriately align with older adults' priorities and goals to maintain independence in the community. For example, fall prevention was a central story in participants' discussions of earthquake preparedness; similarly in non-disaster times falling is a major concern because it can threaten older adults' abilities to remain independent in the community (Hester & Wei, 2013).

Collaborative research from disciplines concerned with the health and welfare of older adults such as health, welfare and emergency management could provide a coordinated approach to age specific preparedness, and provide assistance. For example, a collaborative approach between education and civil defence is well established within a school setting to promote disaster preparedness for children (Finnis, Standring, Johnston, & Ronan, 2004; Ministry of Civil Defence and Emergency Management: What's the plan Stan? (n.d.); Ronan & Johnston, 2005).

This research has provided a clear rationale and direction for those concerned with the everyday welfare of independent older adults to develop age specific disaster preparedness planning that is multidisciplinary in nature. Understanding the socio-cultural role of disaster preparedness, which is inclusive of independent older adults' needs, would contribute to reducing the disproportionate negative outcomes older adults experience in a disaster. Furthermore, community consultation and engagement (Paton, 2006) with older adults about hazard planning would strengthen emergency planning within the community by identifying concerns, and collaborating to address these issues raised in this thesis.

Future research

The importance of health was central to older adults' concerns about managing their independence in the community. Future research focusing on the effectiveness of coordinating with other sectors concerned with health and wellbeing of older adults that is inclusive of age specific disaster preparedness could be examined. For example community groups, and health support organisations could facilitate preparedness discussions with older adults in community settings, as well as at an inter-agency organisational level.

The influence of past experience as a psychosocial resource for preparedness and post disaster recovery is an important aspect that was identified both in the Wellington and Christchurch studies. Previous research findings have identified that older adults experience less emotional distress following a disaster, and better psychological adjustment (Huerta & Horton, 1978; Knight, et al., 2000). Factors used to explain older adults' adaptive capacity during challenging times have been linked to lifetime experiences, which they then can draw upon as a coping resource (Tuohy & Stephens,

2012). Bonanno and Diminich (2012), state that despite older adults experiencing greater distress during a disaster, they tend to exhibit resiliency in the aftermath compared to younger adults. In this research, some Wellington and Christchurch residents linked preparedness and resilience to past experiences to explain how they coped with challenges. Future preparedness research, which explores past experiences as a preparedness resource and examines their relationship to resilience (Bonanno & Diminich, 2012; Norris & Murrell, 1988; Thompson, et al., 1993; Tuohy & Stephens, 2012; Wild et al., 2013) would make a valuable contribution to community resilience research. Importantly, future research could explore how past experiences of individual resilience and coping could contribute to the resilience of others in the community (e.g., children).

Limitations

Both the Wellington and Christchurch studies lacked cultural and ethnic diversity. The recruitment process was co-ordinated by the care agency manager; and a participant profile was identified in liaison with the care manager and myself. We sought to include Māori participants and other non-Pākehā (non-European) cultures, and letters were sent (see Appendix 4 and 7). However, I received no acceptance responses back. Therefore other influences on preparedness, which might be culturally specific, were not identified, and future research is needed to address cultural influences.

This thesis did not explore gender differences in the Wellington or Christchurch study. Although gendered accounts are present, and excerpts within the text are identifiable by either male or female title or name, these excerpts are situated within the context of particular themes. Therefore, the gendered nature of preparedness does not appear as a unique theme. The gendered nature of preparedness in old age is a highly relevant research focus for further research, as currently women live longer than men, and

women as a population group are at higher risk of becoming vulnerable to negative outcomes in a disaster (Enarson, Fothergill, & Peek, 2007).

