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**Children and Natural Disasters:
An investigation of cognitions, knowledge and
emotions in Wellington Year 5 students.**

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degree of**

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in

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ABSTRACT

The aim of the present study was to examine children's cognitions (thoughts, expectations, beliefs and values), knowledge (education and experience), and emotions (feelings) regarding natural disasters. The sample consisted of 30 Year 5 students (9-10 years) from four primary schools in the Wellington Region. Schools were ethnically, socioeconomically and geographically diverse. Students participated in a 60 minute focus group, consisting of three to five students in each group. Focus groups used open ended questions to facilitate conversation, guided by the interviewer. Thematic analysis was used to explore the data and identify key themes, based on guidelines suggested by Braun and Clarke (2003). The analysis identified that many students believe an earthquake to be the most likely disaster to occur in Wellington, and many of the students discussed having serious fears about this. Students also identified a number of positive coping methods for use when experiencing fears about disasters, suggesting some ability to protect themselves from negative emotions. Students displayed pride in preparation and were able to clearly identify a number of positive preparatory behaviours, as well as behaviours during and after a disaster. Students were held a great deal of general knowledge about disasters, such as different types, as well as the causes of some disasters, and had knowledge of a large number of current events, which they had largely viewed on television and discussed in classes. Participants discussed having been involved in emergency management classes and drills within their schools, and had an interest in improving these classes to make themselves feel better prepared for a disaster. Overall, students had considerable interest in disasters, which provides an opportunity to foster preparedness in young New Zealanders.

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CHAPTER ONE:

BACKGROUND TO THE PRESENT STUDY

Natural disasters are an unfortunate but unavoidable fact of life. They can cause damage to individuals physically and emotionally, and cause extensive property damage. While most disasters cannot be predicted, they can still be prepared for, and it is important that we begin to understand our role in a disaster at an early age so that we can help to protect ourselves and those we love from unnecessary harm. Preparing for the threat of natural disasters can help us to mitigate some of the damage done, should a disaster occur, potentially saving lives and helping those affected to recover quickly.

Children have an important role to play in preparation for disasters, as the education of a child can influence others in the home. While adults can be more likely to procrastinate making disaster kits, having escape routes, setting out emergency meeting places, and being aware of who to contact, a child who is assigned this task in class is more likely to go home and see to these tasks with pride and a sense of importance that they are protecting their loved ones (Evans & Oehler-Stinnett, 2006).

Disasters are unpredictable, and damaging, and it can be easy to feel that they are entirely beyond our control. While this is true about their occurrence, it is not always true of their effects. Preparation and information are important tools in allowing children to feel in control of natural disasters. When an individual knows that they have the tools to get themselves through a disaster, there is less fear created by the uncertainty of events. Knowledge about emergency management leads to better prepared homes, and reduced anxiety toward potential disasters (Ronan & Johnston, 2005).

Presenting information about procedures and preparation can be done in the classroom, as this environment allows children to ask questions and gain ideas from one another, and can fit well into lessons about the natural world (Linter, 2006). These lessons can be followed up with homework assignments regarding what to do in the home, and drills about what to do if a disaster occurs while the students are at school. In the 'Health and Safety Code of Practice for State Primary, Composite and Secondary Schools' set out by the New Zealand Ministry of Education, all schools are required to have plans in place for disasters occurring during school hours. The Ministry's website states: "The school's responsibility towards students (as specified in the Ministry Code) centres on keeping them safe from hazards and ensuring they are not harmed by the action of staff" (Ministry of Education, 2008). These plans must comply with the Health and Safety Employment Act 1992, Fire Service Act 1975, and Building Act 2004. It further states that keeping students safe could include providing an awareness of evacuation procedures and fire drills (which must take place annually), the location of first aid supplies, and emergency contact numbers. As long as the school is fulfilling the above legal requirements, the extent to which the school chooses to include classes about disaster preparation in the home, and general knowledge about disasters, can be chosen by the school depending on what they deem necessary.

New Zealand is located in an area called the 'Pacific Ring of Fire', a collection of active fault lines which experience a large number of earthquakes and volcanic occurrences (GNS Science, 2009a). Wellington, located in the Lower North Island, is the capital of New Zealand. It is home to most of the nation's government as well as approximately 4.5% of the country's population in Wellington City alone, and 9% of all New Zealand residents spread across the Wellington region (including Wellington City, Porirua, Lower Hutt, Upper Hutt), according to New Zealand Census data (Statistics New Zealand, 2006).

Wellington City rests on the spot where two tectonic plates (the Australian Plate and the Pacific Plate) meet, which means that residents experience relatively frequent small earthquakes, and occasional large earthquakes, such as those experienced in the Wairarapa in 1855 (the largest earthquake in New Zealand's recorded history) and 1942 (GNS Science, 2009a). This fault line, called the Wellington Fault, runs right through the central city, and is one of the most active in the Wellington region. However, it is only one of five major faults in the region, and the Wellington Fault, Wairarapa Fault, Ohariu Fault, Shepherd's Gully Fault and Wairau Fault are all known to have ruptured (that is, to have released pressure causing an earthquake) in the last 5000 years. GNS Science further state that based on the rupture's rate of recurrence, which is believed to be every 500-1000 years, and the estimated date of the most recent rupture, which was 300-500 years ago, the Wellington Fault may experience another large release of pressure in the near future. If this were to occur it would cause an earthquake, which could cause massive amounts of damage across Wellington City (GNS Science, 2009a).

New Zealand is also surrounded on the east by the Pacific Ocean. Berryman (2005) states that the greatest risk for tsunami occurs along the east coast of the country, and also in Northland and Coromandel areas. This risk is caused by the potential for an earthquake in South America "Along the Hikurangi subduction margin of the eastern North Island" (p. 7). The risk of tsunami is especially high in cities such as Wellington, with a population of approximately 364,128 (Statistics New Zealand, 2009) largely gathered near coastal areas. Residents in Wellington City are at risk from a tsunami across Cook Strait, Fitzroy Bay and Wellington Harbour from the south. Titahi Bay threatens Porirua from the west, and the Hutt River (which stretches from Upper Hutt in the north to Wellington Harbour in the south and passes through central areas of both Lower and Upper Hutt) is at risk of flooding from tsunami in Wellington Harbour (Schouten, 2011).

Because earthquakes and tsunami pose significant risks to Wellington's residents and, as discussed, children have the potential to play an important role in disaster preparations, both for themselves and their families, it is important to investigate children's understanding of these disasters.

While awareness and preparation are key aspects in protecting children and their families from the risk of natural disasters, a key factor must always be to provide empowering information that can reduce anxiety. Children's exposure to information about disasters outside of the classroom is an important feature in how they feel toward the possibility of disasters affecting them. To assess this we must ask questions such as: What do children think, expect and believe about disasters? What do children know about disasters? Where do children access information about disasters? How do children feel about both real and potential disasters?

Therefore, the purpose of this study is to investigate children's cognitions (thoughts, expectations, beliefs and values), knowledge (education and experience), and emotions (feelings) surrounding disasters. It is hoped that increasing our understanding of children's knowledge and readiness to cope in a disaster will inform our emergency management classes and help children be better prepared for disasters.

CHAPTER TWO:

INTRODUCTION

In 2010 a total of 385 natural disasters were recorded worldwide, killing more than 297,000 people and affecting 217 million others (Guha-Sapir, Vos, Below, & Ponserre, 2011). With so many events occurring, it is likely that many individuals will be affected by a disaster, to some degree, within their lifetime. As most people are aware from the extensive news coverage of such events, natural disasters can strike anywhere in the world, at any time. Some, such as hurricanes, large storms, tsunami and volcanic eruptions can involve warnings before the event. However, with many other disasters such as earthquakes and fires there is little chance of a warning. Despite the knowledge that these events can and do occur, homes are not always prepared for such eventualities and people may not be aware of where they can go, what they should do, or who they should contact, should a disaster occur. It is for this reason that disaster education programmes are developed. Campaigns to increase readiness for disasters can come in the form of television advertising, mail-outs, workplace training, community programmes, websites, and school-based programmes. By implementing these campaigns, information about preparedness has become an increasingly common addition into homes, schools and workplaces. By encouraging people to gather getaway kits and make emergency plans, those interested in encouraging preparedness can make an effort to help people prepare for the possibility of being affected by a natural disaster.

At 4.35am on 4 September 2010, Darfield, New Zealand (40 kilometres west of Christchurch City), experienced a magnitude 7.1 earthquake which shook Christchurch and much of the Canterbury region. While deaths occurred as a result of this, 5% of buildings in the central city were damaged and the

earthquake left many of those living in the area anxious and disoriented (Stuff Reporters, 2010). Five months later, as those affected began to regain a feeling of control and return to their routines (while coping with the frequent aftershocks), a further tragedy struck. At 12.51pm on 22 February, 2011, a magnitude 6.3 earthquake struck near the city centre, this time at a much shallower depth, causing significantly more damage and taking 181 lives (Brown, 2011). This event brought to the forefront of many New Zealanders' minds issues of disaster preparation and awareness. This heightened awareness was discussed by New Zealand delegate Jim McLay at the General Assembly of the United Nations on 27 September 2011 in New York, who said: "For regions as vulnerable as ours, disaster preparedness is no desktop exercise – it's a matter of survival" (United Nations, 2011). The Ministry of Education also underscored the importance for parents to be aware of the possible stress reactions which children might experience following a disaster (Ministry of Education, 2011a) by releasing a series of tips for parents and teachers (available on their website) to support children following a large earthquake.

While the February 2011 disaster was the worst experienced in New Zealand since 1931, in terms of structural damage and human cost (GNS Science, 2009a), earthquakes and other disasters are far from uncommon. According to data from GNS Science (2009a) on its 'New Zealand Earthquakes' webpage, New Zealand experiences "several magnitude 6 earthquakes every year, one magnitude 7 every ten years and a magnitude 8 every century". The difference between these earthquakes and the 2011 Christchurch earthquake is that this earthquake was located in a populated area, at a shallow depth, both factors which contributed to the level of damage caused.

New Zealand's extensive coastline means that tsunamis are also a threat. Tsunamis can occur as the result of earthquake events when these occur offshore, or even far out to sea from coastal towns or cities. Historical records

show evidence of only ten tsunamis over five metres affecting New Zealand since 1840 (GNS Science, 2009b). While New Zealand has been lucky not to have experienced a large tsunami in recent history, events in other parts of the world have demonstrated that, should a tsunami occur in a populated area, the impact could be catastrophic. In Japan, March 2011, a magnitude 8.9 earthquake occurred off the country's eastern coast, triggering an enormous tsunami which decimated the coastal town of Sendai. This earthquake and tsunami destroyed most of the town, and caused damage to surrounding areas, such as Fukushima, an inland prefecture housing a nuclear reactor facility. In the disaster over 18,000 lives were tragically lost and as of March 2011 over 7000 people were still unaccounted for (McCurry, 2011).

While earthquakes and tsunamis are prevalent risks for those living in New Zealand and especially to the capital city, Wellington, and the surrounding region, they are not the only natural disasters posing a threat to the safety of New Zealanders. While many threats such as volcanic activity, flood and landslides are more common in some areas than others, travelling to other regions for business or leisure is common for many individuals and families. Therefore, regardless of where in the country people are based, it is important to be aware of threats that people are potentially exposed to outside their own region. For instance, across the country New Zealand has 12 major volcanic areas (GNS Science, 2009c). While eruptions and volcanic events are uncommon, damage from these events is still a concern for people particularly those in the surrounding areas to remain aware of.

One of the most salient volcanic events in recent history occurred in 1995, when Mt. Ruapehu, in the centre of the North Island, erupted with a plume of volcanic ash which spread across the central North Island. This ash closed roads and airports and "animal deaths occurred as a result of ash ingestion and fluorosis poisoning... Fish in local rivers were affected by lahars... Ash was a nuisance, and

had to be cleaned up by both residents and business owners” (Becker, Smith, Johnston & Monroe, 2001, p. 1).

Floods and landslides are also common natural disasters, the risks of which vary drastically depending on the geography of the area. Soil density, proximity to rivers and rainfall can contribute to the likelihood of these events occurring (Liverman, Batterson, Taylor, & Ryan, 2001). There is also a range of man-made contributing factors to disasters such as dam placement, construction, pollution, and forestry which can affect chances of serious damage and loss of lives during a disaster (Sengezer & Koc, 2005). Quality of construction and materials used in building can have a major effect on the likelihood of building collapse in a natural disaster (Coburn, Spence, & Pomonis, 1992).

While it is important to be aware of all forms of disasters, New Zealand’s position along the meeting point of the Australian and Pacific tectonic plates (GNS Science, 2011), as well as the country’s extensive coastline make the threat of earthquake and tsunami a serious concern for its residents. Disasters are an ever-present threat and preparedness is of such importance that we need to develop these skills early in life. Understanding of the ways in which children think about disasters, their beliefs, expectations and values, is important for developing programmes which assist in the early development of the skills and knowledge associated with being prepared for a disaster.

Children’s Cognitions about Natural Disasters

Cognitions are an individual’s mental processes, generally described as *thoughts*. For the purpose of this study it will be used to describe thoughts, expectations, beliefs, and values.

When looking at children's specific cognitions about disaster risk, we are examining their expectations about disasters occurring where they live, and disasters having a direct effect on themselves, their homes, and their families. Children's expectations about disasters were examined in a study of children aged 11-12 years by Tarrant and Johnston (2010) which examined beliefs of Wellington Intermediate School students (Years 7 and 8) about the likelihood of disasters affecting them. The study found that most children considered a house fire (30.9%) to be the most likely form of hazard to affect them at home, followed by earthquake (28.3%). While at school, students believed earthquake was most likely to affect them (36.0%). Unsurprisingly, fire was also the most upsetting for children to think about, with 27% saying that it 'often' scared them. Interestingly, while few students thought the threat of tsunami was one of the two most likely to affect them. As this study took place before the disasters in both Christchurch, New Zealand and Sendai, Japan; it will be of interest to see whether children now perceive earthquakes or tsunami as being the most likely occurrences, and/or whether information about these two major events, one an earthquake and one a tsunami, has affected children's cognitions about these disasters in any other notable ways.

In a study of adult beliefs surrounding earthquakes in New Zealand, Spittal, McClure, Seigert, and Walkey (2005) found that overall, individuals in Wellington judged themselves as being better prepared than others in the same city. They also found that while those surveyed believed themselves more likely to experience damage to their home than others in the same city, they also believed themselves less likely to suffer injury. Spittal et al. use the term 'optimism bias' to describe the cognitive process that leads individuals to have the seemingly contradictory cognitions that while they are more likely to suffer adverse effects from an earthquake than others in the same city, they would fare better physically. This may either stem from, or lead to their bias to believe that they are better prepared than others.

Optimism bias should not, however, be considered to be a negative construct. Optimism bias serves an important function in allowing people to continue to function, regardless of the possibility of disappointment. The significance of this for disasters is that it can also allow people to make plans and preparations about what they will or will not do in the event of disasters. While the optimism bias can lead to people believing they are more prepared than others, and not taking further precautions, it may also be the reason why they make any preparations at all. Rather than falling prey to fatalistic thinking (such as believing that there is no point in making plans because disasters are not survivable), optimism bias can allow us to overcome fear and remain hopeful (O'Mara, McNulty, & Karney, 2011). This makes optimism bias an extremely positive adaptive process in human thinking. In the case of earthquakes and tsunami, this can have implications following the large scale disasters in Christchurch, New Zealand and in Sendai, Japan where the damage seems so catastrophic. Optimism bias is a necessary construct when viewing images of such events, where fatalistic thinking could be so easily applied, and one must overcome this in order to make the preparations needed to survive such disasters.

Ronan and Johnston (1999) discuss the effects of witnessing volcanic activity on a group of 113 New Zealand students aged between 7 and 13. These children all attended school within 11km of an active volcano, Mount Ruapehu, and had witnessed the series of relatively harmless eruptions and ash clouds that occurred over the course of one month before the study. Ronan and Johnston's study took place over the course of seven months, with the first assessment taking place one month after the initial eruption, and follow ups at three, five and seven months. Their investigation found that the most positive effect on coping within their sample group was to have participated in an information-based intervention group, which explained to them what was happening during

an eruption, and gave the opportunity for the children to have their questions answered. This finding suggests that knowledge is a key aspect of positive coping, and can assist those young people to understand the processes of a natural disaster and to feel less stressed and out of control following such events.

Children's Knowledge about Natural Disasters

Disaster Education in New Zealand Schools

Becker, Johnston, Paton, and Ronan (2009) discuss a series of one-on-one interviews undertaken with 48 adults across New Zealand to examine factors which lead to disaster preparedness in homes. One of the positive factors discussed by participants was having children who were involved in disaster education programmes at school. Those individuals surveyed said that their children would come home with information about preparing for a disaster, and the family or parent and child would make plans or prepare resources together for their home. This suggests that of homes with children in disaster education programmes at school, not only do the children themselves benefit from an effective programme, but potentially the entire family unit becomes better prepared as a result of the information. Preparedness within the home environment, such as having supplies and plans in place, as well as an emotional awareness of the possibility of a disaster and understanding that they can get through it, can have a positive impact on the likelihood that the child will be able to get through a disaster event both physically and emotionally (Ronan and Johnston, 2005).

If we have observed that disaster education can reduce anxiety in the child, as stated in Ronan, Johnston, Daly, and Fairley (2001), it can be expected that the information they have passed on to others around them may also reduce the

anxiety of those individuals. Having others in their home who are capable of remaining calm during and after a disaster, could be an even further protective factor in the child's environment. In times of anxiety or stress, as the child feels overwhelmed, they can model their behaviours on the positive coping of the adults around them. This flow of information from school to home has great value, both to the family members, who have a better understanding of how to protect themselves in a disaster, and to the child.

As previously mentioned, it is required by the Ministry of Education that all New Zealand schools have safety practices in place should a disaster occur during school time. However, the school's time constraints and what they perceive as being relevant topics for their students means that the existence and content of disaster education programmes can vary between schools (Coomer et al., 2008).

Many New Zealand schools include disaster education as a part of their studies. A study by Coomer et al. (2008), examining emergency management education in 216 schools encompassing Years 1-13 in the Greater Wellington region found that 86% of schools surveyed had some form of emergency management education in their curriculum. This finding shows that emergency management is considered important enough that the majority of schools include some information on the topic.

Of those schools with emergency management programmes, 74% used library resources for their information, 66% found resources from the internet, 63% reported using the 'What's the Plan Stan?' resource (see following section for further details of this resource), and 62 % used civil defence/emergency management resources. Of those schools teaching emergency management classes 87% chose to teach these classes to all ages. Of those classes taught, 99% included information about earthquakes and 97% included fires, making these topics the most discussed in classes, by far. Inclusion in such a high

number of classes suggests that earthquakes and fires were considered by schools to be relevant for their students. This may be based either on their frequency, or the potential to cause harm. Floods were discussed in 61% of disaster management classes; storms (53%) and tsunami (42%) were also common topics. Of the schools surveyed, two thirds of those schools who indicated running emergency management classes also reported that they use area specific information in their schools when discussing disasters. For example, schools close to coastal areas may have chosen to emphasise what to do if a tsunami warning is issued, whereas a school near a river have spent more time discussing the effect floods (either from rainfall or tsunami) could have on their area, should the river swell.

As mentioned above, a commonly used resource for disaster education is the programme developed by the Ministry of Civil Defence and Emergency Management (2009) called 'What's the Plan Stan?'. This resource discusses the forms of disasters which could likely occur in New Zealand, such as: earthquake, tsunami, flood, volcanic eruption, storm, or non-natural disaster. As the title suggests, the resource is heavy in its emphasis on making plans and preparations so that the child is aware of the different responses required for a range of disaster events.

Lessons can be further enhanced by including current events to create a fuller understanding that such events can and do happen. The use of current events can raise awareness of disasters and enhance classes about preparedness by linking lessons about what can and should be done before, during, and after a disaster, to real world examples of how the information can help to save lives. "The use of current events... is a powerful way for elementary teachers to spur historical, geographic, economic, and political discussions. Natural disasters can also promote conversations about civic responsibility" (Linter, 2006, p. 101).

