

Adult reflections on an adolescent experience of a natural disaster: A qualitative study

Michaela Marie Pratt

A thesis submitted
in partial fulfillment of the requirements for the award of the degree
Bachelor of Arts/Bachelor of Teaching (Primary) (Honours)

Discipline of Education

Avondale College of Higher Education

October 2018

Abstract

This study investigated the experience of four senior high school students at one faith based school during and after the February 22, 2011, Christchurch New Zealand earthquake. The literature revealed that children and adolescents are impacted socially, psychologically and academically by natural disasters, and also that supportive social networks can lead to increased resilience and post-traumatic growth. Using a qualitative case study and narrative inquiry approach, participants were interviewed. Responses were analysed, coded and an earthquake impact profile (EIP) created for each participant. These profiles revealed that larger support networks mitigated severe psychological and academic impacts. Two areas barely evident in the literature that impacted the participants were participation in service activities, and comparing themselves to others. The study concludes that adolescents in their senior years of schools require a large support network, which includes service to others to help alleviate adverse psychological reactions and thus lessen academic impacts in the months and years after an earthquake.

Acknowledgments

I would not be where I am today without the community of people who stood beside me while I was completing my thesis. I would firstly like to thank my husband Andrew for the countless hours he spent listening to my ideas, reading my work and being my sounding board. You are greatly appreciated for everything you have done over the last year and a half.

To my parents and bother, without you, my thesis would never have ended up where it did. Your ideas, recollections of the earthquake, insights and many hours of reading and editing are incredibly valued.

To my parents-in-law, Lisa and Daron. Thank you for editing my work and sending me new articles to read on the earthquake. It was a privilege to have you alongside me for this journey, and I am blessed to have you put your time and effort into my work.

To Tiffany and Emily, your advice and listening ears are something I can not thank you enough for. You both pushed my writing and thinking into realms I never thought possible.

To Bev and Phil, my supervisors. Your leadership, guidance and advice lead me to where I am today. Thank you for all the countless hours you invested in this journey. It will not be forgotten, and I will treasure it always.

Finally, to my friends and family in Christchurch. We have a shared experience that we will never forget. We have overcome great odds that I firmly believe is because of our pride and love for our city. Kia Kaha.

Table of Contents

Abstract	2
Acknowledgments	3
Table of Contents	4
List of Figures	6
List of Tables	7
Chapter One: kia kaha (stay strong)	1
The Research Question	1
Introduction	1
Backstory	1
Research Question	2
Rationale	2
Methodology	4
Definition of Terms:	5
Limitations	5
Chapter Two: kōrure (to change)	7
Literature Review	7
Introduction	7
Natural Disasters	7
Earthquakes	8
Christchurch Earthquake	10
Trauma and Adolescents	11
Conclusion	16
Chapter Three: akoranga (learning)	17
Research Methodologies	17
Research Question	18
Ethical Procedures and Protocols	22
Purposeful Sampling	22
Site and Respondents	22
Data collection: Interviews	23
Analysis	23
Conclusion	25

Chapter Four: kōrero pono (honest narrative)	26
Results	26
Participant One: Isabel’s Story	27
Earthquake Impact Profile	29
Participant Two: Amelia’s Story	31
Earthquake Impact Profile	32
Participant Three: Daniel’s Story	34
Earthquake Impact Profile	35
Participant Four: Emma’s Story	37
Earthquake Impact Profile	39
Conclusion	40
Chapter Five: tūhuratanga (discovery, revelation)	41
Discussion	41
Introduction	41
Question One: Support Networks	43
Question Two: Psychological Reaction	44
Question Three: Impact on Education	45
Conclusion	46
Chapter 6: whakatepe (to finish off, conclude)	47
Conclusion	47
Response to the research questions	47
Recommendations	48
Suggestions for further research	48
Limitations	49
Relevance	49
Conclusion	49
References	51
Appendix	58

List of Figures

Figure 2.1	CTV Building	10
Figure 2.2	Pyne-Gould Building	10
Figure 3.1	Factors informing research	18
Figure 3.2	Flowchart of methodologies and methods	20
Figure 5.1	Framework of the earthquake impact profile connection	42

List of Tables

Table 3.1	Elements of the research question	19
Table 3.2	Earthquake impact profile	25
Table 4.1	Participant names and colour codes	26
Table 4.2	Earthquake impact profile (EIP) for Isabel	29
Table 4.3	Earthquake impact profile (EIP) for Amelia	32
Table 4.4	Earthquake impact profile (EIP) for Daniel	35
Table 4.5	Earthquake impact profile (EIP) for Emma	39
Table 5.1	Distribution of support networks for all participants	43
Table 5.2	Distribution of psychological reactions for all participants	44
Table 5.3	Distribution of academic impact on all participants	46

Chapter One: kia kaha (stay strong)

The Research Question

Introduction

Kia kaha (stay strong) was the phrase repeated over and over after the February 22, 2011, 6.3 magnitude earthquake killing 185 people in Christchurch, New Zealand (O'Connor & Takahashi, 2014; Shepherd, McBride & Lovelock, 2017). Kia kaha became the cultural symbol of strength and resilience that Cantabrians held onto as they faced the destruction of the earthquake (Du Plessis, Sutherland, Gordon & Gibson, 2015). Through the words, kia kaha, school communities pulled together and stood side-by-side to help rebuild their broken schools (Ormandy, 2014). For weeks after the earthquake, schools were without power and water. Some had buildings that needed to be torn down, others had broken windows and resources that littered their classrooms (Ormandy, 2014; Havell, 2012). Over time, liquefaction, road closure, portable toilets, communal water collection points and power outages became normal. The damaged city of Christchurch, with all its destroyed buildings, schools, shops and roads became the focus of reporters, insurance companies and researchers (McColl & Burkle, 2012).

Post-earthquake Cantabrians became known as a resilient people (Du Plessis, 2015). Their attitude of kia kaha was tested in hardship and trauma (Barrer, 2012). Many people of Canterbury chose to continue on despite the tragedy of the earthquake. They picked up the pieces of the city around them, turned the brokenness and destruction into art and beauty, and supported their wider community through service despite the constant aftershocks (Harper, 2012). Now, seven years on, the city of Christchurch is a vastly different city than was it was. It is no longer the historically quaint city that has a beautiful stone cathedral as its heart, but it is a proud, forward thinking city that has been through a journey of repair and change. Kia kaha was the phrase used to remind earthquake victims that regrowth and strength is within them and that, though the journey is long there can be an end (Barrer, 2012).

Backstory

My journey has been a long and tiring process that has led to writing this honours thesis. On February 22, 2011, I was in year 11 of my schooling and eating lunch in a classroom with my friends when the Earthquake struck. We were trapped in the classroom until I was able to unlock the door. When I ran out of the classroom I was struck with a scene I will never forget. Liquefaction was rising from the soccer field in front of me, as 200 people ran screaming and crying across it. When we reached the 'safe zone' at the assembly area, all I could hear were the screams, cries and sirens that now filled the world around us. I sat with kindergarten

children, comforting them. I watched how the teachers, students and parents all responded; their emotions, words they spoke and how they related to each other.

A year later I moved to Australia, and as time moved on, I became deeply interested in the response of everyone on that day and the months and years that followed. Much of my spare time was spent in books or online reading the latest updates of how people were going. The most common word I read was resilience. Christchurch was a resilient city. It could be seen in the outside art; the way people helped those in need and the regrowth of plants and grass over vacant plots that used to have buildings on them.

This all lead to the development of a question, a question that was seven years in the making and therefore is the starting point of this honours thesis.

Research Question

The research question for this project is:

What impact did the 2011 Christchurch earthquake have on four senior high school students in one faith-based school?

This question aims to elicit reflections on the impact of the earthquake on students who were in their final years of high school. The verb, impact, in this context requires participants to reflect on their journey from the earthquake to now and actively engage with their past and present to portray their stories. This encourages participants reflect, potentially providing a then and now picture of their experience.

To act as a guide to answering my research question, the following three questions that arose out the literature will be explored:

1. What support did the students access post-disaster and how did this impact them?
2. What was the self-identified psychological impact on the students?
3. What was the self-identified academic impact on each of the students?

Rationale

All schools within Christchurch, including the school I attended, were affected to some extent. Some were closed for up to several weeks, disrupting normal education while they waited for their infrastructure to be rebuilt and others never reopened (Stuart, Patterson, Johnston and Peace, 2013). Within a school community, students, staff members, parents, and volunteers were all impacted by a local earthquake (Seyle,

Widyatmoko & Silver, 2013; Dean, 2011). Earthquakes, unlike other natural disasters, have no warning before they begin and no evident time when they will end (Mutch, 2015a). This can make it difficult for students and teachers to feel safe within the school environment as aftershocks can continue even years after the first earthquake (Berger, Abu-Raiya & Benatov, 2016; Havell, 2012; Sibley & Bulbulia, 2012). Studies document that natural disasters negatively impact students' academic, social, emotional and spiritual development (Mutch & Gawith, 2014; Sibley & Bulbulia, 2012; Gibbs, Mutch, O'Connor & MacDougall, 2013; Widyatmoko, Tan, Seyle, Mayawati & Silver, 2011; Brown, 2011).

Due to the fact that adolescents are in a crucial period of psychological development, they can be more vulnerable to the negative impacts of natural disasters including academic, social, emotional and spiritual development. Adolescents subsequently have an increased likelihood of developing severe psychological problems post-disaster (Zhang, Zhang, Zhu, Du & Zhang, 2015). Severe psychological problems can include post-traumatic stress (PTS), depression, and anxiety (Tang, Zhao, Lu, Yan, Wang, Zhang & Xu, 2017). There is sufficient evidence that the impact of natural disasters including post-traumatic stress can have a delayed onset with some symptoms increasing over time (Arnberg, Johannesson & Michel, 2013; Neria, Nandi & Galea, 2008).

In contrast, there are positive impacts of natural disasters that have little representation within disaster research (Bernstein & Pfefferbaum, 2018). Not every child that is exposed to a traumatic event will develop post-traumatic stress symptoms (Heath, Nickerson, Annandale, Kemple & Dean, 2009). Some children and adolescents who experience trauma can develop post-traumatic growth (PTG) and display resilience. PTG describes positive changes made in an individual's life after a traumatic event has occurred (Tedeschi & Calhoun, 1996). There is limited research in the area of post-traumatic growth and why individuals who show resilience in the face of natural disasters (Hoffman & Kruczek, 2011). With not all children and adolescents reacting to natural disasters the same way, there is more that can be investigated. There is limited research surrounding natural disasters and their impacts on education (Gibbs et al., 2013). Mutch & Gawith in their 2014 study highlighted that children and adolescents have been largely disregarded in disaster research. This means that the support networks children and adolescents connect with, how natural disasters impact them psychologically, and how their education is impacted needs to be investigated further (Codreanu, Celenza & Jacobs, 2014; Bernstein & Pfefferbaum, 2018; Dyregrov, Yule & Olff, 2018).

Methodology

Some sensations and emotions are impossible to put into writing. When reflecting on my lived experience of the 2011 earthquake, I discovered that I was most interested in the stories of those who have been through natural disasters. To best make sense of the impact of earthquakes and the entirety of the lived experience (Van Manen, 2016) through the eyes of the respondents, this research inquiry was conducted under the paradigm of qualitative research (Flick, 2014). The lived experiences of those who have been through adversity are not amenable to quantitative measurement (Van Manen, 2016), which would remove the humanity, richness and raw expression of the traumatic event and not allow for a full presentation of their experience (Clandinin & Connelly, 2000). It is for this very reason that qualitative research will be the overarching paradigm to guide this investigation. Qualitative research in this context allows the subjective meanings through which individuals interpret the world to be investigated. In particular, it recognises that each individual has their own reality and validates their experiences. In traumatic events there can be no 'objective', singular truth (Webster & Mertova 2007; Barbour, 2014).

Through the process of emergent design under the qualitative research paradigm, the holistic experience can be represented through the eyes of the participants (Webster & Mertova, 2007). These experiences are subjective to each participant in a small sample group. It is to this effect that case study is used to provide a framework through which the study will be conducted. Narrative inquiry (Clandinin & Connelly, 2000) methodology is also used. Narrative inquiry allows for descriptions of a traumatic event in an exploratory manner (Lichtman, 2013).

The term experience, in this view, is the stories people live. The most effective way to represent and understand the experiences of the participants in this study is through narrative inquiry (Clandinin & Connelly, 2000). Experience occurs narratively, and it is through narratives that people share their experiences, reaffirm them, modify them and create new ones (Clandinin & Roseik, 2007). The stories that are told and shared educate the self and others, including researchers who aim to understand the personal response to a traumatic event and the context that surrounds the event (Webster & Mertova, 2007). Narrative is, therefore, the second methodology used in conjunction with case study under the paradigm of qualitative research. Both methodologies are used as lenses through which the data is be collected, viewed and represented.

To better understand, negotiate and represent the experiences of the participants in the 2011 earthquake interviews will be used. Interviews allow for a unique negotiation between the researcher and the participant as stories are told, retold and reaffirmed (Webster & Mertova, 2007; King & Horrocks, 2010). Alternative to the traditional interview process of asking questions and receiving a response, the format of semi-structured interviews will be employed. Participants often provide interesting and important points that may require further clarification. Semi-structured interviews allow for the interviewer to follow up with questions and allow the interviewer to follow the story the participant is sharing without worry of rigidly following a set list of questions (Minichiello & Kottler, 2009).

Definition of Terms:

Several key terms are essential to understand the findings within this study. These key terms are as follows:

Impact: Within this study impact will mean the effect or influence the Christchurch earthquake had on its victims.

Support Structures: This is where the victims of the earthquake turned to for social and emotional support.

Community: Community is a subset of the support structures and includes staff members at school, neighbours, church members and/or spiritual leaders.

Belief System: Belief in a higher being that may include involvement in religion and/or development of spirituality or faith.

Psychological reactions: How each of the participants felt they were emotionally impacted by the earthquake.

Limitations

One of the main limitations for this study is my intimate experience of the 2011 earthquake. This can result in my own voice coming through when representing my participants' stories and experiences. To overcome this, the writing of my participants' stories will be constructed with participant feedback. They will be provided opportunities to read their own stories and provide feedback. This is taken from the methodology of narrative inquiry where the participants' stories are not challenged or changed but taken at face value. Further limitations include the ratio of female to male participants. In total there are three females to one male which does not allow for clear differences between gender responses to be investigated. Finally, the methodology of narrative inquiry does not allow for a broad understanding of how all senior students

responded to the earthquake. This inquiry instead aims to investigate in-depth the experience of a small sample to shed light on the importance of the individual's experience.

Overview

This study will be divided into six chapters, each of them focusing on a different process of the journey that lead to an analysis of the impacts of the 2011 earthquake. Each of the topics discussed in chapter one Kia Kaha (stay strong) will be further expanded and explained in each chapter.

