

**DESCRIPTIONS OF COPING WITH COMMONLY OCCURRING EVENTS
BY HIGHLY SELF-REGULATED BOYS LIVING IN EARTHQUAKE-
AFFECTED CHRISTCHURCH**

A Thesis submitted in partial fulfilment of the requirements for the

Degree

of Master of Arts in

Child and Family Psychology

in the University of Canterbury

by Solfrid H Gillman

University of Canterbury

2015

Table of Contents

List of Tables	v
List of Figures.....	vi
Acknowledgements	vii
Abstract.....	viii
Chapter 1: Introduction to Children After Disasters.....	1
Children's Responses to Natural Disasters	4
Post-Traumatic Stress Disorder in Children	12
Positive Adaptation Post-Disaster	18
Coping.....	18
Chapter 2: A Review of the Coping Literature.....	20
Review of the Coping Literature	29
Zero to Seven Months Post-Disaster	29
Eight to Twenty-Four Months Post-Disaster	42
Coping and Caregivers.....	46
Additional Variables	48
Patterns in the Research	49
Summary of the Literature	50
Limitations of the Coping Research	51
Summary	55
Research Questions.....	56
Rationale for the Present Study	56
Chapter 3: Method.....	64
Design	64

Ethical Implications	65
Development of Interview Questions	66
Selection Process	68
Participants.....	70
Procedure	72
Data Analysis.....	73
Chapter 4: Results	76
Interviews with Philip (child), Kate (mother), and Isobel (teacher)	76
Interviews with Harry (child), Kim (mother), and Isobel (teacher).....	79
Interviews with Fred (child), Tina (mother), and Helen (teacher).....	82
Interviews with Kieran (child), Evan (father), and Nicole (teacher)	85
Interviews with Tom (child), Ben (father), and Isobel (teacher)	88
Chapter 5: Discussion	92
Summary of Findings.....	92
Further Comments	101
Limitations of the Current Study	104
Strengths of the Current Study.....	106
Implications and Areas for Future Research.....	107
Conclusion	108
References.....	110
Appendices.....	117
Appendix A: Advertisement	117
Appendix B: Information Sheets	120
Appendix C: Consent Forms.....	123

Appendix D: Ethics Approval Letter	126
Appendix E: Interview Questions.....	127

List of Tables

Table 1. Coping Literature	30
Table 2. Categories of Coping and Specific Coping Strategies.....	57
Table 3. Philip's Coping Strategies	78
Table 4. Harry's Coping Strategies	81
Table 5. Fred's Coping Strategies	85
Table 6. Kieran's Coping Strategies.....	88
Table 7. Tom's Coping Strategies	90

List of Figures

Figure 1. Hypothesised pathways following disaster.	13
Figure 2. Potential trajectories for children's disaster reactions	14

Acknowledgements

Firstly, I would like to thank my supervisors, Associate Professor Kathleen Liberty and Dr. Michael Tarren-Sweeney, for your support and guidance throughout the year. I am grateful for your knowledge and encouragement, and the many valuable skills I have learnt from you both. I would also like to thank the children, their families, and their teachers who participated in the study. I greatly enjoyed talking with you about your experiences and value the opportunity you gave me to learn about the coping strategies used by children living in Christchurch. Also, many thanks are due to my classmates and my friends, who were always there to support me and to remind me of life outside the office. I would especially like to thank Mark for his optimism and endless belief in me, and my family for always being on the other end of the phone providing support and encouragement.

Abstract

Children are often overlooked in the aftermath of a natural disaster, and children's use of coping strategies plays an important part in their post-disaster adaptation (Vernberg, La Greca, Silverman, & Prinstein, 1996). The aim of this qualitative study was to explore the coping strategies of children with adequate self-regulation skills and minimal behaviour problems, living in Christchurch following the major 2010 and 2011 earthquakes. This aim was achieved through the use of semi-structured interviews with five seven-year-old children, their parents, and their teachers. These interviews were analysed using Directed Content Analysis and results showed that children most often reported using active and adaptive coping strategies, followed by avoidant strategies. Results in the current literature regarding children's coping suggest that children exposed to natural disasters are able to utilise strategies that involve some personal control over their environment and emotions, through the use of active and adaptive coping strategies. Findings from this study contribute to the current understanding of children's use of coping strategies when faced with commonly occurring childhood upsets. Further research is required regarding the outcomes associated with the use of effective coping strategies following traumatic events.

Chapter 1: Introduction to Children After Disasters

On the 22nd February 2011, a magnitude 6.3 earthquake struck Christchurch city, causing the death of 185 people and the injury of several thousand. This occurred more than five months following the earthquake on the 4th September 2010, and was categorised as an aftershock of the initial 2010 earthquake. Although this earthquake was not as powerful as the initial magnitude 7.1 earthquake in 2010, it occurred on a shallower fault line that was nearer to the city, causing it to be particularly destructive (McSaveney, 2013). More than 12,500 aftershocks occurred over a 17-month period, meaning there was no defined endpoint to the disaster and communities were continually exposed to this stressor. The effect of prolonged exposure to this unpredictable stressor has been compared to that of individuals experiencing the chronic threat present in countries at war or at risk of continual terrorist attacks (Kuntz, 2014). The events following the earthquakes and subsequent aftershocks in Christchurch, such as loss of homes or jobs, the closure or merging of schools, and the gradual rebuild of the city, acted as chronic stressors for those living in Christchurch. Exposure to these stressors resulted in a delayed recovery process for many children and their families (Shirlaw, 2014).

A traumatic event is associated with heightened experiences of fear, helplessness or horror, and a child's beliefs and illusion of safety are challenged (Shaw, Espinel, & Shultz, 2012). A child is also still developing cognitively and emotionally and may be struggling with separation and identity formation issues, and with regulating affects and impulses. When experiencing emotions such as fear and helplessness in the face of a traumatic event, children may find it difficult to identify

and recognise these emotions, as their previous experience of these emotions may have been very different. Children use a variety of coping strategies when faced with these difficulties (Vernberg, La Greca, Silverman, & Prinstein, 1996).

An acute traumatic moment is defined as the sudden awareness of vulnerability while being exposed to physical injury or death (Shaw et al., 2012). Children become aware of the fact that their parents are unable to protect and support them when they most need it. Children may witness scenes of severe injury, entrapment, and death, or they may become separated from their parents and family members. They may sustain personal injury or witness injury to family members. Children may have intense fear reactions or experience extreme panic and the belief that they will be hurt or die. Children may also be exposed to family members experiencing high levels of stress and changes in family circumstances, such as unemployment. In addition to this, daily routines and schooling may be disrupted, and friends or family may move away (La Greca & Prinstein, 2002). Following an earthquake, children may be constantly exposed to reminders of the event including cracks in walls, rumbling noises, unrepaired buildings and roads, piles of rubble, and media reports of the earthquake. In terms of media exposure, young children may experience distress due to limited understanding of what it is they are seeing, a high awareness of parental reactions, or a misunderstanding regarding the same event being replayed (Masten & Narayan, 2012).

The life cycle of a disaster. It has been conceptualised that a disaster is made up of three phases: pre-impact, impact, and post-impact (Shaw et al., 2012). This theory proposes that, in the pre-impact phase, it may be possible to carry out disaster planning and encourage disaster preparedness. The impact phase is associated with bodily injury and death, physical destruction, and disruption to the community.