As discussed by Coomer et al. (2008) schools choose to emphasise different topics in their emergency management classes, with some choosing to include information that is specific to their geographic location. It would be likely that Wellington's position along a major fault line is the reason why the earthquake topic was so prevalent in the classes surveyed by Coomer et al. (2008), who found 99% of Wellington schools chose to cover earthquakes in their classes. Based on Linter's discussion of the importance of current events in teaching lessons in the classroom, it is also possible that, following the Japan tsunami in March 2011, tsunami have been discussed in a larger percentage of Wellington classrooms in 2011 than at the time of the 2008 study.

The way in which information is presented can have a large impact on the way students learn (Sternberg & Grigorenko, 1997). As with all education, it is important that these learning differences are taken into account by incorporating different learning styles when presenting information about disasters. The effective communication of these messages is what will ultimately determine the level to which they are absorbed, and the level of understanding that the student develops. For example, teacher enthusiasm and subject enjoyment (Frenzel, Goetz, Ludtke, Pekrun, & Sutton, 2009), retrieval practice (Karpicke, 2009), and homework quality (Dettmers, Trautwein, Ludtke, Kunter, & Baumert, 2010) have all been shown to have positive effects on skill development and learning in children.

Therefore, to best support skill development, it is important that those presenting emergency management in schools are mindful not just of content, but also the manner in which the material is presented. Ronan and Johnston (2005) give a list of what they believe can *diminish* the effectiveness of the hazard information being used. These include:

- An overabundance of material
- Out of date material

- Inappropriate material
- Changes in what the school is able or willing to teach (e.g. due to time constraints or another topic being given priority)
- Teachers leaving the school and taking materials with them, or leaving no one with an interest/motivation/ability to teach the topic.

Overall, this list suggests that quality of materials and motivation/ability to teach the subject are the most likely causes for ineffective teaching of hazard information in schools.

According to Finnis, Johnston, Becker, Ronan, and Paton (2007), effectiveness of a school programme can be *enhanced* by programmes which outline what occurs before, during, and after a disaster. It is helpful to encourage the student to share what they have learned with others, such as their family. Lessons should also include an emphasis on students "doing" preparedness by making plans and being physically prepared for a disaster event, for example, making an evacuation plan or getaway bag that could be used in a disaster. Further, as discussed by Ronan and Johnston (2001), students benefit from repetition of the message of preparedness.

Preparedness can be difficult to measure, as the level to which an individual is prepared physically and mentally for a disaster can only be observed following a disaster event. Dufty (2009) suggests that hazards education can be measured as effective if it carries out for main functions, which are:

- “**1. Preparedness Conversion:** Learning how to begin and maintain preparations for natural disasters.
- 2. Mitigation Behaviours:** Learning what to do before, during and after a disaster to minimise harm to themselves and their loved ones.
- 3. Adaptive Capability:** Learning how to change and maintain systems, networks and build community competencies to minimise the impacts of

natural disasters.

4. Post-Disaster Learning: Learning how to improve functions 1, 2, and 3 above, after a natural disaster” (Dufty, 2009, p. 15).

Dufty also suggests that there is a tendency in all forms of disaster education to only focus on functions 1 and 2, neglecting 3 and 4. This may be largely due to the fact that function 3 is only able to be observed *during* a disaster, and 4, *following* a disaster. This means that *adaptive capability* and *post-disaster learning* are more difficult to implement and assess, as they are dependent on the occurrence of a natural disaster to observe. Dufty’s definition of ‘*effectiveness*’ in these programmes is first that the programme has drawn from, and reflects, research in relevant fields. The student has to have completed the programme having gained an understanding of the risks associated with natural disasters, and how to prepare for them. The student should have a plan for the management of disasters, which is maintained by themselves and their family. Lastly, the programme’s effectiveness in having fully prepared the student can be observed, should a disaster occur, if the student demonstrates an ability to both cope with and learn from the event.

"Evaluation provides a systematic process for determining the success of a programme. It addresses questions about whether and to what extent the programme is achieving its goals and objective" (Finnis et al., 2007, p. 104).

This describes the importance of collecting feedback on any programme in which participants are expected to absorb an important message. In the case of disaster preparedness programmes in schools, it is important to frequently evaluate and build upon the programmes’ ability to increase levels of preparedness. In emergency management programmes the outcome of an ineffective programme can be that individuals/families are unprepared for possible disasters. The ramifications of programme failure could therefore be catastrophic in the event that a disaster does occur.

It is important that the efficacy of education surrounding disasters in schools is evaluated, and that the students are able to give their own feedback about how they think and feel about the education they receive, so that it can be modified to be the most effective in meeting their need to prepare for a disaster. While the present study is not collecting evaluative data on the effectiveness of specific emergency management programmes currently running in schools, it is allowing students an opportunity to discuss their thoughts and emotions and demonstrate what they know about disasters. Information about students' cognitions, knowledge and emotions will contribute to a greater understanding of effective emergency management education. This information will further help us to better understand the experiences of students within those classes, and improve the programmes to best fit the needs of the students.

Finnis et al. (2007) suggest several factors which can enhance engagement with messages about disasters. These are: motivation and intention to prepare, an acceptance of a 'sooner rather than later' message, trust in the message and those delivering it, and that education methods are integrated into community development. These factors suggest that an individual must have a reason to prepare: usually self-preservation or securing the safety of their loved ones. An individual must believe that the preparations should occur immediately, or they may continually postpone them. The individual should have a high level of trust in both the message and those delivering it, or this mistrust will undermine the significance of the message and it will be dismissed. Lastly, integration of the education into the community influences trust by allowing the individual to see similar role models undertaking preparatory behaviours. This also creates a repetition of the message, making it more salient. "School education programmes can be one of the centrepieces of a sustained, community-based effort" (Finnis et al., 2007, p. 100).

Another study (Ronan et al., 2001) reported that students who participated in disaster education in schools perceive a higher risk of personal injury from disasters, but also report significantly lower levels of fear than students who have not taken part in education programmes: "Children reporting involvement in education programmes also reported more realistic perceptions of risk, reduced fears, and increased knowledge of protective behaviours compared to those not involved in such programmes" (p. 3). It seems likely that while students involved in such programmes develop a greater awareness of risk associated with disaster, they also develop a greater understanding of protective behaviours before, during and after a disaster, which may lead to the reduced fear reported by Ronan et al.

"Participants who reported involvement in two or more programs were significantly more knowledgeable compared to children reporting involvement in one group only" (Ronan & Johnston, 2001, p. 3). This reaffirms the importance of disaster education being repeatedly presented in schools. The previously discussed research by Coomer et al. (2008) showed that many of the schools surveyed (86%) ran emergency management classes across the whole school, rather than targeting only certain levels. Students who are educated in schools which implement emergency classes in all years of schooling would therefore take emergency management classes each year, building on their existing knowledge and refreshing previously learned information. These students would, as stated by Ronan and Johnston above, be ultimately more knowledgeable than those taking classes in only one year of their schooling. Further, if education leads to reduced fear, as previously discussed, then students who take classes in multiple years of study could be both better prepared and have lower levels of anxiety related to disasters, than those students who take one class only.

Ronan and Johnston (2005) emphasise the importance of hazard education in

schools for building a network between the young person, their school, and their family unit, and making all of these groups, as well as their community as a whole, resilient toward natural disasters. Ronan and Johnston describe resilience as being more than the ability to merely 'bounce back' from an adverse experience; resilience also involves the processes of rebuilding and adjusting to a potentially different way of being in the aftermath of a disaster.

It is clear that there are strong positive effects to disaster education including realistic cognitions about disasters, encouraging preparation-making and fostering resilience. In particular, disaster education with a strong emphasis on plan-making can encourage students to create plans and preparations at home with their families, which may help to reduce anxiety about potential disasters. In this way, as the teachers educate the students, the students can educate their family, giving reassurance and information which can also filter through to the wider community.

One example of the importance of education about disasters comes from the story of Tilly Smith, a 10 year old British girl who was able to save her family and other tourists from a Thai tsunami (Randall & Berger, 2005). Tilly had learnt about tsunami in her school geography lessons, and when she saw signs that a tsunami was imminent while on holiday with her family, she was able to warn them and others of the danger and flee the beach. Stories such as this, where the positive impact of emergency management classes is so clearly apparent, emphasise that examining factors which can affect preparation and education is of great importance.

Presenting disaster education in classes presents an opportunity to create protective habits which might be expected to stay with the young person throughout their life, and to reinforce the protective habits of the young person's family and friends. This can be done in a way that enhances the

student's understanding of the natural world, and can be followed up with homework or in-class activities to reinforce the information presented in lessons.

Information from Sources Outside the School

Following a disaster, it can seem as if every news source becomes saturated with images of the aftermath. As adults, we often have unlimited access to various forms of media and can choose to what extent we would like to follow the occurrence, and at what point we no longer want to view material about the disaster. Children usually have more restricted access to various forms of media than adults, as the adults in their lives may choose to what extent they believe the children should be exposed to images or information about the disaster, and may limit the child's exposure accordingly.

Following the 2010 and 2011 earthquakes in Canterbury, New Zealand, the New Zealand Ministry of Education (2011a) released a series of guidelines on their website for parents and teachers who were unsure how best to help children affected by these events. With reference to communicating with young people about disasters, these guidelines include the following suggestion: "Protect children from seeing media coverage of the earthquake as it can add to their fears and slow down their recovery" (Ministry of Education, 2011a). This advice makes sense, as repeated exposure to information about a disaster may cause children to worry and fear for their own safety, or the safety of others (Ortiz, Silverman, Jaccard, & La Grecca, 2011). In those cases where a child has experienced a traumatic stress reaction to being involved in or viewing a disaster, being exposed to subsequent images or stories about that event, or similar events, can lead the child to feel as if they are re-experiencing the event, deepening the existing trauma (Kaplow, Saxe, Putnam, Pynoos, & Lieberman, 2006). In news casts it is common for images from a few incidents to be

frequently repeated, which can lead to feeling as if disasters are more common than they really are. Those children who perceive a type of disaster, or disasters in general, as having a higher than realistic prevalence are also prone to higher levels of worry (Ronan & Johnston, 2005).

A previous study by McClure, Allen, and Walkey (2001) examined the way the public views disasters in the media. This was done by portraying a building collapse during an earthquake in several different ways, and examining whether individuals attributed the collapse primarily to building design, or to the severity of the earthquake. Their finding was that the viewer could be led to attribute blame according to the perspective of the media. This further suggests that an emphasis on negative imagery can make disasters seem more common and more severe than they really are, if this is the perspective being shown in the media. The emphasis on negative imagery could in turn lead some individuals to feel that preparation is a worthless endeavour and therefore fail to take the precautions needed, such as: creating an emergency kit, preparing a getaway bag, or making emergency plans. A home that does not have adequate preparations in place may not have the necessary items in the event that an emergency occurs.

In order to limit the effects of emotionally overwhelming media, parents may choose to discuss disaster events in the home, ensuring that their child is aware of the broader context for these events, and providing answers to any questions the child may have about the disaster. Such discussions may come about from conversations in the classroom, from the child having seen an article in a newspaper, on a television show, or on the internet, the caregiver of the child may choose to bring the topic up, or the child may do so. In some cases a child may have access to information about disasters, but may not discuss this with anyone. The child choosing not to share information may sometimes occur because the child has been asked not discuss these things with others. It also

may be that when the child views images and information about disasters, they do not perceive them as relevant to their own life, and therefore dismiss them as unimportant. In order to understand the effect that information about disasters has on children, it is important to examine children's emotional responses to the information they receive.

Children's Emotions about Natural Disasters

Literature pertaining to children and disasters is considerable, but has primarily focused on the short and long term psychological effects that exposure to disasters has on those children who have been personally involved in them. Of key interest has been examining factors which lead to the development of psychological disorders such as Post Traumatic Stress Disorder (PTSD), depression, and anxiety disorders, following the experience of a major disaster.

Age has been noted as one of the key factors which can increase an individual's vulnerability facing a hazard or disaster. Ronan and Johnston (2005) list key vulnerability factors as:

- being female
- the disaster having caused a high number of injuries and deaths
- being in a developing country
- mass violence being involved
- being a primary victim of the disaster
- being a child.

In a study examining post-traumatic stress in children following the Athens earthquake of September 1999, Groom and Soureti (2004) found that there were often serious effects on those children who were living in the area. This included high levels of PTSD symptoms. They also found that females had higher

levels of stress than male participants, which is consistent with previous studies (e.g., Bokszczanin, 2008. and Kolatsis, et al., 2003). While proximity to the epicentre of the earthquake (in which 139 people died and many more were injured) was not, in itself, a major influence on levels of stress, believing that their lives were in danger during or immediately following the earthquake was.

In a study of the psychological effects following the 1999 earthquake in Chi-Chi, Taiwan, Chen, Lin, Tseng and Wu (2002) also noted higher levels of post traumatic stress in females than in males, and in younger children than older children or adults. Chen et al. further observed that children who had previously experienced earthquakes demonstrated what the authors termed a 'dose effect'. The dose effect Chen et al. witnessed suggested that, in those individuals studied, previous experience of benign disasters led to lower levels of post traumatic stress following the Chi-Chi earthquake. It is important to distinguish between the type of events discussed by Chen et al., and traumatic events. Where an individual experiences relatively benign disaster events, such as small earthquakes, this fosters an expectation that disasters can be managed, and can lead to the 'dose effect' discussed above. Further, when a disaster is especially traumatic for the child, it can cause a post-traumatic stress response, such as the type described by Kaplow et al. (2006), and Bonanno and Mancini (2008). Post-traumatic stress in early life can cause susceptibility to developing depression, anxiety, and PTSD in later life. The symptoms of PTSD may begin shortly after the traumatic event with behaviours such as trouble sleeping, clinginess, difficulty eating, or aching in the head or stomach (Greenman, 2005). It is also possible for trauma to be delayed by months, or even years, and become triggered again by life stresses, or a later traumatic or difficult event (Kaplow et al. 2006). All of these conditions can have significant effects on emotional and intellectual development (Williams, 2007).

A study of the ethnic differences between individuals exposed to Hurricane

Andrew (Perilla, Norris, & Lavizz, 2002) showed differences in reactions experienced which was relative to ethnicity. Perilla et al. observed that levels of post traumatic stress were highest in Latino individuals (38%), lower in African Americans (23%) and lowest in Caucasians (15%). Perilla et al. believed that these ethnic differences could be somewhat attributed to the accumulated stress of different cultures, with historical and personal factors such as oppression, poverty and migration stresses causing differential vulnerability and also leading to a decrease in help seeking following tragic events. However, it is important to note that these results still indicated that there were increased levels of traumatic stress following the events of Hurricane Andrew for *all* ethnicities surveyed.

In a study of the effects on 2379, 9-17 year olds who had been affected by a bushfire disaster six months prior, McDermott and Palmer (2002) found that symptoms of depression following a disaster were observed most in those children aged 9-11 years and that “The number of postdisaster depressive symptoms was significantly associated with an individual’s higher trait anxiety, earlier school grade... evacuation experience and emotional distress score” (p. 758). The finding that depressive symptoms following disaster events peak in late childhood is also discussed by Ronan and Johnston (2005). They observed that studies over the past 20 years have indicated that children have much higher rates of post event stress than adults exposed to similar events. This may be relative to the discussed ‘dose effect’ (Chen et al., 2002), as most adults will have had some experiences of minor disasters, either directly or vicariously. Many adults, through personal experience and developmental maturity, can also be expected to have developed or become familiar with multiple coping methods. The result of this is that adults are likely to be more familiar with the steps which need to be taken in a disaster, and their preferred methods for coping with the stress which can occur during and after disaster events.

It is highly important that lessons about preparedness incorporate, as much as possible, a strengthening of those factors which can be seen as emotionally protective when experiencing a potentially traumatic event. Protective factors for children following a disaster include: family cohesion, support, and protectiveness (Bokszczanin, 2007) with low levels of parental stress, and positive behaviours being modelled by parents (Proctor et al., 2007). With findings often supporting the role of parents' positive behaviours in reducing post event stress for children, it seems to be of great importance that disaster education programmes have a focus on including parents and families in the implementation of household disaster preparations, as suggested by Finnis et al. (2007).

The Importance of Fostering Preparedness

In a study of preparedness in households, Mileti and Peek (2002) stated that expected risk does not seem to directly contribute to protective actions. Mileti and Peek further suggested that the reason for this may be that expectation of risk in the area in which one lives is not necessarily internalised to the point of believing that one's own home may be damaged. This is contrary to the expectation that an awareness of risk would lead directly to engaging in preparations to reduce either the risk itself, or effects of the risk. Failure to prepare may be because of the fatalistic thinking discussed previously by McClure et al. (2001), where the prevalence seems so high and the consequences so damaging, that any preparation seems wasted. A contradictory type of thinking could also be true, that although the individual is aware of their home being affected, they are unwilling or unable to entertain the possibility of injury.

It should also be noted that optimism bias can still be present in those who follow through with making preparations, as can fatalistic thinking. That is, it is still possible for an individual to undertake preparations, while feeling that they are unnecessary, especially in cases where they have a motivating reason for making the preparations, such as concern for (or prompting from), other individuals. As previously discussed, homes with children taking part in disaster education programmes are often better prepared, as the child disseminates the information to their family (Becker et al., 2009). This may go a long way to overcoming the optimism bias, or wishful thinking, which may lead adults to believe they are unlikely to be harmed, and therefore being underprepared for disaster.

Tarrant and Johnston (2010) found that of those 11- 13 year old students surveyed in Wellington, only 29% had a family emergency plan, and only 27% had practised what to do in their home in disaster situations. Similarly, the General Social Survey carried out in New Zealand three years earlier (Statistics New Zealand, 2009), found that only 15% of homes in the country were *fully* prepared for a disaster. It was also found that while most households had food for three days (87%), much fewer (41%) had a three-day supply of water. Fewer still (26%) had a household emergency plan, such as emergency contacts, meeting places and planned exits from the home. Ten percent of those surveyed had no preparations at all.

Disasters occur, often unexpectedly and sometimes tragically. While it is impossible to remove the risks of disasters entirely, it is possible to mitigate them by being adequately prepared. Preparedness is about understanding the hazards that exist, knowing what to do should they occur, having things ready, and knowing how to get through the recovery process. It is of extreme importance that messages about preparedness are being transmitted as effectively as possible.

Summary

There is a wealth of information which discusses the potential negative effects of children being exposed to disaster events. In light of the earthquakes and tsunami which have occurred in the past year (2010-2011), in New Zealand and Japan in particular, it is an appropriate time to hold conversations with children who have not been directly affected by a disaster, but have likely been exposed to information about them. Children often have access to television and newspapers and may have access to the internet or other media at home or in their school. Since it is not necessarily feasible to be able to protect a child fully from being exposed to images of natural disasters, it is important to know what children do with the information they find and how they understand and respond to it.

How children engage with information and place it in a context that they understand is of great importance to our understanding of the way children react following a disaster in which they are not directly involved. One of the most effective ways of examining how children are responding to the information they receive about disasters is to talk to students and investigate, through conversation, how they understand natural disasters, especially earthquakes and tsunami, and how children respond cognitively and emotionally to the information they receive. To investigate these questions, the present study will use focus groups to discuss natural disasters and disaster education with Year 5 students (aged 9-10) and enable them to express in their own words their cognitions, knowledge, and emotions surrounding natural disasters and disaster education.