Conclusion

This thesis focused on the importance of extending disaster preparedness research beyond the quantitative paradigm in order to improve understandings about the influences on independent community dwelling older adults' disaster preparedness. Narrative interviews were chosen as an appropriate methodology to explore personal and socio-cultural influences on disaster preparedness in greater depth, because this enabled rich detail to be storied. Disaster preparedness was identified to be a generally accepted practice that included personal and social components. Influences on, and barriers to preparedness were identified as age specific and linked to personal health, social support and socio-cultural norms of independence. Some participants had reduced knowledge about practical preparedness, and reduced social supports to undertake recommended practical preparedness. This research also highlighted the ongoing global nature of preparedness in old age, which focused on managing independence with decreasing personal and social resources such as impaired physical health, loss of spouse and living alone. Preparedness therefore was an adaptive concept that was central to managing health and well-being, in the context of the everyday.

The Christchurch earthquake sequence extended research findings and highlighted the difficulty some participants had in maintaining ongoing preparedness during the prolonged two-year earthquake sequence. The presence or absence of social relationships was a central feature of their stories about preparedness, with less emphasis on survival items.

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This thesis highlights the importance of considering disaster preparedness within a framework of age specific preparedness, and suggests a co-ordinated multidisciplinary planning and policy approach between health, welfare and emergency management organisations. This research has also provided in-depth and meaningful data, which will contribute to further qualitative and quantitative research by providing new conceptualisations beyond the current demographic and social cognitive factors, which can be used to further explore older adults' disaster preparedness.

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Appendices

Appendix 1: Open-ended orienting questions for Wellington study

I began each interview by saying that I interested in preparing for a disaster and was interested in hearing their views...

The following questions were used as prompts to assist in generating rich and detailed accounts. Participants were asked these questions if further clarification was needed, which had not been addressed in their accounts. Towards the conclusion of the interview, a closing question was always asked to signal the ending, and importantly to allow participants the opportunity to add further final thoughts (e. g., I think that's about all I had to ask, is there anything else you would like to say, which we haven't covered?).

Has there been a time in your life when you had to prepare for an emergency/disaster?

Over the years is preparedness something you have done? Do you still continue to do this?

What does getting prepared (for a disaster) mean to you? / what in particular stands out? (*Links with risk perceptions, meanings about preparedness*)

How do you think about preparedness at this time (in your life)?

Has preparedness changed for you over the years?

Do you still continue to do be prepared /think about being prepared? How is it for you? (*Links to Hobfoll's COR model*)

Where have you heard/got information about preparing for a disaster? Follow-up question: Are there others who you have talked to about this? (*Links with Social representations theory*).

What is important when you consider preparedness? (*Links with risk perceptions, meanings about preparedness, age specific needs*)

Have there been other influences on your personal preparedness? (If suggestions are needed to clarify my question, prompt with giving examples: for example, a situation such as power cuts, health needs, other people). (*Links to Hobfoll's COR model and available resources*).

Appendices

Where have you heard/got information about preparing for a disaster? Are there others who you have talked to about this? (*Links to SRT and Hobfoll's COR model, e.g. social resources*)

How relevant are the messages on preparedness to you? (*Links to an age specific context*)

Appendix 2: Open-ended orienting questions for Christchurch Study

I began my interview by saying to each participant something like: “I was interested in preparing for a disaster and of course you have much to contribute having been in a disaster...”

The following questions were used as prompts to assist in generating rich and detailed accounts. Participants were asked these questions if further clarification was needed, which had not been addressed in their accounts. Towards the conclusion of the interview, a closing question was always asked to signal the ending, and importantly to allow participants the opportunity to add further final thoughts (e. g. I think that’s about all I had to ask, is there anything else you would like to say, which we haven’t covered?)

So, what happened in the earthquakes? (e.g., September, February, ongoing shocks)

Were you prepared for the first earthquake?

How have the earthquakes changed the things you do to prepare for a disaster?

Over the years is preparedness something you have done? Do you still continue to do this?

What does getting prepared (for a disaster) mean to you? / what in particular stands out? (*Links with risk perceptions, meanings about preparedness*)

How do you think about preparedness at this time (in your life)?

Has preparedness changed for you over the years?