Children may lose a caregiver or witness scenes of destruction or harm. During this phase, it is often the case that children and adults experience a sense of helplessness, which is at the core of a traumatic experience (Shaw et al., 2012).

The earthquakes experienced in Christchurch occurred suddenly and without warning. Buildings, schools, homes, and bridges were destroyed. Shops were unable to open, sanitation systems were damaged, and water supplies became contaminated (Brigg & Roark, 2013). A study examining the disaster preparedness of the Christchurch health system found that emergency planners lacked support from medical staff, however, when the earthquakes occurred, the health system was able to respond adequately (Pryor, 2013, March 15). During the post-impact phase, a sense of disillusionment appears, as people become aware of the work required to achieve full recovery. Secondary stressors come into play, including loss of home, closure of schools, unemployment, economic losses, damage to community infrastructure, and psychological distress and impairment. The presence of these factors indicates that the post-impact phase may be as challenging and as distressing as the earthquake itself.

This has been discussed by authors examining post-disaster experiences, where participants were exposed to overcrowded homes and schools, damaged buildings and roads, and the loss of relocated family members or neighbours for a lengthy period of time following the disaster (La Greca & Prinstein, 2002; Silverman & La Greca, 2002). These factors created increased distress and disruption for families following an event that was highly anxiety provoking in itself. This suggests that the experiences of residents in Christchurch are comparable to those of participants in the literature, although the continual aftershocks indicate that the disaster-phase model may not adequately describe the experiences of Christchurch communities, as the impact and post-impact phases were combined. In addition, the

unpredictable aftershocks may have acted as continual trauma reminders for some children and their families.

Children's Responses to Natural Disasters

When children are constantly fearfully expectant, their ability to use cognitive, social, and emotional experiences to effectively manage problems is impaired, and many behavioural, emotional, and somatic reactions to continual exposure may be present (American Psychiatric Association, 2013). Behavioural reactions may include impulsivity, hyperactivity, aggression, sleep and appetite disturbances, and oppositional behaviour. Emotional reactions may include signs of post-traumatic stress, mood and anxiety symptoms, and dissociative responses (Silverman & La Greca, 2002). Negative self-attributions may occur and a child may experience negative self-judgments in relation to self-efficacy, competency, and self-worth resulting in self-blame, guilt, shame, and feelings of helplessness. Irritability, emotional instability, and agitation may be present, and children may find it difficult to identify and describe the emotions they are feeling. In terms of cognitive abilities, children may experience learning difficulties, problems with attention and information processing, distorted judgment of social situations, and an inability to interpret other people's intentions. Memory deficits, denial, repression, amnesia, and academic difficulties may also occur. Issues with interpersonal relationships may also be present, resulting in family conflicts, social isolation, and distrust of others. The reactions children experience have a direct relationship with the intensity, duration, and degree of impact the traumatic event has on a child's bodily integrity, stress response system, and vital physiological systems (Shaw et al., 2012).

These reactions may also have been present following the Christchurch earthquakes, with parents, teachers, and doctors reporting increases in behavioural

problems as well as issues relating to depression, anxiety, and stress (Shirlaw, 2014). One study has also found evidence of long-term problems related to the earthquake and subsequent stressors (Liberty, Macfarlane, Basu, Gage, & Allan, 2013). Initial results showed that between 14% and 21% of children who started school in 2013 ($N = 100$) were exhibiting symptoms of Post-Traumatic Stress Disorder (PTSD). Problems with learning and behaviour were also seen, including decreased interest in play, increased aggressive behaviours, separation anxiety, and issues with concentration and sleep.

Individual factors. Individual factors that affect a child's response to disaster include age, gender, previous trauma history, subjective experience of the disaster, and level of coping skills both before and following the disaster. In terms of gender, boys more often experience traumatic events, however, girls are more likely to experience anxiety, mood, and PTSD symptoms when exposed to trauma (Shaw et al., 2012). It has been shown that boys have recovered more quickly from PTSD than girls, but that boys exhibited more disruptive behaviours (Shaw, Applegate, & Schorr, 1996). A child's previous trauma exposure is associated with higher risks for psychopathology when faced with later traumatic events, and repeated exposure tends to have a detrimental effect resulting in loss of resilience and an increased vulnerability to subsequent trauma (Masten & Narayan, 2012). Subjective appraisal of a disaster is also associated with adverse psychological effects. The way the child defines the situation and the meaning imposed on the event have both been shown to be strong predictors of a child's outcome following trauma (Shaw et al., 2012).

Cognitive development. Current stage of cognitive development, as well as an understanding of the causes of disaster, also impact on the child's experience of the traumatic event. Pre-school children are in the final stages of the sensorimotor period

(Piaget, 1929), and they are likely to process trauma at a sensory level, using smell, sight, and sound (Deering, 2000). As a result, these children may have a heightened vulnerability to sensory overload and a decreased capability to cope with the traumatic stimuli that is now part of their environment. As well as this, pre-school children may be limited in their ability to verbalise fears and reactions. Play and drawing may be used to re-enact the disaster and may be an alternative method of processing the trauma (Deering, 2000; Saylor, Swenson, & Powell, 1992). It has been suggested that this repetitive play represents the child's attempt to discharge the emotions they are experiencing as a result of the disaster, as well as to master feelings of helplessness in order to recover a feeling of control over their environment. This type of play can be seen as a positive coping strategy that does not avoid the stressors associated with a traumatic event (Saylor et al., 1992).

A further concept described by Piaget, animism, describes how pre-school children personify inanimate objects, for example, tornadoes are seen as monsters and rivers swallow people (Piaget, 1929). It has been proposed that this personification may cause children to create a mental image of the disaster that is graphic and terrifying (Deering, 2000). This process may, in turn, provide the child with a way to face the feared entity as well as safely store the experience away (Saylor et al., 1992).

According to Piagetian theory, as children begin to enter the preoperational stage, egocentric thinking results in children viewing traumatic events as being caused by something they themselves have done (Piaget, 1929). When a misperception of the causes of disaster occurs, there is the potential for a child to feel guilt and self-blame. In terms of responding to a disaster, pre-school children tend to react with specific, apparently isolated, behavioural symptoms (Deering, 2000). Caregivers may notice signs of regression, such as thumb-sucking, crying, or clinging behaviour, as well as

somatic complaints, such as sleep disturbances and eating problems. In terms of emotional reactions, pre-school children may have difficulty identifying feelings, and may experience irritability, sadness, and separation anxiety (Dogan-Ates, 2010). Children may also experience trauma-specific and generalised fears following a traumatic event, as well as greater behaviour problems compared to children who have not been exposed to disaster (Dogan-Ates, 2010).

School-aged children are in Piaget's concrete operational stage of cognitive development (Piaget, 1929) and are more able to understand the seriousness of a disaster and to discuss their feelings in relation to the disaster with family members (Deering, 2000). Children of this age may react to a disaster by showing symptoms of irritability, anxiety, decreased school performance, and separation anxiety (Dogan-Ates, 2010; Green et al., 1991; Liberty et al., 2013; Silverman & La Greca, 2002). Inappropriate and aggressive behaviours may impact on peer relationships, and cognitive difficulties may result in reduced concentration, and interest, in school (Dogan-Ates, 2010). School-aged children may often process the traumatic effects of the disaster through play, and the presence of concrete reminders of the disaster (for example, important items retrieved from the family home) may also help them to process their changed circumstances (Deering, 2000). According to Piagetian theory, as children in this stage of cognitive development attain the concept of conservation, they may become more aware of the viewpoints of those around them and may be more able to view events from different perspectives (Piaget, 1929).