2. Chapter One: Kia Kaha (stay strong): Overview of the whole thesis. This chapter provides reasoning, understanding and background information on why this study took place.
3. Chapter Two: kōrure (to change): This chapter investigates the literature and what has been previously studied under the topic of natural disasters and education. It will explore how natural disasters change communities and individuals.
4. Chapter Three: akoranga (learning): Within chapter three, the process of arriving at the research question will be discussed along with the methodologies and methods chosen.
5. Chapter Four: kōrero pono (honest narrative): Chapter four provides the results from the interview, the participant's stories and an individual analysis of each story.
6. Chapter Five: tūhuratanga (discovery, revelation): This chapter discusses the analysis of the findings in relation to the literature and how these findings answer the research questions.
7. Chapter Six: whakatepe (to finish off, conclude): This chapter provides a summary of the answers to the research questions. It identifies the limitations of the study and areas for further research, makes recommendations for schools, and concludes by summarising the implications of this study and possible wider implications of the research.

Chapter Two: kōrure (to change)

Literature Review

Introduction

The previous chapter, *kia kaha* (stay strong), presented an overview of the study and explained the purpose of the research. The research question was outlined and my personal background with the research topic identified.

This chapter, *kōrure* (to change), contains a review of the literature pertaining to this study. It begins by investigating the broad nature of natural disasters and their impacts on people and communities. This is followed by a literature analysis of two earthquakes: the Nepal earthquake as a recent disaster, and the Newcastle (Australia) earthquake for its geographic location. Finally, literature on the Christchurch earthquake will be presented along with the already identified post-earthquake impacts on children and adolescents.

Natural Disasters

The impact of natural disasters is far reaching and can be deeply distressing and disturbing events that millions of people around the world experience every year. Natural disasters disrupt daily life, destroy infrastructure and can result in death, injury and displacement. They are not a new phenomenon and have affected humanity throughout history (Falcone & Detty, 2015). Furthermore, natural disasters do not affect all members of a population equally: geography, climate, structural and political resources and socioeconomic status all contribute to mitigating morbidity and mortality (Kahn, 2005). Falcone and Detty (2015) identify that those individuals who are at the age extremes (young and old) and in the lower socioeconomic classes typically experience worse outcomes from a natural disaster.

Codreanu, Celenza & Jacobs (2014) estimate that around 175 million children are affected by natural disasters each year, and this is expected to increase as climate change intensifies the frequency of natural disasters. With natural disasters affecting millions of children worldwide it is vital to understand their impact and what can be done to promote resilience and provide opportunities to recover (Powell & Thompson, 2016). Natural disasters negatively affect adults', adolescents' and children's mental well-being (Dyregrov, Yule & Olff, 2018; Brown et al., 2017) in the months and years after the disaster (Tang, Liu, Liu, Xue & Zhang, 2014). The most prevalent and well researched negative psychological impact that children

experience is post-traumatic stress disorder (PTSD) (Kar, 2009). Accompanying PTSD, victims may suffer from depression, anxiety and/or other mental health disturbances (Kar, 2009). Despite the overwhelming evidence of negative psychological impacts on disaster victims, not all who are exposed to natural disasters will experience long-term negative psychological impacts. Post-traumatic growth (PTG) is evident in some individuals who have experienced trauma (Bernstein & Pfefferbaum, 2018).

Children who live through natural disasters need parental care and wider community support to alleviate the stressors that they experience as a result of the trauma (Dyregrov, Yule & Olff, 2018). Communities can prepare for the effects of disasters through specific actions, including education at the school level, improving community connections and providing students with a wider support network (Codreanu, Celenza & Jacobs, 2014). It is through community support and education that many of the negative psychological effects can potentially be alleviated (Codreanu, Celenza & Jacobs, 2014).

Earthquakes

Major earthquakes are some of the most devastating natural disasters that affect mankind (Khatri, Tran, Baral, Fisher, 2018). The structural damage that results from severe earthquakes can cause many deaths and traumatic injuries in a very short period of time (Bartels & VanRooyen, 2012). Mutch (2015a, p. 39) adequately explains earthquakes,

What differentiates earthquakes from other disasters is that they are unpredictable and uncontrollable. They are elusive, in the sense that the causes are hard to see but the effects are highly visible. There is no warning and no set endpoint. On-going aftershocks continue to cause physical and psychological damage long after the initial event.

What Mutch (2015a) and many others have highlighted is how powerful earthquakes can have long-term consequences for survivors, and exposure to earthquake-related traumatic events increases the risk of psychological disorders, including PTSD (Sezgin & Punamaki, 2012; Khatri et al., 2018). This forms the foundation for investigating the various impacts of earthquakes on its survivors.

As with other natural disasters, Earthquakes impact children and adolescents socially, emotionally, academically and psychologically to varying degrees (Mutch, & Gawth, 2014; Bartels & VanRooyen, 2012; Brown et al., 2017; Kar, 2009; Tang et al., 2014). The focus of the majority of research has been on the psychological impacts of individuals who have experienced an earthquake (Silwal, Dybdahl, Chudal, Sourander & Lien, 2018). There has also been an emphasis on resilience post-disaster, particularly

investigating how individuals develop resilience (Long & Wong, 2012; Navarro et al., 2016; Heath et al., 2009). Long and Wong (2012) identified that for individuals to develop resilience and more positive outcomes, they require connections to the community to be fostered and familial supports to be engaged. How students in school respond to and are impacted by earthquakes is directly related to the social support they receive from their parents, caregivers and teachers (Navarro et al., 2016; Heath et al., 2009).

Earthquake Research Examples

Two earthquakes have been chosen for a thorough examination of their impact. Earthquake research tends to focus on two to three years after the earthquake occurs, so the Nepalese earthquake has been chosen as a recent example and the Newcastle (Australia) earthquake as a regional example.

Kathmandu, Nepal, 2015

Less than five years after the Christchurch earthquake, a 7.8 magnitude earthquake struck Kathmandu, Nepal on April 25, 2015 (Sharma, 2015). This was followed by a 7.3 magnitude aftershock on the May 12, (Shah, Pujol, Kreger & Irfanoglu, 2017). Just under a third of those killed were children and adolescents; another one million children were affected by injuries, temporary or damaged housing, unsafe environments, health and medical problems, sleep issues and bereavement (Silwal et al., 2018).

Silwal et al. (2018) investigated the prevalence of PTSD after both earthquakes in Nepal in 2015 and discovered that adolescents who lived through and were affected by the earthquakes had a strong possibility of developing PTSD and depressive symptoms. This is similar to the findings of Kar (2009), who went further and claimed that mental health professionals, parents and teachers often underestimate the intensity and duration of the stress reactions in children, as their reactions are different to that of adults due to their developmental stage. Silwal et al. (2018) also identified that parental education plays a role in the likelihood of children developing PTSD and other mental health disorders. Children who are from low income families and lived in poor housing conditions are most likely to react negatively to the earthquake and develop PTSD (Silwal et al., 2018) However, other researchers, such as Sweeting, Green, Benzeval and West (2015), have found that parental socio-economic position may not have an influence on mental health post-disaster for adolescents.

Newcastle, Australia, 1989

Closer to New Zealand, on December 28, 1989, Newcastle, Australia experienced a 5.6 magnitude earthquake. This was the first earthquake in recent history to cause fatalities in Australia (McCue, Wesson, Gibson, 1990). There has been little recent research on the Newcastle earthquake, with the majority of studies being conducted between 1990 and 1999. In the 29 seconds that the earthquake lasted, 13 people were killed and the city of Newcastle suffered a billion dollars (AUD) of damage (Lewis, 1995). Like the Nepalese earthquake, residents who were exposed to the earthquake experienced negative psychological impacts such as PTSD (Lewis, 1995). Carr, Lewin, Webster and Kenardy (1997) found that negative psychological impacts tended to stabilise between 12 and 18 months post-earthquake. They also found that those who had experienced trauma previously in their lives were more likely to be at risk of developing psychological morbidity (Carr et al., 1997). Lewin, Carr & Webster (1998), in a later study, found strong correlations between individuals who were aged or had a history of emotional trauma and psychological morbidity post-earthquake.

Christchurch Earthquake

During the February 22, 2011, 6.3 magnitude earthquake, the way in which the world knew Christchurch changed. Multiple buildings collapsed, including the CTV building and the Pyne-Gould building (see Figures 2.1 and 2.2).



Figure 2.1 CTV Building (foreground) Figure 2.2: Pyne-Gould Building

These buildings were located in what became known as the red zone in the central business district of Christchurch (Berno, 2017; Marquis, Kim, Elwood & Chang, 2017). Along with the physical changes within the city, people were changed. The earthquake caused significant disruption to the daily lives of the Christchurch inhabitants (Greaves et al., 2015; Berno 2017). The earthquakes began on September 4, 2010, with a 7.1 magnitude earthquake. Little damage followed this earthquake, despite its size. However, February 2011 saw the most destructive earthquake New Zealand had ever seen, with the city of Christchurch greatly impacted (McColl & Burkle, 2012; Berno, 2017; Marquis et al., 2017). In the months

and years that followed, over 12,000 aftershocks continued to shake the fragile city and caused over 40 billion dollars in damage (NZD) (Marquis et al., 2017).

On February 22, 2011, over 150,000 students and 10,000 adults were in schools across Canterbury (Education Review Office, 2013). Immediately after the earthquake, students looked to their teachers, principals, learning support staff and peers for guidance on how to navigate the emotional trauma they had faced (Brown, 2011; Dean, 2011). During this time, frightened students congregated on ovals, basketball courts and in open areas waiting for parents or caregivers to pick them up. In the weeks after the earthquake, normal schooling was continually disrupted (Tolley, 2011) and the community worked together in an attempt to return to normal functioning as quickly as possible (Brown, 2011).

The aftershocks continued, making recovery efforts and consequent clean-up difficult (Gibbs et al., 2013). Some schools were severely affected, which resulted in some school buildings being condemned (Siembieda & Johnson, 2015), leaving some students with nowhere to discuss what happened, sympathise with each other and recover emotionally in a supportive environment (Mutch, 2013). Due to the changes in the school environment, such as schools sharing campuses, larger classroom sizes and lack of time for curriculum content, a focus on well-being was difficult (Ormandy, 2014). Children are some of the most vulnerable victims and lack the resources to handle the trauma and stressors of earthquakes (Silwal et al., 2018; Brown et al., 2017; Tang et al., 2014; Berger et al., 2016; Bonanno, Brewin, Kaniasty, & Greca, 2010). Despite these findings, children and adolescents appear to represent a significant but overlooked population within earthquake research (Mutch & Gawth, 2014).

Trauma and Adolescents

Social Support and Impacts

Social implications on young people post-disaster forms a small part of disaster research. Bateman and Danby (2013) conducted a study that considered post-disaster recovery strategies that focused on social and emotional re-adjustment for children. Bateman & Danby (2013, p. 6) found that “story-telling sequences help both children and teachers to recover from their traumatic experiences... helps each member to understand that they are not alone in their feelings of anxiety.”

Supporting this study, Mutch and Gawith (2014) suggest that in the months after a natural disaster, students require more time in class and at home to share stories and provide each other with social and emotional

support. This is challenging and due to the demands of the curriculum and time constraints. Teachers can struggle to find time to allow students to adequately process the events of the natural disaster (Bateman & Danby, 2013; Bonanno et al., 2010; Gibbs et al., 2013; Widyatmoko et al., 2011). However, sharing stories for some children and adolescents can be a traumatising experience (Leek Openshaw, 2011). Children and adolescents need to be provided with opportunities to express their emotions without being forced to talk about it. This can include activities such as “journaling, drawing, creating cards or posters, listening to music [and] brainstorming ideas to offer support (service to others)” (Leek Openshaw, 2011, p. 168). Further to school support, Long and Wong (2012) identified in their study that children not only require connections within the school but to the wider community and their families (Codreanu, Celenza & Jacobs, 2014). The literature indicates that social support assists students in the development of resilience after a traumatic event and can contribute to a lower rate of PTSD symptoms (Yagi et al., 2016; La Greca, Silverman, Vernberg & Prinstein, 1996).

Belief Systems and Service

The February 22, 2011 Earthquake caused a time of uncertainty and fear for individuals where many became fully aware of the reality of their vulnerability and caused a mental strain on individuals (Sullivan & Wong, 2011; Fletcher & Nicholas, 2016). For some, the trauma of the earthquake provoked existential thinking as they turned to their religious beliefs as a source of comfort and potential answers (Sullivan & Wong, 2011; Peres, Moreira-Almeida, Nasello & Koenig, 2007). Religious beliefs have been connected to individuals improving in their mental health (Nelson, 2009). Benson, Furman, Canda, Moss and Danbolt (2015, p. 1373) highlighted how “religious communities might provide physical, emotional, social and philanthropic support to victims”. The belief systems that an individual connects with “can serve as a source of resilience and strength during a disaster and in its aftermath” (Furman et al., 2016, p. 75). Individuals who connect into a belief system post-disaster are less at risk for developing a negative mental health disorder such as PTSD (Blanc, Rahill, Laconi, Mouchenik, 2016; Jakovljević et al., 2012). Post-earthquake, a person may turn to their belief system for comfort and this is an area in which they may experience growth (Calhoun & Tedeschi, 2014).

Post Traumatic Growth and Resilience

Post-Traumatic growth (PTG) is defined as positive change in a person’s life as a direct result of exposure to a traumatic event (Tedeschi & Calhoun, 2012; Bernstein & Pfefferbaum, 2018; Janoff-Bulman, 2004). This

concept of children and adolescents experiencing PTG in relation to natural disasters has only been featured in empirical studies that have been conducted in the last two decades (Bernstein & Pfefferbaum, 2018; Meyerson, Grant, Carter & Kilmer 2011; Cryder, Kilmer, Tedeschi & Calhoun, 2006). There is little known in relation to natural disasters and PTG in children (Bernstein & Pfefferbaum, 2018; Cryder et al., 2006). Tedeschi and Calhoun (1996) devised five major domains of growth, from quantitative data and accounts of people who experienced trauma (Park, Cohen & Murch, 1996). “These five domains are personal strength, new possibilities, relating to others, appreciation of life, and spiritual change” (Calhoun & Tedeschi, 2014, p. 5). An individual who has experienced trauma may display growth in one or more of these areas (Meng, Wu & Han, 2018; Smith et al., 2017).