Do you still continue to do be prepared /think about being prepared? How is it for you? (*Links to Hobfoll’s COR model*)

Where have you heard/got information about preparing for a disaster? Follow-up question: Are there others who you have talked to about this? (*Links with Social representations theory*).

What is important when you consider preparedness? (*Links with risk perceptions, meanings about preparedness, age specific needs*)

Have there been other influences on your personal preparedness? (If suggestions are needed to clarify my question, prompt with giving examples such as power cuts, health needs, others). (*Links to Hobfoll’s COR model and available resources*)

Appendices

Where have you heard/got information about preparing for a disaster? Are there others who you have talked to about this? (*Links to Hobfoll's COR model, e.g., social resources*)

How relevant are the messages on preparedness to you? (*Links to an age specific context*)

Appendix 3: Wellington participant Information letter

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Disaster preparedness project:**The influence of personal and socio-cultural contexts on older adults'
preparedness for a disaster**

Hello, my name is Robyn Tuohy and I am a student at Massey University. My background before beginning this PhD research project was in nursing, social work, together with raising a family. I am writing to ask if you would consider participating in an interview research study about preparing for natural disasters, that will be part of my doctoral degree. I would like to talk with you and hear about your views and experiences about preparedness.

There has been little research about the disaster preparation needs of adults over 65 years from the perspective of this age group. If you agree to being interviewed, your experiences and views will contribute to assisting emergency management organisations and support agencies to improve disaster preparedness for older adults.

I would like to tape record the interview with your permission. The tape recording and any written material from your interview will be stored securely and your identity kept confidential. I would not be using your name in my research project. If you would like the interview recording sent back, I would return it to you, otherwise the audio-taped recording will be stored securely at Massey University, Palmerston North, and would be destroyed after five years. You would also have the opportunity to read your transcribed interview and add comments or withdraw comments as you desire. I would also send you a typed copy for your personal record.

Appendices

I have consulted with Home Instead Senior Care about my project, and I would like to reassure you that whether you choose to participate or not in this research project it will not affect the support you are getting now or in the future. The time of the interview would be arranged to suit you and would take about one hour. I would be the only person interviewing you, and am happy for you to invite whanau/extended family as support for you during the interview. After the interview I will transcribe the interview and post it back to you to read and check the content. I expect that this will take no more than an hour of your time.

If you have any further questions about my research please feel free to contact me on 801 5799 ext 62169. This is the phone number for the Joint Centre for Disaster Research at Massey University, Wellington. You will be able to leave a message with the secretary on this extension number, and she will contact me with your message to ring you back.

Once I have completed my research, a summary of my findings will be sent to you. You are under no obligation to accept this invitation to be interviewed, however if you decide to participate you have the right to:

- decline to answer any particular question
- withdraw from the study
- ask any questions about the study at any time during participation
- provide information on the understanding that your name will not be used unless you give permission to the researcher
- be given access to a summary of the project findings when it is concluded
- ask for the audio tape to be turned off at any time during the interview

My research is being supervised by two academic staff from Massey University:

Associate Professor Christine Stephens	Professor David Johnston
School of Psychology Massey University Palmerston North Phone: 06 350 5799 ext. 2081 E-mail: c.v.stephens@massey.ac.nz	Joint Centre for Disaster Research GNS Science/Massey University Lower Hutt. Phone: 04 570 1444 E-mail: david.johnston@gns.cri.nz

Appendices

If you agree to being interviewed about preparing for a disaster, please reply to the Invitation to Participate form and return in the freepost (no stamp is needed) self-addressed envelope that is enclosed. I would then ring to make a time to come and talk with you.

If you have any worries about a disaster or would like more information about how to prepare for such an event please call the Hutt City Council, telephone number: 570-6666

Thank you for taking the time to read this research information letter.