Parental role. Both school-aged and pre-school-aged children's capacity to manage the effects of a disaster and understand the causes of disaster is significantly affected by parental reactions, as these children ultimately depend on surrounding adults for a sense of safety (Deering, 2000). Factors relating to the family have

important effects on a child's response as well, and it has been shown that family structure and cohesiveness, parental response to the impact of the disaster, and family functioning following the disaster are important factors during the recovery process (Masten & Narayan, 2012). A child frequently reproduces the fears and anxieties exhibited by their parents, and levels of psychological distress can be predicted based on a child's observations of their parents' reactions and use of coping strategies during the disaster (Shaw et al., 2012). Saylor and colleagues (1992) found that children who were appropriately supported by their parents were able to attempt to manage the effects of traumatic events and, in some cases, benefit from the experience. Young children have a limited experience of using coping strategies, and findings suggest that parental ability to cope with disaster likely predicts post-disaster symptoms (Dogan-Ates, 2010). It has been shown that parental warmth, support, acceptance, cohesiveness of the family, and clear boundaries are positively associated with coping strategies that include active, approach, or problem-solving components (Power, 2004). It has also been shown that a child's report of effective coping strategies is positively associated with parents' suggestion of effective coping strategies for their child (Power, 2004).

Further strategies that parents may utilise include modelling emotional regulation, acknowledging their child's emotional expression, encouraging support-seeking behaviour, and distracting the child. Strategies such as problem-solving include altering the situation in order to decrease distress, while other strategies are used to change oneself in order to manage the current circumstances, for example, acceptance (Power, 2004). Parents are able to guide the use of these strategies and help their child find meaning by highlighting the positive aspects of the uncontrollable circumstances a disaster has created (Power, 2004). It has been shown

that children who use strategies such as acceptance to manage situations that are uncontrollable exhibit improved adjustment, compared to those children not utilising these strategies (Jeney-Gammon, Daugherty, Finch Jr, Belter, & Foster, 1993).

Parental guidance and support of coping strategies changes over time, ranging from encouraging simple strategies such as distraction, to more complex strategies that involve forming alternative appropriate solutions (Power, 2004).

Extra-familial factors. A child's vulnerability to disaster also reflects that of the community. Community and social factors include social support networks, culture, socioeconomic status, political structure, and community functioning following the disaster. A significant community disruption for children is the impact of the disaster on the school environment, including school closures, interrupted activities, and emotionally distressed school staff (Shaw et al., 2012). The quality of social support and social infrastructure may also impact the child and family unit. There may be a breakdown of communication channels, families may move away, and debilitating injury may occur. Many children in Christchurch were unable to return to their schools following the earthquakes. This resulted in the merging of schools or the sharing of one site by various schools for different time-periods during the day. These arrangements caused additional stress to students, parents, and teachers who were already experiencing other earthquake-related difficulties (Shirlaw, 2014).

In terms of socioeconomic status and poverty, children from disadvantaged backgrounds have an increased risk of experiencing impaired mental health and social and emotional functioning (Russoniello et al., 2002; Salloum & Lewis, 2010). Sub-optimal home conditions, less parental warmth, social withdrawal, anxiety, and disruptive behaviour may be more prevalent in low socioeconomic households. These families are also often living in hazardous areas offering reduced protection and

resources, therefore, when a disaster occurs, families may be more vulnerable to the consequences. Following the Christchurch earthquakes, families living in low socioeconomic areas also experienced significant damage to housing and property, as well as damage to local roads and to below ground infrastructure (SCIRT, 2014). In addition, the increasing cost and unavailability of housing following the earthquake has resulted in vulnerable families living in overcrowded conditions and an increase in poverty-related issues such as scabies, asthma, and head lice (Shirlaw, 2014).

In terms of political structure and governance, the level of response and intervention following disaster depends upon government planning and strategy (Shaw et al., 2012). As earthquakes are not predictable, they may result in an increased number of injuries and deaths, as people are unable, or do not have the time, to get to safety (La Greca & Prinstein, 2002). Following the February earthquake, the government declared a State of National Emergency that remained in place for almost nine weeks. A review found that emergency services responded appropriately to the disaster and that the agencies involved worked together effectively. Poor communication from the Civil Defence offices was an area of concern, however, the report found that disaster response was well managed and effective (Bayer, 2012, October 5).

In terms of culture and ethnicity, ethnic minorities experience more adverse psychological consequences compared to members of the majority culture. It has been shown that disadvantaged and minority populations have a higher rate of exposure to previous trauma and are therefore more vulnerable to trauma following a disaster (Breslau et al., 1998). In addition to this, ethnicity has been found to impact children's psychological outcomes following disasters, with minority children showing impaired functioning compared to majority children (Lengua, Long, Smith, & Meltzoff, 2005).

Statistics from the New Zealand General Social Survey (Statistics New Zealand, 2012) found that 43% of households categorised as high-risk had a Māori respondent, in comparison to 8% in the households categorised as no-risk. Risk factors in these high-risk households included living in a high deprivation area, poor mental and physical health, limited access to facilities, and living in an overcrowded house (Statistics New Zealand, 2012).

Developmental pathways. Various pathways of developmental change following a traumatic event have been investigated. These have been based on case studies as well as empirical observations, and similarities can be seen across models. However, due to the limited data available, these pathways are currently speculative for children and youth (Masten & Narayan, 2012). Hypothesised trauma pathways for children were visually represented and reproduced by Masten and Narayan (2012), as seen in Figure 1. The vertical axis represents quality of functioning, while the horizontal axis represents time, both before and after the disaster. The first figure represents the pathways of children functioning in the ‘normal zone’ prior to the disaster. In this figure, Pathway A reflects stress resistance, or resilience, and Pathway B reflects PTSD following the disaster and eventual recovery. These theorised pathways can be seen as coping with the effects of a traumatic event. Pathway C reflects post-traumatic growth, another response to disaster that has gained increasing awareness relating to the possible positive growth-promoting changes that may develop following exposure to trauma (Meyerson, Grant, Carter, & Kilmer, 2011). These three paths can be seen as positive responses to disaster. Pathway D reflects PTSD without recovery in an unspecified time period, and Pathway E reflects delayed onset of PTSD without recovery. A study of adolescents three years post-Hurricane Katrina found that 45% followed Path A, 28% followed Path B, 23% Path D, and

4.7% Path E (Kronenberg et al., 2010). The second figure illustrates pathways of development for children who are experiencing pre-disaster adversities and therefore may not be functioning within the 'normal zone.' Children experiencing pre-disaster adversity (i.e., functioning within the 'maladaptive zone') may be more vulnerable to post-disaster symptomatology. Path H reflects PTSD without recovery, and Paths F and G reflect resilience. Paths F and G also reflect a decrease in the level of functioning within the context of continued adversity, and return to previous levels of functioning, once optimal conditions are formed or restored. Path H reflects a decrease in adaptive functioning without recovery, despite the presence of more favourable conditions. In regards to children experiencing difficulties prior to a traumatic event, a combination of the two graphs can be used to reflect the various hypothesised pathways for these children.