While studies discussed in this chapter have investigated children and their experiences or beliefs about natural disasters, to date all previous studies on the subject, in New Zealand, have been survey-based. This presents an opportunity

for further investigation. While survey studies are immensely valuable in gathering a wide range of information from a large number of participants, answers are essentially limited to fixed choices or responses on a Likert scale. From conversations with children we can find out what the students draw from information they have encountered about disasters. Engaging children in conversations about disasters, especially earthquakes and tsunami, puts them in a position to voice their thoughts safely, and talking with students shows them that their opinions are valued. The present study addresses this gap in the existing research by providing a qualitative investigation of the cognitions, knowledge, and emotions that children have regarding natural disasters, and considers implications for children's disaster education. In conducting a qualitative investigation, the present study will contribute to a greater understanding of the way children make sense of disasters, how they engage with information about disasters, and what emotions they have about disasters and disaster education. Any development in our understanding of children's needs can contribute to an improvement in disaster education in New Zealand and inform our practices when engaging with children who have been indirectly exposed to a disaster. Finally, knowledge about the effectiveness of emergency management programmes, gained from the students participating in them, can help to further the development of effective classes where students are interested in the material presented, educated by it, and learn skills which will lead to better preparation in the home. This is of great importance, as increasing preparedness in the home can lead to better outcomes in the event of a natural disaster, potentially saving lives of young New Zealanders and their families.

Aims of the Present Study

The present study examines the cognitions, knowledge, and emotions that children possess about natural disasters (focussing on earthquakes and tsunami) using a thematic analysis of focus groups with 30 Year 5 students in 4 schools around Wellington, New Zealand.

The aims and key research questions for this study are:

1. To investigate children's cognitions about natural disasters:
 - What thoughts worry them when thinking about natural disasters?
 - What do they expect is the likelihood that they will experience a natural disaster?
 - What do they believe will happen, should a natural disaster occur?
 - Do any of these expectations differ now, in 2011, from those reported in previous research?

2. To investigate children's knowledge and education about natural disasters:
 - What do they know about how and why natural disasters happen?
 - What do they know about preparedness for natural disasters?
 - What behaviours do they know for keeping safe in a natural disaster?
 - Where do they access information about natural disasters?

3. To investigate children's emotions about natural disasters:

- How does the information they receive make them feel?
- What about natural disasters causes them fear?
- How can they help themselves to feel better when thinking about disasters makes them feel afraid?

CHAPTER THREE:

METHOD

Research Design

The present study examines the cognitions (thoughts, expectations, beliefs and values), knowledge (education and experience), and emotions (feelings) of children, in relation to disasters and disaster education. Examining the themes which run through the children's responses allows an investigation of what information children are exposed to and how they engage with that information.

The present study used focus groups of Year 5 students (aged 9-10 years) to obtain qualitative data, which was then subjected to thematic analysis. This research design had the benefit of giving the children freedom in their answers, so that the ideas discussed in the previous research (e.g. children's beliefs about disasters and understanding about keeping safe, as discussed in the previous chapter) were able to be explored further and built upon (see Appendix D for 'Question Framework'). Focus groups were led by the researcher using a series of questions to prompt discussion. The questions used were derived from issues identified in previous research, and to fulfil the aims of the present study. Focus group format was chosen over individual interview to allow the children to have peers present with whom they could share thoughts, feelings, and information, creating a more relaxed experience for the children involved. This focus group format best fits the aims of the present study, by allowing children to freely express themselves in a safe environment and to meet the stated aims.

Analytic Approach

The aims of the present study were: to investigate children's cognitions surrounding natural disasters, to investigate children's knowledge about natural disasters, and to investigate children's emotions about natural disasters. Thematic analysis was used to identify semantic themes in conversations with participants. Thematic analysis is described by Braun and Clarke (2006) as being a flexible way in which to describe properties of a data set by examining patterns within that data set. This research structure was chosen for the present study because of the lack of existing qualitative research on this topic. As discussed, previous studies in the area have relied on quantitative measures, which have left a gap in the literature surrounding children's own perspectives about their experiences. It is important that children be given an opportunity to discuss their own perspectives about disasters and preparedness, and to comment on them.

Ethical considerations

Ethical approval for this research was granted by Massey University Human Ethics Committee: Southern B, Application 11/21, May 30 2011.

Consent

Initial consent for participation was gained from the school Principal, on behalf of the school (see *Recruitment* section of this chapter for further details). Schools were contacted by mail in the first instance, with a letter detailing what would be required of the school, and the aims and intentions of the study. Schools were also provided with a copy of the materials which would later be presented to parents (i.e. the Information Sheet for Parents, and Consent Form:

See Appendix B), and students (see Information Sheet for Participants in Appendix A).

Following consent from the school, an information sheet and consent form were sent home (via the school) to the parents of those students who were randomly selected to participate (random selection is discussed further in the *Recruitment* section of this chapter). It was necessary to gain written consent from the parents of each child, as all participants were under 16 years of age. Within the *Information Sheet for Parents* (see Appendix B) it was requested that parents discuss the information about participation with their child. This meant that when children whose parents had consented were asked to come along to the focus group, the children were already aware of what was happening and what was expected of them.

When children first arrived in the group they were each given a copy of the *Information for Participants* (see Appendix A) which was read to them by the researcher. The children were advised that they did not have to say anything they were uncomfortable disclosing and were allowed to leave at any time, should they wish.

Emotional Safety

Throughout all focus groups the researcher's academic supervisor, who had extensive experience with children, was seated elsewhere in the room, from where she could clearly see the students, but would not provide a distraction for them. Her presence was necessary in order to monitor the state of the children involved so that, should any child become distressed, she could assist them. In fact, this assistance was not needed during or after any of the group sessions.

Earlier in this chapter, it was acknowledged that the discussion of disasters can be distressing for some people, especially children, and that every opportunity

must be taken to minimise the risk of stress for the participants. In addition to the above support person being present, should any child need it, a list of support services was provided to the school and parents. This list was sent as an attachment to the information sheet provided on initial contact. This was necessary so that should any child feel distressed following the group, there were adequate support options available to their parents and to the school.

Cultural Concerns

The present study does not use ethnicity as a factor in the analysis of student responses. New Zealand is, however, an ethnically diverse country and it is important that the study includes (as much as possible), some of the range of ethnicities of the country in which this research is taking place. It was hoped that a random selection of students should gather a range of ethnicities and genders similar to those present within the schools represented in this study.

It was requested on the *Consent Form for Parents* (see Appendix B) that they identify the ethnicity of their child. This was to help the researcher in providing a cultural context for the children's statements. The inclusion of ethnicity data was suggested by the Massey University Cultural Advisor for Psychology, Trish Young, who provided feedback on the design to ensure that it was in keeping with the principles of the Treaty of Waitangi. A cultural advisor was available through the university at any time during the study, should any cultural issues be identified. However, it was not necessary to contact the cultural advisor again during this study.

Procedure

Participants

The participants were 30 students from four schools around the Wellington region. All students were in Year 5 and aged between 9-10 years. Children were the target group for this study, because they have been identified in previous research (e.g., Ronan & Johnston, 2005; Kolatsis et al., 2003) as being a higher risk group than adults for distress and trauma following a disaster. Importantly, by the ages of 8-10, children are beginning to develop logical reasoning (Gauffroy & Barouillet, 2011) as well as abstract language skills (Nippold, Hegel, Sohlberg, & Schwarz, 1999) which contribute to their ability to express complex thoughts and feelings more easily than children younger than 8 years of age. For these reasons, Year 5 students were chosen to be the participants for this study.

Recruitment

Seventeen primary schools in the Wellington area were initially contacted by letter, to request their consent to participate in this study. Selection of the schools for initial contact for this study was done with as much geographic and socioeconomic diversity as possible included by spreading selection across geographic locations and decile rankings. Ultimately, selection was limited based on willingness to participate, with four schools of the 20 contacted consenting to participate. The four schools were from the Porirua (North Wellington), Karori (East Wellington), Brooklyn (Central Wellington), and Newtown (South Wellington) areas. One of the schools was located near a western harbour, another on a hill, another was near an eastern bay and the last

was surrounded by nature reserves. Thus, the sample represented a geographically diverse group.

Schools also ranged from decile two to decile ten (low to high socioeconomic catchments, respectively). Decile ranking (1-10) represents the proportion (in 10% groupings) of student catchment that is drawn from low socioeconomic communities. For example, a decile 1 school has the highest proportion (top 10%) of low socioeconomic communities in their catchment area, while a decile 10 school has the lowest proportion (bottom 10%) of low socioeconomic communities in their catchment area (Ministry of Education, 2011b). While the decile ranking is not a direct indication of the socioeconomic statuses of students in that school, it does give an indication of the range of students who are likely to be enrolled. As it is not feasible to request specific details about income from the students or parents involved, decile provides us with the most reliable indication of socioeconomic diversity within a particular school. Table One below provides a summary of participants and schools in the present study.

Table One: School Summary

School ID	Decile	No. of Students in Study	Male	Female	9yrs	10yrs
1	2	9	4	5	6	3
2	3	10	7	3	10	0
3	9	3	1	2	3	0
4	10	8	0	8	5	3
Total		30	12	18	24	6

Schools that indicated an interest to participate were followed up by phone and/or email to discuss possible dates for the focus groups, to clarify the number

of Year Five classes they had available to participate in this study, and to establish the number of students in each of these classes.

Using Haahr's (2010) True Random Number Generator, five students were selected from the class roll of each available class. Two back-up numbers were also provided, in case consent was not given for some of the five students selected. It was important that numbers be chosen at random, as having the entire class participate would have been an unreasonable expectation of each school's time, and time constraints would have meant that fewer schools could have been included in the study, diminishing the diversity of the sample group, and making the sample group unnecessarily large.

A set of envelopes containing consent forms and information sheets for parents was provided, with a letter containing the lists of random numbers, from which the corresponding students (counted down on the roll) were recruited for the study. The envelopes were sent to the class teacher/s via the principal. The teachers then gave the envelopes to the selected students to take home to their parent or caregiver.

Written consent was gained from one parent for each participant, and the parent was also invited to contact the researcher should they have any questions regarding the study. Consent was gained from the participants themselves at the beginning of each focus group, and participation was emphasised as being entirely voluntary.

Focus Groups

Focus groups took place in an empty classroom within the school over a period of 25-60 minutes. These were conducted during school hours, as was requested

by each of the schools. The groups were guided by the researcher, who asked questions to keep the conversation relevant. The groups ranged in size from three to five students and were video and audio recorded for transcription. Both forms of recording were used so that, should one recording be unclear, passages could be cross referenced for accuracy. Focus groups were conducted in the schools between August 19 and November 10, 2011. See Table Two below for full details of groups.

Table Two: Participant Details by Group

	Pseudonym	Age	Gender	Ethnicity
Group One				
1.	X-nialation	9yrs 5mth	Male	NZ Euro
2.	Austin	9yrs 4mth	Male	Maori/Euro
3.	Leah	10yrs 9mth	Female	Cook Isl.
4.	Jack	10yrs 8mth	Male	Cook Isl.
5.	Shirlz	9yrs 8mth	Female	Not Stated
Group Two				
6.	Chyna	9yrs 5mth	Female	Samoan
7.	Jemz	10yrs 2mth	Female	Samoan/Tokelauan
8.	Gohan	9yrs 0mth	Male	Maori/ Cook Isl.
9.	Rohan	9yrs 5mth	Female	Maori/Euro
Group Three				
10.	Sandy Sand	9yrs 1mth	Male	Assyrian
11.	SpongeBob	9yrs 11mth	Female	Not Stated
12.	Krusty Krab	9yrs 0mth	Male	Not Stated
13.	Roxy Rex	9yrs 10mth	Male	Samoan
14.	Patrick	9yrs 5 mth	Male	Not Stated
Group Four				
15.	Gwen	9yrs 3mth	Female	Indian
16.	Stella	9yrs 4mth	Female	Euro/Samoan
17.	Corey Jane	9yrs 4mth	Male	Asian
18.	John	9yrs 5mths	Male	NZ Euro
19.	Conner	9yrs 9mth	Male	Assyrian
Group Five				
20.	Ashley	9yrs 6mth	Female	NZ Euro
21.	Violet	9yrs 3mth	Female	Maori
22.	Bob	9yrs 4mth	Male	NZ Euro
Group Six				
23.	Lilly	9yrs 7mth	Female	NZ Euro
24.	Cassie	9yrs 10mth	Female	British
25.	Lara	10yrs 4mth	Female	NZ Euro
26.	Laura	9yrs 5mth	Female	NZ Euro
27.	Charlotte	9yrs 5mth	Female	NZ Euro
Group Seven				
28.	Ziggy	9yrs 9mth	Female	NZ Euro
29.	Courtney	10yrs 3mth	Female	British
30.	Anya	10yrs 1mth	Female	NZ Euro

Focus groups were used in this study as there are certain limitations with individual interviews, as well as with very small groups. One of these limitations is that small groups of children (fewer than four) can feel overwhelmed by the presence of an unfamiliar adult, leading them to feel inhibited, less willing to engage in conversations, and answering questions only briefly. This behaviour means that smaller groups have the tendency to be conducted more as serial interviews, rather than as a focus group (Morgan, Gibbs, Maxwell, and Britten, 2002). As Morgan et al. suggest in their paper on the optimal conditions for conducting focus groups with children between the ages of 7-11 years, groups which are larger than five were also disadvantaged somewhat, as the children involved became difficult to hold conversations with, holding separate conversations, laughing, and becoming distracted. Morgan et al. suggest that groups of around four to five children provide an excellent size within which to conduct discussions. Groups in the present study were planned to include five participants. However, in several groups students were absent on the day, which resulted in one group of four and two groups of three.

The present study was conducted with 30 participants. It is necessary for thematic analysis that the sample size not be too large, as the quantity of information which can be gathered from each group or interview can be extremely demanding to process (Braun & Clarke, 2006). The present study had been originally designed with a sample size of 20 participants, which would have been sufficient to meet the aims of the research as focus groups are extremely rich in data (Braun & Clarke, 2006). However, after conducting the first four focus groups, it was felt that the researcher's skills in leading focus groups had improved significantly, and she was able to identify that during the first two groups (conducted on one day) some opportunities to gather data had been missed. It was decided by the researcher that an additional two focus groups

(comprising 5 children each) would provide an opportunity to further explore the aims of the study, and a further school was approached.

Procedure for focus groups

All sessions began by the researcher introducing herself and reading out the *Information Sheet for Participants* (Appendix A), which students were also given to read along with, to ensure that they knew what to expect. The researcher went on to explain what was being asked of them, and gave students the opportunity to ask questions about the study and their role in the research and the focus group discussions. Students were then given the opportunity to leave if they did not want to take part in the study at this point. They were also made aware that they could leave at any point during the focus group if they wished. No student in any group chose to do so. The researcher explained that she would not use their real names, and therefore everything said in the group would remain confidential, and that it was important that students not discuss what other participants said in the group afterwards, for confidentiality.

Following this, the students each chose a pseudonym they would like to use during the group, which they wrote on a name tag and decorated with coloured pens and stickers. This was done to encourage feelings of anonymity and confidentiality, to assist freedom of speech, and to further relax the students. Following the students making their nametags, the researcher read out the group guidelines, stressing the respect for others that was necessary for the groups.

Respect Guidelines were:

- *It is ok to have different opinions; we can ask questions, but there are no wrong answers*

- *We can talk about what that group was about and we can talk about things Teresa (the researcher) says, but we don't repeat what other people in the group have said*
- *Laughing is fine, but not when it hurts people.*

A video recorder was set up in a corner of the room where it was as inconspicuous as possible and a voice recorder placed near the researcher and children. The children were made aware of these devices and it was explained that they were present so that the researcher could use them to make notes later, and that these recordings would be used so that comments were attributed to the correct person. It was important to have both devices in case one malfunctioned, or did not catch all dialogue.

The group was guided by the researcher, with questions prepared in advance (see Appendix D) to reflect previous research and gain information that would meet the aims of the study. Questions were a range of open and closed ended, as best fitted the investigation.

Focus group questions

Some examples of questions which were used during the focus groups were:

- Can you tell me what a natural disaster is?
- How many different types of natural disaster can you think of?
- Which of the disasters we talked about do you think you are most likely to experience in Wellington?
- If you had a question about an earthquake or tsunami, where would you go to answer it, or who would you ask?
- How do you feel when you talk about earthquakes?
- What can you do to make yourself feel better when you feel scared?

The full set of questions prepared as a guide to focus group discussions is provided in *Appendix D*.

At times, participants were asked to discuss their answers by providing some further explanation of an aspect or aspects of their answer. This allowed a natural conversation to evolve. However, interrupting the participants or moving the flow of conversation unnecessarily was avoided as much as possible. In order to keep the mood positive, the groups always ended with a question about how the students did or could make themselves feel better if they felt stressed or upset when thinking or talking about disasters. This meant that sessions ended with conversations about things that made the students feel happy and confident, rather than sad or scared. The intention of this was that students would not leave the session ruminating about dangerous events or negative emotions, but rather were thinking about the positive behaviours they can engage in if or when they are feeling stressed.

Following the focus group, students were thanked for their time. It was reinforced to them that they had provided great ideas, that their time was useful for the research, and hopefully provided the students themselves with an opportunity to reinforce their own learning and share their ideas. Students were also told that there would be a small reward for their time and help. The students and teachers were not told until after the session that they would be given anything for taking part. This reward was stickers, which the researcher gave to the class teacher for the entire class to share. The reward was given to *all* students so that no child in the class was disadvantaged by having not been randomly chosen for the study.

Analysis

Reflexivity

While it is impossible to operate in a psychological and experiential vacuum, attempting to suspend one's own beliefs is a responsibility which the researcher must take seriously when undertaking qualitative research. Using one's own frame of reference instead of that of the participant can undermine the validity of the research.

Bracketing

Bracketing is the process by which the researcher attempts to bracket, or put aside, his or her own preconceptions and expectations, in order to decontextualize the data and code it (Hycner, 1985). Bracketing is an important part of the process of thematic analysis because it involves the researcher being able to decontextualise the data to separate it from its meaning before assigning codes to the information. As the researcher decontextualises the data for coding and recontextualises the data (after coding and grouping the themes), bracketing allows the researcher to view data in the context of the participants' experiences, rather than their own.

Transcription

Data was entirely transcribed by the researcher, as a simple orthographic transcription (dialogue only). The researcher checked transcription against both video and audio recordings to ensure accuracy of the transcript.

Coding

Coding is the term used to refer to the process by which themes are identified within the transcribed data and assigned categories. These categories are then arranged to form a map of the themes, which accurately describes the data set. In the present study, coding followed the six-phase procedure outlined by Braun and Clarke (2006), as follows:

Phase One: Familiarising Yourself with Your Data

This phase, as discussed by Braun and Clarke (2006) requires that the analyst repeatedly re-read the transcripts in order to become familiar with the content of the data.

In the present study, the researcher conducted the transcription herself. The process of transcribing material from the focus groups led to a high level of familiarity with the data, which must be read and re-read multiple times as it is being transcribed to ensure accuracy. Throughout this process and the following steps, the researcher read the transcripts multiple times for familiarity and consistency of coding.

Phase Two: Generating Initial Codes

Generating initial codes involves producing detailed but short descriptions which illustrate interesting features of the data (Braun & Clarke, 2006). During this phase, initial codes were made on transcriptions of the focus groups, line by line, which described the content of each piece of information. Coding was done initially by treating each line as a separate, but equally important, piece of data and forming a simple description of that information. Following the initial coding the transcripts were re-read and checked for consistency, ensuring that the same language was used throughout coding.

Phase Three: Searching for Themes

“Searching for themes... involves sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes” (Braun & Clarke, 2006, p. 19). During this stage theme groups were created and labelled to try and form groups which described sets of data. Several themes were derived from the aims. The data was then split up into the groups, to make them easier to map, as described in phase four.

Phase Four: Reviewing Themes

This phase requires reviewing and refining the identified themes. This process involves examining each theme in the thematic maps to determine whether these reflect the overall data set (Braun & Clarke, 2006). Using colour coding to differentiate between the key themes, each transcript was examined line by line to decide which category the pieces of data fit into. Once the data had been separated into key theme groups, relationships between the pieces of coded data were examined in order to form larger themes and sub themes. These were then grouped so that they fit into the three key areas of investigation for this research: Cognitions (including thoughts, beliefs, and expectations); Knowledge (including education, suggestions, experience, and sources of information); and Emotions. Themes were linked in branches from larger, overarching themes and smaller themes which followed on from them; which created a visual representation, referred to by Braun and Clarke (2006) as a ‘thematic map’. One large thematic map was created for each of the three groupings discussed above.