Complementary to PTG, is resilience where individuals display positive outcomes from a negative event but not necessarily growth (Schaefer & Moos, 1992; Winstanley, Hepi & Wood, 2015; Tedeschi & McNally, 2011). After the Christchurch earthquake, there were numerous newspaper articles, journal articles and studies that focused on the resilient nature of Cantabrians (Du Plessis et al., 2015; Barrer, 2012). The word resilience is multi-dimensional with no single definition. It has often been conceptualised as an outcome, (Winstanley et al., 2015) or viewed as the final destination that individuals reach where they can function as normally as possible post-trauma (MacKinnon & Derickson; 2013). In contrast to this view, resilience can be viewed as a continuous process that involves dynamic interactions between risk and protective factors to a person at various life stages (Brown et al., 2017; Milojev, Osborne & Sibley, 2014). In this study, resilience is viewed as a continuous journey that can span across many years and eventually results in an individual who experiences close to pre-trauma functioning.

There are many factors that can increase the likelihood of individuals developing resilience post-trauma. Social connections can heavily influence an individual’s ability to show resilience (Powell & Thompson, 2016; Revenson & Lepore, 2012). In the context of the Christchurch earthquake, strong levels of resilience were found among young adults who reported positive emotional strength and social belonging as a consequence of the earthquakes (Fergusson, Boden, Horwood & Mulder, 2015). Along with social support, there are personality factors that can play a major role in resilience such as a sense of hardiness, self-reliance and dispositional optimism (Scheier & Carver, 1985). Another predictor of resilience is through the type of environments that surrounds the child. When an individual who has been through trauma is surrounded by an

environment that caters for their wellbeing, there is a greater possibility developing resilience and fostering growth (Revenson & Lepore, 2012).

Post-Traumatic Stress Disorder

Post-Traumatic Stress Disorder (PTSD) is a common and debilitating condition that arises after exposure to traumatic events including natural disasters (Flores, Carnero & Bayer, 2014; Neria et al., 2008). The diagnostic criteria and definition of PTSD is available in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and is characterised by experience of trauma where a person is exposed to death, threatened death, or actual or threatened serious injury (American Psychiatric Association, 2013). This can occur through direct exposure, witnessing the trauma, learning that a relative or close friend was exposed to a trauma or indirect exposure (American Psychiatric Association, 2013).

When investigating who are the most vulnerable, “children's characteristics (e.g., sex, age, and ethnicity), intellectual and emotional functioning, factors in the post-disaster environment, and coping efforts” (Terranova, Boxer & Morris, 2009, p.345) can influence the emergence and course of PTSD symptoms. Kronenberg et al., (2010), discovered that females report more disaster-related PTSD symptoms than males, a finding with wide support in the literature (Silwal et al., 2018; La Greca et al., 1996; La Greca, Silverman, Lai & Jaccard, 2010; Weems et al., 2010). Furthermore, Terranova et al., (2009) found that children who have pre-existing emotional and behavioural difficulties have an increased risk for developing PTSD symptoms, which may last for as long as a year. However, children and adolescents who present PTSD symptoms, can be influenced by the way in which their parents and community around them is recovering and responding to the earthquake (Terranova et al., 2009). Terranova et al. (2009) makes it clear that social support is one of the most important factors influencing an individual’s reaction to stress, with children who receive low levels of social support more at risk of developing PTSD.

There is sufficient evidence that the psychological impact of natural disasters can have a delayed onset, with some symptoms increasing over time (Arnberg et al., 2013). Neria et al. (2008) found that those who displayed PTSD symptoms six years post-disaster were unlikely to recover completely. Sullivan and Wong (2011) identified that adult victims of the Christchurch earthquake experienced symptoms of fear from environmental triggers and fear for the safety of their family members. Gawith (2011) and King and Tarrant (2013), identified that children could struggle with symptoms of anxiety, stress, suppression of memories and

anger. Nevertheless, there is limited understanding of the long-term impacts that natural disasters can have on children and adolescents (Tang et al., 2017; Mutch & Gawith, 2014; Arnberg et al., 2013; Neria et al., 2008). Despite there being conclusive evidence of the relationship between disasters and PTSD (Norris, Friedman, Watson, 2002), the literature pertaining to post-traumatic growth and resilience in children and adolescents suggests that not all children will display PTSD symptoms post-disasters (Little, Akin-Little & Somerville, 2011; Little & Akin-Little, 2011; Bonanno et al., 2010).

Academic impact

Academic achievement can be heavily impacted by natural disasters and with schools shut down for extended periods of time, decreased levels of academic functioning can occur (Gibbs et al., 2013; Widyatmoko et al., 2011). However, it is important to note that a loss in academic functioning is usually only short term, with only those who displayed symptoms of PTSD typically affected for 3-7 months post-disaster (Bonanno, et al., 2010).

Psychological conditions such as PTSD and their associated symptoms do negatively impact students' academic outcomes. Young people exposed to natural disasters can experience a decline in academic performance over time (Baytiyeh, 2017). This can be attributed to the fact that behavioural issues can lead to a loss of learning (e.g. leaving the classroom, suspension) and conflicting relationships with teachers (Scott, Lapre, Marsee & Weems, 2014). However, there is opportunity for more research pertaining to the relationship between natural disasters and academic achievement. It is possible that exposure to natural disasters and the development of PTSD symptoms may play a greater role in the prediction of children and adolescent academic outcomes post-disaster (Scott et al., 2014).

Along with psychological impacts on academic achievement, O'Connor and Takahashi (2014) reported that due to curriculum demands there was little time for children to make sense of the trauma they had been through. Teachers and principals were encouraged to return to a routine as soon as possible (Mutch, 2015b). With the overcrowded curriculum, all teachers could do was strive to meet curriculum demands (O'Connor & Takahashi, 2014). This inhibited students from being able to emotionally process the trauma that a natural disaster causes (Mutch, 2015b).

Conclusion

Research indicates that support structures, school communities and families play a pivotal role in the construction of coping strategies in children and adolescents post-earthquake (Dyregrov, Yule & Olf, 2018; Codreanu, Celenza & Jacobs, 2014) and that psychological impacts on children and adolescents can vary greatly in the duration and type of reaction they experience (Carr et al., 1997). The range of psychological reactions can include experiences of post-traumatic growth, resilience, PTSD, anxiety or depression (Flores et al., 2013; Neria et al., 2008; Tedeschi & Calhoun, 2012).

Despite this knowledge, there is limited research into the long-term psychological effects of natural disaster related trauma in children and adolescents with the preponderance of studies limiting their scope of research to two or three years after the traumatic event (Arnberg et al., 2013; Mutch & Gawith, 2014; Mutch, 2015a). The development and understanding of PTG within children and adolescence is an emerging field that has only been represented by research within the last decade (Bernstein & Pfefferbaum, 2018; Meyerson et al., 2011). There is a limited understanding of the relationship between children and the development of PTG post-disaster (Bernstein & Pfefferbaum, 2018).

This chapter has summarised the relevant literature pertaining to young peoples' experiences after natural disasters and demonstrated how the central research question helps to expand on gaps in the literature. It has provided a foundation and reasoning for why this study is vital in understanding the impacts on adolescents by providing them with a platform to share their experiences. The next chapter will outline the design process of the research question, the site and respondents, the methodological framework and methods used to gather and analyse primary data from participants.

Chapter Three: akoranga (learning)

Research Methodologies

Introduction

The previous chapter provided an overview of how the research literature was used to guide and form the research question. The literature review positioned this study within the context of previous studies of disaster and earthquake research. The research question changed and evolved to fit the gaps within the research. This process led to the development of the question that is guiding this research process:

What impact did the 2011 Christchurch earthquake have on four senior high school students in one faith-based school?

The following sub-questions were used to guide the data collection process and methodology paradigm.

1. What support did the students access post-disaster and how did this impact them?
2. What was the self-identified psychological impact on the students?
3. What was the self-identified academic impact on each of the students?

This chapter will aim to provide a rational for, and understanding of the processes and decisions made as this project began to emerge. By drafting this chapter within my personal journal, I was able to reflect and question the design and the decisions I made throughout this study. This process, termed by Charmaz (2014, p. 314) is regarded as “rendering through writing”. This process allows for clarity and openness between the researcher and the reader, while providing evidence as to the quality and legitimacy of the study (Lincoln & Guba, 2013).

The overarching methodology for this research project is the qualitative paradigm. Under this paradigm, a bricolage of case study (Yin, 2014) and narrative inquiry are interwoven (Clandinin & Connolly, 2000). Under these methodologies, data is gathered through semi-structured interviews and analysed through a towards grounded theory approach. (Charmaz, 2014). Through this chapter, the decisions that were made are clarified along with the reasoning and grounding behind them that led to the bricolage (Kincheloe, McLaren & Steinberg, 2011) of methodologies and methods that were used.

Research Question

Deemed the “the most important step to be taken in a research study” (Yin, 2014, p. 11) is the question which guides this project. The designing of the research question of a qualitative investigation is one of the most influential factors in its success or failure (Flick, 2008). It was personal, *a priori*, experience in the Christchurch earthquakes that sparked the emergence of my research question (Horowitz, 2006). Initially, the research question was rooted only in my emic knowledge. Upon reflection on my personal journey and experience, I had a natural affiliation with the perceived impacts that students experienced after the earthquake and how this affected

their education. As I was reading literature on the topic, I discovered gaps within the literature that related to my personal interest. As the literature was reviewed and the data gathered during this project, it moved into propositional knowledge (Russell & Doris, 2008). Four factors directly impacted the creation of the research question. Figure 3.1 identified these four factors: emic/tacit perspective, literature analysis, qualitative paradigm and data. Each of these influencers worked together to assist in the development of the question.

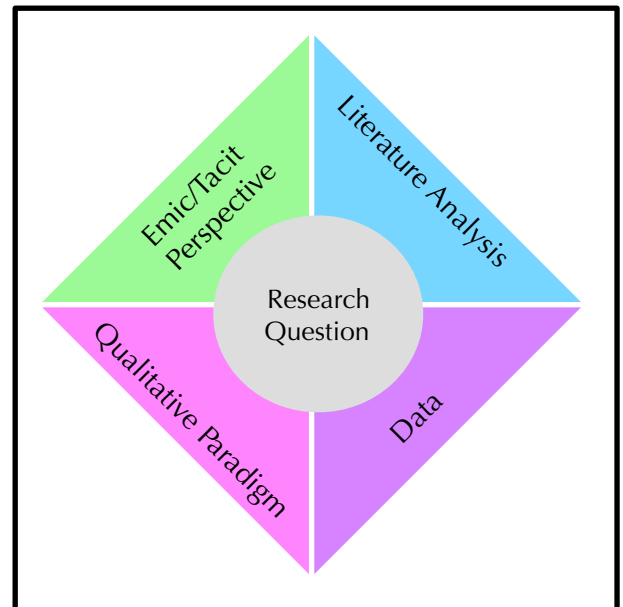


Figure 3.1: Factors informing the research question.

Breaking up of the question

The question that finally became the core of my research is:

What impact did the 2011 Christchurch earthquake have on four senior high school students in one faith based school?

To further understand the question I have broken down the core elements and how it shapes my research in Table 3.1.

Table 3.1: Elements of the research question

Question Elements	
What	This question is investigating “what is the situation” and describes what is happening through the perspectives of each participant.
impact did the	Impacts emerged from the literature review
2011 Christchurch Earthquake	This part of the question makes known the time, location and nature of events being studied.
have on four	Identifies the number of participants and limits the scope.
senior high school students	This provides an age bracket for the participants.
at one faith based school?	This provided a criterion for participant equality of initial experience, important to a comparison of results.

Three sub questions were devised to aid in answering the main research question. These questions arose from the literature review in chapter 2 and determined the questions asked in the interviews (see Appendix B). The purpose of the sub questions was to provide a holistic picture of the participants post-earthquake.

Qualitative methodology

The research paradigm employed was qualitative using narrative and case study methodologies (see Figure 3.2). This shaped the representation of the findings and how the data was analysed and discussed. The qualitative paradigm was chosen as it allowed for flexibility and fluidity while venturing into new territories of understanding and knowledge within my research area (Minichiello & Kottler, 2009). Through qualitative research I am given the opportunity and honour to advance knowledge through describing the experiences, explaining the phenomena and developing theories based on what I uncover through my participants (Minichiello & Kottler, 2009).

When looking at the paradigms under which research is conducted, I found myself naturally affiliated with qualitative research. My experience in the 2011 earthquake provided me with an understanding of how

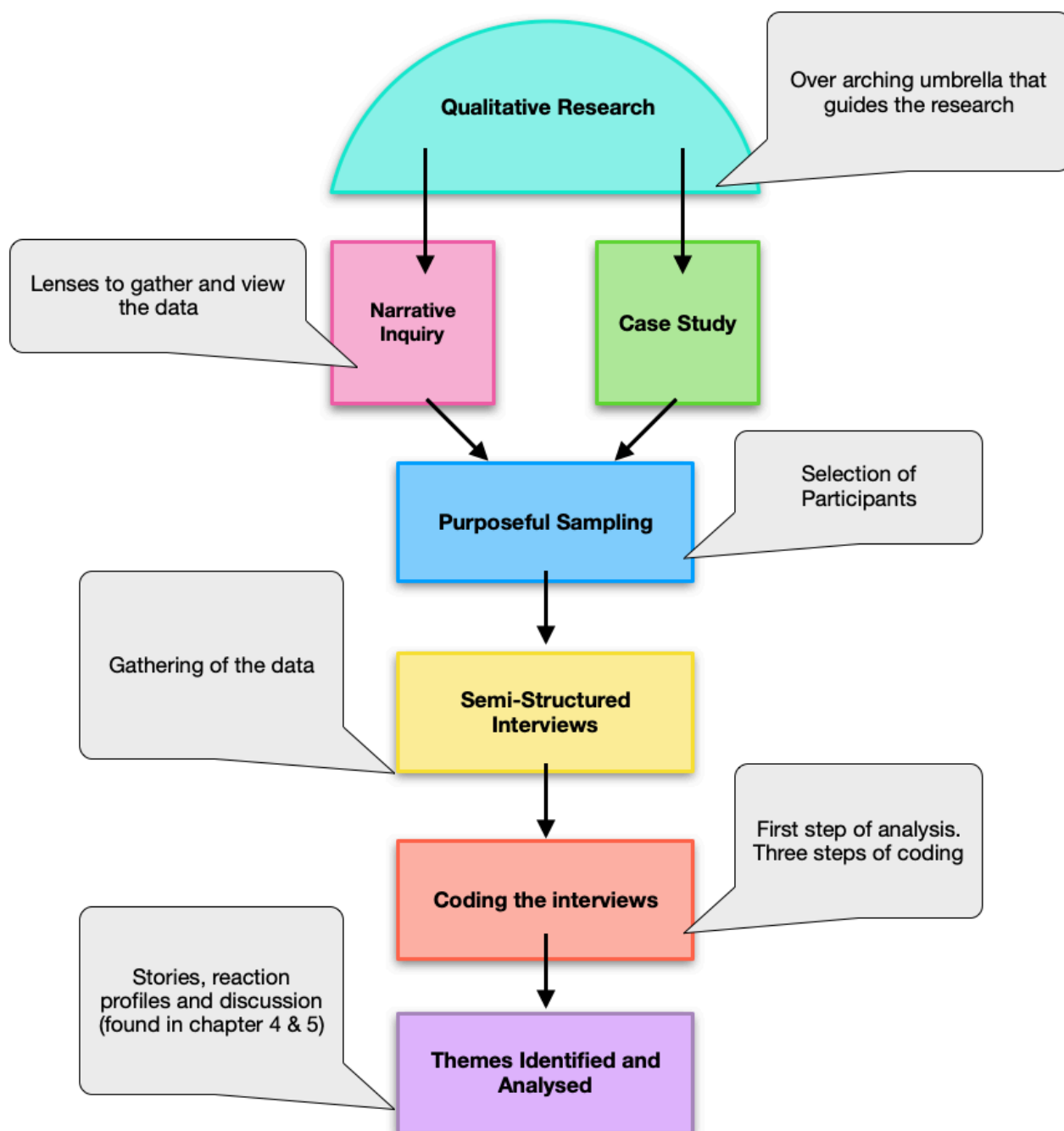


Figure 3.2: Flowchart of methodologies and methods

complex and rich my own emotional response was to the trauma. I felt strongly that if I was to represent my participants' experience through quantitative research, it would be an injustice to their experiences and recovery journey as it only provided a broad brushstroke to their experiences (Barbour, 2014). My own experiences provided a lens through which I viewed the Christchurch Earthquake and potentially, could distort how I interpreted my participants' experiences. My 'reflectivity' (Barbour, 2014, p. 36) about my own assumptions and potential limitations stemmed from my life experiences, education background and