Kind Regards,

Robyn Tuohy
School of Psychology
Massey University
Palmerston North



This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 11/77. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Acting Chair, Massey University Human Ethics Committee: Southern B, telephone (06) 350-5799 x 8729, email humanethicsouthb@massey.ac.nz.

Appendix 4: Wellington Maori participant Information letter

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Disaster preparedness project:**The influence of personal and socio-cultural contexts on older adults'
preparedness for a disaster event**

Hello, my name is Robyn Tuohy and I am a student at Massey University. My background before beginning this PhD research project was in nursing, social work, together with raising a family. I am writing to ask if you would consider participating in an interview research study about preparing for disasters that will be part of my doctoral degree. I am wanting to include the views of a number of different ethnic and cultural groups, including Maori. I will not have a long list of questions for you, but rather, would like to listen to your views about getting prepared. There has been little research about the disaster preparation needs of adults over 65 years from the perspective of this age group. By interviewing you about this topic, my research will contribute to informing emergency management organisations and support agencies to help improve age specific disaster preparedness. This research will also contribute to further developing information tailored to the needs of adults over 65 years.

I would like to tape record the interview with your permission. The tape recording and any written material from your interview will be stored securely and your identity kept confidential. I would not be using your name in my research project. If you would like the interview recording sent back, I would return it to you, otherwise the audio-taped recording will be stored securely at Massey University, Palmerston North, and would be destroyed after five years. You would also have the opportunity to read your transcribed interview and add comments or withdraw comments as you desire. I would also send you a typed copy for your personal record.

Te Kunenga
ki Pūrehuroa

Joint Centre for Disaster Research

PO Box 756, Wellington 6140, New Zealand T +64 4 801 5799 F +64 4 801 4822 E jcdr.enquiry@massey.ac.nz disasters.massey.ac.nz

Appendices

I have consulted with Home Instead Senior Care about my project, and I would like to reassure you that whether you choose to participate or not in this research project it will not affect the support you are getting now or in the future. The time of the interview would be arranged to suit you and would take about one hour. I would be the only person interviewing you, and am happy for you to invite whanau/extended family as support for you during the interview. After the interview I will transcribe the interview and post it back to you to read and check the content. I expect that this will take no more than an hour of your time.

If you have any further questions about my research please feel free to contact me on 801 5799 ext 62169. This is the phone number for the Joint Centre for Disaster Research at Massey University, Wellington. You will be able to leave a message with the secretary on this extension number, and she will contact me with your message to ring you back.

Once I have completed my research, a summary of my findings will be sent to you, and would be happy to come and talk with you about my research findings, if you wanted this. You are under no obligation to accept this invitation to be interviewed, however if you decide to participate you have the right to:

- decline to answer any particular question
- withdraw from the study
- ask any questions about the study at any time during participation
- provide information on the understanding that your name will not be used unless you give permission to the researcher
- be given access to a summary of the project findings when it is concluded
- ask for the audio tape to be turned off at any time during the interview

My research is being supervised by two academic staff from Massey University:

Associate Professor Christine Stephens	Professor David Johnston
School of Psychology	Joint Centre for Disaster Research
Massey University	GNS Science/Massey University
Palmerston North	Lower Hutt.
Phone: 06 350 5799 ext. 2081	Phone: 04 570 1444

E-mail: c.v.stephens@massey.ac.nz

E-mail: david.johnston@gns.cri.nz

If you agree to being interviewed about preparing for a disaster, please reply to the Invitation to Participate form and return in the freepost (no stamp is needed) self-addressed envelope that is enclosed. I would then ring to make a time to come and talk with you.

If you have any worries about a disaster or would like more information about how to prepare for such an event please call the Hutt City Council, telephone number: 570-6666

Thank you for taking the time to read this research information letter.

Kind Regards,

Robyn Tuohy
School of Psychology
Massey University
Palmerston North



This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 11/77. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Acting Chair, Massey University Human Ethics Committee: Southern B, telephone (06) 350-5799 x 8729, email humanethicsouthb@massey.ac.nz.