Phase Five: Defining and Naming Themes

Defining and naming themes involves further analysing the themes and refining them to create a clear and concise description of the data they contain. Once a thematic map existed for each grouping, which clearly showed the themes

present in the data, and the relationships between themes, a summary was developed which defined those themes. Some of the original themes were moved or renamed during this phase to provide a clearer description of what was contained in each theme. A table of these themes is presented in Table Three, in the following chapter.

Phase 6: Producing the Report

Some data from the groups was more relevant when presented quantitatively (such as responses about likelihoods); this was collated and presented as a table or list to support the qualitative data. All other data was presented using examples of statements from participants which typified the way that themes were represented in the focus groups. Themes were placed in perspective with previous research and current understandings of children and their responses to disasters. This analysis is presented in the following chapters.

CHAPTER FOUR:

RESULTS

During the first stages of Thematic Analysis (as discussed in the previous chapter), themes were identified within the focus group transcripts. These were organised under the three main areas of investigation (cognitions, knowledge, and emotions) and arranged hierarchically into themes and sub-themes. For example, the theme of *Injury* was contained in most of the transcripts, and was a thought which caused the students worry; therefore this was a sub-theme of *Concern*, which was, in turn, an aspect of the overarching theme of *Cognition*. Therefore, from *Cognition*, to *Concern*, to *Injury*, a hierarchical structure is formed connecting the themes. The structure of this analysis is presented in Table Three:

Table Three: Summary of Themes

Children’s Cognitions about Natural Disasters	Children’s Knowledge about Natural Disasters	Children’s Emotions about Natural Disasters	Feedback about Disaster Education
<p>1. Concerns</p> <ul style="list-style-type: none"> - Injury - Death - The Physical Environment - Loss - Isolation - The Unknown <p>2. Expectations about Disasters</p> <ul style="list-style-type: none"> - Likelihood of Disaster Occurring <p>3. Expectations about Roles</p> <ul style="list-style-type: none"> - Roles of Carers - Gender Roles <p>4. Beliefs</p> <ul style="list-style-type: none"> - Religious Beliefs - Cultural Beliefs <p>5. Values</p> <ul style="list-style-type: none"> - Sense of community 	<p>1. Formal Education</p> <ul style="list-style-type: none"> - Awareness of Types of Disasters - Understanding of How Disasters Happen - Awareness of Current Events - Knowledge about Keeping Safe - Knowledge of Drills - Understanding the Need for Emergency Preparations in the Home <p>2. Sources of Information Outside the School</p> <ul style="list-style-type: none"> - Family - Television - Internet <p>3. Knowledge from Experiences</p> <ul style="list-style-type: none"> - First-hand - Vicarious 	<p>1. Fear</p> <p>2. Empathy</p> <p>3. Excitement</p> <p>4. Relief</p> <p>5. Anger</p> <p>6. Emotional Disconnection</p> <p>7. Emotional Coping Strategies</p> <ul style="list-style-type: none"> - Preparation - Family - Knowing others are safe - Distraction 	<ul style="list-style-type: none"> - Importance of Preparation - Importance of Taking Disasters Seriously - Need for More Information

Children's Cognitions about Natural Disasters

This section discusses children's *cognitions* on a range of topics, as identified in the data. Children's concerns, expectations, beliefs and values featured in discussions about disasters and disaster education, these are presented below.

Concerns

The term 'concern' describes thoughts which caused the students to worry for themselves or others. These concerns were often expressed toward loved ones and friends, and primarily referred to in terms of their fear of *loss*.

Loss

The first thing students talked about following a disaster was checking that their parents were not harmed. The concept of losing their parents seemed to be the biggest concern for participants:

Gwen: *Because disasters can hurt people and you also have your family who also may get hurt and if something bad happens to them you'll just be left on your own.* (Female, 9yrs)

John: *Something happens to my family members and being left alone. That's sad.* (Male, 9yrs)

Students also discussed the idea of losing possessions or losing their home:

Chyna: *Lose family members?* (Female, 9yrs)

Rohan: *Um, like all your favourite stuff getting crushed and all that sort of stuff.* (Female, 9yrs)

Rohan: *You might have nowhere to live?* (Female, 9yrs)

While the participants volunteered information about how devastated they might feel at the loss of loved ones, they did not express a great deal of concern about physical possessions. As discussed later in reference to *empathy*, and also in reference to *death*, participants seemed to be viewing a lot of information about the losses sustained in other major disasters. It seems that they were internalising the information about people losing loved ones, and considering that bereavement might affect them in a similar circumstance.

Siblings

Many of the participants discussed having young siblings over whom they felt protective. These were most often mentioned when discussing the steps for protecting themselves during an earthquake or tsunami, where they added an extra step into their plan by saying they would first get their sibling, then would undertake the other protective behaviours with them, once they knew they were safe.

Violet: *well, um, well, if I get hurt I'd probably have to go to the hospital and I'd be worried about my mum because she works all day and my brothers and my sisters and especially my little brother because he's only two and yeah.* (Female, 9yrs)

Charlotte: *um, I would probably, um, I would start running, or grab my little brother, and then start running because, he's quite a fast runner, but he's four, but he probably wouldn't understand.* (Female, 9yrs)

Students who discussed these actions clearly believed that older family members should already know the steps for keeping themselves safe, while younger siblings would not know this.

Injury

While students did talk frequently about the possibility of personal injury in an earthquake, this was primarily discussed as a possible consequence if they were to do something incorrectly.

Courtney: *People get scared I think because... if you don't do it right you won't survive. I think people get scared because you can die.*

(Female, 10yrs)

Similarly, when students discussed the steps following a disaster, a commonly mentioned step was to check on others, and use first aid kits in case one of their friends or family was hurt.

Ashley: *Stuff will fall down, if you're not under a table or anything like that you'll probably get killed because heaps of really heavy stuff will fall on you and knock you down, or glass will go on you and scrape you completely.*

(Female, 9yrs)

A boy called Sandy also discussed his fear of being hurt, but with a different perspective.

Sandy: *Sometimes I would be quite sad coz maybe the earthquake happened and it's like a medium one and I break a arm and my whole*

family's okay and I'm the only one who broke something and they didn't.
(Male, 9yrs)

The concern expressed here is not about being hurt, but rather, being the *only one* to be hurt.

Death

Death was a common feature of the children's discussions about the consequences of disasters.

Ashley: *I would emerge from the table and I'd be really scared and if my family was dead I would be crying.*
(Female, 9yrs)

Sandy: *Sometimes I get scared coz like, when a earthquake happens and I'm by myself in like my room, and everything's like I'm trapped inside and I think like there's no food and I think I'm gonna die. I get scared like that sometimes, that's how I get scared.*
(Male, 9yrs)

Few of the students discussed the possibility of being killed or physically hurt themselves, but those who did, spoke of it as an effect of not following the correct safety steps.

The Physical Environment

Participants made mention of a range of different possibilities regarding environmental effects, should a large earthquake occur:

X-nialation: *All the buildings might collapse, might not have anywhere to go.*
(Male, 9yrs)

Violet: *Well, if I'm in a car, the road might fall apart.* (Female, 9yrs)

Participants most often discussed the physical damage effect of disasters as being building-collapse.

Isolation

The idea of being trapped or stuck and alone was a very common worry for the students. For example:

Sandy: *You're alone in your room then like, you've got a table you'd go underneath and it's like you're by yourself and you might think like you're the only one there left.* (Male, 9yrs)

Patrick: *I'd probably feel lonely, because I might be trapped and then probably somebody might not find me.* (Male, 9yrs)

Usually, the focus of these fears was not that they may be hurt, but that they would be alone.

The Unknown

Students discussed feeling afraid that in an earthquake, they may not know what is happening, and in particular, expressed fear over not knowing whether there would be an aftershock or tsunami.

Conner: *I'd be really scared because it would be my first earthquake that I've ever been in.* (Male, 9yrs)

Anya: *When we go to the bach there's no TV there... you have to pay to go on the internet, and we're not getting any newspapers... you don't really know what's happening... we were at the bach when there was the*

Christchurch earthquake, so we had no idea that Christchurch had such a big earthquake and we had family there, so we couldn't contact them or anything, so I get nightmares when we go to the bach. (Female, 10yrs)

Fear of not knowing if an aftershock or tsunami may occur was common for the students, and demonstrated that they were thinking through potential risks, past that of the initial disaster.

Expectations about Disasters

Likelihood of Disasters Occurring

Children were asked to name one disaster which they believed was the most likely to affect them in Wellington. Table Four shows which disasters the participants identified. The term 'affect them' was used because of its prevalence in previous studies (e.g. Ronan and Johnston, 2005). Therefore, for consistency, the term was used in the present study.

Table Four: Perceived Likelihood of Disasters

Most Likely Disaster	Number of Participants	Percentage of Participants
Earthquake	10	33.33%
Tsunami	3	10%
Tornado	3	10%
Thunder/lightning storm	3	10%
Hail	3	10%
Pollution	1	3.33%
Volcano	1	3.33%
Windstorm	1	3.33%
Blizzard	1	3.33%
Fire	1	3.33%
Slip	1	3.33%
Undecided	2	6.66%
Total	30	

The table above demonstrates that, of those students in the focus groups, one third believed that an earthquake was the most likely disaster to affect them in Wellington. Tsunami, thunder/lightning storm, hail and tornado followed as the next most likely, and were each chosen by an equal number of students (3). While hail and storms are relatively common events, and tsunami risk is associated with risk of earthquakes, tornado is a relatively uncommon event. The implications of these perceived likelihoods are explored further in the *Discussion* section.

In addition to the likelihood of certain disasters affecting them, the students made several other attributions about where and when disasters occur.

(Note: all names used are pseudonyms which were chosen by the individual students)

Tsunami:

Gohan: *It usually happens in um, in Thailand.* (Male, 9yrs)

Violet: *It happens, it, it mostly happens in Hawaii, because they have big sea.* (Female, 9yrs)

Tornados:

Rex: *I heard it happens most of the time in the United States.*
(Male, 9yrs)

Earthquakes:

SpongeBob: *Earthquakes happen in Christchurch usually.*
(Female, 9yrs)

Interviewer: *You don't think an earthquake would happen in Wellington?*

Stella: *Uh, not in this area, but somewhere around New Zealand.*
(Female, 9yrs)

Above we see students making links about the likelihood of disasters occurring in different places in the world, as well as making attributions about experiencing disasters in their own lives.

The participants in the groups were able to describe accurately how earthquakes occur and were largely aware that they happen in some locations rather than others due to placement of fault lines and the release of pressure. However, many also held the belief that there would likely be an earthquake in Wellington, because they believe the earthquakes to be travelling closer to Wellington.

Rex: *It's been to Christchurch, I think it's coming nearer to Wellington.*

(Male, 9 yrs)

Patrick: *It's come to Taupo, so I think it's coming closer to here.*

(Male, 9yrs)

The idea that 'the earthquake' is coming closer to Wellington was common for many of the students in the study.

Predictions

Students spoke often about hearing that there was going to be a large earthquake in Wellington. They got this impression from watching television and their conversations with others.

SpongeBob: *But I do get scared when someone says that there IS going to be an earthquake in Wellington.*

Interviewer: *Yeah? So do you hear that sometimes, people saying that there is going to be an earthquake in Wellington?*

SpongeBob: *Yes.*

Interviewer: *And where do you hear that?*

SpongeBob: *Sometimes in the news.*

Interviewer: *Yeah?*

SpongeBob: *Sometimes my friends tell me.* (Female, 9yrs)

Sandy: *When I hear about like, there's gonna be a earthquake in Wellington I do get scared.*

(Male, 9yrs)

Participants' belief that there is likely to be a large earthquake in Wellington demonstrates that messages about earthquake predictions are coming through to children from family, friends and television, despite the obvious risk of causing them fear. As the above excerpts mention, the idea that Wellington is going to have an earthquake in the near future does cause fear in those students who hear this.

One student, Rex, discussed in detail the effect that one such prediction had in his family. He discusses being afraid after hearing the prediction, and his family gathering to make preparations for the possible earthquake.

Interviewer: *You said before that you said lots of prayers? ... Ok, can you talk a little bit more about that? About what you said them for?*

Rex: *Oh, to like, not make an earthquake.*

Interviewer: *Yeah?*

Rex: *Because I got really so scared it would happen and I'll like, I'd just get scared.*

Interviewer: *Yeah?*

Rex: *Yeah, so that's why everyone went to my auntie's house.*

Interviewer: *Yeah? Who went to your auntie's house?*

Rex: *Mostly our family, but I think two people were endangered because they had to set up for their day-care... and so we filled up water bottles, so we feel safe and like...*

Interviewer: *So were they getting together and all-*

Rex: *Saying prayers.*

Interviewer: *Saying prayers? Yep and, but were they also getting together and making emergency preparations, like with the water and, was there anything else, or just water?*

Rex: *I think it was just water and yeah I think it's only water.*

Interviewer: *Ok, and whose idea was it to do that, do you know?*

Rex: *Uh, my, I think my auntie.*

Interviewer: *Yeah?*

Rex: *I think that she, aw nah, I think they just went there, because they wanted to be saved and they went there.*

...

Interviewer: *Yeah, and so, was that after a big earthquake somewhere else?*

Rex: *Aw nah, they said it on some, on some TV show.*

Interviewer: *That there was going to be a big earthquake in Wellington?*

Rex: *Yep.* (Male, 9yrs)

Rex's story about hearing that there was going to be an earthquake demonstrates how predictions about earthquakes can affect the community as a group, as well as having an impact on individuals and their families.

Expectations about Roles

Role of Carers

During descriptions of what steps to take in a disaster, most students spoke as if they were the sole individual in the scenario. This was not the case for all students, however, and those who spoke of other people who would be present, discussed the role other individuals had to play in keeping them safe.

Ziggy: *Probably, um scream and say "Mum" because otherwise it would be scary.* (Female, 9yrs)

Anya: *Once the earthquakes finished, Mum says we have to run out, we have to grab, like, a handful of clothes... stuff them in our bag, run out the door and then run up a hill. It's really annoying, because Mum thinks we*

should be prepared for running up the hill.

(Female, 10yrs)

Anya's statement demonstrates the mother also assuming responsibility for making emergency preparations in the home. This is a common feature of children's discussions of preparations in their homes.

Violet: *Every supermarket day my Mum buys some cans of food, so, but we put it in the first aid kit and uh, we have lots of bottles of water.*

(Female, 9yrs)

Cassie: *My Mum's got a big basket of earthquake stuff and a big tank of water in the hallway.*

(Female, 9yrs)

This seems to be unique to the role of the mother, rather than parent. Fathers were not mentioned by any students as being the individual they would call for, nor were they said to have done any preparations in the home.

Outside the home, teachers and lifeguards were other individuals who were mentioned as having roles in emergency management.

Gender Roles

Gender was only overtly mentioned in one of the groups, but is of interest, as the student's comment drew on a significant gender stereotype. When talking about whether or not the group members felt scared talking about natural disasters a student named Gohan, the only male student in a group of four, stated:

Gohan: *Nope... Probably because I'm the only boy in here!*

(Male, 9yrs)

This statement echoes the stereotype that getting scared is something that girls do, and boys do not. The researcher was quick to reassure the student that being scared was natural when talking about disasters, which is a potentially scary topic, as did another member of that group, who said, “*It’s not just girls.*”

Beliefs

Religious Beliefs

As previously discussed, Rex discussed an event where members of his family had heard that an earthquake was expected to occur in Wellington. Rex described being afraid after hearing this. His family gathered together at the home of his aunt, with members of the community, to pray to God not to allow the earthquake to occur.

Rex: My friends told me that they saw on TV that this person said that it might happen and we’ll have a earthquake here. They said it’ll happen, so we went to my auntie’s house, coz that’s the safest place and we said lots of prayers and that and then it didn’t happen... we thanked god in our prayer.

(Male, 9yrs)

While Rex was aware of the geological mechanism that leads to earthquakes, he also places much of the responsibility for disasters occurring in God’s hands.

Cultural Beliefs

Participants in a different group discussed the role of taniwha, which they had books about in their classroom. The students made specific mention of two taniwha (Ngake and Whataitai), who were said to have once resided in Wellington harbour [taniwha are supernatural beings of Maori legend, said to reside in rivers, lakes and seas (Keane, 2009)]. The students discussed feeling

fear when thinking about the taniwha because in stories taniwha were able to use earthquakes as punishment for people who caused damage to the environment.

Ashley: *In them someone would be doing- making the earthquakes sometimes... Like in Maori myths...*

Violet: *Like, in one of those taniwha books there's lots of different gods and there's one that, of earth, that sometimes creates earthquakes when people litter.*

Interviewer: *Yeah? So you hear stories of people being punished with earthquakes? ...And how do you feel when you hear those sorts of stories?*

Ashley: *I get really scared and I, sometimes I, it gives me nightmares.*

(Ashley, female, 9yrs)

(Violet, female, 9yrs)

Values

Sense of Community

When discussing how it felt to be part of a community environment, Rex states:

Rex: *I think I felt like I wasn't that lonely, yeah and I think I was safe up there.*

(Male, 9yrs)

Summary of Cognitions

Participants had a range of interesting cognitive perspectives, which offer a window into the ways in which children think about disasters. Participants were able to discuss what they believed to be the likelihood of different disasters. Earthquakes were expected to be the most likely disaster to affect students (33% believed this), followed by tsunami, thunder/lightning storm, hail, and tornado (10% each).

Students also seemed to have clear ideas about their own roles in disasters, as well as the people around them, identifying the responsibilities they have as caregivers to younger siblings, and that others have to them as their caregivers.

Belief in influences on disasters, such as God or taniwha, shows that children are able to hold a belief in an outside influence, while at the same time being aware of the physical mechanisms behind disasters. Similarly, attributions that were made about the *movement* of earthquakes and *locations* of disasters contradicted what students knew about *causes* of disasters, as discussed in the following section.

Children's Knowledge about Disasters

Formal Education

Awareness of Disasters

All groups began with two activities: the first was to describe features of disasters; the second was to create a list of all the disasters the participants were able to name.

The features given for disasters were:

Destructive/dangerous

Sandy: *Destroy things in seconds.* (Male, 9yrs)

Stella: *They kill people.* (Female, 9yrs)

Frightening

Patrick: *I was gonna say scary.* (Male, 9yrs)

Rex: *Um, scared or something.* (Male, 9yrs)

Unpredictable

John: *They can happen any time.* (Male, 9yrs)

Gwen: *They happen when they're unexpected.* (Female, 9yrs)

Natural

Ashley: *A natural disaster is a thing that isn't from us it's from the nature part, not us.* (Female, 9yrs)

With the exception of Ashley's description of a natural disaster as something from nature, rather than man, the terms used to describe disasters were focused on the danger aspect of disasters.

The full list of disasters mentioned over the course of all groups was:

Earthquake, meteor, tsunami, tornado, volcano, fire, smoke, acid rain, hail, gas, landslide, plague, swine flu, world war, hurricane, cyclone, thunder, lightning, car crash, sand storm, blizzard, drought, lava flow, pollution, radioactive waves, plane crashes, sleet, frog fall, animal attacks, stuck in a mine, robbery, falling off a cliff, and flood.

When students were asked to list all the natural disasters they could think of, *earthquakes* and *tsunami* featured near the top of all lists, which suggests that they were the most salient natural disasters for the children participating. All lists included the items: earthquakes, tsunami, hurricanes, and tornados. The majority also included storms, meteors, and fires. It could also be argued that fire is usually caused by human actions (although bushfire can occur without human intervention), but it was included as a natural disaster for the purposes of this study, as it had been included as one in previous research on children and disasters (e.g. Coomer et al., 2008).

Many items were mentioned in the groups which are clearly not natural disasters, such as: world war, car crash, falling off a cliff, and burglary. Naming such events implies that the students suggesting them were unaware that these items were not classified as natural disasters. In other cases students prefaced their descriptions of non-natural disasters by acknowledging them as such.