previous research experience earlier in my undergraduate degree. My choice to conduct my research using the qualitative research paradigm is attributed to my natural disposition to this methodology, as I often view the world around me with this ‘mindset’ of stories and experiences from which I can draw conclusions. To offset the influence of my own bias and understandings of the earthquake, I chose methodologies and methods under the qualitative paradigm through which I would view the data provided by the participants that would allow their voice to be present. Under the paradigm of qualitative research, and through the lenses of case study and narrative inquiry, the methods of gathering and analysing data were chosen and conducted. This process can be seen in Figure 3.2, with the paradigm and methodologies filtering into the methods and analysis of data.

Case Study

My bricolage of chosen methodologies included case study (See Figure 3.2). Case studies “provide a unique portrayal of people in a real social situation by means of vivid accounts of event, feelings and perceptions” (Basit, 2010, p.19). Case studies are an accepted research method in social science (Yin, 2014), and capture the complexity of a single case (Stake, 1995). Lichtman (2013) elaborates that case studies may involve a related group of individuals. The commonality in this study was twofold: all participants experienced the same natural disaster, and all participants were senior high school students attending the same school. As my own lived experience is common with those of my participants, I needed to ensure that my own earthquake experiences did not influence how I recorded and processed the material that these individuals entrusted me with (Stake, 1995).

Narrative Inquiry

Since 1990 Narrative inquiry has experienced an increase in its use within educational research and more recently as an emergent methodology in its own right across a broad range of disciplines (Webster and Mertova, 2007). Narrative inquiry is the fundamental mode through which human stories of experience are shared and this provides researchers with a rich and descriptive framework through which they can investigate the lived experience through the eyes of individuals (Clandinin & Connelly, 2000). Webster and Mertova (2007, p.1) describes narrative as “well suited to addressing the complexities and subtleties of human experience in teaching and learning”. Narratives are what link humanity together, creating windows into social and cultural context (Czarniawska, 2004). Narrative Inquiry does not have an apparent start and

end point and there are no perceivable categories on which to focus (Squire, Andrews & Tamboukou, 2008). However, despite these issues, narrative inquiry opens up opportunities to view data in a deeply humanistic manner (Squire et al., 2008) (See Figure 3.2). As a story is carefully told, the complexities of characters, relationships and settings unfold and can reveal growth areas in an educational setting though which improvements can be recommended (Webster & Mertova, 2007). Stories are a reflection of the fact that experiences are a matter of growth and that understandings are continually developed. Memories and understanding are formed spatially, temporally and selectively and comes directly from experience that is social and constitutive in nature, thus providing a way of understanding experience (Clandinin & Connelly, 2000).

Ethical Procedures and Protocols

Approval for this study was granted by the Avondale College of Higher Education Human Research Ethics Committee. Explicit consent was granted by each of the participants involved before interviews were conducted and a pseudonym was assigned to provide anonymity (see Appendix A). All stories were approved by participants prior to analysis.

Purposeful Sampling

For the purpose of this study and due to time constraints, purposeful sampling was utilised to select participants. Purposeful sampling involves the researcher utilising prior knowledge of either the exiting research and/or the research setting, in order to guide the selection of participants (King & Harrocks, 2010). The underlying reasoning for utilising purposeful sampling was to maximise diversity within my sample of participants and to facilitate a comparison between perceptions/accounts of the individuals being studied.

Site and Respondents

Participants were selected for this study according to a strict set of requirements that maximised both similarity and diversity.

These requirements were present in the research question:

What impact did the 2011 Christchurch earthquake have on four senior high school students in one faith-based school?

These requirements included:

1. At least one girl and one boy with a total of *four participants*.

2. Must have been in *years 11-13* at the time of the earthquake, preferably a spread between these year levels.
3. Must have attended the selected faith based school at the time of the earthquake.
4. Must be willing to participate and provide consent (see Appendix A).

With these criteria in mind, six individuals were contacted and of those six individuals, four agreed to participate. Prior to the interview, they were required to sign a consent form which provided them with the opportunity to withdraw from the study at any time, for any reason. Of the four participants, three were female and one was male. Two participants were in Year 11 and two participants were in Year 13 at the time of the earthquake.

Data collection: Interviews

There are many types of interview structures; however, due to the fact that this research topic is sensitive in nature, only one type of interview was suitable (Barbour, 2014). The interviews were conducted in a semi-structured format (Appendix B) and were used to answer all three of the sub-questions for this study. This method of interview has been well recognised as a way to elicit individuals' perspectives and accounts through the process of asking and answering a set of questions (King & Horrocks, 2010). However, these questions are not always asked in the same order and the interviewees are provided with the opportunity to raise additional issues that are important to their experience. Along with this, the interviewer has the ability to add questions to in response to comments made by the current or previous interviewees. This enables the research to be fluid in nature as new thoughts and ideas are presented by the participants, thus upholding the true essence of qualitative research (Minichiello & Kottler, 2009; Barbour, 2014).

With the knowledge of the interview structure in mind, my participants agreed to be interviewed. The interviews took place using Zoom, online conferencing software. The interviews could not be conducted in person due to distance and time. Each interview lasted between 30-50 minutes and was highly dependent on how much the participants wanted to share (see Appendix B & C).

Analysis

When analysing the transcripts of the interviews, a 'towards grounded theory' approach was employed. Kathy Charmaz (2014) defines grounded theory methods, "consisting of systemic, yet flexible guidelines for collecting and analysing qualitative data to construct theories from the data themselves" (p. 1) It is through

this process that the theories are viewed as grounded in the data as everything related back to the data (Charmaz, 2014). The ‘towards grounded theory’ approach was employed for this study as time was limited and the complete process of the grounded theory method would not have allowed it to be completed in the timeframe provided. Thus, elements from this method were employed to ensure that the data had a voice of its own (Charmaz, 2014).

Though this study only contained four perspectives of the 2011 earthquake, this small sample size does not pose an issue within the grounded theory approach. As Glaser (1998) and Stern (1994) highlighted, grounded theory aims to develop conceptual categories, thus data collection is directed to illuminate properties of a category and relationships between categories (Birks & Mills, 2013).

Each of the interviews was transcribed and then following the grounded theory coding practices; they were coded through the initial coding process (see Appendix C). In the initial coding process I created labels for each line of data that categorised and summarised the account of each participant (Star, 2007). This developed a deep relationship with my data and by extension with my participants as I came to understand their experiences at an intimate level (Star, 2007).

Focused coding began as the second major phase of data analysis. This process allowed for codes to appear that were more frequent or held more significant among my initial codes (Charmaz, 2014). My initial codes were collapsed and synthesised into broader codes that attended to larger pieces of data and allowed for themes to emerge. This process was completed for each participant as I coded the initial codes and allowed for focus areas that were quintessential to each narrative to emerge (see Appendix C). These focused codes were then examined for frequency and graphed to provide a clearer picture of their impact on the participants and resulted in the emergence of categories (see Appendix C).

Axial coding, which is the third type of coding that relates categories to sub-categories was used to bring the data back together as a coherent whole (Strauss & Corbin, 1998; Charmaz, 2014). This formed the structure for the earthquake impact profile in chapter 4, *ōrero pono* (honest narrative), and allowed for each of the participants stories to be analysed through the categories and sub-categories that emerged from the data (see Table 3.2). From the Earthquake Impact profiles a framework of the earthquake impacts profile connections emerged (See Figure 5.1). This framework is discussed in chapter five.

Table 3.2: Earthquake impact profile

Earthquake Impact Profile			
Support Network			
Friends & Family	Community	Involvement in service	Belief system
Psychological Reaction			
Resilience +	Worry/anxiety	Self-reliance	Suppression
Comparison to others	Fear	PTSD	Anger
Impact on Education			
No impact	Low Impact	High Impact -	

Conclusion

This chapter described the design process of the research question, the methodologies employed within this study and the methods used to gather and analyse the data. The ethics approval for this study was outlined along with a description of the site and participants. The next chapter shares the results from the interviews in the form of stories of each participant along with a brief analysis through the use of the earthquake impact profile.

Chapter Four: kōrero pono (honest narrative)

Results

“I will get forgotten, but the stories will last... And so we all matter (Green, 2006)”

Chapter Four: kōrero pono (honest narrative), contains four stories, one from each participant. Each of the stories shared in this chapter are upheld with certainty (Clandinin & Connelly, 2000). Within each story is a rich and vivid description of each participant’s experience that matters immensely as it highlights their raw encounter with an earthquake. After each story, an “earthquake impact profile (EIP)” will be provided. The EIP consists of three broad impacts or influences that the participants experienced due to the earthquake. The three areas of influence include:

- support structures;
- psychological reaction; and
- impact on education.

Under each of these impacts are subcategories that portray how each of the participants was specifically impacted. Each of these impacts will be explained and expanded within the EIP to create a clear and descriptive image of how each participant found the experience of the earthquake. Each of the participants has been colour coded for ease of identification (see Table 4.1).

Table 4.1: Participant names and colour codes

Participant	Colour
Isabel	Purple
Amelia	Blue
Daniel	Green
Emma	Pink

Participant One: Isabel's Story

Isabel was at school in an empty hallway when suddenly, the extremely violent earthquake struck. She remembers screaming for help, but there was no one to listen. Her legs started to feel like jelly, so she carefully put down the cup of noodles, right before she was thrown to the ground. The earthquake continued for what felt like hours. It was a very surreal feeling looking around at the moving building as she struggled to get up off the ground. When she managed to get up, she ran to the English room and was greeted with a sight she will never forget. The whole Year 13 class was underneath the tables and somewhat confused about if they should hide or run. All Isabel could do was scream, "Everyone get out!" Everyone ran to the first escape door but it was jammed. One person in the class managed to kick the door open and everyone spilled outside. Isabel remembers by this point that the earthquake had stopped but there was a strange feeling in the air and the ground still felt very unsettled. All Isabel remembers seeing were children from the primary school running around, screaming. She grabbed as many kids as she could and ran to the assembly area. As she was running across the field, an aftershock hit and she vividly remembers the grass looking like water. As all the year levels were sitting in their lines, Isabel remembers feeling anxious and all she could think was that she needed more people around her. She got up and went to look after the primary school children. She sang songs, talked and played games with the children as everyone waited for their parents to pick them up. Isabel couldn't get in contact with her Mum and as parents started to arrive, she began to feel more and more anxious. It started to hit her at this point just how big the earthquake was. Eventually, she managed to get in contact with her grandfather and when he arrived to pick her up, Isabel suddenly burst into tears and ran to hug him. The first thing she said was "Where's mum?"

In the days and weeks that followed, Isabel was terrified to go anywhere without her Mum. She would go to work, the doctors and the shops by her mother's side. Isabel couldn't stand to be alone just in case another earthquake happened. She developed what she discovered years later were PTSD and anxiety. This caused her to not want to go to the toilet or shower without having the door open. She struggled to sleep at night and would wake up with uncontrollable shakes that were later diagnosed as panic attacks. When she returned to school, Isabel was anxious. She was physically shaking as she walked into school. During one of her classes, Isabel messaged her Mum, asking to be picked up. Her Mum called the school and scheduled time with a staff member. The staff member was able to calm her down and provide some advice. However, as time moved on, Isabel recognised that she needed more help than others around her, especially if she was going to improve her mental health. There was only one staff member whom she felt comfortable talking with,

however, they were not a qualified counsellor. Isabel reached the point where she felt bad for always talking to the same person regularly and felt as if she was annoying. Isabel felt bad because people were judging her for requiring more emotional support after the earthquake. She came up with fake responses to questions like "how are you going?" and never felt comfortable sharing with people how she just needed a hug, couldn't eat or sleep and was just terrified. Reflecting on this time, Isabel realised that she needed to see a qualified counsellor, but at the time she didn't have the money or the foresight to see one when she was in high school. Before the earthquake, Isabel struggled academically. She worked hard and completed her tasks but would never see any improvement. After the earthquake, she struggled to finish everything required for her schooling year. She was pressed for time and had to put her mental health on hold to focus on her academic work. Isabel never finished the requirements for school the year of the earthquake and as a result, never graduated from high school. She felt robbed of what should have been the best years of her life. She had to change her university plans and as a result, felt stressed and overwhelmed. The teachers tried their best to help, however, she felt that the staff members were also feeling the effects of the earthquake. Spiritually, Isabel struggled after the earthquake. She struggled to have the outlook of "the Lord is on my side." Her mum would text her Bible verses and the chaplain would offer pastoral support but it wasn't enough. When she began to venture into the city to help clean up, she saw the effects of the earthquake for the first time and it hit her how severe the damage was. Over time she noticed how artworks were replacing the destruction and she started to see how beautiful and resilient the community was. She saw the brokenness of the city rebuilt and how God was shining through all of the trauma. As a result, she started to put her trust in God again. Isabel's mum was a single mother which meant people helped them out where they could by offering rides home from school. They also received messages from around the world sending love and prayers.