Appendix 5: Invitation to participate



MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Disaster Preparedness Project

**The influence of personal and socio-cultural contexts on older adults’
preparedness for a disaster event**

INVITATION TO PARTICIPATE

Please return this form in the pre-paid, addressed envelope provided

Your name:

Your postal address is:

.....
.....
.....

Your contact telephone number is

The best time of day to ring you is:

Appendix 6: Christchurch participant Information letter

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Disaster preparedness project

**The influence of personal and socio-cultural contexts on older adults'
preparedness for a disaster**

Hello, my name is Robyn Tuohy and I am a student at Massey University. My background before beginning this PhD research project was in nursing, social work, together with raising a family. I am writing to ask if you would consider participating in an interview research study about preparing for natural disasters that will be part of my doctoral degree. I would like to talk with you and hear about your views and experiences about preparedness.

There has been little research about the disaster preparation needs of adults over 65 years from the perspective of this age group. If you agree to being interviewed, your experiences and views will contribute to assisting emergency management organisations and support agencies to improve disaster preparedness for older adults.

I would like to tape record the interview with your permission. The tape recording and any written material from your interview will be stored securely and your identity kept confidential. I would not be using your name in my research project. If you would like the interview recording

Te Kunenga
ki Pūrehuroa

Joint Centre for Disaster Research

PO Box 756, Wellington 6140, New Zealand T +64 4 801 5799 F +64 4 801 4822 E jcdr.enquiry@massey.ac.nz disasters.massey.ac.nz

Appendices

sent back, I would return it to you, otherwise the audio-taped recording will be stored securely at Massey University, Palmerston North, and would be destroyed after five years. You would also have the opportunity to read your transcribed interview and add comments or withdraw comments, as you desire. I would also send you a typed copy for your personal record.

I have consulted with Home Instead Senior Care about my project, and I would like to reassure you that whether you choose to participate or not in this research project it will not affect the support you are getting now or in the future. The time of the interview would be arranged to suit you and would take about one hour. I would be the only person interviewing you, and am happy for you to invite whanau/extended family as support for you during the interview. I would also be happy to inform Home Instead Senior Care that you have agreed to participate in this study should you want the agency to know this information. After the interview I will transcribe the interview and post it back to you to read and check the content. I expect that this will take no more than an hour of your time.

If you have any further questions about my research please feel free to contact me on 04) 801 5799 ext 62169. This is the phone number for the Joint Centre for Disaster Research at Massey University, Wellington. You will be able to leave a message with the secretary on this extension number, and she will contact me with your message to ring you back.

Once I have completed my research, a summary of my findings will be sent to you. You are under no obligation to accept this invitation to be interviewed; however if you decide to participate you have the right to:

- decline to answer any particular question
- withdraw from the study
- ask any questions about the study at any time during participation
- provide information on the understanding that your name will not be used unless you give permission to the researcher

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- be given access to a summary of the project findings when it is concluded
- ask for the audio tape to be turned off at any time during the interview

My research is being supervised by two academic staff from Massey University:

Associate Professor Christine Stephens	Professor David Johnston
School of Psychology	Joint Centre for Disaster Research
Massey University	GNS Science/Massey University
Palmerston North	Lower Hutt.
Phone: 06 350 5799 ext. 2081	Phone: 04 570 1444
E-mail: c.v.stephens@massey.ac.nz	E-mail: david.johnston@gns.cri.nz

If you agree to being interviewed about preparing for a disaster, please reply to the Invitation to Participate form and return in the freepost (no stamp is needed) self-addressed envelope that is enclosed. I would then ring to make a time to come and talk with you.

If you have any worries about a disaster or would like more information about how to prepare for such an event please call:

Christchurch City Council	03 941 8999 or 0800 800 169.
Earthquake Support Coordinator Service	0800 777 846
Aged Concern	03 366 0903 or 0800 803 344.

Thank you for taking the time to read this research information letter.