Another trajectory for children's potential reactions following disaster has also been proposed (Staab, Fullerton, & Ursano, 1999). As seen in Figure 2, the vertical axis represents the severity of children's reactions following a disaster, ranging from symptoms of stress to PTSD. The horizontal axis represents time following the disaster. Line 1 reflects symptoms of acute stress that are resolved over time. Line 2 reflects Acute Stress Disorder that is also resolved with time. Line 3 reflects Acute Stress Disorder progressing to symptoms of PTSD, and line 4 reflects a delayed onset of symptoms of PTSD. Once again, these trajectories are speculative and there is limited understanding regarding how disaster characteristics might influence children's response trajectories.

Post-Traumatic Stress Disorder in Children

Children are especially vulnerable to the effects of traumatic events because they lack the experience, skills, and individual resources required to fulfil their mental

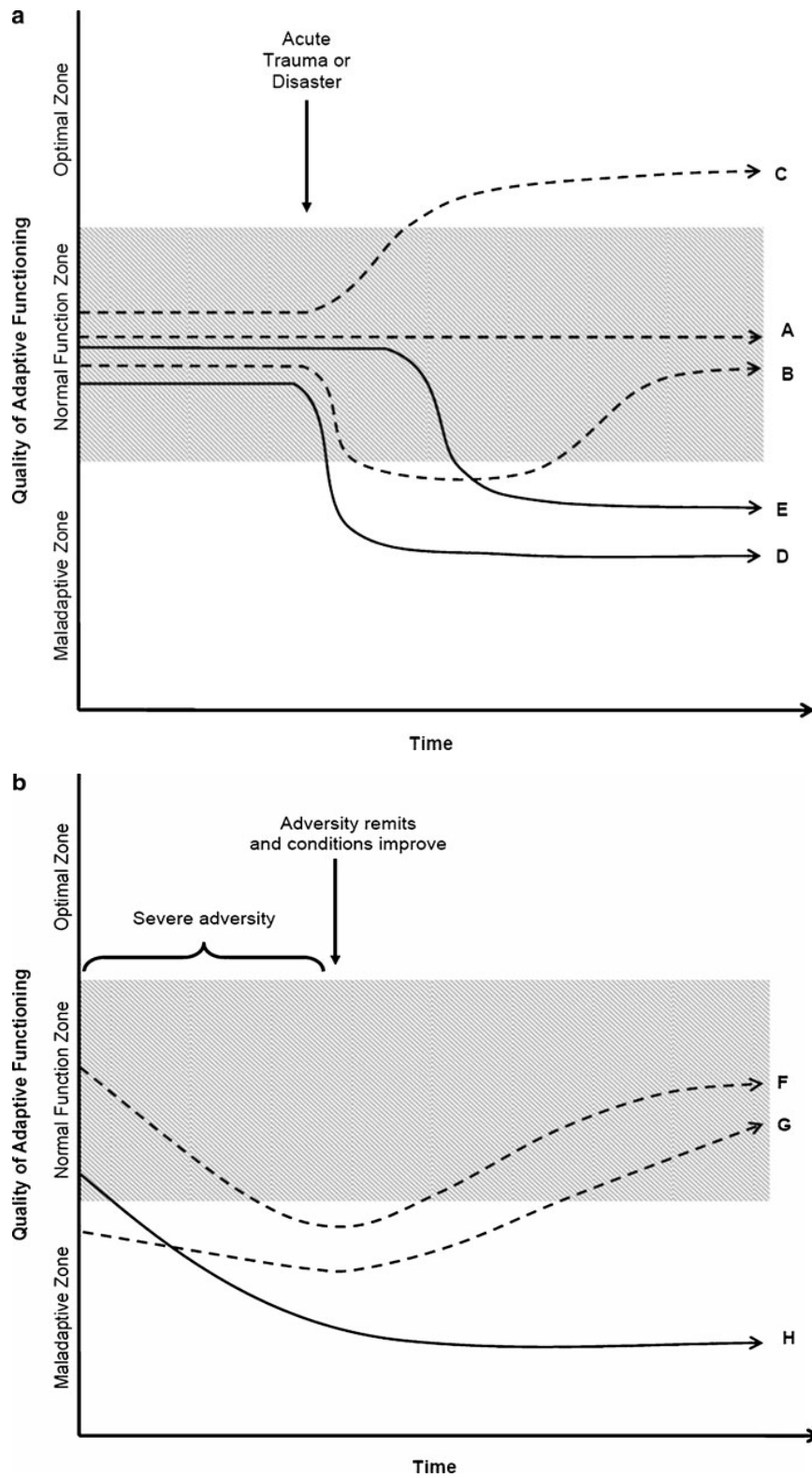


Figure 1. Hypothesised pathways following disaster.
(Masten & Narayan, 2012, pp. 234)

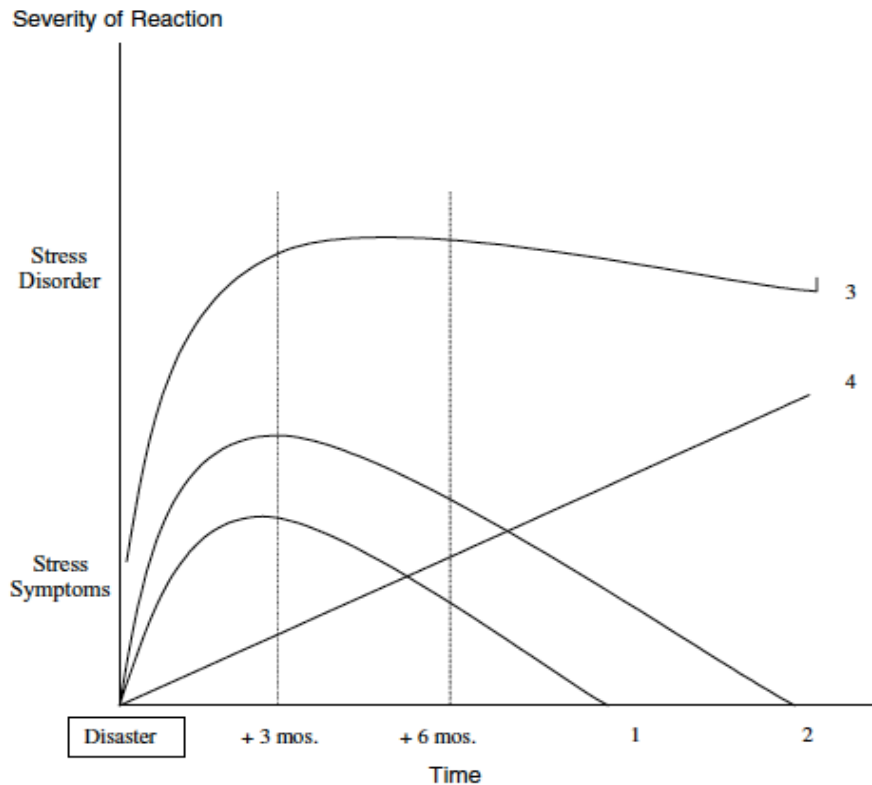


Figure 2. Potential trajectories for children's disaster reactions
(Gist & Lubin, 1989, pp. 122)

and behavioural needs independently (Shaw et al., 2012). As discussed, many factors contribute to a child's response to traumatic events, in addition to the cognitive and emotional development exhibited by the child at the time of the traumatic event. The symptoms that children may exhibit following disaster exposure include depression, anxiety disorders, somatic concerns, and symptoms of PTSD (Giaconia et al., 1995; Silverman & La Greca, 2002). In most cases, these symptoms disappear and normal functioning is restored to resilient children. However, in some cases, children are unable to adapt to changing circumstances and go on to develop symptoms meeting criteria for a diagnosable disorder.