Earthquake Impact Profile

Table 4.2: Earthquake impact profile (EIP) for Isabel

Isabel's Earthquake Impact Profile			
Support Network			
Friends & Family	Community	Involvement in service	Belief system
Psychological Reaction			
Resilience +	Worry/anxiety	Self-reliance	Suppression
Comparison to others	Fear	PTSD	Anger
Impact on Education			
No impact	Low Impact	High Impact -	

(higher frequencies/ importance highlighted more intensely)

Support structures:

Isabel found support through her single mother, school staff members and her friends. Isabel acknowledged in her story that she was unable to leave her mother's side post-earthquake and needed this constant support in her life. She also had specific staff members at the school she attended who provided her with support by consoling her fears and worries. Isabel's belief system and acts of service were less frequent occurrences in her story; however, they were still important support structures for her. She received Bible verses from her mother and mirrored her journey of growth in spirituality to the re-growth of the city of Christchurch as she helped in the restoration of the community through service.

Psychological reaction

Isabel identified in her story that she was heavily and negatively impacted psychologically by the earthquake. She was diagnosed with PTSD, anxiety, depression and experienced high levels of fear and worry about being alone and for her family's safety. This impacted every facet of her life. However, as time continued, post-earthquake, Isabel saw a psychologist and counsellors and saw an improvement in her mental health. She was also able to acknowledge that healing was a journey that would take time. This came through in many aspects of her life as she showed resilience in the face of trauma which is a healing journey she is still on today. On a lesser scale, Isabel did experience some flashbacks which were a result of

suppressing what occurred in the past. She occasionally compared herself to others which allowed her to identify that she needed more help when dealing with the trauma of the earthquake.

Impact on education

As a result of her psychological reaction, Isabel struggled with her academic work and as a consequence, her education was impacted highly in a negative way. She was unable to pass her school work which impacted her education prospects for the future.

Participant Two: Amelia's Story

Amelia was at school, eating lunch with her friends when everything started shaking. Everyone climbed under the desks without hesitation. In the past, people didn't take earthquakes seriously because they had never done any damage and weren't as big. This one was shaky and the walls looked like jelly. The earthquake felt like it went on for ages and time blended together. Everyone seemed to think at the same time, "We need to get out of here," which resulted in everyone running to the outside door. The door wouldn't open which caused Amelia to feel frantic and afraid. When it finally opened, everyone ran outside onto the field. Everyone around Amelia remained calm, some teachers seemed shocked but there was nothing significant that stuck out in her mind. Returning to school seemed normal and the school culture was to ignore the problem. She remembers the doors being replaced with quick release doors. For Amelia, the culture of not talking was helpful because she didn't want to talk to others about how she was feeling. Amelia didn't want to feel coddled and being allowed to process her emotions in her own time worked for her. Upon reflection, Amelia wishes that the school spoke openly about the fact that people died because it felt random for who died and who survived and it just seemed unfair that God would take away the life of a baby.

The earthquake has impacted her ability to go into public spaces. The thought of not being able to escape does cross her mind, however, she has never let this mentality stop her going places. Amelia occasionally feels a small amount of anxiety when entering places that could pose a danger in an earthquake. Immediately after the earthquake Amelia felt angry and frustrated that there was no power or water. She was forced to drink only sparkling water because that's all she had access to and since then she has never been able to bring herself to drink sparkling water. Due to her frustration, Amelia's family sent her away to another city to stay with friends. This allowed her to relax and regroup before going back to school.

Academically Amelia didn't see any effects. Her academic results were excellent before the earthquake and she continued this level of achievement post-earthquake. She did find the derived grade useful in removing any pressure during the final exams. The place where she struggled most was with her spirituality. She didn't feel supported spiritually by the school she attended, mostly because there were no outside counsellors. Amelia didn't trust some staff members because she always had the impression that they would tell others confidential information. It ruined her trust in adults and she no longer saw them as individuals who could 'fix' everything and keep confidentiality. As a result, there was no one that she could talk to. Amelia does

wish that someone external was brought in to conduct counselling sessions with the high school students, but at the time was skeptical of whether talking to someone would help because she couldn't see how talking to someone could change how she felt. She wouldn't have minded having small group discussions with people from various grade levels. She felt that if their stories had been shared and emotions discussed, it could have helped her process her feelings. Even if she didn't speak, just listening to others would have helped.

After the earthquake, Amelia's family received support from their neighborhood. This wasn't long lasting because her family is introverted and not the type of people to lean on others when in need. They are a family who faces adversity with the attitude of "just ignore it" and as a result, her family never discussed the earthquake.

Earthquake Impact Profile

Table 4.3: Earthquake impact profile (EIP) for Amelia

Amelia's Earthquake Impact Profile			
Support Network			
Friends & Family	Community	Involvement in service	Belief system
Psychological Reaction			
Resilience +	Worry/anxiety	Self-reliance	Suppression
Comparison to others	Fear	PTSD	Anger
Impact on Education			
No impact	Low Impact	High Impact -	

Where they found support

Amelia found little support through her family and friends, as she was largely self-reliant in her reaction to the earthquake. Her family had a strong culture of "just get on with it". She did find herself questioning God and His role in why the earthquake occurred and struggled with the concept that God would let babies die. Amelia relied more strongly on the wider community. She looked to them for how they responded and this

heavily influenced her reaction. She noted that staff members at school were 'fine' and 'acting normal' and this encouraged Amelia to ignore her feelings towards the earthquake.

Psychological reaction

Amelia's psychological reaction was very strongly rooted in self-reliance and suppressing her memories of the event. She didn't see the point in talking to people about how she felt. Amelia also experienced worry, anxiety and low levels of fear in her everyday life and this affected her when entering tall building and when in large crowds of people. Amelia compared herself to others who were reacting in highly emotional ways to the earthquake and rationalised to herself that she didn't need as much help as others. She did experience moderate levels of anger towards the earthquake for disrupting her life and removing her everyday necessities. This anger also came out in her belief system as she struggled with God over the cause of the trauma her in life.

Impact on education

Amelia experienced no negative effects on her education. Her choice to not dwell on her emotions and ignore what was happening allowed her to continue on with her academic work where she received high levels of achievement.

Participant Three: Daniel's Story

For Daniel the time of the earthquake sticks vividly in his mind. Everyone was chatting and eating lunch. Suddenly the whole place started to shake, very strongly. He remembers that everyone knew what to do because of their experience in the September earthquake. However, this one was different. The panels in the ceiling started to fall; people were screaming and jumping under desks, one person was yelling, "Get out, get out, get out!" There was panic everywhere. One of Daniel's friends tried to escape out the fire exit door but it was jammed. Eventually, it opened and everyone ran out of the building. As Daniel was walking to the assembly area, an aftershock hit. It was the first time that he was outside for an earthquake. It was a surreal feeling seeing the powerlines move like a skipping rope. When they reached the assembly area everyone lined up in their year levels and was marked off the roll. One of the high school teachers had brought his laptop out with him. This served as a much-needed distraction for the senior boys. Because Daniel was a leader within the school, he was asked to go over to the primary kids to play games with them and distract them. Upon reflection, Daniel found that helping kids allowed him to deal with the trauma and experience of the earthquake by providing a distraction that focused his energy. During this time Daniel started to worry about his family's safety. Daniel couldn't contact his dad and continuously worried about his dad's safety. Eventually, his dad arrived to pick him up. The first thing Daniel said was, "How bad can it be?" and his dad replied, "It's really bad. You know a lot of people are dead." Daniel couldn't believe it. Everything felt so surreal. Bad things only happened in other cities and to other people. At school, he had felt isolated as he couldn't contact the outside world but when his dad arrived, it hit him just how big the earthquake was.

In the weeks after the earthquake, time blurred for Daniel. He spent time with his family, helped clean up the community through various service projects and played PlayStation. Daniel could not remember much of when school restarted after the earthquake. He remembers being given the derived grade which helped relieve some stress and pressure. However, the derived grade did make him stressed in the trial exams. He was tired mentally but was never worried about another earthquake happening. After he graduated school from Daniel would experience anxiety through environmental triggers that mimicked an earthquake. He would experience a build-up of anxiety, a feeling of not having control and adrenalin beginning to pump through his body. Eventually, he would realise that it wasn't a big deal. These feelings still come back today and can be a cause for embarrassment for Daniel.

Spiritually, Daniel experienced growth. He understood that earthquakes were just a result of the world and he was able to understand and have empathy for those around the world who were in similar situations. This strengthened his relationship with God as Daniel knew he was protected because ultimately God is in control. As the years passed, Daniel has shared his story with those around him to teach them about trusting in God and having faith in His protection.

Daniel remembers the fact that he didn't want to talk to anyone around him about his fears and anxieties. He also compared himself to people around him; he saw others struggling more than himself and questioned whether he needed support when others needed it more. In the months after the earthquake, his family experienced a lot of stress.

Earthquake Impact Profile

Table 4.4: Earthquake impact profile (EIP) for Daniel

Daniel's Earthquake Impact Profile			
Support Network			
Friends & Family	Community	Involvement in service	Belief system
Psychological Reaction			
Resilience +	Worry/anxiety	Self-reliance	Suppression
Comparison to others	Fear	PTSD	Anger
Impact on Education			
No impact	Low Impact	High Impact -	

(higher frequencies/ importance highlighted more intensely)

Where they found support

Daniel's support network was similar to that of Isabel's network; however, Daniel had his mother and father who provided him with support through conversations. Daniel felt safe and secure when he was near his family. Daniel also looked to members of staff and spiritual leaders at the school he attended. These staff members encouraged him to be involved in service. Daniel also looked to his belief system for comfort and support and saw growth in his understanding of the world around him.

Psychological reaction

Daniel's psychological reaction was mostly suppressed. When answering questions in the interview, he often struggled to recall events that occurred after the earthquake. Daniel was only able to clearly recall events that happened from the point he started university the following year. Daniel also experienced worry and anxiety in the daily activities he undertook and to a lesser extent fear. Environmental triggers often caused an increase in his anxiety. Daniel also compared himself to other people around him. This reinforced self-reliance when dealing with his emotional response and reduced his likelihood of talking to a counsellor because others around him needed help more.

Impact on education

Daniel experienced a low impact on his education. This is attributed to his high reliance on the derived grade that was offered to students who were in the earthquake. The derived grade allowed Daniel to receive the highest grade that came from either his trial or final exam. This meant he worked hard for his trial exam and didn't study for his final. Daniel felt like he didn't achieve the best he could have due to this.

Participant Four: Emma's Story

Emma was at school at the time of the earthquake, in a classroom eating lunch with her friends. Without notice the earthquake hit. From her experience in the September 2010 earthquake, she knew what was happening and knew what to do. Without hesitation, she got under a desk; however, the nature of this earthquake was different from the September earthquake. This one was more violent and caused the desks to bang together loudly. No one wanted to stay in the classroom, which caused everyone to rush to the escape door that led outside but it wouldn't open. Reflecting on the day, it was pretty scary thinking that maybe she wouldn't be able to get out if anything had happened to the school building. The door finally opened and everyone left the school building and made their way over to the assembly area. It was her friends' support that helped her the most. She met up with friends she was separated from during the earthquake and hugged them, laughing and providing support to each other. Emma was not worried about the earthquake and its effects. She knew the other ones in the past were not serious and had not caused much damage and assumed that this earthquake was no different. Her mum called her from another city because she had felt the earthquake and was anxious for her daughter's safety. The phone call was kept short because another aftershock hit and phone lines were busy. Emma was frustrated she couldn't reassure her mum that she was OK because she knew her mum was scared and anxious. Emma's dad was close by at the time of the earthquake and her house was around the corner. This provided comfort and reassurance that things would be OK. As time went on, Emma was not allowed to go home and had to return to Science class which was the worst thing imaginable. During this time another aftershock happened and school was cancelled and students were allowed to go home. Many students were stuck at school as their parents hadn't come to get them. Emma decided to go to her house and grab a bunch of snacks for the kids to help comfort them and provide support.

It was when she returned home that Emma realised how bad the earthquake was. There was a huge fire, a couple of buildings had fallen down and many other buildings were damaged. Hearing about this was shocking to Emma as the city had been through other earthquakes before and she didn't feel unsafe until she saw how destructive this earthquake was. In the weeks after the earthquake, Emma was able to observe just how much the city of Christchurch had changed. There were whole suburbs that were removed, never to be rebuilt. Despite the sense of loss and destruction, Emma was still able to see the silver lining in her life. Emma admired the way her dad handled the earthquake and recognised that her mum had anxiety in the months and years after the earthquake that affected her quite badly, however, her mum still supported Emma

during this time. With the support from her family, the ability to serve others and spend time with friends she saw how the earthquake helped develop strong bonds with those around her and those bonds have stayed with her.

When she returned to school, Emma doesn't remember much. Emma does remember feeling rushed and that the content was taught in a condensed time. In Emma's opinion, she was not affected academically and was able to graduate from school with no academic consequences. Over time, Emma began to lose her connection to the church in which she was involved. This was because the people who were originally there left which resulted in a loss of connection to her church community. Despite this Emma still has a connection with God and this was strongly developed through the service to others in the months after the earthquake. It was a wholesome experience for Emma and as a result, her service allowed her to feel more human and developed her identity. Emma noted that cleaning the city allowed her to see what it was like in its mess and destruction. As time went on, she could see its restoration and compare it to the past. This affected her life in a positive way because she could see the city go through something terrible and emerge beautiful years later. This made the whole situation less upsetting and more hopeful. Emma found it encouraging to see people working together to regrow the city.

Earthquake Impact Profile

Table 4.5: Earthquake impact profile (EIP) for Emma

Emma's Earthquake Impact Profile			
Support Network			
Friends & Family	Community	Involvement in service	Belief system
Psychological Reaction			
Resilience +	Worry/anxiety	Self-reliance +	Suppression +
Comparison to others +	Fear	PTSD	Anger
Impact on Education			
No impact	Low Impact	High Impact -	

(higher frequencies/ importance highlighted more intensely)

Support network

Emma found that her connection to her friends and family was strengthened in a positive manner post-earthquake. She relied on her friends for support and her family provided comfort and security. To a lesser extent she received support from the wider community. Post-earthquake she began to see a decline in her connection to religion, which was attributed to the spiritual members in her community moving away. Emma still had a connection to God and could see him in the restoration of the city. Aside from friends and family, Emma connected into service and found that her involvement in the cleanup of the city greatly impacted her. She found it an experience that allowed her to experience growth and resilience and consequently this positively impacted her psychological reaction.

Psychological reaction

Emma experienced resilience post-earthquake and could see the way that the earthquake impacted her in positive ways. Unlike all the other participants, Emma's self-reliance, suppression and comparison to others were positive reactions that allowed her to show resilience. The only negative reaction Emma experienced was through anger and that only affected her minimally.

Impact on education

Emma experienced no impact on her education. She did have difficulty remembering what she did for the rest of the school year in 2011 as most of this was a blur. However, she believes that her academic achievement was not impacted.