Cassie: *I was kind of scared, um, it's not really a disaster, but something bad that happened... someone with a trailer on the back of their car... wacked the bus stop, and the people got out just in time, so it was sort of scary, because we could hear the clunk.* (Female, 9yrs)

In this example Cassie is aware that the car accident she is describing is not a natural disaster, and she begins her description by acknowledging this. She also begins by describing the story as having two features common to other disasters: that she was scared; and that it was something bad that happened.

Understanding of How Disasters Happen

While not all students were clear on the correct terminology (such as referring to the 'Techno Plates'), students in all groups were able to clearly identify that earthquakes were caused by underground plates crashing together. Several students, all from the same school, were further able to explain that this process causes mountains and can result in land sinking.

Anya: *It's like when you, we learned about it like this, you get these two fingers and push them against each other, they either go up or down...*

Ziggy: *And if the tectonic plate is like that it's called subduction.*

(**Anya**, female, 10yrs)

(**Ziggy**, female, 9yrs)

The fact that Ziggy was aware of processes such as subduction, demonstrates a high level of knowledge about the mechanisms of earthquakes.

Most students were also aware that earthquakes in coastal areas or out to sea were the cause of tsunamis. One student elaborated further by explaining the warning signs for a tsunami.

Anya: *The earthquakes happen ... and then because it moves, it causes the sea to go pom, pom, pom, pom, and then all the tides, everything goes in, and a lot of people think 'oh my gosh, there's all these dead fish, let's go collect them, and they go and collect the dead fish and then the sea comes in and goes wah 'oh, now we're dead'.* (Female, 10yrs)

While these quotations demonstrate some of the higher levels of understanding shown in the focus groups, students across all schools were able to show a basic understanding of how both earthquakes and tsunami occur.

Awareness of Current Events

In each group participants were asked to discuss any disasters they could recall hearing about. The disasters in Sendai (Japan) and Christchurch (New Zealand) were mentioned early in every group.

Sandy: *I heard about the hurricane in the United States... I heard about the tsunami in Samoa and Japan.* (Male, 9yrs)

Stella: *An earthquake in Christchurch.* (Female, 9yrs)

Many groups also recalled hearing about a volcanic eruption in Chile, tsunami in Samoa, an explosion in the Pike River mine in New Zealand, tornados in Auckland and Waikanae in New Zealand, a hurricane in the United States (possibly referring to Hurricane Katrina), an earthquake in the United States, the 1995 eruption of Mt. Ruapehu (discussed in Chapter Two), an earthquake in China, forest fires in Australia, a flood in Porirua (New Zealand), radiation leaks in Japan, floods in Australia, and the eruption of Krakatoa in Indonesia.

John: *The radiation in Japan.* (Male, 9yrs)

Knowledge about Keeping Safe

All groups were able to identify behaviours for protecting themselves. These protective behaviours are summarised in Table Five below:

Table Five: Protective Behaviours

<p>During an earthquake:</p> <ul style="list-style-type: none">- Getting under a table/desk/doorway- Keep away from glass and falling objects- Protecting neck (doing 'the turtle' - curling into a ball)
<p>After an earthquake:</p> <ul style="list-style-type: none">- Wait until the shaking stops before moving- Check on other people- Get safety gear
<p>After hearing a tsunami warning:</p> <ul style="list-style-type: none">- Get away from the beach- Go to high ground- Warn others about the disaster

It was encouraging to see that students were not just aware of the steps involved in keeping themselves safe, but were also enthusiastic to share their knowledge about safety with the researcher. One student also asked the researcher about preparation, saying:

Patrick: *Ok, I've got a question for you, if there was a big earthquake and you could only have one minute to take 5 things, what would it be?*

(Male, 9yrs)

Patrick's interest demonstrates the interest the students had in hearing what knowledge other individuals might possibly have.

Knowledge of Drills

All of the groups could recall having had safety drills at school in the past year. The efficacy of these drills varied as some groups argued over what the drill had been for (i.e., fire drill, earthquake drill). In one of these groups a student called Ashley discussed the procedure following an earthquake drill in her school with a high degree of detail:

Ashley: *After the earthquake (our teacher) would do the roll, just to make sure everyone's there... after we all got checked we go down to the bottom field and stay there until some people would come... like my parents... if my parents are dead, my next door neighbours, and if my neighbours are dead, my grandma, and if my grandma is dead then I don't know what happens next.*

(Female, 9yrs)

Students in a different school were able to identify several different earthquake hazards in the room where they were currently sitting. These included an unstable wall, large windows, a ceiling-mounted projector, a smart-board, and clocks on the walls.

Lilly: *Right now, if there was an earthquake, people who were sitting here would have to go under extremely quickly and so would people over there, because of that (pointing up to the projector), that could easily fall down and like the clocks and windows.*

(Female, 9yrs)

They mentioned that they had been learning in class about identifying hazards in their own environment.

Understanding the Need for Emergency Preparations in the Home

All students described having at least one emergency item in their homes (such as either water or food), and most had food, water and first aid kits. All groups were able to identify the following necessary items for a home:

- Water
- Food
- First aid kits
- Warm clothes.

Some groups went into greater detail about items for their emergency kits, including: Can opener, slippers, matches, a tent, sleeping bags, shoes, a portable cooker, blankets, cell phone, and a torch.

Courtney: *We have tinned food, and a tin opener and we have four bottles of water, which are like that big, like a big, thing, and we've got lots, also we've got some torches, so we can see in the dark and we've also got like a mini, easy to open tent, where you can like, go in if it's a big earthquake.* (Female, 10yrs)

Courtney was very proud of the fact that her family had a tent and went into detail explaining how important it may be to get away from your home in a disaster, and that a tent is a useful tool in case you needed to sleep outside.

Students were further able to identify protective behaviours such as:

- Don't overburden getaway kits
- Pack items thoughtfully

- Be aware that living near beaches poses a tsunami risk
- Be aware that living on the edge of hills poses a landslide risk in an earthquake
- Be aware that having trees near the house is an added risk in an earthquake
- Be aware that brick buildings are less safe in an earthquake than those made of wood.

When discussing getaway bags Anya said:

***Anya:** You don't want to have too, um, too much stuff in your emergency kit, because you have to be able to put it on your back and run.*

(Female, 10yrs)

Understanding how to pack an emergency kit is valuable knowledge to have, as Anya lives on a beach, where there is an increased risk of tsunami and, in an earthquake, it is likely that she and her family will need to leave the house quickly. The students demonstrated that they were thinking in detail about their safety during and after a disaster.

Sources of Information Outside the School

When discussing information students received, other than what was learned in class, there were three main sources of information through which students described hearing about disasters. These were; family, television, and the internet. Other sources mentioned included newspapers, books, and friends.

Family

The following students talked about where they hear stories about disasters:

Violet: *From my Grandma, because she likes reading the newspaper and watching the news, but I don't.* (Female, 9yrs)

Gwen: *If my Dad hears something my Dad will tell my Mum and my Mum will look at the internet and she'll tell my Dad and usually they don't tell me anything I just hear them talking and I go "huh, huh? What happened? Where was the earthquake?"* (Female, 9yrs)

Not only were family members a common place for children to hear stories, but parents were also the first place most participants would go to seek information or ask questions.

Lilly: *I would ask my Mum, my Dad, or even my big sister.* (Female, 9yrs)

Older siblings and peers were also common sources of information, but were not discussed as often as parents, or as types of media such as television or the internet.

Television

Most of the students discussed seeing things on the news. However, other programmes were mentioned, and several students discussed watching television shows that were interrupted to show details of the Japan earthquake/tsunami.

Cassie: *Not necessarily in Christchurch, but when I was at my friend's house we were watching a TV show and it had to stop because of the Japan earthquake on the news, and it was sad.* (Female, 9yrs)

Regarding the news, students said:

Lara: *My Mum and Dad tell me that I have to watch it.*

(Female, 10 yrs)

Laura: *Whenever I get up in the morning, my Dad just turns on the TV, switches on TV news.*

(Female, 9yrs)

The News was the most commonly mentioned television programme for hearing information about disasters, and most students in the groups discussed watching news shows. Many said that they watched the news on a daily basis, and others said that they would only watch the news when they had been told to, or when they already knew that something had happened that they were interested in.

Cassie: *They don't have a lot of good stuff on the news.*

(Female, 9yrs)

Knowledge from Experiences

First-Hand Experience

All students had recollections of experiencing events such as lightning, thunder, hail and snow. Participants were asked if they could recall feeling an earthquake themselves. Twenty-three of the 30 participants (77% of the sample) discussed having felt an earthquake. All of the earthquake experiences were described as 'little', 'tiny' or 'small', and students mostly discussed having little or no fear during the event itself, but often expressed fear of whether there may be another one later. For example:

Charlotte: *Sometimes when there's a small earthquake there's sometimes a bigger one comes a bit later or if there's a big earthquake there's aftershocks.*

Interviewer: *And so that scares you when you think about earthquakes?*

Charlotte: *Once there was a small earthquake I thought there might be a big earthquake a little bit later.* (Female, 9yrs)

Another student (from the United Kingdom), discussed having an experience of an earthquake in New Zealand when she still had very little knowledge of them. When asked how she felt during this earthquake, she said:

Courtney: *Not scared, because at that time ... I didn't think stuff like that could kill you very much and at school they were always going on and on and on about what to do in an earthquake and then each school I came new to, they always talked about it, so then I just got used to saying 'oh, we're in New Zealand now, we have earthquakes' and then I have to get used to it.* (Female, 10yrs)

Her experience was that she had no fear during the event because she was not aware of the possibility of the earthquake being deadly.

Vicarious Experience

Students talked about watching the news frequently. Many said that news watching was a part of their morning or evening routines. Others did not watch regularly, but would do so when they knew that a disaster had occurred. Many of the images students were describing were graphic and had caused strong emotional responses.

Cassie: *I don't feel sad when I hear about it, but when I see it on the news with all the pictures and stuff it does... I also don't like seeing blood and stuff... like, on the news there's a lot of blood and bad pictures.*

(Female, 9yrs)

Lilly: *In the Christchurch earthquake there's this man with like, it was only a small cut here, but it was all- he was really messy.*

(Female, 9yrs)

Many participants also discussed experiencing nightmares about disasters:

Ziggy: *I can't get it out of my head, I still get nightmares, it's really strange.*

(Female, 9yrs)

Cassie: *Sometimes I have, like, bad dreams about having earthquakes or disasters... It's just since the Christchurch one, but it's really scary when you think about what could happen.*

(Female, 9yrs)

Use of the internet for gathering information about disasters was a common experience throughout the focus groups. Websites that the participants discussed using to find information about disasters were: Google, YouTube, Stuff, Wikipedia, and Yahoo, any of which can potentially contain graphic images relating to disasters.

Charlotte: *I would ask my Dad, because my Dad normally goes on the computer on Stuff, which normally shows pictures of all of the things that have happened around the world. And so I would ask him because my Mum doesn't really know much about that.*

(Female, 9yrs)

Gwen: *On the main page on Yahoo there's usually pictures and information.*

(Female, 9yrs).

Several students told what seems to be the story of Tilly Smith (discussed in Chapter Two), the young girl who saved tourists in Thailand from a tsunami (Randall & Berger, 2005):

Charlotte: *I can't remember where it is, but I think someone, a little, a girl, she was about 13, but she heard that a tsunami was coming and she ran down the beach telling everyone that a tsunami was coming and they should get away.*

(Female, 9yrs)

Courtney: *A girl survived over a hundred people's lives in Thailand because she learnt about, at school, about natural disasters... they don't take notice, but she took big notice, but she was only about nine or ten and she saved people's lives.*

(Female, 10yrs)

The story of Tilly Smith may have resonated especially with the students recounting the story, as they were both girls of a similar age as Tilly was at the time of the event.

Summary of Knowledge

The participants of this study had varying levels of knowledge in terms of both classroom education and knowledge from other sources. It is clear that all of the students involved were receiving some education about emergency management in their schools, and that all schools were conducting emergency drills with their students, with varying degrees of detail.

Information being retained about disasters varied from basic to detailed, with some students volunteering a great deal of information about the mechanisms that cause disasters, and steps that would lead to the safest outcome in a disaster.

Students are also receiving information from their families, the television and the internet, some of which contains graphic content and may run the risk of causing stress. Much of this information was sought out voluntarily by the students, with only one saying she was instructed to watch information about disasters. Graphic images and stories may also be tempered by positive stories, such as Tilly Smith's, where other individuals have survived disasters by being prepared.

Children's Emotions about Natural Disasters

Fear

For the purposes of this study, the term 'fear' is used to describe the ideas discussed which cause the students worry or anxiety about their own physical or emotional safety. Students demonstrated varying levels of fear, with several disclosing that they have nightmares about disasters. The concepts which caused fear to children are discussed the *Concerns* section, as worrying thoughts are the cognitive aspect of fear response. It is important to note that fear about disasters was discussed by almost all students involved in this study, and while some fear responses were smaller (such as acknowledging that they feel fear sometimes), others were quite strong fear reactions (such as nightmares, or difficulty removing troubling thoughts).

Empathy

Students frequently talked about feeling sad for others when discussing disasters that had occurred in other areas, especially Christchurch. The key thought which was mentioned as eliciting an empathic response was the idea of people losing loved ones.

Lilly: *I just feel sick after a disaster happens... A nauseous-y feeling, it isn't very nice. I don't like disasters happening... I don't like how people get hurt and I felt really sick on the Christchurch one coz all these people were stuck in the building that went into, like, a pancake... I felt really sick how like the bodies would be in there and that sort of thing.*

Interviewer: *So, you felt sad for people?*

Lilly: *Yeah, I felt, like, feeling of some people having someone in their family dying makes me feel sick.* (Female, 9yrs)

Lara: *With the lady with the blood all over her face and stuff, and people having to be put down in the park. I was crying.* (Female, 10yrs)

Interviewer: *Ok. And so when you heard about the tornado in Auckland, how did you feel about that?*

Conner: *I was really scared.*

Interviewer: *...And what did you think when you were watching the video?*

Conner: *I was thinking, poor them.* (Male, 9yrs)

As is evident in the quotations above, the way in which the participants expressed their empathy toward those involved varies. Lara *cried* while seeing images on the news, Lilly had an overtly physical reaction of *nausea* and Conner *thought* to himself "poor them". The reactions described by the students were

strongest when viewing images of people who were hurt. One student summarised her empathy by saying:

Cassie: *I don't feel sad when I hear about it, but when I see it on the news with all the pictures and stuff it does.* (Female, 9yrs)

As discussed within the theme of *Vicarious Experience*, students viewing the news are often seeing very graphic and emotional content, and as Lara and Lilly's statements above demonstrate, the content elicits a strong emotional response in the children viewing them.

Excitement

One student discussed her expectation that an earthquake would be exciting, as well as scary. When asked how she thought she would feel about experiencing a small earthquake, she said:

Gwen: *I'd be scared and excited... because it's the first time I have ever felt an earthquake.* (Female, 9yrs)

It was clear from the enthusiasm students had when talking about disasters that they find them fascinating.

Relief

A commonly discussed reaction to experiencing a small earthquake was the feeling of relief that students expected to have, knowing that no damage had been done.

SpongeBob: *I would feel really, really, really, really happy, and relieved, because it was just a tiny one and nothing fall, fall, uh, fell down*

(Female, 9yrs)

Sandy: *I'd feel a little bit happy, because, like, it was like a little one and no one got hurt ... I would feel good because that was like, a time when nothing happened.*

(Male, 9yrs)

Anger

Anger came up in several of the groups and was discussed as a direct consequence of experiencing an earthquake where family members were hurt.

Rex explains his feelings:

Rex: *I'd be kind of angry, scared and sad.*

Patrick: *Why angry?*

Rex: *Because maybe something happened to our family... and I would just get so angry...psh, psh, fight the earthquake.*

(Rex, male, 9yrs)

(Patrick, male, 9yrs)

The emotion Rex describes could also be linked to frustration, as when disasters occur there is no one on which to place the blame. Rex chooses to describe this feeling in terms of anger, and of wanting to use physical aggression to attack the earthquake. While it was clear from Rex's statement that he was making this statement about 'fighting' the earthquake jokingly, it is still interesting to note that he phrased his anger in a physical way. Other students used the term anger

to describe how they expected they might feel, but were not able to give a clear explanation for this.

Emotional Disconnection

Cassie discussed her feelings of disconnection when thinking about disasters:

Cassie (*regarding a fire which occurred at her school*): *It doesn't really feel real.*

Interviewer: *And do you think that sometimes when you think about other disasters? That it doesn't feel real?*

Cassie: *Yeah, coz you feel like you can't do anything to help them, coz it seems so far away, but it's not really.* (Female, 9yrs)

Here Cassie is acknowledging that, although disasters occur close to home geographically, her helplessness in these situations make them seem distant and unrelated to her own life.

Emotional Coping Strategies

Coping is also related to both *Cognitions* and *Knowledge*, as many of the strategies that individuals use to cope with adverse emotions and events are learned, rather than innate. However, in discussion students were asked how they could make themselves feel better if they were *scared* or *upset*, meaning that in the context of the conversation, their coping was related to their emotions. Several strands of ideas arose from their answers, demonstrating that they had multiple tools available in their coping toolkit:

Preparation

It is important that students looked at preparation as more than a necessary inconvenience, but also as protection:

Courtney: *I think if you've learnt, like other schools, like poor schools, like in for example Haiti, if they don't get a good education, they don't know what to do in an earthquake, but we do, so if you've got the right, if you know what to do in an earthquake, then you'll probably survive, but if you just stand there going 'what am I going to do?' then you just, probably won't because things will start falling.* (Female, 10yrs)

Interviewer: *So if you did feel scared, what can you think of that you might be able to do to make yourself feel better?*

John: *Getting stuff ready.*

...

Corey: *Be more prepared.*

(John, male, 9yrs)

(Corey, male, 9yrs)

Family

Spending time with family and being hugged was another coping strategy being used by participants. Spending time with family has the dual purposes of providing physical comfort, and the reinforcement of safety for the participant.

Rohan: *Cuddle up to my family.* (Female, 9yrs)

Sandy: *Just like, if I'm scared I just like, uh, hold my little brother.*

(Male, 9yrs)

It may also serve the purpose (as Cassie discusses below) that when the child hugs a family member, they know that the other person is safe.

Knowing Others are Safe

The importance of knowing that family were safe referred both to knowing that their family would be safe in a disaster, and knowing that at that moment in time their family were in a safe place.

Courtney: *I feel better if my, like I kinda know that my Mum and Dad know now what to do, so they won't get hurt.* (Female, 10yrs)

Cassie: *I feel better when I get a hug from my Mum and my Dad, because I know that they're safe.* (Female, 9yrs)

In the theme of *concerns* students' worries about losing family are discussed. It is unsurprising that knowing loved ones are safe is a key part of coping, when fear of losing them is such a common concern.

Distraction

Distracting themselves from the fear was a strategy that came up as several different activities:

Violet: *Sometimes I play soccer outside with my Mum.* (Female, 9yrs)

Ashley: *If I got scared I would paint, because I'm really good at painting.* (Female, 9yrs)

Conner pointed out the purpose of engaging in activities that were distracting when worried by saying he would:

Conner: *Do something fun...it will get anything that gets me worried out of my mind.* (Male, 9yrs)

This statement succinctly describes why the use of distraction was so common among the participants. That is, it was an effective way to change or dismiss worrying thought patterns.

Summary of Emotions

When students were asked at the beginning of each session to describe disasters, 'scary' was invariably one of the first words used. This concept that the primary feature of disasters is that they scare children was echoed throughout the focus groups and was especially evident when students were asked to describe how they believed they would feel following an earthquake or tsunami. Students gave details of the many aspects of their fear which was often motivated by loss, isolation and not knowing what could happen next.

Students were also describing feeling concern for loved ones and empathy for strangers who were being affected by disasters all over the world. One of the positive notes of the focus groups is the enthusiasm the students displayed when talking about disasters.

Feedback about Disaster Education

Toward the end of most sessions the participants were given the opportunity to discuss what they felt they would like to learn more about in class, in terms of

disasters. The students' feedback was that the following areas were important to them:

Preparation

Students wanted more factual information for themselves about disasters, and had a specific interest in survival and information that would help them keep safe.