The diagnosis of post-traumatic stress disorder, or PTSD, was introduced in 1980. Research into the psychological effects of trauma exposure has built a strong case for the existence of PTSD, and, despite controversy that the diagnosis is present in pre-school children, there is general consensus that symptoms of PTSD do occur in this population (Scheeringa, 2008). The acute stress experienced due to a traumatic event may result in changes in bodily function (headaches and stomach-aches) and in behaviour (hyperactivity, regressive behaviours, and clinging and dependent behaviours). Changes may be seen in mood (irritability, feelings of insecurity, anxiety, fear, anger, sadness), in thinking (distorted beliefs about causes of the disaster), and in interpersonal relationships, for example, social withdrawal or increased immersion in peer-related activities (Dogan-Ates, 2010; Shaw et al., 2012). Children may re-experience the disaster through recurrent thoughts, images, and sounds, and may show distress in the presence of disaster reminders. Children may also try to avoid thoughts and feelings associated with the traumatic event. In addition, children may exhibit increased arousal, resulting in sleep difficulties and increased irritability or aggression (American Psychiatric Association, 2013).

Revised criteria (published in 2013) for the diagnosis of PTSD in children under six include the presence of play re-enactment in the place of spontaneous and intrusive memories, as well as frightening dreams that may not be clearly associated with the traumatic event (American Psychiatric Association, 2013). In relation to dissociative reactions, trauma-specific re-enactment may be present in the child's play. Negative alterations in cognitions may be exhibited as an increase in the frequency of negative emotions and a decrease in the expression of positive emotions, a decreased interest in significant activities, and social withdrawal. Extreme temper tantrums may also be present (American Psychiatric Association, 2013). The

adversities encountered while experiencing chronic stress may decrease a child's resilience and the risk of experiencing psychological disorders is increased (Masten, 2007).

Prevalence. The prevalence of PTSD in school-aged children has been estimated to range from 3% to 6% (Kilpatrick et al., 2003). This rate refers to children who have been exposed to traumatic events such as parental death, car accidents, and medical procedures. In terms of children exposed to disasters such as hurricanes, moderate to severe PTSD symptoms have been found for approximately 30 – 50% of children and adolescents (La Greca, Silverman, Vernberg, & Prinstein, 1996; Vernberg et al., 1996). Evidence of long-term mental health effects has also been found (Green et al., 1994). Measures taken two years following the 1972 Buffalo Creek disaster showed that 30% of a sample of children under the age of eight met criteria for PTSD. A follow-up study was carried out 14 years later, which showed that 28% of the sample were still exhibiting symptoms of PTSD (Green et al., 1990). A further study by these authors showed that 7% of the children, all females, continued to meet the criteria for a diagnosis of PTSD, 17 years following the traumatic event (Green et al., 1994).

Gender. It has been found that females exhibit increased levels of PTSD symptoms and this was the case in the literature reviewed in the following chapter. One study assessing children following Hurricane Katrina found that girls in the sample had a significant tendency toward experiencing higher PTSD symptoms than boys, with 13% of exposed girls exhibiting severe symptoms of PTSD compared to 4.6% of boys (Russoniello et al., 2002). Another study assessing post-disaster PTSD found that girls reported higher mean scores of PTSD symptoms at 1.5 months and at eight months post-disaster compared to boys (Terranova, et al., 2009).

Comorbid disorders. A child meeting criteria for PTSD following a disaster may also exhibit other psychological difficulties. Anxiety disorders, such as separation anxiety, generalised anxiety, and specific phobias have been found to be comorbid with PTSD (American Psychiatric Association, 2013; La Greca & Prinstein, 2002). A review by La Greca and Prinstein (2002) suggested that the total number of difficulties (psychological or behavioural) experienced by children appears to increase in the short term following a natural disaster. A study of adolescents who had experienced a variety of traumatic events, including natural disasters, found that 80% of adolescents with a diagnosis of PTSD also met criteria for further psychiatric diagnoses, with 40% meeting criteria for two or more diagnoses, particularly mood and anxiety disorders (Giaconia et al., 1995). Depressive symptoms are present in 10 – 14% of those exposed to traumatic events, with the most common disorders being major depression and dysthymia. Children often present with somatic symptoms and regressive clinging as well as dependent behaviours. Behaviour disorders may also be present in a child experiencing PTSD, such as attention-deficit/hyperactivity disorder, oppositional defiant disorder, and conduct disorder, although it may be difficult to identify whether these were present prior to the traumatic event. A study following children who experienced the February 2011 earthquake in Christchurch used various measures of behaviour to show that, in 2013, about 15% of the children in the sample were experiencing significant levels of stress and reduced coping and competence compared to children pre-earthquake (Liberty et al., 2013).

In addition to children who experience PTSD and other difficulties, some children are resilient and are able to continue pre-disaster levels of functioning. Other children are able to successfully restore pre-disaster levels of functioning following PTSD, and some may even experience growth as a result of trauma (Meyerson et al.,

2011). As discussed above, there are a wide variety of possible outcomes for children experiencing traumatic events, however, this study will focus on the positive adaptation some children experience following exposure to a natural disaster.

Positive Adaptation Post-Disaster

It has been shown that children exhibiting appropriate coping skills, self-mastery, good temperament, and a healthy relationship with a caregiver have a lower tendency towards maladjusted development (Rutter, 1987). Some factors that have been shown to contribute to a child's resilience include competent parenting, a positive self-concept, emotional regulation, problem-solving abilities, communication, and the ability to elicit care-taking behaviours from surrounding adults (Masten, 2007). In addition to this, the quality of early attachments and appropriate relationships with caregivers contribute to the emotional stability that is necessary for a child to develop prosocial behaviours, tolerance for frustration, and self-regulation. The school and the wider community provide opportunities for mastery, learning, and the development of social skills. The mastery of various domains, including academic, social, and interpersonal, is integral to the development of a child's resilience (Masten, 2007).