Conclusion

Through each of the stories, character profiles and graphs the main themes and how these themes affected each participant can be seen. In the next chapter, tūhuratanga (discovery, revelation), each of the participant's main reactions to the earthquake will be compared with the literature and used to answer the research questions.

Chapter Five: tūhuratanga (discovery, revelation)

Discussion

Introduction

The previous chapter presented the personal earthquake narratives of each participant. Following each narrative, an earthquake impact profile was established along with a description of how each student was affected post-earthquake. In this chapter, tūhuratanga (discovery, revelation), the earthquake impact profiles (EIPs) for each of the participants will be further discussed and compared to the research question and literature review.

Connections between the main categories in the EIPs can be observed. It was found across all four participants that their support network influenced and impacted their psychological reaction which then affected their education (figure 5.1). This concept will be reflected on when answering each of the sub questions below:

1. What support did the students access post-disaster and how did this impact them?
2. What was the self-identified emotional impact on the students?
3. What was the self-identified academic impact on the students?



Figure 5.1: Framework of the earthquake impacts profile connections

Question One: Support Networks

What support did the students access post-disaster and how did this impact them?

The participant narratives identified that all four students relied on support networks in the days and weeks following the earthquake. Each counted on family, friends and community to help them cope in the early post-earthquake days when their lives were totally disrupted, and into the future as they put their lives back together again. Table 5.1 shows the distribution of support networks and their impact on the participants.

Table 5.1: Distribution of support networks for all participants

Support Network	Isabel	Amelia	Daniel	Emma
Friends and Family				
Community				
Involvement in service				
Belief System				

(higher frequencies/ importance highlighted more intensely)

The finding that friends, family and community offer positive support for adolescents post-earthquake supports the position of Long and Wong (2012), along with Terranova et al. (2009), that social support is the most important factor in mitigating PTSD. The support of family was crucial to the participants and agrees with Silwal et al. (2018) that parental education makes a difference to how children deal with trauma. In this study, one of the participants, Isabel, had just one support person; her mother. As her story and three others were tracked, it became apparent that a larger familial network was an advantage in this situation. The belief system of each of the participants influenced their psychological reaction to the earthquake. The belief system for the majority of the participants acted as a source of resilience, strength and provided comfort and answers to why the earthquake happened. This supports the conclusion of Benson et al. (2015) and Sullivan and Wong (2011) on the importance of belief systems post-trauma in providing comfort and community.

One support network that three of the four participants connected into was involvement in service. This network provided a source of distraction, immediately after the earthquake and in the weeks and months after the earthquake. For some of the participants playing with primary school children immediately after the

earthquake provided comfort, distraction and a place to focus their emotional energy. Two of the participants were actively involved in cleaning up the city of Christchurch. One participant, Emma, found that being involved in service developed community connections, self-identity and spirituality and provided comfort in seeing the city restored. The concept of serving others after adolescents have experienced trauma was largely neglected within the literature and was only identified by one researcher (Leek Openshaw, 2011) as a helpful post-trauma strategy. From this study, a strong positive connection between involvement in service and psychological reactions was observed.

Question Two: Psychological Reaction

What was the perceived emotional impact on the students?

Leading on directly from the support networks is the perceived emotional impact on the four students. Figure 5.1 demonstrates the process by which the quality and diversity of support networks impacts on the psychological reactions, both short term and long term that these participants experienced. Table 5.2 shows the distribution and intensity of self-identified psychological impacts on the four participants.

Table 5.2: Distribution of psychological reactions of all participants

Psychological reaction	Isabel	Amelia	Daniel	Emma
Resilience +				
Worry/Anxiety				
Self-reliance				
Fear				
Anger				
Comparison to others				
PTSD				
Suppression				

(higher frequencies/ importance highlighted more intensely)

Isabel was the only participant that was formally diagnosed with PTSD and anxiety. Her support structures influenced her psychological reaction. This supports the position of Powell & Thompson (2016) and Yagi et al. (2016) whom both agree that smaller social support networks can contribute to a higher likelihood of

PTSD. There were high levels of worry, anxiety, fear and suppression that affected the participants both short and long term. This is a finding supported by Neria et al. (2008) and Arnberg et al. (2013) whom both identified that victims of natural disasters could experience impacts for six or more years after the event.

All participants showed resilience in some aspects of their lives. They attributed this to their support networks that provided social belonging and emotional support post-earthquake, a finding which in the literature (Fergusson et al., 2015). Self-reliance also provided a foundation for resilience to be fostered in some participants. Self-reliance is a personality factor that can play a major role in the development of resilience as identified by Scheier & Carver (1985).

One aspect of the participant's psychological reactions profile that was not present within the literature was their tendency to compare themselves to their peers. All participants in this study at some point post-earthquake, compared their psychological reaction to their peers and judged their need for help on the perceived emotional response they observed in their peers. Adolescents are in a developmental period of their lives and there is literature that supports how children and adolescents observe the emotional response of others such as Brown (2011) and Dean (2011). However, there were no studies that formed a link between adolescents comparing themselves to their peers and the potential impacts this had on their psychological reactions after an earthquake or another natural disaster.

All participants identified that their support network should have included a professional counsellor or psychologist that had no affiliation with the school they attended. They all felt that this would have helped lessen the intensity and duration of their negative psychological reactions and allowed them to share their stories and receive professional advice on how to move forward after the earthquake.

Question Three: Impact on Education

What was the perceived academic impact on the students?

Continuing with the flow through effect of Figure 5.1, the severity of the psychological reaction to the earthquake impacted the participants' continuing education in different ways, with differing levels of intensity and with different outcomes. Table 5.3 indicates the varying impact on each individual's academic achievement as perceived by them.

Table 5.3: Distribution of academic impact on all participants

Academic Impact	Isabel	Amelia	Daniel	Emma
No Impact				
Low Impact				
High Impact				

(higher frequencies/ importance highlighted more intensely)

The only participant, who was diagnosed with PTSD, was also severely impacted academically, a finding consistent with Bonanno et al. (2010). All other participants in this study experienced no to low impacts that only affected their academic outcomes for a short amount of time. This reflected their wider support networks which helped alleviate a strong negative psychological reaction in all three of these participants.

Conclusion

This chapter provided a discussion on the earthquake impact profiles for each participant and related these impacts back to the literature. A connection was identified between the three overarching domains of support networks, psychological reactions and academic impact (Figure 5.1). In the next chapter, a summary of the findings, recommendations and suggestions for future research will be presented.

Chapter 6: whakatepe (to finish off, conclude)

Conclusion

Introduction

This study investigated the impacts of the Christchurch 2011 earthquake on four senior students at one faith based school. An emergent qualitative research paradigm resulted in three connected sets of findings. Previous chapters provided a rationale for the study, positioned the study in the literature, described the research methods, analysed the data and discussed the findings. This chapter will summarise the findings of this study, investigate recommendations, provide suggestions for future studies and finally conclude this study.

Response to the research questions

This study investigated the impacts of the 2011 earthquake on four senior students at one faith based school. The findings within this study responded to the following question:

What impact did the 2011 Christchurch earthquake have on four senior high school students in one faith-based school?

The following three sub questions were used to guide the research:

1. What support did the students connect with post-disaster and how did this impact them?

Each of the participants connected with at least three different support networks which included: friends and family, community, involvement in service, and belief systems. These support networks served to ground the students in reality and helped them cope with the emotional stress they experienced.

2. What was the perceived emotional impact on the students?

Each of the participants experienced a wide range of psychological reactions which ranged from negative psychological reactions of PTSD, fear and anxiety through to positive psychological reactions which included resilience. Commonalities and differences were noted. The psychological reactions influenced their academic outcomes.

3. What was the perceived academic impact on the students?

A varied impact on academic achievement was found, ranging from no impact to low impact or high impact. There were connections identified between the psychological reactions and the participant's academic achievement. Negative psychological reactions with a limited support network resulted in a high negative impact on education and minimal or a positive psychological reaction resulted in low to no academic impact.

The connections between each of the questions and impacts on each of the participants can be seen in Figure 5.1.

Recommendations

Three major recommendations for schools affected by a natural disaster such as an earthquake emerged from this study:

4. that schools offer students support networks to complement those offered by families and friends. In faith-based schools, these could include opportunities to explore the relationship between their faith and their situation, and occasions for involvement in age appropriate community service;
5. that schools facilitate the availability of an independent psychologist or counsellor for all students post-earthquake. This will allow for all students to have equal access to a professional who could assist with each student's psychological reaction while also broadening their support network; and
6. that schools provide time to share stories between peers and staff members. This will allow students to discuss what has happened and receive social and emotional support from teachers and their peers.

Suggestions for further research

From the findings of this study there are some areas that emerged for further research:

1. This study focused on a small number of students from a faith based school. A study that increases the sample size and/or focuses on other natural disasters may generate results that can be generalised for adolescents and across natural disasters.
2. Spirituality formed a small aspect of this study and there were no distinct measurements for spiritual growth implemented. Future studies could investigate spirituality post-disaster and how this relates to resilience, growth and the wider community.
3. This study identified that service to others in the time after the earthquake positivity impacted participants. Future studies could explore the role that adolescent involvement in service activities post-disaster plays in mitigating against adverse psychological reactions.
4. Adolescents within this study compared their psychological reactions to each other which affected their decision to see a counsellor. This was not evident within the literature and future studies could be conducted to investigate how adolescents are impacted when they compare themselves to their peers post-trauma.

Limitations

This research was limited by the small sample size. There were only four participants who were high school students at the time of the 2011 earthquake. This limits the capacity to generalize findings to other schools, natural disasters or individual responses of other adolescents.

Additionally, as the researcher, I had a personal connection to the earthquake. I was attending a high school in Christchurch at the time of the earthquake. My experience of the earthquake could have resulted in my own voice competing with the voice of my participants. However, each participant was given the opportunity to provide feedback on their story and make changes they felt necessary. This ensured the story was true to their memories. This limited my voice in their story.

Relevance

Despite identified limitations, this research provides valuable information regarding the impact on four senior high school students as a result of the 2011 Christchurch earthquake. School administrators, parents, educators and spiritual leaders could be informed of helpful practices and the impact of support networks on psychological reactions and ultimately on academic achievement. These findings may also provide educators with an understanding of how their students react to trauma and the factors that influence their reactions.

Conclusion

This study has shown the impacts that the February 22, 2011 Christchurch earthquake had on four senior high school students at one faith based school. The quality of social and emotional support that the participants received influenced the severity of their psychological reactions which had a flow on effect on their education. This study also establishes that service to others can positively impact adolescents affected by an earthquake. This has not yet been discussed within disaster research. Furthermore, adolescents within this study also compared themselves to their peers which influenced their likelihood of receiving psychological assistance post-earthquake. The concept of comparison to others and its influence on teens suffering from a traumatic experience has not been investigated within previous literature.

Each person who experiences trauma has an important story to share which provides insights into their unique reaction and can provide direction in the future for how educators, school leaders, parents and spiritual leaders can provide support. The participants in this study valued a quality support network and the

opportunity to share and listen to each other's stories. Through this shared traumatic experience strong bonds were created between the individuals involved. This study concludes that adolescents in their senior years of school may benefit from varied social support networks to help mitigate negative psychological reactions which may have an adverse impact on short and long term academic achievement.

Personal Reflection

In a matter of ten seconds, a life can be changed, however, as the participants in my study shared with me, from the destruction and chaos can emerge something truly beautiful. As my personal journey with this study comes to an end, I reflect on my own experience, reactions, support network and its effect on my own education. There is one quote from my favourite poets, Emily Dickinson (1970, p. 116), that comes to mind that I feel truly describes how I feel seven years later about my experience and the city of Christchurch;

“Hope” is the thing with feathers -
That perches in the soul -
And sings the tune without the words –
And never stops - at all-

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5)*. Washington, DC: American Psychiatric.
- Arnberg, F. K., Johannesson, K. B., & Michel, P. O. (2013). Prevalence and duration of PTSD in survivors 6 years after a natural disaster. *Journal of Anxiety Disorders*, 27(3), 347-352.
- Barbour, R. (2014). *Introducing qualitative research: A student's guide* (2nd ed.). London, England: Sage.
- Barrer, P. (2012). "Kia Kaha Christchurch!": Strengthening Identity in New Zealand. *Asian and African Studies*, 21(2), 240-255.
- Bartels, S. A., & VanRooyen, M. J. (2012). Medical complications associated with earthquakes. *The Lancet*, 379(9817), 748-757.
- Baytiyeh, H. (2017). Why school resilience should be critical for the post-earthquake recovery of communities in divided societies. *Education and Urban Society*. doi:0013124517747035.
- Basit, T. N. (2010). *Conducting research in educational contexts*. London, England: Continuum.
- Bateman, A., & Danby, S. (2013). Recovering from the earthquake: Early childhood teachers and children collaboratively telling stories about their experiences. *Disaster Prevention and Management*, 22(5), 467-479.
- Benson, P. W., Furman, L. D., Canda, E. R., Moss, B., & Danbolt, T. (2015). Spiritually sensitive social work with victims of natural disasters and terrorism. *British Journal of Social Work*, 46(5), 1372-1393.
- Berger, R., Abu-Raiya, H., & Benatov, J. (2016). Reducing primary and secondary traumatic stress symptoms among educators by training them to deliver a resiliency program (ERASE-Stress) following the Christchurch earthquake in New Zealand. *American Journal of Orthopsychiatry*, 86(2), 236.
- Berno, T. (2017). Social enterprise, sustainability and community in post-earthquake Christchurch: Exploring the role of local food systems in building resilience. *Journal of Enterprising Communities: People and Places in the Global Economy*, 11(1), 149-165.
- Bernstein, M., & Pfefferbaum, B. (2018). Posttraumatic growth as a response to natural disasters in children and adolescents. *Current Psychiatry Reports*, 20(5), 37.
- Birks, M., & Mills, J. (2013). *Grounded theory: A practical guide*. Glasgow, Scotland: Sage.
- Blanc, J., Rahill, G. J., Laconi, S., & Mouchenik, Y. (2016). Religious beliefs, PTSD, depression and resilience in survivors of the 2010 Haiti earthquake. *Journal of Affective Disorders*, 190 (1), 697-703.
- Bonanno, G. A., Brewin, C. R., Kaniasty, K., & Greca, A. M. L. (2010). Weighing the costs of disaster: Consequences, risks, and resilience in individuals, families, and communities. *Psychological Science in the Public Interest*, 11(1), 1-49.
- Brown, R. (2011). Principles guiding practice and responses to recent community disasters in New Zealand. *New Zealand Journal of Psychology*, 40(4), 86.
- Brown, R. C., Witt, A., Fegert, J. M., Keller, F., Rassenhofer, M., & Plener, P. L. (2017). Psychosocial interventions for children and adolescents after man-made and natural disasters: a meta-analysis and systematic review. *Psychological Medicine*, 47(11), 1893-1905.