Appendices

Kind Regards,

Robyn Tuohy

School of Psychology

Massey University

Palmerston North



This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 12/22. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Chair, Massey University Human Ethics Committee: Southern B, telephone (06) 350-5799 x 8729, email humanethicsouthb@massey.ac.nz.

Appendix 7: Christchurch Maori participant Information letter

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGĀ TANGATA

Disaster preparedness project:**The influence of personal and socio-cultural contexts on older adults'****preparedness for a disaster**

Hello, my name is Robyn Tuohy and I am a student at Massey University. My background before beginning this PhD research project was in nursing, social work, together with raising a family. I am writing to ask if you would consider participating in an interview research study about preparing for natural disasters that will be part of my doctoral degree. I am wanting to include the views of a number of different ethnic and cultural groups, including Maori. I would like to talk with you and hear about your views and experiences about preparedness. There has been little research about the disaster preparation needs of adults over 65 years from the perspective of this age group. If you agree to being interviewed, your experiences and views will contribute to informing emergency management organisations and support agencies to help improve age specific disaster preparedness.

I would like to tape record the interview with your permission. The tape recording and any written material from your interview will be stored securely and your identity kept confidential. I would not be using your name in my research project. If you would like the interview recording

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sent back, I would return it to you, otherwise the audio-taped recording will be stored securely at Massey University, Palmerston North, and would be destroyed after five years. You would also have the opportunity to read your transcribed interview and add comments or withdraw comments as you desire. I would also send you a typed copy for your personal record

I have consulted with Home Instead Senior Care about my project, and I would like to reassure you that whether you choose to participate or not in this research project it will not affect the support you are getting now or in the future. The time of the interview would be arranged to suit you and would take about one hour. I would be the only person interviewing you, and am happy for you to invite whanau/extended family as support for you during the interview. I would also be happy to inform Home Instead Senior Care that you have agreed to participate in this study should you want the agency to know this information.

After the interview I will transcribe the interview and post it back to you to read and check the content. I expect that this will take no more than an hour of your time.

If you have any further questions about my research please feel free to contact me on 04) 801 5799 ext. 62169. This is the phone number for the Joint Centre for Disaster Research at Massey University, Wellington. You will be able to leave a message with the secretary on this extension number, and she will contact me with your message to ring you back.

Once I have completed my research, a summary of my findings will be sent to you, and would be happy to come and talk with you about my research findings, if you wanted this. You are under no obligation to accept this invitation to be interviewed, however if you decide to participate you have the right to:

- decline to answer any particular question
- withdraw from the study
- ask any questions about the study at any time during participation

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- provide information on the understanding that your name will not be used unless you give permission to the researcher
- be given access to a summary of the project findings when it is concluded
- ask for the audio tape to be turned off at any time during the interview

My research is being supervised by two academic staff from Massey University:

Associate Professor Christine Stephens	Professor David Johnston
School of Psychology	Joint Centre for Disaster Research
Massey University	GNS Science/Massey University
Palmerston North	Lower Hutt.
Phone: 06 350 5799 ext. 2081	Phone: 04 570 1444
E-mail: c.v.stephens@massey.ac.nz	E-mail: david.johnston@gns.cri.nz

If you agree to being interviewed about preparing for a disaster, please reply to the Invitation to Participate form and return in the freepost (no stamp is needed) self-addressed envelope that is enclosed. I would then ring to make a time to come and talk with you.

If you have any worries about a disaster or would like more information about how to prepare for such an event please call:

Christchurch City Council, telephone numbers: 03 941 8999 or 0800 800 169;

Earthquake Support Coordinator Service: 0800 777 846 (8 am -11pm 7 days, the support is based on your individual circumstances);

Aged Concern: 03 366 0903 or 0800 803 344.

Appendices

Thank you for taking the time to read this research information letter.