Coping

The definition of coping used in a review by Compas and colleagues (2001) described coping as "... a mindful effort to monitor emotions, cognitions, behaviours, physiology, and the surrounding environment following a traumatic event." (pp. 89). The level of biological, social, cognitive, and emotional development the individual exhibits impacts these processes of regulation. This level of development impacts on the resources that support coping and also affects the type of coping strategies an individual attempts to use (Compas, Connor-Smith, Saltzman, Thomsen, &

Wadsworth, 2001). Coping may also be defined as a continual altering of cognitive and behavioural attempts in order to regulate external or internal demands deemed as overwhelming the capabilities of the individual (Lazarus & Folkman, 1984). Lazarus and Folkman proposed that strategies for coping can be categorised as either problem-focussed or emotion-focussed strategies. Their theory suggests that problem-focussed strategies attempt to improve a stressful situation through active means, such as seeking information or forming alternative solutions. Emotion-focussed strategies attempt to reduce levels of stress through the use of thoughts and feelings, for example, avoiding the source of stress, expressing emotions, or seeking comfort and support from others (Jensen, Ellestad, & Dyb, 2013). Other authors have found that this model of coping does not adequately describe their results and have instead classified coping as active and avoidant coping (Pina et al., 2008), negative coping (Terranova, Boxer, & Morris, 2009), or distraction coping (Ayers, Sandier, West, & Roosa, 1996). Salloum and Lewis (2010) categorised coping into active, adaptive, and avoidant coping.

According to the review by Compas and colleagues (2001), active coping is defined as efforts intended to obtain some personal agency when experiencing stressful events or emotions. Coping strategies that can be placed under this category include cognitive restructuring, problem-solving, and emotional regulation. Adaptive coping is defined as efforts to adapt to the current circumstances, through the use of positive thoughts or activities. Strategies include distraction, wishful thinking, and resignation. Avoidant coping is defined as efforts to avoid, or withdraw from, stressful aspects of the both the environment and one's own emotions. Strategies in this category of coping include self-criticism, blaming others, and venting.

Chapter 2: A Review of the Coping Literature

Included in this chapter is a review of a coping meta-analysis by Compas and colleagues (2001), as well as of the measures used when researching coping in children. Finally, the available literature assessing coping in children, aged six to 19, who have experienced natural disasters such as hurricanes, earthquakes, and tsunamis, will be analysed. Literature regarding children's coping strategies in response to a natural disaster is examined as this can be related to the experiences of children living in Christchurch following the earthquakes.

The meta-analysis by Compas and colleagues (2001) highlighted the challenges associated with definitions of coping and examined the relationships between coping, psychological adjustment, psychopathological symptoms, and individual competence. Most studies reviewed by this meta-analysis had samples of both female and male participants and sample mean ages ranged from three to 19 years. Sample sizes ranged from 34 to 1,021 participants. The majority of the studies used a design that was cross-sectional, and measures varied from self-report questionnaires, to semi-structured interviews, and observations of behaviour. Three studies also used reports of significant others, such as parents and teachers. The variables examined included internalising and externalising problems, as well as social and academic competence. Due to the difficulty of comparing results from studies using different measures of coping, the authors analysed the available research by dividing it into four categories. Problem-focussed coping strategies included problem-solving, information seeking, and problem-focussed support; emotion-focussed coping included emotional expression, denial, and wishful thinking;

engagement coping included problem-solving, emotional expression, and support seeking; and disengagement coping included problem avoidance, cognitive avoidance, and social withdrawal. In terms of the categories of coping used in the current study, problem-focussed coping and engagement coping can be placed under active coping, as problem-solving, seeking information, and emotional expression were strategies included in these categories. Emotion-focussed coping can be categorised under adaptive coping, as denial and wishful thinking were included in this category. Disengagement coping can be categorised under the avoidant coping category, as cognitive avoidance, as well as social withdrawal, were included in this category.

The authors discussed that most of the studies measuring engagement and problem-focussed coping found a positive association between children's use of these strategies and better psychological adjustment. This positive association was found for research examining children and adolescents, and appeared to be significant for internalising and externalising behaviour, as well as competence. Strategies that were positively related to internalising and externalising problems included cognitive and behavioural avoidance, social withdrawal, resigned acceptance of the situation, emotional expression, wishful thinking, and self-blame. Findings suggested that a focus on emotions was not related to maladjustment, rather, responses involving disengagement with the stressor, negative cognitions of the self, and issues with regulating emotions were consistently positively related to increased symptomatology as well as decreased levels of competence. Sub-types of engagement and problem-focussed coping most frequently negatively related to maladjustment included problem-solving, cognitive restructuring, and positive reappraisal of the stressful event. The negative correlation between these types of coping and maladjustment was

often associated with events that were uncontrollable, either subjectively or objectively. The authors suggested that this finding highlighted the need to take into account the context of coping, as efforts to cope with a stressor that is beyond the individual's control, such as a natural disaster, may be ineffective. Problem-focussed coping appeared to be related to improved adjustment when facing controllable stressors; coping strategies were more efficacious when there was a match with the level of control over the situation.

The limitations discussed by the authors included the inability of cross-sectional design to identify coping effectiveness. It may be that the use of coping strategies results in decreased levels of distress, or it may be that levels of distress influence the use of certain coping strategies. In addition to this, cross-sectional studies do not reflect the possibility that coping strategies change. The results found in these studies may not accurately reflect the developmental pathway of participants over time. As seen in the diagrams in the previous chapter, it has been theorised that it may be possible to restore previous levels of functioning over time (Masten & Narayan, 2012). Ideally, coping strategies will assist in the regaining of pre-disaster functioning. As it is possible that a child's developmental level may impact on the use of coping strategies, a view of coping over time may show different patterns of coping. Therefore, the use of longitudinal research is important for developing an understanding of coping strategies and changes that may be seen over time.

A further limitation identified by Compas et al (2001) was that self-report measures were used in the majority of the studies, and it was stated that further research involving multiple informants was required. The use of self-report measures results in information from a singular source and this information may be biased by poor recall, an issue that may be more problematic for children than for adults

(Compas et al., 2001). In addition to this, children may not want to report strategies that were unsuccessful. Children may have difficulty rating “how much” a certain coping strategy was used, meaning a clear understanding of the dimensions children are using when answering these questions is required. Valid information can be obtained from different perspectives of the child’s coping by including information from multiple sources. The combination of self-report responses and responses from other informants can provide information on behaviours seen by others and on self-perceived coping. In this way, the use of multiple informants is used to increase understanding of self-report responses, as well as decrease issues of validity.

There were several implications discussed by Compas and colleagues (2001). Firstly, it was stated that coping is multidimensional and complex, and models of coping that are simple and one-dimensional may not adequately differentiate among the many different coping strategies. For example, studies using models that focus only on the distinction between problem- and emotion-focussed coping, or approach and avoidance coping, may be unable to accurately represent the complex structure of coping. Therefore, an analysis of the form and function of distinct coping sub-types is required. Secondly, the authors suggested that interviews assessing coping may be more useful when talking with young children who have a limited reading ability. Interviews may also provide the opportunity for an increased understanding of the child’s responses, as well as the ability to encourage discussion of the nature and goals of coping strategies. In addition to this, there are limited measures of coping involving reports from informants such as parents or teachers. Each informant may provide specific information that contributes to an understanding of the child’s coping (Compas et al., 2001). Finally, the authors suggested that the evidence from this review indicated that coping significantly contributes to the psychological adjustment

of children following a traumatic event such as natural disasters, medical procedures, and family conflict.