- Calhoun, L. G., & Tedeschi, R. G. (2014). The foundations of posttraumatic growth: An expanded framework. In *Handbook of posttraumatic growth* (pp. 17-37). New York, NY: Psychology Press.
- Carr, V. J., Lewin, T. J., Webster, R. A., & Kenardy, J. A. (1997). A synthesis of the findings from the quake impact study: A two-year investigation of the psychosocial sequelae of the 1989 Newcastle earthquake. *Social Psychiatry and Psychiatric Epidemiology*, 32(3), 123-136.
- Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage.
- Clandinin, J., & Roseik, J. (2007). Mapping a landscape of narrative inquiry: Borderland spaces and tensions. In J. Clandinin (Ed.), *Handbook of narrative inquiry: Mapping a methodology* (pp.35-75). Thousand Oaks, CA: Sage.
- Clandinin, D. J. & Connelly, F. M. (2000). *Narrative Inquiry: Experience and story in qualitative research*. San Francisco, CA: Jossey-Bass.
- Cryder, C. H., Kilmer, R. P., Tedeschi, R. G., & Calhoun, L. G. (2006). An exploratory study of posttraumatic growth in children following a natural disaster. *American Journal of Orthopsychiatry*, 76(1), 65-69.
- Codreanu, T. A., Celenza, A., & Jacobs, I. (2014). Does disaster education of teenagers translate into better survival knowledge, knowledge of skills, and adaptive behavioral change? A systematic literature review. *Prehospital and Disaster Medicine*, 29(6), 629-642.
- Czarniawska, B. (2004). *Narratives in social science research*. London, England: Sage.
- Dean, S. (2011). People, places and shifting paradigms-when 'South Island' stoicism isn't enough. *New Zealand Journal of Psychology*, 40(4), 83.
- Dickinson, E. (1970). Poem 254. In T. H. Johnson, (Ed.), *The complete poems of Emily Dickinson* (p.116). London, England: Faber and Faber.
- Du Plessis, R., Sutherland, J., Gordon, L., & Gibson, H. (2015). 'The confidence to know I can survive': resilience and recovery in post-quake Christchurch. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 10(2), 153-165.
- Dyregrov, A., Yule, W., & Olff, M. (2018). Children and natural disasters. *European Journal of Psychotraumatology*. doi:20008198.2018.1500823
- Education Review Office. (2013). *Stories of resilience and innovation in schools and early childhood services: Canterbury earthquakes: 2010–2012*. Wellington, New Zealand: New Zealand Government.
- Falcone, R. E., & Detty, A. (2015). Natural disasters: Hospital management. *Emergency Medicine Reports*, 36(23).
- Fergusson, D. M., Boden, J. M., Horwood, L. J., & Mulder, R. T. (2015). Perceptions of distress and positive consequences following exposure to a major disaster amongst a well-studied cohort. *Australian & New Zealand Journal of Psychiatry*, 49(4), 351-359.
- Fletcher, J., & Nicholas, K. (2016). What can school principals do to support students and their learning during and after natural disasters? *Educational Review*, 68(3), 358-374.
- Flick, U. (2008). *Designing qualitative research*. London, England: Sage.
- Flick, U. (2014). *An introduction to qualitative research*. London, England: Sage.

- Flores, E. C., Carnero, A. M., & Bayer, A. M. (2014). Social capital and chronic post-traumatic stress disorder among survivors of the 2007 earthquake in Pisco, Peru. *Social Science & Medicine*, 101, 9-17.
- Furman, L. D., Benson, P. W., Moss, B., Danbolt, T., Vetvik, E., & Canda, E. (2016). Reflections on collective trauma, faith, and service delivery to victims of terrorism and natural disaster: Insights from six national studies. *Social Work and Christianity*, 43(1), 74.
- Gawith, L. (2011). How communities in Christchurch have been coping with their earthquake. *New Zealand Journal of Psychology (Online)*, 40(4), 121.
- Gibbs, L., Mutch, C., O'Connor, P., & MacDougall, C. (2013). Research with, by, for and about children: Lessons from disaster contexts. *Global Studies of Childhood*, 3(2), 129-141.
- Glaser, B. G. (1998). *Doing grounded theory: Issues and discussions*. Mill Valley, CA: Sociology Press.
- Greaves, L. M., Milojev, P., Huang, Y., Stronge, S., Osborne, D., Bulbulia, J., ... Sibley, C. G. (2015). Regional differences in the psychological recovery of Christchurch residents following the 2010/2011 earthquakes: a longitudinal study. *PLoS One*, 10(5), e0124278.
- Green, J. (2006). *An abundance of Katherines*. New York, NY: Dutton Books.
- Harper, J. (2012). Making a virtue out of adversity: Christchurch art gallery's response post-earthquake. *Artlink*, 32(4), 70.
- Havell, E. A. (2012). *Predicting psychological responses after the February 22nd Christchurch earthquake: Peritraumatic dissociation, posttraumatic stress symptoms, anxiety, depression, and social isolation* (masters thesis). University of Canterbury, Christchurch, New Zealand.
- Heath, M. A., Nickerson, A. B., Annandale, N., Kemple, A., & Dean, B. (2009). Strengthening cultural sensitivity in children's disaster mental health services. *School Psychology International*, 30(4), 347-373.
- Hoffman, M. A., & Kruczek, T. (2011). A bioecological model of mass trauma: Individual, community, and societal effects. *The Counseling Psychologist*, 39(8), 1087-1127.
- Horowitz, T. (2006). *The epistemology of a priori knowledge*. New York, NY: Oxford University Press.
- Jakovljević, M., Brajković, L., Jakšić, N., Lončar, M., Aukst-Margetić, B., & Lasić, D. (2012). Posttraumatic stress disorders (ptsd) from different perspectives: A transdisciplinary integrative approach. *Psychiatria Danubina*, 24(3.), 246-255.
- Janoff-Bulman, R. (2004). Posttraumatic growth: Three explanatory models. *Psychological Inquiry*, 15(1), 30-34.
- Kahn, M. E. (2005). The death toll from natural disasters: the role of income, geography, and institutions. *Review of Economics and Statistics*, 87(2), 271-284.
- Kar, N. (2009). Psychological impact of disasters on children: review of assessment and interventions. *World Journal of Pediatrics*, 5(1), 5-11.
- Khatri, G. K., Tran, T. D., Baral, S., & Fisher, J. (2018). Effect of the 2015 Nepal earthquakes on symptoms of common mental disorders among women who are pregnant. *Journal of Affective Disorders*, 228, 238-247.
- Kincheloe, J. L., McLaren, P., & Steinberg, S. (2011). Critical pedagogy, and qualitative research: Moving to the bricolage. In N. K. Denzin & Y. S. Lincoln, (Eds), *The SAGE handbook of qualitative research* (pp. 163-177). Thousand Oaks, CA: Sage.

- King, N., & Horrocks, C. (2010). *Interviews in qualitative research*. Bodmin, England: Sage.
- King, T. A., & Tarrant, R. A. (2013). Children's knowledge, cognitions and emotions surrounding natural disasters: An investigation of year 5 students, Wellington, New Zealand. *Australian Journal of Disaster and Trauma Studies* 2013, (1), pp 17-26
- Kronenberg, M. E., Hansel, T. C., Brennan, A. M., Osofsky, H. J., Osofsky, J. D., & Lawrason, B. (2010). Children of Katrina: Lessons learned about postdisaster symptoms and recovery patterns. *Child Development*, 81(4), 1241-1259.
- La Greca, A. M., Silverman, W. K., Vernberg, E. M., & Prinstein, M. J. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: A prospective study. *Journal of Consulting and Clinical Psychology*, 64(4), 712.
- La Greca, A. M., Silverman, W. K., Lai, B., & Jaccard, J. (2010). Hurricane-related exposure experiences and stressors, other life events, and social support: Concurrent and prospective impact on children's persistent posttraumatic stress symptoms. *Journal of Consulting and Clinical Psychology*, 78(6), 794.
- Leek Openshaw, L. (2011). School-based support groups for traumatized students. *School Psychology International*, 32(2), 163-178.
- Lewin, T. J., Carr, V. J., & Webster, R. A. (1998). Recovery from post-earthquake psychological morbidity: Who suffers and who recovers? *Australian & New Zealand Journal of Psychiatry*, 32(1), 15-20.
- Lewis, A. (1995). The Newcastle Earthquake Database: Information Resources for Earthquake Mitigation. *Australian Journal of Emergency Management*, 10(4), 1.
- Lichtman, M. (2013). *Qualitative research for the social sciences*. Thousand Oaks, CA: Sage.
- Lincoln, Y. S., & Guba, E. G. (2013). *The constructivist credo*. Walnut Creek, CA: Left Coast Press.
- Little, S. G., & Akin-Little, A. (2011). Responses to childhood trauma: An international perspective. *School Psychology International*, 32(5), 441-447.
- Little, S. G., Akin-Little, A., & Somerville, M. P. (2011). Response to trauma in children: An examination of effective intervention and post-traumatic growth. *School Psychology International*, 32(5), 448-463.
- Long, D., & Wong, Y. L. R. (2012). Time bound: The timescape of secondary trauma of the surviving teachers of the Wenchuan earthquake. *American Journal of Orthopsychiatry*, 82(2), 241.
- MacKinnon, D., & Derickson, K. D. (2013). From resilience to resourcefulness: A critique of resilience policy and activism. *Progress in Human Geography*, 37(2), 253-270.
- Marquis, F., Kim, J. J., Elwood, K. J., & Chang, S. E. (2017). Understanding post-earthquake decisions on multi-storey concrete buildings in Christchurch, New Zealand. *Bulletin of Earthquake Engineering*, 15(2), 731-758.
- McColl, G. J., & Burkle, F. M. (2012). The new normal: Twelve months of resiliency and recovery in Christchurch. *Disaster Medicine and Public Health Preparedness*, 6(1), 33-43.
- McCue, K., Wesson, V., & Gibson, G. (1990). Seismological aspects of the newcastle NSW earthquake of 28 December 1989. In *Conference on the Newcastle Earthquake: Conference Proceedings* (p. 9). Institution of Engineers, Australia.

- Meng, Z., Wu, X., & Han, L. (2018). Post-traumatic stress disorder and post-traumatic growth among the adult survivors of the Lushan earthquake: Selecting resilience as the moderator. *International Journal of Disaster Risk Reduction*, 27, 524-529.
- Meyerson, D. A., Grant, K. E., Carter, J. S., & Kilmer, R. P. (2011). Posttraumatic growth among children and adolescents: A systematic review. *Clinical Psychology Review*, 31(6), 949-964.
- Milojev, P., Osborne, D., & Sibley, C. G. (2014). Personality resilience following a natural disaster. *Social Psychological and Personality Science*, 5(7), 760-768.
- Minichiello, V., & Kottler, J. A. (Eds.). (2009). *Qualitative journeys: Student and mentor experiences with research*. Thousand Oaks, CA: Sage.
- Mutch, C. (2013). "Sailing through a river of emotions": Capturing children's earthquake stories. *Disaster Prevention and Management*, 22(5), 445-455.
- Mutch, C. (2015a). The impact of the Canterbury earthquakes on schools and school leaders: Educational leaders become crisis managers. *Journal of Educational Leadership, Policy and Practice*, 30(2), 39-55.
- Mutch, C. (2015b). Leadership in times of crisis: Dispositional, relational and contextual factors influencing school principals' actions. *International Journal of Disaster Risk Reduction*, 14, 186-194.
- Mutch, C., & Gawith, E. (2014). The New Zealand earthquakes and the role of schools in engaging children in emotional processing of disaster experiences. *Pastoral Care in Education*, 32(1), 54-67.
- Navarro, J., Pulido, R., Berger, C., Arteaga, M., Osofsky, H. J., Martinez, M., ... & Hansel, T. C. (2016). Children's disaster experiences and psychological symptoms: An international comparison between the Chilean earthquake and tsunami and Hurricane Katrina. *International Social Work*, 59(4), 545-558.
- Nelson, J. M. (2009). *Psychology, religion, and spirituality*. New York, NY: Springer Science & Business Media.
- Neria, Y., Nandi, A., & Galea, S. (2008). Post-traumatic stress disorder following disasters: A systematic review. *Psychological Medicine*, 38(4), 467-480.
- Norris, F. H., Friedman, M. J., & Watson, P. J. (2002). 60,000 disaster victims speak: Part II. Summary and implications of the disaster mental health research. *Psychiatry: Interpersonal and Biological Processes*, 65(3), 240-260.
- Ormandy, S. (2014). Wellbeing and the curriculum: One school's story post-earthquake. *Teachers and Curriculum*, 14(1).
- O'Connor, P., & Takahashi, N. (2014). From caring about to caring for: Case studies of New Zealand and Japanese schools post disaster. *Pastoral Care in Education*, 32(1), 42-53.
- Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress related growth. *Journal of Personality*, 64(1), 71-105.
- Peres, J. F., Moreira-Almeida, A., Nasello, A. G., & Koenig, H. G. (2007). Spirituality and resilience in trauma victims. *Journal of Religion and Health*, 46(3), 343-350.
- Powell, T., & Thompson, S. J. (2016). Enhancing coping and supporting protective factors after a disaster: Findings from a quasi-experimental study. *Research on Social Work Practice*, 26(5), 539-549.
- Revenson, T. A., & Lepore, S. J. (2012). Coping in social context. In A. Baum, T. A. Revenson, & J. Singer (Eds.), *Handbook of Health Psychology (2nd ed.)*, 193-217. New York, NY: Psychology Press.