Gwen: *When do tsunamis and earthquakes usually happen?*

(Female, 9yrs)

Courtney: *I kind of think you would actually want a natural disaster topic or class because you don't want to be in a big earthquake and, like, the important information-*

Anya: *You're just sort of just, like 'oh my gosh, what was I supposed to do?'*

Ziggy: *You talk about the basics, but you don't talk about the important stuff.*

(**Courtney**, female, 10yrs)

(**Anya**, female, 10yrs)

(**Ziggy**, female, 9yrs)

Students also had a strong interest in doing more safety drills at school.

Chyna: *Do more drills.*

Rohan: *Especially earthquake and fire drills.*

(Chyna, female, 9yrs)

(Rohan, female, 9yrs)

Anya: *I think the teachers should, sort of, add, like these earthquake drills, because they have fire drills and stuff... I think they should actually, like, be practicing more rapidly.*

(Anya, female, 10yrs)

Taking Disasters Seriously

Students felt that other people were not taking disasters as seriously as they should.

Courtney: *I think people should get realistic, because people don't actually take earthquakes big... don't take it seriously, like, for example, like, teenager, if there was an earthquake they kind of think 'oh, yay, earthquake, it's going to be shaking', yeah, but if, like, they don't know what they're doing you probably won't survive in an earthquake if you don't even know what it's for and stuff.*

(Female, 10yrs)

Stella: *I want other people to know how dangerous it could be after an earthquake, because there could be bad aftershocks and they won't survive.*

(Female, 9yrs)

Students were clearly concerned for other people, suggesting that they were either not aware of the danger, or were choosing to ignore it.

Other Disasters

Students seemed to feel that there was often a narrow focus on earthquake and tsunami in their classes about disasters.

Violet: *Well, we do talk a lot about natural disasters, but, sometimes we just talk about earthquakes and tsunamis and we can talk about other things of natural disasters not just earthquakes and tsunamis.*

(Female, 9yrs)

Anya: *We should have, maybe a topic about natural disasters because we learn about, like, cyclones in the news and stuff, but we never actually learn about them in school and stuff, so we know that they're big storms, but, it would be better to know, like, how they're caused and things like that.*

(Female, 10 yrs)

Overall, students discussed having an awareness of an enormous range of disasters and an interest in also learning about how disasters other than earthquakes and tsunami occur and what is necessary to keep safe during these other types of disaster.

Summary of Feedback

For students, there was an interest in receiving more and varied information about disasters, and in undertaking more drills in which to practice the skills they were learning.

There was also a heavy focus on concern for the ways in which other people respond to disasters, with students believing that disasters are not taken seriously enough by older children and adults. Students wanted to make sure other people are aware that disasters are dangerous, and that it is important to be prepared.

All of the feedback provided by students suggests that there are strong levels of interest in disasters, and that students are keen to receive more information about disasters than they do already.

CHAPTER FIVE:

DISCUSSION

Children's Cognitions about Natural Disasters

For the purposes of this study, the term 'Cognitions' is used to describe the way that children *think about* disasters. This includes their thoughts, expectations, beliefs and values, as separate from the information they have been taught. It was necessary to investigate children's cognitions about disasters, in order to understand how children engage with the information they receive in class, and from other sources. Main cognitive themes were identified as: *Concerns, Expectations about Disasters, Expectations about Roles, Beliefs, and Values*

Concerns

Loss

As discussed in reference to Vicarious Experience, participants seemed to be viewing a lot of information about the losses sustained in other major disasters. Participants also volunteered information about how devastated they might feel at the loss of loved ones. This was discussed primarily in terms of the children's protectiveness over siblings and fear of losing parents (specifically their mother). The concern displayed when talking about young brothers or sisters underscores the nature of the sibling relationship, that older siblings felt the need to protect younger siblings. Children's concerns also show that students are recognising the potential harm that could occur during the disaster, and want to ensure their sibling is safe during the event. Their concern may be a result of human beings' evolutionary desire to care for siblings (and others who share our genes) for the

protection of our genetic line (Meyers, 2005), and may also be understood in terms of love and support within the family unit.

In the traditional family parents hold the responsibility of protecting and nurturing a child, and emotional attachment forms between the child and parent. In addition to the role of caregiver, a parent is used as a guide for development, modelling for the child how to regulate their emotions and behave socially (Colle & Del Giudice, 2011). Should the parent be lost, the child is left without a sense of security, and safety both physically and emotionally, from which to expand and explore the world (Fairchild, 2006). It is for this reason that children so deeply fear the loss of a mother, as this is the individual or whom the child often carries the most love, and with whom the child feels most safe. This fear could be helped somewhat by reassuring the child that their family know what to do in a disaster. One way of doing this could be to engage the whole family in disaster drills, which give the child confidence that their whole family have the skills to achieve the best outcome in a disaster. As students discussed later, in reference to coping strategies, knowing that their family are safe is a part of the coping strategies students can use to make themselves feel better when they feel afraid.

Injury and Death

Most of the children's discussions regarding injury or death following a disaster were regarding the consequences of not following proper procedures during or after the event. Discussions demonstrated that these children have gained an understanding of the steps to remain safe in a disaster, and also the possible consequences of not doing as they had been taught. One student discussed the possibility of being injured in regard to being isolated. The focus of his concern seemed to be more on the loneliness or embarrassment associated with the idea of being hurt when no one else was, rather than any concern over his actual physical wellbeing. In this scenario, being hurt was not the primary issue, but

being isolated by being hurt was. For a 9 year old child, isolation from family and social support would put him under considerable stress, as at this age he is dependent on older family members for physical and emotional support.

Children were often quite matter-of-fact in their discussions of death. One student in particular was able to cite a list of people who were responsible for picking her up from school if there was a disaster, and followed each individual in her list with “*and if they were dead...*”. She later discussed the possible death of her family and cat by stating how sad she would be to lose them. Like many other students, while she was able to discuss the deaths of loved ones in a very straight forward manner, when talking about the steps during a disaster, she was also aware that she would be emotionally affected. Clearly, students are aware death is a possibility, but when confronting it in their emergency plans, they are able to separate the emotional element from the necessary steps to keep themselves and others safe.

Discussions of death or injury were not introduced by the interviewer, and arose from the children’s mention of the topic, therefore, it is clear that students consider death or injury as possible consequences of disasters. Awareness of death may be due to the way in which emergency management information is presented to them (such as, teachers stressing the importance of the information by making the possible consequences clear). It is also unsurprising that children are aware of deaths occurring from disasters when taking into consideration the types of images children discuss having experienced through the media (*Vicarious Experience* is discussed later in this chapter).

Understanding of death rests on the ability to grasp four aspects: irreversibility (understanding that something which has died cannot return to being alive), finality (that the physical body has ceased all of its functions), causality (understanding of how death occurs), and inevitability (that all living things

eventually die). Further, understanding of death is developed relative to maturity and experience with death (Cotton & Range, 1990). This suggests that viewing images in the media about loss may promote opportunities for healthy discussion about death, and children with lesser emotional maturity may have difficulty understanding death concepts on their own.

The Physical Environment

Participants most often discussed building collapse as a consequence of earthquakes. Often when discussing images they had viewed about disasters on the news, children talked about seeing pictures of collapsed buildings. As with the discussion of death and injury, building collapse is likely to be related to the frequency with which the children involved mentioned viewing images of collapsed buildings, following earthquakes. Damage to the physical environment is also discussed often in the context of children's protective behaviours. With the protective actions being discussed in reference to the physical dangers that exist during an earthquake or tsunami (such as; walls and ceilings collapsing, glass breaking, or things falling over), and the corresponding actions which can protect from these threats (such as; getting under a table, avoiding unstable structures, and keeping your back to windows). While this study was not designed to explore what children believed the likelihood of building damage was, it may be of value to explore this in later research. This would help us to better understand how children perform hazard assessment, and to understand the kinds of messages children are receiving about risk. The frequency with which children discussed the topic of building collapse suggested that they were aware that building collapse is an important threat in a disaster, and also suggests that they believe it to be a relatively common occurrence in an earthquake. Further, children's interest in building collapse may relate to their curiosity about dramatic and infrequent events.

Isolation

Fear of being alone may stem from a concern that they would not know what to do, should something happen which they had not planned for. If correct, this ties into the fear of the unknown, discussed in the following section. It may also be related to the concept of loss discussed above, that the children fear that they may lose family members if they were not there to watch over them. Fear can arise from the prospect of being unsafe, with no one to protect them. This fear should be able to be reduced by being near others and by discussing plans for what to do and where to meet, following a disaster. Both at home and in class, students could discuss with an adult what the safest evacuation routes are for a disaster, so that they know where they can go, should a disaster occur.

The Unknown

Being unsure of what is happening, or what to do is never a comfortable situation to be in. This discomfort can become amplified into fear when an individual is in a potentially harmful situation, such as a disaster. While some students who had never experienced an earthquake discussed them as something they were curious to experience, some regarded the same idea fearfully. The fear expressed may be related to concern that they may be left isolated, may die, or lose loved ones. Generally children's concern of not knowing what would happen next was related to the possibility of aftershocks or tsunami. With both aftershocks (such as the ones experienced in Canterbury) and tsunami (such as the one which occurred in Japan) being quite well known to the students, it is unsurprising that they would be concerned about the possible after-effects of an earthquake. From children's discussions regarding earthquakes, it is clear that they are being educated about aftershocks. While there is no way to prevent tsunami or aftershocks from occurring, educating children about risks and protective behaviours can lessen the chance of injury or death and this may also help them to feel safer.

Expectations about Disasters

Likelihood of Disaster Occurring

As discussed in the previous chapter, students were asked to generate a list of as many disasters as they could think of. From the list they had created they were asked to pick a single disaster which they believed was the most likely to affect them in Wellington. Thirty-three percent of students in this study believed earthquake was the most likely disaster to affect them (see *Table Two* for details), making earthquake the most expected event. This is unsurprising considering that earthquake is the most widely taught disaster in Wellington classrooms (Coomer et al., 2008), as discussed in the introductory material. It is also, arguably, one of the most prevalent disaster risks in Wellington (see *Chapter Two* for discussion of earthquake risk in the Wellington region). Further, the earthquakes in Christchurch and Japan have likely increased awareness about disasters in children hearing about them.

In a study of the perceived likelihood of earthquakes in adults, McClure, Willis, Johnson and Recker (2011) examined the expectations of individuals in three areas of New Zealand, before and after the September, 2010, earthquake in Darfield, New Zealand. This study found that individuals in Christchurch and Palmerston North experienced a significant increase in their expectation that they may be affected by an earthquake, following the disaster. Individuals in Wellington did not experience a significant increase in expectation of earthquakes. However, those living in Wellington had already judged the likelihood as significantly higher than those in other areas, prior to the Darfield earthquake. These findings demonstrate that there exists a higher level of expectation about experiencing an earthquake in adults in Wellington. It is likely that the expectation of experiencing an earthquake is also being communicated to children and this is being reflected in their own expectations about the likelihood of an earthquake.

Tsunami, Lightning/thunder storm, Hail, or Tornado, were each selected by ten percent of students. While tornado disaster is not widely taught in classrooms (as mentioned in *Chapter Two*), on July 9 2011 a tornado touched down in Waikanae, north of Wellington City (Schouten, July 9, 2011). If this current event is the reason for its appearance in this list, it could indicate that how recently children have heard of a disaster occurring is as important as frequency when deciding likelihood. That is, the *recency effect* may somewhat account for the current findings. The recency effect describes the finding that the most recently presented information is the most easily recalled (Meyers, 2005).

Another aspect of this list which is of interest is that fire was only chosen by one student as being the most likely disaster to affect them in Wellington. This finding is contrary to that of Tarrant and Johnston (2010) who found that house fire was rated as the most likely hazard to affect students at home, as this item was chosen by 30% of the 1704 participants aged 11-12 in the Tarrant and Johnston study. The above study also found that tornado was chosen by only 7% of students. There are two possible causes for the difference in findings between the Tarrant and Johnson study and the present study. First, the difference may be a semantic issue, as students were asked to rate 'disasters'. While fire was included as a natural disaster in the present study because of its prevalence in the previous research, it is possible that students did not consider it to be a natural disaster. Secondly, students may be seeing other disasters as more likely, due to their presence in the media, which may again relate to the possibility that disasters which have been viewed recently are rated as more likely. These findings raise the interesting question of how children assess likelihoods of various disasters, and may warrant further research.

The fact that several participants believed the earthquake to be travelling closer to Wellington suggests that they may think of the Christchurch earthquakes as

the same roaming event. This belief may be, in part, because they seem to consider a Wellington earthquake as an inevitable occurrence. If the large earthquake they discuss is considered to be an inevitable occurrence then perhaps believing that it is the same earthquake that has struck other areas is the children's way of making sense of devastating events. Part of the reason why students seem to believe that an earthquake in Wellington is inevitable may be due to their exposure to predictions about this event occurring. Several students described feeling afraid after hearing on television or from friends that an earthquake will occur in Wellington. Students were able to describe quite clearly the mechanisms through which an earthquake occurs, and understood why the earthquakes were occurring in Christchurch, yet their discussion of the earthquake as *moving closer* almost anthropomorphises the earthquake. In his discussion about his family's reaction to a predicted earthquake Rex says that his family gathered together to pray that God not let the earthquake happen. These behaviours are very telling of how seriously these sorts of predictions are taken some of the adults that hear them, not only children. The positive side of Rex's story involves members of his family and their community gathering together and making preparations, which highlights that predictions can lead to increased preparedness, as well as fear.

Students also discussed where they believed different disasters could take place. Participants' expectations about likely sites for disasters to occur indicate that children are using information they hear to make attributions about common locations for disasters themselves. Two possible reasons for such beliefs may be, that adults are telling children directly that these disasters only happen elsewhere in order to keep them from worrying, or that the children are seeing stories about disasters occurring in these other places (such as the Boxing Day tsunami in 2004, in Indonesia) and making further attributions about their occurrence from this information (such as, that tsunami occur most often in Thailand).

Expectations about Roles

Carers

In the home children discussed mothers as being responsible for helping them remain safe, which is likely to be a result of the mother's role as a primary caregiver and comforter. Likewise, mothers were assumed responsible for all preparations in the home, as they were solely mentioned as responsible for making arrangements or gathering supplies. Again, preparation is likely to be an extension of the mother's role (or perceived role) as carer, that she is seen as the person in the home who is most responsible for emergency management. The mother is usually the individual a child looks to for security, guidance and to model their own behaviour in uncertain situations.

Teachers were discussed as being responsible in the event of a disaster in the school, and lifeguards were mentioned in a similar role at the beach. It is quite correct that in a classroom the teacher is responsible for advising students about what to do, and it is also fair to assume that, in the event of a tsunami, a lifeguard would warn people to leave the beach. Children in this study were indicating their expectation to be able to look for assistance from authority figures during a disaster.

What is interesting is the degree to which students did or did not mention other individuals' roles in offering direction to them in a disaster. Students who spoke of the disaster as if they were alone were taking responsibility for their own safety, and may prove to have a higher level of confidence and/or preparedness than those who relied on others. As has been seen in previous studies (e.g., Bokszczanin, 2008), infantilising children can lead to less positive outcomes following a disaster. Therefore, showing a degree of independence toward disaster preparation may have a positive effect on coping, should a disaster occur.

Ultimately, the students involved were 9 and 10 year old children, and while they were able to perform some level of risk assessment and identify steps for keeping themselves safe, it is reasonable to expect that there should be a caregiver or authority figure present, or nearby in a disaster. Regardless of how independent a child may be, they are still dependent upon the adults in their lives and it is the responsibility of these adults to keep them as safe as possible before, during and after a disaster.

Gender Roles

It is interesting that Gohan felt that his role as the male in the group meant that it was *unacceptable* for him to be scared. As discussed previously, it is a common finding in research on the effects of disasters that males have lower levels of post-traumatic stress following a disaster than their female counterparts (Ronan & Johnston, 2005). As the group was small and chosen at random, gender balance was not able to be controlled, and there were slightly fewer boys (12 total) than there were girls (18 total). The way in which Gohan makes reference to this imbalance suggests that he may have felt uncomfortable with the group dynamic and would have been more comfortable in the group if he had some classmates of his own gender.

Beliefs

In Rex, Ashley and Violet's discussions concerning beliefs about earthquakes (see *Results*) there is a degree to which control over creating earthquakes is assigned to a higher being, rather than being a wholly geological occurrence. Rex discussed the role of God in creating and protecting from earthquakes, while Ashley and Violet discussed taniwha as being able to create earthquakes. Violet used an example from a story she had read where a taniwha used earthquakes

to punish man for littering. Ashley agreed that she had heard these types of stories and found them “creepy” and that the creepy ones caused her to have nightmares. Ashley later stated that she did not believe in the taniwha, because she *is not* Maori. Violet, however stated that she *does* believe them and stated that this was because she *is* Maori. It was interesting to note that the students’ belief in taniwha was communicated as being related solely to ethnicity. Despite stating that she does not believe in them, Ashley also expressed fear when talking about taniwha, far more than Violet, and stated that stories about them caused her to have nightmares. Her expression of fear contradicts her assertion that she does not believe in them.

The students’ discussions about beliefs raise interesting questions about the role of beliefs in thinking about disasters. For Ashley, it seems that the beliefs some hold about a being or beings which can cause disasters is a frightening thought. For Rex however, the concept that God has an influence on disasters is more positive, as he can (and did) appeal to God to prevent the expected disaster. Previous research into the effect of religion on stress (e.g., Smith, McCollough & Poll, 2003) suggests that religion has a buffering effect on stress (that is, that religion is negatively correlated with depressive symptoms, especially in times of higher stress), and could be a protective factor against depressive symptoms and trauma. While no causation can be established, it seems likely that for Rex being able to appeal to a higher power provides a protective form of stress relief.

Values

In Rex’s story about going to his aunt’s home to make preparations for a possible earthquake, he talks about how they gathered with other members of the community at his aunt’s house so they could pray and prepare together. He says that in this environment he felt safe and like he “*wasn’t lonely*”. Rex’s account

about the actions his family took after hearing about an earthquake, which had been predicted on television, demonstrates the value of making disaster preparedness into a community activity. Rex's story is contrary to the behaviours discussed by Ronan & Johnston (2005), who discussed the distribution of information leaflets into communities. Their finding was that receiving information about a hazard can make members of a community feel safer, and therefore less likely to undertake preventative or preparatory measures. In Rex's story, the inclusion of neighbours as part of their own preparations indicates that the community was promoting action, perhaps because in this case the disaster was an expectation. This suggests that where a disaster is expected, the community can gather together and promote positive behaviour from one another.

Children's Knowledge about Natural Disasters

Knowledge is the framework through which we make sense of events and give them meaning. It was important to look at the knowledge children form around disasters to gain a better understanding of what information they are receiving, and how information affects them. The information children receive can come to them through formal education (emergency management classes and drills at school), exposure to the media, and discussions with other people in their lives. All of these pieces of information, whether factual or false, form the knowledge the children have about disasters, and therefore the framework they use to develop an understanding of past and new events. The main themes of Knowledge that were identified in this study were: *Formal Education*, *Information from Sources Outside the School*, and *Knowledge from Experiences*.

Formal Education

Awareness of Types of Disasters

When students were asked to describe natural disasters, 'frightening', 'scary' or 'dangerous' were almost exclusively the first descriptors given. The descriptions given suggest that for the children involved, the most salient feature of disasters is fear. Students were able to list a large range of natural disasters, from common (such as earthquakes), to extremely uncommon (e.g., 'frog-fall', where frogs are swept up in certain weather conditions and appear to rain down).

Students also tended to list items which were more likely to be classified as accidents, hazards or man-made disasters than natural disasters. These included items such as burglary, car accidents, war, pollution, and plane crashes (for full lists of items refer to *Results* section). In the case of one student, Cassie, she related a story in the focus group which she prefaced by saying, "I was kind of

scared, um, it's not really a disaster, but something bad that happened." Here Cassie is beginning her story, which she knows is not about a natural disaster by describing two key features of her experience- that she was **scared**, and that it was **something bad** that happened. It seems likely that it is these two features that cause her to bring the accident story into a conversation about natural disasters. She sees her story as relevant because, while she knows it is not a natural disaster, it shares two of the defining characteristics of natural disasters (as described by the groups).