Measures of coping used following natural disasters. A variety of self-report measures have been used to examine the coping strategies of children following natural disasters. A frequently used measure is the Kidcope (Spirito, Stark, & Williams, 1988). In the coping literature reviewed for this study, the Kidcope measure had been used in research following hurricanes such as Hurricane Katrina and Hurricane Floyd. It was designed for children aged seven to 12. The measure is administered in a checklist form, completed by participants, in order to examine the frequency and efficacy of coping strategies. The measure is made up of 15 items with 10 coping strategies. Items for this measure were selected conceptually from coping categories frequently mentioned in the coping literature, and include *"Tried to see the good side of things," "Did something like watch TV to forget,"* and *"Blamed myself for causing the problem."* (Spirito et al., 1988). A specific stressor is identified, such as a natural disaster, and respondents rate how frequently each coping strategy was used on a 4-point scale from 0 = *not at all* to 3 = *almost all the time*. Efficacy is rated on a 5-point scale from 0 = *not at all* to 4 = *very much*. There are two items relating to problem solving, one to cognitive restructuring, two to emotional regulation, and one to social support. These strategies can be categorised under the active coping category. Two items relate to distraction, two to wishful thinking, and one to resignation. These can be categorised under the adaptive category. Two items relate to social withdrawal, one to self-criticism, and one to blaming others. These items can be categorised under the avoidant category. Reliability for the Kidcope categories ranged from 0.09 to 0.41 (Russoniello et al., 2002); these low values may be due to the use of one or two items to construct each strategy.

The Coping Scale (Xiao & Xu, 1996) has been used to assess coping styles following earthquakes such as the Sichuan earthquake in China. This measure was designed for adolescents aged 11 to 16. Participants respond using a checklist format and the measure is made up of 62 items. Respondents rate the frequency of coping strategies on a 5-point scale from 1 = *not sure at all* to 5 = *very sure*. Coping strategies are divided into mature coping, immature coping, and mixed coping. Items in this measure can be categorised under the active and avoidant coping categories. This measure was shown to have a Cronbach's alpha of 0.88 (Zhang et al., 2010).

The Coping Responses Inventory from the Health and Daily Living Form (Moos, Cronkite, Billings, & Finney, 1988) has been used to examine coping strategies following earthquakes such as the Northridge earthquake in the USA. This measure was designed for adolescents aged 12 to 18 and is administered in a self-report checklist format. The measure is made up of 32 items with three coping strategies. Items include "*Tried to see the positive side of the situation,*" "*Made a plan of action and followed it,*" and "*Avoided being with people.*" A specific stressor is identified, such as the earthquake, and respondents rate how frequently each coping strategy was used on a 4-point scale from 0 = *not at all* to 3 = *almost all the time*. There are 11 items relating to active cognitive coping, 13 to active behavioural coping, and 8 to avoidance coping. Reliability for this measure ranged from 0.62 to 0.73 (Valentiner, Holahan, & Moos, 1994).

The Children's Coping Strategies Checklist (Program for the Prevention Research, 1999) was designed to assess active and avoidant coping strategies and has been used in studies of children's responses to disasters such as Hurricane Katrina. The measure was designed for children aged nine to 13 and is administered in a self-report checklist format. It is made up of 24 items that were developed through

adaptation of items from the Behaviour-Based Coping Inventory (Wills, 1985).

Additional items appropriate for this age group were then included and all items were written to reflect dimensions of coping seen in the literature. Examples of items include: *“You thought about what you could do before you did something.”* and *“You avoided it by going to your room.”* A 4-point scale from 1 = *never* to 4 = *most of the time* is used by participants to rate the frequency of coping behaviours. Coping is divided into active and avoidant categories. Reliability for this measure ranged from 0.68 to 0.87 (Pina et al., 2008).

Terranova and colleagues (2009) created a composite coping scale in order to focus on the negative coping strategies reported by participants. This scale was based on the externalised and internalised coping sub-scales of the Self-Report Coping Measure (Causey & Dubow, 1992) and the avoidant actions sub-scale of the How I Coped Under Pressure Scale (Program for the Prevention Research, 1999). Factor analysis of the items in these scales was used to create the composite scale. This measure has been used following hurricanes such as Hurricane Katrina. It was designed for children aged nine to 13 and is administered in a self-report checklist form. The measure is made up of 18 items and an example of an avoidant item is: *“Tried to stay away from the problem.”* Respondents rate how frequently their focus was on venting negative emotions, as well as inward-focussed efforts to manage emotional reactions to stressors. Respondents also rate how often attempts were made to avoid circumstances where stressors were likely to occur. A 5-point scale is used to measure responses from 0 = *never* to 4 = *always*. There are six items relating to the avoidant category of coping. Internal reliability for this negative coping scale was 0.79 (Terranova et al., 2009).

The Coping Questionnaire – Child (Kendall, 1994) was designed to measure children’s perceived ability to cope with specific situations that are anxiety provoking, and has been used following the Mount Ruapehu eruptions in New Zealand. The measure was designed for children aged nine to 13 and is administered in a self-report checklist format. It is made up of three items that can be tailored to a specific situation, for example, the ability to cope with events associated with a volcanic eruption (Huzziff & Ronan, 1999). The three items used following the Mount Ruapehu eruptions were: *“When you are thinking about the volcano, are you able to help yourself feel less upset?”*, *“When you are hearing about the volcano at home, are you able to help yourself feel less upset?”*, *“When you are seeing information about the volcano on TV or in the newspaper, are you able to help yourself feel less upset?”*. Participants respond using a 7-point scale from 1 = *not at all able to help myself* to 7 = *completely able to help myself*. Internal reliability for this measure was 0.71 (Ronan, 1997).

The Children’s Coping Assistance Checklist (Prinstein, La Greca, Vernberg, & Silverman, 1996) was developed by the authors of the study in order to identify how often parents, teachers, and friends helped children utilise various coping strategies. This measure has been used following Hurricane Andrew. It was designed for children aged eight to 11 and it is administered in a self-report checklist form. Possible items were identified from a survey of pamphlets, and items assessing assistance over an extended period of time were added. Confirmatory factor analyses were conducted in order to confirm a three-factor model of coping assistance (Prinstein et al., 1996). The measure is made up of 27 items and examples of items include: *“I drew or coloured pictures about the hurricane with ____.”* and *“I did things with ____ just as if the hurricane never happened.”* For each item, respondents

rate how often they did certain things with other people to help them feel better about the traumatic event on a 4-point scale from 0 = *not at all* to 3 = *almost all the time*. Scores have a possible range from 0 – 27, with higher scores indicating increased coping assistance. Coping assistance is divided into active and adaptive categories. Inter-rater reliability ranged from 0.82 to 0.95 (Prinstein et al., 1996).

A similar scale examining the coping assistance provided by caregivers following disasters has also been developed (Gil-Rivas, Silver, Holman, McIntosh, & Poulin, 2007). This composite scale was adapted from items in the Brief COPE Inventory (Carver, 1997), as well as the emotional expression sub-scale of the Emotional Approach Coping Scale (Stanton, Kirk, Cameron, & Danoff-Burg, 2000). The measure has been used following hurricanes such as Hurricane Katrina. This measure was designed for adolescents aged 13 to 16 and is made up of 20 items. Examples of items include: “*I’ve been taking action to try make the situation better.*” Participants rate the frequency, and the type, of coping assistance provided by caregivers on a scale from 0 = *not at all* to 4 = *most of the time*. Strategies measured can be categorised under the active, adaptive, and avoidant forms of coping. Internal consistency of the scale was 0.89 (Gil-Rivas & Kilmer, 2013).