- Russell, G. K., & Doris 1, J. M. (2008). Knowledge by indifference. *Australasian Journal of Philosophy*, 86(3), 429-437.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4(3), 219.
- Schaefer, J. A., & Moos, R. H. (1992). Life crises and personal growth. In B. N. Carpenter (Ed.), *Personal coping: Theory, research, and application* (pp. 149-170). Westport, CT: Praeger.
- Scott, B. G., Lapré, G. E., Marsee, M. A., & Weems, C. F. (2014). Aggressive behavior and its associations with posttraumatic stress and academic achievement following a natural disaster. *Journal of Clinical Child & Adolescent Psychology*, 43(1), 43-50.
- Seyle, D. C., Widyatmoko, C. S., & Silver, R. C. (2013). Coping with natural disasters in Yogyakarta, Indonesia: A study of elementary school teachers. *School Psychology International*, 34(4), 387-404.
- Sezgin, U., & Punamäki, R. L. (2012). Earthquake trauma and causal explanation associating with PTSD and other psychiatric disorders among South East Anatolian women. *Journal of Affective Disorders*, 141(2-3), 432-440.
- Shah, P., Pujol, S., Kreger, M., & Irfanoglu, A. (2017). 2015 Nepal Earthquake. *Concrete International*, 39(3), 42-49.
- Sharma, D. C. (2015). Nepal earthquake exposes gaps in disaster preparedness. *The Lancet*, 385(9980), 1819-1820.
- Shepherd, D., McBride, D., & Lovelock, K. (2017). First responder well-being following the 2011 Canterbury earthquake. *Disaster Prevention and Management: An International Journal*, 26(3), 286-297.
- Sibley, C. G., & Bulbulia, J. (2012). Faith after an earthquake: A longitudinal study of religion and perceived health before and after the 2011 Christchurch New Zealand earthquake. *PloS One*, 7(12).
- Siembieda, W. J. & Johnson, L. A. (2015). Christchurch recovers. *Planning*, 81(8), 37-40.
- Silwal, S., Dybdahl, R., Chudal, R., Sourander, A., & Lien, L. (2018). Psychiatric symptoms experienced by adolescents in Nepal following the 2015 earthquakes. *Journal of Affective Disorders*, 234, 239-246.
- Smith, R., McIntosh, V., Carter, J., Colhoun, H., Jordan, J., Carter, F., Bell, C. (2017). In some strange way, trouble is good for people. Posttraumatic growth following the Canterbury earthquake sequence. *The Australasian Journal of Disaster and Trauma Studies*, 21(1).
- Squire, C., Andrews, M., & Tamboukou, M. (2008). Introduction: What is narrative research? In Andrews, M., Squire, C., & Tamboukou, M. *Doing narrative research* (p. 1-21). London, England: Sage.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.
- Star, S. L. (2007). Living grounded theory: Cognitive and emotional forms of pragmatism. In A. Bryant, & Charmaz, K. (Eds.). *The Sage handbook of grounded theory*, (p.75-94). London, England: Sage.
- Stern, P. N. (1980). Grounded theory methodology: Its uses and processes. In B. J. Glaser (Ed.). *Critical issues qualitative research methods* (p.116-126). Mill Valley, CA: Sociology Press
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research*. 1998. Thousand Oaks, CA: Sage.
- Stuart, K. L., Patterson, L. G., Johnston, D. M., & Peace, R. (2013). Managing temporary school closure due to environmental hazard: Lessons from New Zealand. *Management in Education*, 27(1), 25-31.
- Sullivan, S., & Wong, S. (2011). An enhanced primary health care role following psychological trauma: The Christchurch earthquakes. *Journal of Primary Health Care*, 3(3), 248-251.

- Sweeting, H., Green, M., Benzeval, M., & West, P. (2015). The emergence of health inequalities in early adulthood: Evidence on timing and mechanisms from a west of Scotland cohort. *BMC Public Health*, 16(1), 41.
- Tang, B., Liu, X., Liu, Y., Xue, C., & Zhang, L. (2014). A meta-analysis of risk factors for depression in adults and children after natural disasters. *BMC Public Health*, 14(1), 623.
- Tang, W., Zhao, J., Lu, Y., Yan, T., Wang, L., Zhang, J., & Xu, J. (2017). Mental health problems among children and adolescents experiencing two major earthquakes in remote mountainous regions: A longitudinal study. *Comprehensive Psychiatry*, 72, 66-73.
- Tedeschi, R. G., & Calhoun, L. G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9(3), 455-471.
- Tedeschi, R. G., & Calhoun, L. G. (2012). *Posttraumatic growth in clinical practice*. New York, NY: Routledge.
- Tedeschi, R. G., & McNally, R. J. (2011). Can we facilitate posttraumatic growth in combat veterans? *American Psychologist*, 66(1), 19.
- Terranova, A. M., Boxer, P., & Morris, A. S. (2009). Factors influencing the course of posttraumatic stress following a natural disaster: Children's reactions to Hurricane Katrina. *Journal of Applied Developmental Psychology*, 30(3), 344-355.
- Tolley, A. (2011, May 16). Study centres support Christchurch students. *Targeted News Service*, p. 1.
- Van Manen, M. (2016). *Researching lived experience: Human science for an action sensitive pedagogy* (2nd ed.). New York, NY: Routledge.
- Webster, L., & Mertova, P. (2007). *Using narrative inquiry as a research method: An introduction to using critical event narrative analysis in research on learning and teaching*. London, England: Routledge.
- Weems, C. F., Taylor, L. K., Cannon, M. F., Marino, R. C., Romano, D. M., Scott, B. G., ... & Triplett, V. (2010). Post traumatic stress, context, and the lingering effects of the Hurricane Katrina disaster among ethnic minority youth. *Journal of Abnormal Child Psychology*, 38(1), 49-56.
- Widyatmoko, C., Tan, E. T., Seyle, D., Mayawati, E., & Silver, R. (2011). Coping with natural disasters in Yogyakarta, Indonesia: The psychological state of elementary school children as assessed by their teachers. *School Psychology International*, 32(5), 484-497.
- Winstanley, A., Hepi, M., & Wood, D. (2015). Resilience? Contested meanings and experiences in post-disaster Christchurch, New Zealand. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 10(2), 126-134.
- Yagi, J., Fujiwara, T., Yambe, T., Okuyama, M., Kawachi, I., & Sakai, A. (2016). Does social capital reduce child behavior problems? Results from the Great East Japan Earthquake follow-up for Children Study. *Social Psychiatry and Psychiatric Epidemiology*, 51(8), 1117-1123.
- Yin, R. K. (2014). *Case study research: design and methods* (5th ed.). Thousand Oaks, CA: Sage.
- Zhang, Y., Zhang, J., Zhu, S., Du, C., & Zhang, W. (2015). Prevalence and predictors of somatic symptoms among post-traumatic stress disorder: A cross-sectional study conducted in 21 primary and secondary schools after an earthquake. *PloS One*, 10(9), 1-14.

Appendix

Appendix A: Information Statements and Consent Forms



Participant Consent Form "Impacts of a Natural Disaster: Adult Reflections on adolescent experience"

I understand that I have been asked to participate in a research project undertaken by the Avondale College of Higher Education. I have been given information about the research project, and I understand that the study is investigating the impacts of natural disasters through stories. I have been provided with the ability to discuss and ask any questions throughout the research project with Michaela Thompson and Phil Fitzsimmons as per the information sheet provided.

I understand that if I consent to participate in this project:

- I can withdraw at any time without penalty during the project.
- My participation in this research is voluntary
- My refusal to participate or withdraw of consent will not affect my relationship with Avondale College of Higher Education (Australia) or the researchers involved.
- Interviews will be digitally recorded and coded, and I will be allocated a pseudonym so that my name will not appear on any written material or published findings.

I have been advised of the potential time elements associated with this research and can at any time ask any questions that I may have about the research and my participation.

If I have any concerns or complaints regarding the way the research is or has been conducted I am aware I can contact Dr. Phil Fitzsimmons and if unresolved Avondale's HREC secretary as detailed below.

This research project has been approved by the Avondale College Human Research Ethics Committee (HREC). Avondale College requires that all participants be informed that they have any complaints regarding the manner in which the research project is conducted or may be given to the researcher or HREC Secretary. Avondale College, PO Box 19, Cooranbong, NSW. 2265 or phone (02) 4980 2121 or fax (02) 4980 2117 or email: research.ethics@avondale.edu.au.

Participants Name:

Participants Signature:

Date:.....

Participant information



Participant Information **"Impacts of a Natural Disaster: Adult Reflections on adolescent experience"**

Dear Potential Participant

The purpose of this letter is to request your participation in a study investigating the impacts of a natural disaster on the wellbeing of survivors. This study will seek to investigate the social, emotional, academic and spiritual impacts of the February 2011 earthquake on young people. The researchers of this project seek to understand your point of view through your stories. It is through your stories that we can seek a deeper understanding on how you view the earthquakes and how you feel you were impacted in the time after February 2011. The results from this research can potentially provide future educators and mentors with ways in which they can further support young people post-natural disasters in both Australia and New Zealand.

Due to the nature of this study and the questions that could be asked during the interview there is a risk that you may find it emotionally difficult to participate. If you consent to participate in the interview, you may stop the interview at any time for any reason. Post-interview you will be recommended a counsellor who can follow up with you.

If you consent to participate, you will be requested to take part in up to three interviews. The interviews will be conducted in April and May of 2018 at a time that is convenient to you. The interviews will take place over the online video conferencing software Zoom.

You are free to refuse to participate in this study. If you choose to participate you can change your mind at any time and withdraw from the study. Refusal or withdrawal from this study will not affect your relationship with the researcher and/or Avondale College of Higher Education.

To participate your full name will need to be provided. However, your name will be erased once a pseudonym has been negotiated between the researcher and the participant. All information will be confidential, and interviews will be digitally recorded. Your pseudonym will be used in all written material and any published findings. The recorded materials will be stored on a thumb drive in a locked safe in the principal investigator's office. This data will be deleted at the conclusion of 5 years. The data collected from your participation will be used for the preparation of a possible conference or journal publications.

For further information, please contact Phil Fitzsimmons at:

Dr. Phil Fitzsimmons
Avondale College of Higher Education
PO BOX19, Cooranbong,
NSW, 2265
Australia
Email: phil.fitzsimmons@avondale.edu.au

This research project has been approved by the Avondale College Human Research Ethics Committee (HREC). Avondale College requires that all participants be informed that they have any complaints regarding the manner in which the research project is conducted or may be given to the researcher or HREC Secretary. Avondale College, PO Box 19, Cooranbong, NSW. 2265 or phone (02) 4980 2121 or fax (02) 4980 2117 or email: research.ethics@avondale.edu.au.

Appendix B: Protocol for Interviews



Interview Questions

Research title: Adult reflections on an adolescent experience of a natural disaster: A qualitative study

Researchers Name: Michaela Thompson (Pratt)

Due to the nature of the interview process, it is impossible to state beforehand the exact nature and wording of the questions that will occur. Participants often provide interesting and important points that may require further clarification. Thus, the following questions are a guide and are framed to elicit further information from the respondents.

Overview

The first question aims to provide a foundation for the rest of the interview. Through understanding the participants experience of the Earthquake and how they describe the first question will provide a clear framework on which the rest of the interview stem from (Clandinin & Connelly, 2000). This concept is derived from the phenomenological approach to interviews which regards narratives of life stories as expressions of lived experience (Rogers, 2007; Van Manen, 1997). This approach assumes transparency of meaning between the interviewer and the interviewee (narrator). This means that questions in this interview will be asked regarding facts, events and personal understandings of experiences without challenging the participants point of view (Rogers, 2007). Due to the nature of the interview process, clarifying questions will be asked to further understand the narrators point of view to ensure transparency does occur.

Instruction:

Explain that there are three sections to the interview. Everything is confidential. Assign a pseudonym before the interview begins. The interview can be stopped at anytime.

Key Questions:

Continuity

1. Tell me about your experience during the February 2011 Earthquake.
2. What are your memories of your first days back at school after the earthquake?
3. How would you describe the long-lasting effects this experience has had on you?
4. What are some of lasting memories of the Earthquake. Why do you think they have stayed with you.

Personal

5. How have these memories impacted your school/personal lives immediately after the earthquake.
6. Were you affected academically after the earthquake?
 - If so, describe how you feel you were.
7. In the years after the earthquake how would you say this experience has affected you?
 - How do you feel that you were affected spiritually after the earthquake?

Context

8. What role, if any, did others around you play immediately after the earthquake?
9. How was your family affected by the earthquake?
10. If you were supported, can you describe how were you supported after the earthquake?

Remind the participant to see out a psychological or counsellor that is local to them.

Appendix C: Sample of Transcript

The entire transcripts will not be included as the community of Christchurch is small and the information provided within each interview can cause the participants to be easily identified. To maintain confidentiality an excerpt of an interview has been included along with a sample of coding. This excerpt is from Amelia's interview and was changed slightly to remove names and locations.

M: If you were supported, can you describe how you were supported after the earthquake?

A: Well I think I was supported in the fact that after the earthquake I just wasn't doing well with no power and just getting really angry they supported me going to another city to just like get away from it for a wee bit. So I think that was good. But I'm sure my friends and I talked about it for a little bit which was probably like a good sort of debrief type thing. But yeah I think largely it was just me supporting myself, and that's not because other people didn't want to but it was just because I didn't really, you know, I just didn't really ask for help it was just like my problem I guess, that's just how I viewed it. Like my problem, I think it probably would have been, I'm not sure if its part of the question, but I think it probably would have been good to have talked about it or like even have had like, you know how they always used to do those kumbaya sessions with the girls, like when they were fighting, it was so annoying. Yeah, in general, I hated them, and I wouldn't have said anything, but like I think we should have had something like that. Like we didn't even have like we didn't even do that which is quite weird. Because we literally used to do that like for nothing.

Appendix D: Samples of Coding and Themes

Initial Codes

Participant One	Participant Two	Participant Three	Participant Four
Often describes who and emotions of others, their experiences are meshed into her own.	Saw everyone as fine, acted normal, everyone is collective and the same	No retuning into the school, danger	Meshing together of all her earthquake experiences
No safety, no place to escape	Chose to ignore, didn't talk to others or about the trauma	father was in potential danger	Trauma from the past, the February event and the future ones are meshed together in her retelling
Distraction through helping	Moved on with normality	describes the stories of his father	All inclusive in her direction of the day
no safety	Wanted to be treated as an adult	describes previous earthquake trauma	Describes the state of the city
Basketball is a place of safety	Wanted to talk about the fact people died	Fear for safety	Service
Describes adults emotions as very upset	Lack of memory, blurring of memory	Couldn't contact family	Breaking of inner bubble = realisation of destruction
Relied on intergenerational relationships as a distraction	Recognition of what she needed (not to talk)	fear of death	Removal of innocence
Describes sounds: silence before sirens	Ignoring, not talking about problems	Uncertainty of family's wellbeing	Links to past and present trauma
Sounds induced	Normality changed	Distraction through	Describes what is

Focused Codes

Frequency of themes

Comparison to others	Struggled academically	Emotional Retelling	Can't Remember	Clinical Retelling (casual)	Fear of being alone
Service	Participant 1 ISABELL	Mental Health	Past-Trauma	Participant 2 Amelia	Achieved Academic Excellence
Family	Clear Memory	Growth (mentally and spiritually)	Ignored problems (culture and family)	Anger	Blamed God
Confusion of time			No Support	Self-Reliant	Comparison to others

Suppression (Clear memory - Can't remember)	Describes normality, the funny	Supportive Staff	Connection to family	Comparison to others	Clinical retelling
Service	Participant 3 DANNY	Fear of Death	Fear of death	Participant 4 EMMA	Describes sounds, limits emotion
Family	Stressed Academically	"No Worry"	Loss of memory	Loss of connection to God	Service
Environmental Triggers	Growth Spiritually	Comparison to Others	Sense of loss of city	Sees blessings	Relies on past trauma