Understanding of How Disasters Happen

Students across all of the schools demonstrated knowledge about the mechanisms which cause earthquakes and tsunami. Knowledge ranged from quite basic (aware that earthquakes are caused by the movement of the underground plates) to quite detailed (able to display knowledge about subduction). Those students who demonstrated the higher levels of understanding disasters, also mentioned having a personal interest in disasters, and seeking out information on the internet or in libraries to accommodate their desire to learn more than what was taught in class.

Most students were able to discuss some of the warning signs of tsunami, such as the tide receding dramatically, and identified that, while many people would be tempted to go closer to investigate, it is important to get as far away as possible. While Anya's phrasing in discussing people being killed in a tsunami seems to be making light of the way that people can be killed by going to the shore to have a look, the fact that she is aware that these warning signs exist, and that people need to be aware of them or they may die, demonstrates a solid grasp of the level of danger involved.

Regardless of their levels of knowledge about how earthquakes and tsunami are caused, all students were aware that there is a high level of risk involved, and

most children understood that the knowledge they have about disasters has the potential to save their lives.

Awareness of Current Events

Students were able to list a large number of natural disasters that had occurred in their living memory. Most of these disasters were named when the students were directly asked to name recent disasters, and other disasters came up in the course of conversation. All groups discussed the earthquakes in Canterbury, New Zealand and the Japanese earthquake and tsunami, and these items were usually the first to be mentioned. Being the first to be named suggests that these two events were the most easily recalled, likely as a function of the recency effect, the scale of the disasters, and being geographically close, which created an overall salience to these events.

Another disaster which was often discussed was the tsunami which occurred on September 29, 2009, killing 192 people in Samoa and Tonga (ABC Science, 2010). The Samoan tsunami was also a disaster which was geographically close, and as New Zealand has large Samoan and Tongan populations, had an effect on a large number of families and communities in this country. Several students discussed having family who were directly involved in the disaster. This may have also had an effect on the level of interest, as knowing people involved and hearing accounts from family members will have made the event seem more 'real' and therefore more interesting.

Students generally discussed disasters in the Pacific Rim (e.g. Indonesia, Thailand, Australia, Chile, Samoa, and New Zealand). While the Pacific Rim is well known for its high rate of earthquakes, the frequency with which disasters in this area were discussed could also be due to a higher interest in disasters that have a geographic proximity to New Zealand. Students are also likely to have a

higher interest in countries or cultures they are familiar with through school, family or television.

In a study of effects on memory and recall in children by Lehmann and Hasselhorn (2010), the authors found that items that were both *repeated* and *recent* were more easily recalled than those that were not. This finding suggests that when children are viewing or being exposed to repeated stories and images of events, the repetition creates a high level of salience regarding information about disasters. This occurrence can have both negative and positive effects. First, repeated exposure to negative information can lead the child to believe that the events are more common or dangerous than they really are (Comer, Furr, Beidas, Babyar, & Kendall, 2008). Secondly, information about disasters which presents important lessons about disasters, such as preparedness (Linter, 2006) can also become ingrained through repetition.

Knowledge about Keeping Safe

To ensure children's safety, one of the most important things we can assess is how students are engaging with the information presented to them about emergency management. Students all had a basic understanding of how to keep safe in an earthquake at school or at home, and could identify how to remain safe in a tsunami. Some students were able to elaborate further, providing a risk assessment of the room they were sitting in for the focus group activity. Another student began asking questions of the researcher, about what she would include in an emergency bag, if she could only have five items. Both of these examples show that the students were engaging with information about safety, thinking about emergency management, and wanting to see how other people apply what they had learned about disasters. It is important that students develop the ability to identify potential hazards around them wherever they are, as this ability may have an impact on their safety in a disaster.

Knowledge of Drills

Students could all recall having some emergency drills in their schools, but many expressed a desire to have more. They felt that these were not conducted often enough, and that it was difficult to recall what these drills were actually for, or how often they had occurred. Students were also able to offer further information about behaviours that were protective following a disaster. These pieces of information show a level of learning which is deeper than the basic details, such as getting under a desk during an earthquake. As discussed above, detailed knowledge of potential risks and protective behaviours has the potential to impact on these students' safety outcomes following a disaster. It is important that students are taught these behaviours in school as well as the home, because disasters can occur any time. Students need to know how to take care of themselves at school, as the ratio of children to teachers means that each child cannot be given constant, direct attention in an emergency.

Understanding the Need for Emergency Preparations in the Home

All students had one or more emergency item in their home, and could create an extensive list of items that could and should be included. Students displayed pride in being able to discuss the preparations they had undertaken. As discussed in the *Introduction*, Wellington homes have been reported as being sorely underprepared for a disaster (Statistics New Zealand, 2009). Therefore, any means for encouraging preparation, such as encouraging pride in being prepared, can be a valuable tool in fostering preparedness, first in school, then in New Zealand homes.

Sources of Information Outside the School

Three main sources of information were identified in students' discussions as being the means through which students hear about disasters. These sources were: family, television, and the internet.

Family

Within the family older siblings, grandparents, and aunts or uncles were all discussed as common sources of information, but were not being used as often as parents. Parents were the most commonly mentioned source of information, followed by types of media such as television or the internet. In most cases students were seeking out their parents and asking for information. One student described her uncle bringing her pieces of information about disasters. A second student discussed hearing her parents talking about disasters, and interrupting them to ask for information.

Another student said he had experiences of getting in trouble for discussing disasters too much. It is possible that other members of the child's family were upset by recent disasters, and preferred not to hear about them, or that they sought to discourage him from becoming distressed talking about disasters. The disparity between students being engaged in discussion, initiating discussion, and being discouraged from discussion indicates that there are varying levels of willingness to discuss disasters in different households. This variation means that, while some students have an opportunity to ask questions and have their concerns or interests elaborated on, others are left with questions and concerns, which they must answer themselves (if they have the means to do so). It is important that children have the opportunity to ask questions about things they do not understand, especially things which have the potential to cause them distress. Children who do not have this opportunity may develop incorrect

beliefs about disasters, such as believing that they are more common than they are, and may have unnecessary stress as a result of this.

Television

Most of the students discussed seeing graphic images and stories about disasters on the news. However, other programmes were mentioned, and several students discussed watching television shows that were interrupted to show details of the Japan earthquake/tsunami. Many said that they watched the news on a daily basis, and others said that they would only watch the news when they had been told to, or when they already knew that something had happened that they were interested in. There were differing levels of interest in watching the news between students. Most regarded the news as interesting, a few considered it boring, and several described it as sad or scary. Those who described it as scary did so because of the types of stories and images that they considered commonplace on the news. Children's reactions to media are explored further in *Vicarious Experience*.

Internet

Students discussed having access to the internet at home and school, and often used the internet to search for information about disasters. Several websites the students mentioned having access to were: YouTube (a website students used to search for videos of disasters), Stuff and Yahoo (which students used to view images and read news stories about disasters), and Any Questions? (where students could ask questions and have them answered by a Librarian). Images and videos can contain details which can be emotionally distressing. The effect of this is discussed in *Vicarious Experience*.

Knowledge from Experiences

First-Hand Experience

Courtney's experience: The experience relayed by Courtney in the previous chapter demonstrated that the nature of the small earthquake itself was not frightening for her, until she became aware that earthquakes could lead to death. Courtney's change of perspective demonstrates that the seriousness of earthquakes had not been apparent to her. This awareness came about through education, which has since led to preparation, and which will ultimately contribute to her safety, should an earthquake occur. Courtney's story shows how children who have not been educated to understand the potential risks of an earthquake may be in increased danger when one occurs. Being undereducated about disasters can lead to them being both incapable (due to lack of knowledge), and unwilling (due to lower expectation of risk) to participate in safety measures, should a disaster occur.

Gwen's experience: Gwen had the uncommon (among the participants) experience of having never felt an earthquake. Because she had never had an earthquake experience, she regarded earthquakes with more interest than other students, expressing that she would expect to find experiencing one interesting, and may be happy to experience a small earthquake. Her interest is likely to be a combination of her desire to experience something new and a desire to be part of the shared experiences of earthquakes that her peers had been through.

The experiences other students relayed about earthquakes were of interesting and benign events, where luckily no damage was sustained and no one had been harmed. They were generally conveyed with a mixture of interest and fear.

Vicarious Experience

As discussed in the sub-topics *Fear* and *Concern* and students were disclosing experiences of fear, especially when discussing the potential to lose loved ones, which they seemed to consider a common consequence of disasters (see *Death* theme). Exposure to emotionally charged images of people being hurt raises concerns over whether children have the potential to be traumatised by the images they view of disasters.

In a study examining the effects of television viewing on children, Comer et al. (2008) found that higher, unmonitored television viewing led to increased perception of children's own vulnerability to world threats. This relationship was found to be stronger in children with higher trait anxiety than those without. The finding suggests that viewing of potentially distressing television has the potential to make children feel unsafe, and has an especially strong effect on children who are already anxious. It is interesting to note that the study did not find any significant effect from use of the internet. However, since the type of internet use was unspecified, it may be that children did not have unfiltered access to websites.

The effect of increased distress from watching current events has been examined in relation to distress about terrorism (Comer & Kendall, 2007). This study found that "media coverage and exposure to such media coverage is associated with post attack posttraumatic stress disorder (PTSD) symptomatology" (p. 178). This finding is especially interesting in reference to the emotions discussed by children in the present study. While the fear discussed by the students appeared normal, some of the students expressed having nightmares about earthquakes and disasters. Having nightmares about disasters, in particular about things children have seen in the news, suggests that some students may be at risk for experiencing the early stages of intrusive thoughts, common to traumatic stress. The risk of vicarious trauma may also be

present with students' use of the internet, where content is graphic and unfiltered. Discussions of both news watching and internet use suggest that parents should, and often do, monitor what their children are viewing.

Vicarious experience can also have positive effects on individuals, and the examples in the previous chapter, while undoubtedly frightening, can also help to reinforce the message of a need for preparedness. This effect is also true when the story being told has a positive message. Stories such as that of Tilly Smith (discussed in *Literature Review*), are excellent for reminding students of the importance of being aware of disasters. Tilly Smith was able to save 100 lives because of the lessons she learned in class, and her story was widely published, which reinforces the lessons learned in class. Tilly Smith's story is an excellent example of the point made by Linter (2006), that current events can play an important role in classrooms for promoting civic responsibility, as well as educating children about disasters.

Children's Emotions about Natural Disasters

High levels of interest have positive implications for education by leading to better learning, which can, in turn, lead to higher levels of preparation. It is of great importance to look at the emotions children feel when discussing topics such as disasters, because emotions can inform behaviours. The intended result of emergency management in schools is always to create well informed students, who are able to perform the behaviours necessary to get through a disaster. Emotional themes identified in this study were: *Fear, Empathy, Excitement, Anger, Emotional Disconnection, and Emotional Coping Strategies*

Fear

Fear itself is a response which causes the individual to remain alert for danger. In the case of disasters, being afraid is necessary to allow us to have sufficient alertness to carry out protective behaviours. It demonstrates effective learning about earthquakes that students are aware that both aftershocks and tsunami are risks following an earthquake, and they know to be vigilant for them.

On the other side of this reaction is anxiety. Anxiety is a term used to describe an increased state of arousal, where the individual is fearful of a possible outcome (Meyers, 2005). It is common for most individuals to experience anxiety at some point, and it is usually short term, such as before, during or after an event with a potentially negative outcome. It becomes a problem when anxiety is no longer a transitory state, and begins to influence the way an individual conducts themselves. While none of the students in this study appeared to suffer from anxiety and short term fears and anxieties are normal, it is important that those supporting children are aware of signs that they are suffering from fear, especially if this is to the point that it affects their school or home life.

Empathy

Students displayed strong levels of empathy for individuals in Christchurch when discussing the images they had viewed on the news. Many students discussed seeing images that made them sad, and one described feeling ill thinking about the people who had lost loved ones in a building collapse she saw on television. Her story reminds us that the media viewed by children can have a profound impact on them in terms of causing upset or distress following a disaster. Images of people covered in blood, buildings collapsing, and bodies are described by the children in this study as causing them strong emotional reactions, including tears and nightmares. Empathy is a protective human response, motivating care and concern for others; however children may need to be protected from overexposure to graphic images.

Excitement

As previously discussed in Personal Experience, there is a degree to which students want to experience disasters, to know what they are like. Excitement can be (as demonstrated by Gwen) because children feel that otherwise they are missing out on a common experience. Gwen was one of only a few students who said that they had never experienced an earthquake. It may be that her interest was a desire to be involved in a new experience, wanting to 'catch up' to the experience level of her classmates, and to be a part of their shared experiences and discussions. For children it is important to have experiences to share to be a part of the peer group.

Also mentioned (see discussion of *Knowledge*) was the fact that some students were going out of their way to research disasters in their own time. For example, one student discussed using YouTube to look at videos of the tornado

in Auckland after he had heard of the event. It is helpful that students display an interest in disasters because, as discussed in Chapter Two, engagement and interest can have a very positive influence on learning skills and information (Frenzel et al., 2009). Having their interest engaged in the topic of emergency management could lead to improved learning and skill development, which could likewise assist in improved personal and community outcomes following a disaster.

Relief

A common expectation for students following a 'small' earthquake, was that they would feel relieved that the earthquake had not been bigger. This belief has an underlying assumption, which in many cases would be correct, that there would be no harm caused during a small earthquake. The description of relief again reinforces the fear the students feel over the negative consequences from a large earthquake, as their relief is a response to their fear of the possible negative outcomes from a larger earthquake.

Anger

A few of the students discussed having anger toward the earthquake or feelings of anger in general, following an earthquake. One student described his emotion as wanting to 'fight the earthquake' using the concept of physical aggression to describe his anger. Since the feeling the students were describing was obviously difficult to express, perhaps his definition, in which he treats the earthquake as if it were a being, was the closest he could come to explaining having feelings of anger toward an event.

Emotional Disconnection

Emotional disconnection is a common response to difficult events. The reaction allows an individual to avoid being overburdened emotionally and can feel as if it protects the individual from distress. A student named Cassie described the feelings she has toward disasters as at times not feeling real. She relates her feeling to her inability to do anything to help. For Cassie it seems as if feeling disconnected from the event has three potential causes. First, it may be related to feeling that she is helpless to do anything for the people affected by disasters. Secondly, being able to feel disconnected from negative events may also be her cognitive reaction to the fear that such events can create, if the event does not seem real, it is not going to happen for her. Lastly, the scale of the disasters may simply be beyond anything she has experienced and without an experience in her own past to draw on, she is unable to fully conceptualise it.

Emotional Coping Strategies

Coping is an important part of the resilience necessary to get through difficult events, should a disaster occur. Coping strategies are processes which can help to manage fear and other negative emotions, so that these emotions do not become intrusive to everyday life. In a study of children living in violent communities, Duncan (1996) found that children were able to cope best with anxiety where they had *“an internal locus of control, a strong sense of self-efficacy, and an optimistic and planful attitude toward the future”* (p. 1). That is, where an awareness of coping strategies (such as preparation, distraction, or knowing others are safe) can help children feel in control of their outcomes, it can also lead to reduced anxiety.

Preparation

Many students discussed the act of being prepared as a behaviour that can be used to make them feel better. Awareness that increased preparation can help them feel better about disasters occurring means that they are taking the messages about preparation seriously and using these behaviours as part of their positive coping strategies.

Family

Being close to family members was often discussed as a coping strategy, and in discussions was shown to serve a dual purpose for children. The first purpose was reinforcing the child's own safety by having a caregiver nearby who was able to make them feel protected. Secondly, the nearness of important loved ones meant that the child was able to see that that person was safe, therefore reducing anxieties related to the possible loss of a loved one. Information about family being safe was extremely important to the children, and was generally expressed through hugging.

Knowing Others are Safe

As above, where loved ones could not be seen or touched, it was still considered an important aspect of coping with fears to know that loved ones were in a safe place. One child discussed feeling safe, knowing that her mother was not in Christchurch, which she considered an unsafe place that her mother often visited. She expressed that her anxieties were reduced when, if her mother had to be away from home, she was somewhere other than Christchurch.

Other students expressed feeling safer knowing that their loved ones were aware of what to do in a disaster. For the students, knowledge of what to do in a disaster was expressed as the key protective factor for anyone, and knowing that their families had this knowledge reduced their own anxiety.

Distraction

Avoidance of thought is a technique which can lower the amount of time children spend ruminating about negative thoughts and emotions. Students talked about doing an activity they enjoyed as a form of cognitive avoidance. They described 'having happy thoughts' as a way of coping with fears or worries. Avoidance of negative thoughts may have positive implications, as rumination (the repetition of a negative thought or problem, without reaching a solution) has been linked with occurrences of depression (Abela & Hankin, 2011). It is important to make the distinction between repetitive thoughts without outcome (rumination) and actively considering a specific problem, in an effort to find a solution. It has been suggested that contemplating in an active way can, in fact, have positive outcomes for the individual; *"A number of studies suggest that active processing or contemplation of negative and threatening information plays an important role in health, well-being, and personal growth"* (Davis & Asliturk, 2011, p. 1).

Feedback about Disaster Education

As discussed previously, research emphasises the importance of evaluation for improving education (e.g., Finniss et al., 2007). The present study did not seek to test the efficacy of particular classroom programmes about emergency management, but rather to discuss with students what their perspectives were on the education they have received.

This question was asked near the end of groups, because it was considered important that the children had already discussed their classes on disasters, and therefore had been thinking about the classes before being asked about their opinions of them overtly. By this point in the groups, students had been talking for almost an hour and, as discussed by Morgan et al. (2002), students of this age

often have difficulty staying attentive for this length of time, meaning that the topic was not always explored in depth.

It is important that students are engaged in discussions about their learning, as they are able to provide valuable insight into what does and does not work for them as students. Time was always taken at the end of sessions to ask students to discuss what they felt may be missing from their classroom education about disasters, and what they felt may improve these classes. Their key concerns were as follows:

Preparation

What is important about the students' interest in preparation is that they are clearly aware of the potential threats and are taking an interest in information about their safety. As mentioned under the theme of *Education*, interest is a key factor in effective education. They were interested in doing more (and varied) drills, which suggests that they are aware that practising what to do in a disaster is a protective behaviour that can help them achieve the best outcome. Ronan and Johnston (2005) discuss the importance of undertaking activities such as drills, by stating:

“During a disaster there is little time to learn new skills and undertake preparedness activities. Learning these beforehand make a tremendous difference and can save lives, and reduce the impacts of disaster” (Ronan & Johnston, 2005, p. 101).

Taking Disasters Seriously

The fact that, in their opinion, others were not taking disasters seriously was one of the most emphatic points that the students wished to communicate. The students involved in this study wanted to make sure that older children and adults know that disasters are dangerous, and that it is hugely important that they be taken seriously. This ties into the themes of *Concern* (discussed in

Cognitions), and *Fear/Empathy* (discussed in *Emotions*), as students are seeing elsewhere that people are not surviving disasters, and want to communicate messages about preparation to keep others safe.

Other Disasters

The frequency with which students discussed wanting to know about other disasters poses the question of whether classes about disasters are too narrowly focused. As discussed in Chapter Two, travelling to other areas of the country for activities such as family holidays is very common and, while Wellington may be a high risk area for earthquakes and tsunami this will not be the case in other parts of the country. Students may be travelling in other areas and need to be aware of other potential risks to identify and keep safe from.

CHAPTER SIX:

CONCLUSIONS

Summary of findings

Cognitions about disasters suggested that students most often expected to be affected in some way by an earthquake in Wellington. Fire, which had been present in previous research, was not a high expectation in the sample group.