Kind Regards,

Robyn Tuohy
School of Psychology
Massey University
Palmerston North



This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 12/22. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Chair, Massey University Human Ethics Committee: Southern B, telephone (06) 350-5799 x 8729, email humanethicsouthb@massey.ac.nz

Appendix 8: Participant consent form

MASSEY UNIVERSITY
 COLLEGE OF HUMANITIES
 AND SOCIAL SCIENCES
 TE KURA PŪKENGA TANGATA

Disaster preparedness project

**The influence of personal and socio-cultural contexts on older adults'
 preparedness for a disaster event**

PARTICIPANT CONSENT FORM

This consent form will be held for a period of five (5) years

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being audio taped.

I wish/do not wish to have my tapes returned to me.

I wish/do not wish to have the opportunity to make changes to my transcript

I agree to participate in this study under the conditions set out in the Information letter.

Signature:

Date:

.....

Full Name - printed

.....

Appendices

Appendix 9: Ethics Committee approvals

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

25 January 2012

Robyn Tuohy
377 Muritai Road
Eastbourne
Lower Hutt
WELLINGTON 5013

Dear Robyn

Re: HEC: Southern B Application – 11/77
The influence of personal and socio-cultural contexts on older adults' preparedness for a disaster event

Thank you for your letter dated 16 January 2012.

On behalf of the Massey University Human Ethics Committee: Southern B I am pleased to advise you that the ethics of your application are now approved. Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Dr Nathan Matthews, Chair
Massey University Human Ethics Committee: Southern B

cc A/Prof Chris Stephens
School of Psychology
PN320

A/Prof David Johnston, Director
Joint Centre for Disaster Research
WELLINGTON

A/Prof Mandy Morgan, HoS
School of Psychology
PN320

Appendices



MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

28 June 2012

Robyn Tuohy
377 Muritai Road
Eastbourne
Lower Hutt
WELLINGTON 5013

Dear Robyn

Re: HEC: Southern B Application – 12/22
The influence of personal and socio-cultural contexts on older adults' preparedness
for a disaster event

Thank you for your letter dated 26 June 2012.

On behalf of the Massey University Human Ethics Committee: Southern B I am pleased to advise you that the ethics of your application are now approved. Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Dr Nathan Matthews, Chair
Massey University Human Ethics Committee: Southern B

cc A/Prof Chris Stephens
School of Psychology
PN320

Prof David Johnston
Joint Centre for Disaster Research
WELLINGTON

A/Prof Mandy Morgan, HoI
School of Psychology
PN320

Massey University Human Ethics Committee
Accredited by the Health Research Council

Research Ethics Office, Massey University, Private Bag 11222, Palmerston North 4442, New Zealand
T +64 6 350 5573 +64 6 350 5575 F +64 6 350 5622
E humanethics@massey.ac.nz animaethics@massey.ac.nz gtc@massey.ac.nz
www.massey.ac.nz

Appendix 10: Statements of contribution for submitted articles**Chapter Two**

Tuohy, R., Stephens, C. & Johnston, D. (2014). Qualitative research can improve understandings about disaster preparedness for independent older adults in the community. *Disaster Prevention and Management*, 23(3), 296-308.

Chapter Four

Tuohy, R., Stephens, C., Johnston, D. (under review). Disaster preparedness: Older adults' perspectives. *International Journal of Emergency Management*.

Chapter Five

Tuohy, R., & Stephens, C. Older adults' meanings of preparedness: A New Zealand perspective. (under review). *Ageing and Society*.

Chapter Six

Tuohy, R., Stephens, C., & Johnston, D. (2014). Older adults' disaster preparedness in the context of September 2010 – December 2012 Canterbury earthquake sequence. *International Journal of Disaster Risk Reduction*, 9, 194-203.