Students were most likely to expect to be affected by an earthquake than any other type of disaster, and that fire was considered less likely than in previous studies. It is likely that students are assessing earthquake and tornado risks highly, as a function of the recency effect. While belief in higher beings could be both a protective and risk factor, in terms of children's concern, presence of carers and community had positive effects on the children involved.

The children involved experienced concerns about their own safety, and that of others, especially young siblings and parents. Of the concerns discussed most have the potential to be relieved by actions taken in the home. As most children's concerns centre around the safety of themselves and family members, undertaking protective activities as a family (such as making evacuation plans, or putting together getaway kits) can help reassure the child that their family have the skills to keep safe.

Knowledge of what to do in a disaster was expressed as the key protective factor by students, and injury was generally seen as a function of failing to follow proper procedures. Children were well educated about disasters, and able to

describe types and causes of disasters as well as a number of protective behaviours for themselves and others.

Vicarious experience through the media was a common occurrence for the students involved, and was for many students, exposing them to images and stories that were distressing for them. Students were also able to relate to stories about young people who had behaved admirably in disasters. This shows that vicarious experience was able to be used positively, when the stories were of positive outcomes, but had the potential to cause distress, if the stories had negative outcomes.

Emotions expressed regarding disasters varied from excitement, particularly where an earthquake had not been experienced before, through to strong fear. Students described seeing a lot of images on the news about disasters and discussed strong empathy for those affected. Students also displayed pride when talking about preparations in their homes, which suggests an interest in carrying out preparations.

The fact that preparation was a key coping mechanism for students shows the importance of students having knowledge, but also being aware that their family members have knowledge about disasters, as knowledge has a key role in reducing the children anxiety about potential risks.

Feedback from students about their own emergency management education included an interest in learning about different types of disasters, in addition to earthquake and tsunami, and conducting more emergency drills. The key message that students in this study wanted people to take away was to emphasise how important preparation is. They discussed preparations in their home with pride because they knew how important it was to be prepared, and they felt concerned when they believed that those around them did not take the

threat seriously. The important lesson from this is that there is an interest in learning about disasters and this can be used to encourage preparation in the home.

Implications

Students in the present study displayed enthusiasm and interest when talking about disasters, and a desire to learn more about different types of disasters. It is possible that engaging students' interest by discussing further types of disasters may lead to better outcomes overall, as interest is key in effectively learning information. Students talked about the preparations in their homes with pride, excited to be involved in the process of making their families safe. Their pride speaks to the value of the relationship between school and home in developing preparedness, as activities set as homework can be used to create enthusiasm in the home and the school. For families, undertaking preparations in the home with the child can have the dual benefits of improving outcomes in the event of a disaster, and relieving some of the child's anxiety by demonstrating that those around them have the skills to survive.

If... you know what to do in an earthquake, then you'll probably survive, but if you just stand there going 'what am I going to do?' then you just, probably won't, because things will start falling.

-Courtney (10 Years)

Limitations

Many of the limitations of the study are related to the scale of the research. While the small number of participants (30) was sufficient for a qualitative study at Masters level, the study would have benefitted from a larger number of participants, from a greater number of schools across a wider geographical area. Likewise, due to the scale of the study it was only possible to conduct the research over one age group (Year 5). While having participants in a single age group provided continuity in the present study, it would have been of benefit, and may be of future interest, to conduct a study of a wider age range. This would mean that the findings would be of wider use, as the current study is only directly able to comment on a small population of students.

Focus group sessions were approximately 60 minutes. The length varied as the researcher became more skilled at conducting the groups and getting students to elaborate on their thoughts. As previously discussed, in sessions which are longer than 60 minutes, the facilitator can risk losing the interest of students, and this did begin to occur minimally in some two of the groups. This suggests that perhaps two sessions for each group may have been better, to keep the focus of the students and allow fuller data collection. Groups of longer than 60 minutes would likely need to be conducted outside of class time, as it could pose an inconvenience to schools to allow students to leave class for this length of time.

Gender of students in the focus groups was decided by random selection. In co-educational schools, random selection created an imbalance in two of the groups, one which consisted of three female and one male, and another which consisted of four males and one female. In the first of these two groups, the

male student made remarks about his gender, which suggested that he may have felt more comfortable with a more gender balanced group.

Future research

The present study asked students to indicate what they believed to be the most likely disaster to affect them in Wellington. While this information has value, time did not allow for the opportunity to investigate how they each came to their decision. It would be of interest to further investigate how children assess likelihoods for disasters affecting them. Several of the items which rated highly among students were events which had occurred recently and were either local or national news. Whether or not students decided likelihood based on the most recent events, by how publicised an event was, or by their recollection (including events they have heard of from others) over their lifetime, may be of value to understanding how children conceptualise disasters.

It would be of value to investigate whether students engage better in classes about emergency management when there is more variety in the types of disasters being discussed. It has been suggested (in Chapter Two) learning is enhanced when students are enjoying a topic. Investigation of which aspects of disaster education are most interesting to students, and whether a broader coverage of topics enhances interest, may be considered in respect of curriculum development.

Some students were displaying intense emotions when discussing their viewing of material regarding disasters. The issue warrants further research to greater understand what children are viewing and how it affects them. However there is some indication from the students' discussion of these stories and images, that viewing news stories has been causing some children stress. Students' stress

was further compounded by the students being told that they should be expecting to experience a serious earthquake, which was causing them concern. Whether this stress is cause to limit how children are accessing information about disasters is beyond the scope of this research, but warrants further investigation.

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APPENDIX A

Information Sheet for Participants

Who am I?

My name is Teresa King and I am doing a study about how people, especially children, think and feel about disasters.

What's this all about?

The purpose of talking to you in this group is to give you the chance to talk about how you feel about disasters and hazards.

If you would like to take part, I will ask you some questions about how things are going for you now. That is, you can talk about how disasters, especially earthquakes, make you feel, what you might think about them and what you know about different types of disasters. You can say anything you want really.

What will we be doing?

We will have a talk together about different types of disasters, and what you know about them. I might ask some questions to get you started, but you can say anything you like about them, or you don't have to say much at all if you don't want to.

If you don't want to talk about disasters, you don't have to stay in the group. If talking about different types of disasters makes you feel unhappy, we can have a talk about that and see if I can help you to feel a bit better.

Our group talk should last for about three quarters of an hour.

There will be a video camera which is recording the group. This is so that later on I can go back and see what we talked about. From what we've talked about on the video, I'll make some notes about the things that are important to you. The video tapes will be thrown out when I've finished with them.

Sometimes things people say in groups like this are fairly private, so we respect that and just talk about those things in the group.

What happens afterwards?

The things that your group says will be used to write a summary about what children your age think about different types of disasters. The report will help us understand what Year 5 children think about disasters. When I write the report, I won't use your real name. That way, anything you say in the group is kept private, and no-one will be able to tell who said what. I'll send my report to your school, and they will be able to pass on the report for your parents to read. Remember, anything I write won't have your real name in it. In a minute I'm going to ask you to choose a different, special name for yourself and you can write it on one of these labels and stick it on your top.

I wonder if I explained clearly to you what we're going to do. What would you like to ask me that I haven't explained properly, or that you just want to know?

If you don't want to be in the group, that's OK; you can just go back to class now.

APPENDIX B:

Information Sheet for Parents and Caregivers

Researcher Introduction

I am Teresa King, conducting this study as a part of my Master of Science degree in Psychology at Massey University. This study will be a year-long project for me, and the data collected will form my Masters Thesis. I will be supervised in this work by Dr Ruth Tarrant, a lecturer and research supervisor at Massey University, Wellington, and a Research Associate with the Joint Centre for Disaster Research (JCDR). (The JCDR is a joint collaboration between Massey University and GNS Science.)

Project Description

This study involves running a short (45 minute) focus group of children in Year 5, which will involve me, as the researcher, discussing with five students what their thoughts are about different types of disasters, especially earthquakes, and what helps or doesn't help them if or when they feel worried.

I am writing to invite you and your child in Year 5 to participate in this study. I expect the study to be of value to our understanding of what children know and feel about different disasters. Schools can then be informed about children's responses to disasters, and about children's needs in disaster-circumstances.

Please discuss this information with your child and decide whether both you and they are comfortable with their participation.

Participant Selection

- The participants for this study will be 20-30, Year 5 students from schools around Wellington.
- I have chosen this age for the children because at their level of development they have the ability to communicate verbally, and are generally responsive to group discussion.
- You have been contacted because your child's school has accepted my invitation to participate in this research study.

While I do not anticipate any distress to participants, and will take every care possible to avoid participants becoming upset, I will support any child who might become distressed. If necessary, I will request assistance from my supervisor. While my supervisor will not participate in the focus groups, if any child requires further assistance, Dr Ruth Tarrant will be available to assist any child who may need support during or after the focus groups.

Project Procedures

Before deciding if you consent to your child taking part in the study, there are some things you will need to know about the child focus groups:

- A few children have been chosen at random from the Year 5 classes. From these, we will approach only those children whose parents consent to them being available for focus groups. These children will be asked if they would like to come and participate in the focus group. Before starting they will have the details of the project explained to them, and should they not wish to participate, or choose to leave at any time they are free to do so. Their consent will be recorded before the focus group starts.
- This group will be video-recorded so the children's comments can be transcribed, and to ensure that I attribute statements to the correct child. All children participating will be made aware of this. Children will not be identified

by name, however, in any write-ups of the study. The videos will be destroyed 5 years following transcription, and will be kept securely and confidentially during this time to protect the children's privacy.

- The focus groups will contain five children at a time, and will last 45 minutes each.
- Focus groups will take place after school time, in a private area within the school.
- In addition to your consent, your child will also be invited to give verbal consent before this focus group takes place. That is, invited children will only take part if they are happy to do so.
- If you have any questions at all, please feel free to contact me or my Supervisor, Dr Ruth Tarrant. Our details are included at the end of this document.

Data Management

Once all of the information has been collected, I will look for themes in the children's responses so I can form an understanding of how children think about disasters. I'll look for areas where children might benefit from support strategies, and investigate what can be done to improve support for children.

This information will form my thesis. I will write a shorter summary-report that I will give to schools that have participated. These schools will make this report available to parents, so that my research may benefit those who have helped with it.

All data that is collected during this study will be kept securely at Massey University, and will only be accessible to myself and my supervisor until it is destroyed.

I will send the school a summary of findings for their interest, following the study. The school will be asked to make these findings available to parents. You may also contact me at the address below for a summary of the findings. Findings will be available by the end of this year.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you and your child have the right to:

- decline to answer any particular question;
- withdraw from the study at any time up until the completing of the focus groups;
- 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 a summary of the project findings when it is concluded.

Contact Details:

If you have any questions at all, please feel free to contact myself or my Supervisor and we will be happy to discuss them with you.

Teresa King

Masters Student

Massey University, Wellington

King.tere@gmail.com

0210447199

Dr Ruth Tarrant

Supervisor

School of Psychology

Research Associate, Joint Centre for Disaster Research

Massey University, Wellington

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04 801-2794, Ext 6754

Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application **11/21**. 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.

Extra Support: Support resources for yourself and your child.

Barnardos

Counselling and support resources

www.barnardos.org.nz

Child, Adolescent and Family Services

Work with children, young people and their whanau/family who are having emotional, behavioural or relationship problems.

Phone:

Hutt Valley: 04-570-9600

Paraparaumu: 04-903-0200

Porirua: 04-237-2860

Wellington: 04-801-2960

Family Matters Foundation

Counselling, support and training to children and families. Helping with grief, trauma, depression, behavioural problems and anxiety.

Paraparaumu - 04 9059533

Levin - 06 2100368

Family Services

An online directory of support services in New Zealand

www.familyservices.govt.nz

Parent Help

24hr parenting helpline, also have a counseling service.

0800 568 856; www.parenthelp.org.nz

Skylight

Support resources and counseling for families.

Phone: 0800 299 100; www.skylight.org.nz

Consent for child to take part in study

- 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 that I have discussed this research with my child
- I agree to allow my child to participate in this study under the conditions set out in the Information Sheet.
- I agree to the interview being sound/image recorded

My Name:

I am Parent/Legal Guardian/Caregiver of:

Child's Name:

Child's Class/Room:

Name of Child's School:.....

Child's Age:Years andMonths

Child's Ethnicity:

Signature:

Date:

Please return this form to your child's teacher at school.

Thank you!

APPENDIX C:

Information Sheet for Schools

Researcher Introduction

I am Teresa King, conducting this study as a part of my Master of Science degree in Psychology at Massey University. This study will be a year-long project for me, and the data collected will form my Masters Thesis. I will be supervised in this work by Dr Ruth Tarrant, a Lecturer and Supervisor at Massey University, Wellington, and a Research Associate with the Joint Centre for Disaster Research(JCDR). The JCDR is a joint collaboration between Massey University and GNS Science, and is situated at Massey University, Wellington.

Project Description

This study involves running a short (45 minute) focus group of children in Year 5, which will involve me, as the researcher, discussing with five students what their thoughts are about different types of disasters, especially earthquakes, and what helps or doesn't help them if or when they feel worried.

I am writing to invite your school to participate in this study. I expect that this will be of value to your own school, as well as to other schools around the country.

What would I require from your school?

- The ability to distribute information packs for parents /caregivers via those students who are eligible for the study.
- Access to students for whom consent is given, for 60 minutes in which to conduct the focus group.
- A small quiet room in which to conduct short (45-60 minute) focus groups.

Participant Selection

- In total, the children in this study will be 20-30 students in Year 5, from schools around Wellington. Children will be invited to take part only after their parents have consented that their child may be invited.
- I have chosen this age-group because at their level of development they have the ability to communicate verbally, and are generally responsive to group discussion.
- Parents will be contacted for their consent, through the school, only after your school has indicated that you accept my invitation to participate in this research study.

While I do not anticipate any distress to participants, and will take every care possible to avoid participants becoming upset, I will support any child who might become distressed. If necessary, I will request assistance from my supervisor. While my supervisor will not participate in the focus groups, if any child requires further assistance, Dr Ruth Tarrant will be available to assist any child who may need support during or after the focus groups.

Project Procedures

Consent from Parents:

Five Year 5 students will be selected at random to participate in the study. Parents/caregivers of those children will be sent an information sheet and consent-form for their child, Parents/caregivers will be asked to return the completed form to the class teacher if they consent for their child to be invited to participate in the study. We will select 5 students initially, and should consent not be gained, further students will be selected to replace those students who cannot take part.

Focus Groups:

- The focus groups will contain five children at a time, and will last 45 minutes

each.

- Focus groups will take place in a private area within the school, after classes, so as not to disrupt learning. In addition to parental consent, the child will also be asked for their consent before any focus group takes place. Children will take part only if they are happy to do so, and may leave at any time, providing they are not distressed. If a child is distressed, the researcher will assist that child as described above.
- This group will be video-recorded so that the responses can be transcribed and to ensure I attribute statements to the correct child. All children participating will be made aware of this. The videos will be destroyed 5 years following transcription, and be kept securely and confidentially during this time to protect the children's privacy.

Data Management

Once all of the information has been collected, I will look for themes in the children's responses so I can form an understanding of how children think about disasters. I'll look for areas where children might benefit from support strategies and investigate what can be done to improve support for children.

This information will be reported in my thesis. (No child or school will be identified by name). I'll write a shorter summary report which I will give to schools taking part in the study.

All data that is collected during this study will be kept securely at Massey University, and will only be accessible to me and my supervisor until it is destroyed.

Contact Details:

If you have any questions at all, please feel free to contact me or my supervisor and we will be happy to discuss them with you.

Teresa King

Masters Student
Massey University, Wellington
King.tere@gmail.com
0210447199

Dr Ruth Tarrant

Supervisor, School of Psychology
Research Associate, Joint Centre for Disaster Research
Massey University, Wellington
R.A.Tarrant@massey.ac.nz
04 801-2794, Ext 6754

Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 11/21. 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 D:

Question Framework

Time	<u>Duration</u>	<u>Activity</u>	<u>Items required</u>
10.00- 10.10am	10 mins	<i>Students arrive at group</i>	<i>List of students, video camera and voice recorder set up in room.</i>
Teachers ask those students for whom consent has been given to follow researcher to the space where groups are being held.			
10.10- 10.12 am	2 mins	<i>Discuss consent and respecting each other.</i>	<i>Consent forms, 'respecting each other' sheet</i>
<p>CONSENT</p> <p>Hi, my name is Teresa; I am doing a study about what young people like you think about natural disasters. I am really excited to hear what you have to say, but first I want to make sure you know what is involved.</p> <ul style="list-style-type: none"> • Explain consent sheet and give to group to read along <p>Respecting each other:</p> <ul style="list-style-type: none"> • <i>It is ok to have different opinions, we can ask questions, but there are no wrong answers.</i> • <i>We can talk about what that group was about and we can talk about things Teresa says, but we don't repeat what other people in the group said.</i> • <i>Laughing is fine, but not when it hurts people</i> <p>Read the above, which will be printed on a sheet. Explain what they mean.</p>			

10.12- 10.13am	1 min	Making nametags	Felt tips, small stickers, name labels
<p>Introduction</p> <p>So, now that we all know what is going to happen, I would like you to make a nametag that we can use, just for this group, so that when I go to write this all down, I won't use your real name, and no one knows who you are.</p> <ul style="list-style-type: none"> • Give students stickers they can use to make and decorate a nametag 			
10.13- 10.16am	3 mins	General question 1: Make list of disasters they have heard of.	A3 Paper, Felt tips
<ol style="list-style-type: none"> 1. So, the first thing I would like to know about is what you know about natural disasters- Can you tell me what a natural disaster is? 2. Ok, now, I wonder how many different types of natural disaster you can think of. (make list as they discuss) 			
10.16- 10.28am	12 mins	Aim 1: To investigate the children's perceptions about earthquakes and tsunami	
<ol style="list-style-type: none"> 3. Can you tell me of any disasters that have happened this year that you have heard about? 4. Are there any disasters you think could happen in Wellington? 5. Do you think you could be affected by a big Earthquake? 6. Can you talk about that - what do you think could happen in an Earthquake that might affect you? 7. Which of the disasters we talked about do you think you are the MOST likely to experience yourself? 			

10.28- 10.43am	15 mins	Aim 2: Knowledge about disasters	
<p>8. What is the first thing you would do if there was an earthquake while you were at home?</p> <p>a) What would you do next?</p> <p>9. What is the first thing you would do if there was an earthquake while you were at school?</p> <p>a) What would you do next?</p> <p>10. Do you know what a tsunami is?</p> <p>11. Can you tell me what a tsunami warning sounds like?</p> <p>12. What is the first thing you would do if there was a tsunami warning while you were at the beach?</p> <p>13. Do you ever hear about earthquakes?</p> <p>14. Do you ever hear about tsunami?</p> <p>15. Where do you hear stories/information about earthquakes or tsunami?</p> <p>a) What do you hear about them?</p> <p>16. Do you talk to anyone about what you've heard about Earthquakes?</p> <p>17. Do you talk to anyone about what you've heard about tsunami?</p> <p>18. If you had a question about an earthquake or tsunami, where would you go to answer it, or who would you ask?</p>			
10.43- 10.58am	15 mins	Aim 3: To investigate how children feel about earthquakes and tsunami	A3 paper, pens.
<p>19. How do you think you would feel in a little earthquake?</p> <p>20. How do you think you would feel in a big earthquake?</p> <p>21. How do you think you would feel if you were at the beach and there was a tsunami warning?</p> <p>22. Have you ever felt an earthquake?</p> <p>b) Were you scared?</p>			

c) What about it scared you?

23. Do you ever feel a bit scared talking about EQs?

d) What do you think made you feel scared?

24. Is there anything you do to make yourself feel better when you feel scared?

e) What *could* you do?

10.58- 11.00am	2 mins	<i>Students thanked and return to their class.</i>	<i>Sticker books to take to teacher.</i>
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25. Is there anything else about Earthquakes or tsunami that you'd still like to talk about before we finish?

I want to say thanks for coming and talking to me. It means a lot to me that you were ok with helping, and I hope that I can use the things you have said to help people who teach others about disasters. Because you came to help out I have some stickers that I can give to your teacher for everyone to share. Thanks again for all your good work today!