Appendices



MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

**STATEMENT OF CONTRIBUTION
TO DOCTORAL THESIS CONTAINING PUBLICATIONS**

(To appear at the end of each thesis chapter/section/appendix submitted as an article/paper or collected as an appendix at the end of the thesis)

We, the candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of Candidate: Robyn Tuohy

Name/Title of Principal Supervisor: Professor Christine Stephens

Name of Published Research Output and full reference:

Qualitative research can improve understandings about disaster preparedness for independent older adults in the community

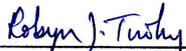
Tuohy, R., Stephens, C., & Johnston, D.

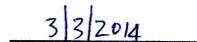
Accepted for publication: Disaster Prevention and Management

In which Chapter is the Published Work: Chapter Two

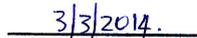
Please indicate either:

- The percentage of the Published Work that was contributed by the candidate: 90% and / or
- Describe the contribution that the candidate has made to the Published Work:


Candidate's Signature


Date


Principal Supervisor's signature


Date



MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

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Name of Candidate: Robyn Tuohy

Name/Title of Principal Supervisor: Professor Christine Stephens

Name of Published Research Output and full reference:

Disaster preparedness - Older adults' perspectives

Tuohy, R., Stephens, C., & Johnston, D.

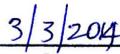
Submitted for publication: International Journal of Emergency Management

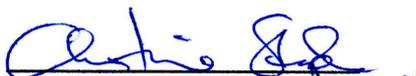
In which Chapter is the Published Work: Chapter Four

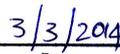
Please indicate either:

- The percentage of the Published Work that was contributed by the candidate: 90%
and / or
- Describe the contribution that the candidate has made to the Published Work:


Candidate's Signature


Date


Principal Supervisor's signature


Date



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GRADUATE RESEARCH SCHOOL

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Name/Title of Principal Supervisor: Professor Christine Stephens

Name of Published Research Output and full reference:

Disaster preparedness - Older adults' meanings of preparedness

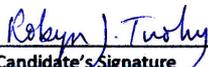
Tuohy, R., & Stephens, C.

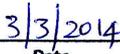
Submitted for publication: Ageing and Society

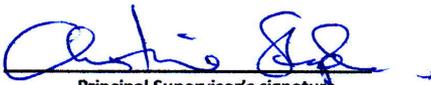
In which Chapter is the Published Work: Chapter Five

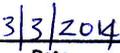
Please indicate either:

- The percentage of the Published Work that was contributed by the candidate: 90%
and / or
- Describe the contribution that the candidate has made to the Published Work:


Candidate's signature


Date


Principal Supervisor's signature


Date



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GRADUATE RESEARCH SCHOOL

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Name/Title of Principal Supervisor: Professor Christine Stephens

Name of Published Research Output and full reference:

Disaster preparedness - Older adults' disaster preparedness in the context of September 2010 - December 2012 Canterbury earthquake sequence

Tuohy, R., Stephens, C., & Johnston, D.

Submitted for publication: International Journal of Disaster Risk Reduction

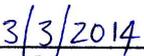
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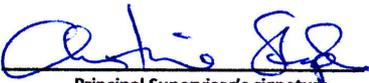
Chapter Six

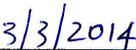
Please indicate either:

- The percentage of the Published Work that was contributed by the candidate: 90% and / or
- Describe the contribution that the candidate has made to the Published Work:


Candidate's Signature


Date


Principal Supervisor's signature


Date

Appendix 11: Declaration confirming content of digital version of thesis**Declaration Confirming Content of Digital Version of Thesis**

I confirm that the content of the digital version of this thesis

Title: Exploring older adults' understandings of disaster preparedness: A New Zealand perspective

is the final amended version following the examination process and is identical to this hard bound paper copy.

Have you published articles/material from your thesis?

Yes

If yes, have you received copyright permission from the third party to include this published material in your thesis which will be placed in the Library's electronic repository?

Yes

Student's Name: Robyn Jean Tuohy

Student's Signature:

A handwritten signature in black ink that reads "Robyn J. Tuohy". The signature is written in a cursive style with a large initial 'R'.

Date: 22 August 2014