As recommended in the Compas et al. (2001) meta-analysis of the coping literature, qualitative interviews have also been used to gather data (Jensen et al., 2013; Pfefferbaum et al., 2008; Salloum & Lewis, 2010). Interviews have been used following disasters such as tsunamis and hurricanes. These interviews were developed for children aged six to 18 (Jensen et al., 2013), nine to 17 (Pfefferbaum et al., 2008), and seven to 12 (Salloum & Lewis, 2010). Examples of questions included: “*Of all the things you experienced, what was the worst moment?*” followed by “*When this happened, did you do or say anything to yourself so that you would feel better?*”

(Jensen et al., 2013), as well as “*What has helped you cope with (stressful event) thus far?*” and “*Who do you have that you can talk with about your thoughts and feelings about what happened?*” (Salloum & Lewis, 2010). Interviews were semi-structured and lasted approximately one hour (Pfefferbaum et al., 2008), approximately 45 minutes (Salloum & Lewis, 2010), and between 30 minutes and two hours (Jensen et al., 2013).

Review of the Coping Literature

Major databases were searched and studies were included in the review if they were carried out following a natural disaster and had a focus on children’s use of coping strategies. The selected studies were published in peer-reviewed journals, between 1993 – 2014, and included participants with ages ranging from six to 19. The review of these studies has been organised by the time elapsed since the disaster. These time periods have been further analysed in relation to the frequency of the use of active, adaptive, and avoidant coping strategies during the period post-disaster. First, a summary of the research on coping is presented. Table 1 summarises the reviewed studies and is organised by type of natural disaster (e.g., earthquake, hurricane, tsunami) and time elapsed since the disaster.

Zero to Seven Months Post-Disaster

The frequency of strategies in the active, adaptive, and avoidant coping categories has been examined during the seven months immediately post-disaster. Children aged eight to 16 were found to use adaptive coping strategies most frequently during this time period (Jeney-Gammon et al., 1993; La Greca et al., 1996; Russoniello et al., 2002; Salloum & Lewis, 2010; Vernberg et al., 1996). A longitudinal study assessed children aged seven to 12, one and three months post-disaster, and found that family factors (such as distressing discussions at home

Table 1. *Coping Literature*

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Northridge earthquake 12 months pre- disaster 1 year post	Asarnow et al. (1999) Longitudinal Examine risk and protective processes for post-traumatic stress reactions	<i>N</i> = 49 pre-disaster <i>N</i> = 14 post-disaster <i>M</i> = 13.66 (2.60) 60% male 40% female 84% European American 8% Hispanic American 6% Asian or Pacific Island 2% African American		<i>M</i> = 10.49 (9.89) 19% mild range 9.5% moderate range	- The Coping Responses Inventory (child) - Schedule for Affective Disorders and Schizophrenia for School-Age Children Epidemiologic version (supplemented by sections on PTSD)
Sichuan earthquake 1 year	Zhang et al. (2010) Cross-sectional Examine the coping style of children in low and high exposure areas	<i>N</i> = 423 high exposure <i>N</i> = 188 low exposure <i>N</i> = 235 high exposure <i>M</i> = 13.21 (0.62) low exposure <i>M</i> = 13.11 (0.60) high exposure - 45% male, 55% female low exposure - 44% male, 56% female			- Coping Scale (child) - Mental Health Scale (child)

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Mount Ruapehu eruptions 1 month 3 months	Huzziff & Ronan (1999) Longitudinal Examine the predictors of coping ability	time 1 <i>N</i> = 187 time 2 <i>N</i> = 127 <i>M</i> = 10.4 (1.7) 48% male 54% female 60% Pakeha/European 20% European/Māori 11% Māori 9% other ethnicity		time 1 <i>M</i> = 18.73 (13.71)	- Coping Questionnaire – Child (child) - Post-Traumatic Stress Disorder Reaction Index for Children (child)
Southeast Asian tsunami 10 months	Jensen et al. (2013) Cross-sectional Assess children's retrospective perceptions on what they thought and did in order to cope with a stressful situation	<i>N</i> = 56 females <i>M</i> = 12.8 (3.3) males <i>M</i> = 12.4 (3.0) 36% male 64% female 96% Norwegian	98% secondary education		- UCLA-PTSD-RI (child) - Qualitative interviews

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Forest fire, Israel 1 year	Braun-Lewensohn (2014) Cross-sectional Determine whether three different cultures utilise similar coping resources	<i>N</i> = 1,143 <i>M</i> = 15.89 (1.19) 40% male 60% female 36% Jewish 33% Muslim 31% Druze	Jews - 80-90% employed Muslims - 40-80% employed Druze - 44-80% employed	Jews - <i>M</i> = 1.92 (0.63) Muslims - <i>M</i> = 2.30 (0.69) Druze - <i>M</i> = 2.12 (0.75)	-Psychological Distress (child) - Sense of Coherence Scale (child)
Hurricane Katrina 17 months pre- disaster 6-7 months post	Pina et al. (2008) Longitudinal Examine whether social support, discrimination, and coping predicted post- disaster symptoms of PTSD	<i>N</i> = 46 <i>M</i> = 11.43 (3.69) 61% male 39% female 33% African American 67% European American		23.9% in clinical range - symptom severity <i>M</i> = 19.78 (10.70) - avoidance <i>M</i> = 7.35 (4.49) - hyper vigilance <i>M</i> = 6.93 (3.92) - re-experiencing <i>M</i> = 5.50 (4.14)	- Children's Coping Strategies Checklist (child) - The Child Posttraumatic Stress Disorder Checklist (child)

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Hurricane Gustav 12 months pre- disaster 6 months pre- disaster 1 month post	Weems et al. (2014) Longitudinal Examine the coping strategies of children with high exposure and low levels of symptomatology	<i>N</i> = 141 age 9 -16 52% male 48% female 96% African American 3.5% mixed African American/other 0.5% Hispanic	- 97% received free lunch at school - 2% reduced payment - 1% paid for lunch	time 1 - doubtful-moderate 81% - severe-very severe 19% time 2 - doubtful-moderate 84% - severe-very severe 16% time 3 - doubtful/moderate 91% -severe-very severe 9%	- Children's Coping Strategies Checklist avoidant coping sub- scale (child) - The Post- Traumatic Stress Reaction Index for Children (child)
Hurricane Katrina 1.5 months 8 months	Terranova et al. (2009) Longitudinal Examine the associations of emotional and social factors (fear reactivity, emotional regulatory abilities, peer victimisation) and coping with PTSD symptoms	<i>N</i> = 152 <i>M</i> = 11.5 (0.59) 46% male 54% female 61% European American 18% African-American 17% multiple ethnicities 4% Native American/Asian/Pacific Island/Hispanic		- time 1 <i>M</i> = 0.78 (0.55) - time 2 <i>M</i> = 0.68 (0.85)	- Self-Report Coping Measure externalised and internalised coping sub-scales (child) - How I Coped Under Pressure Scale avoidant actions sub-scale (child) - The Child Posttraumatic Stress Disorder Checklist (child)

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Hurricane Andrew 3 months	Vernberg et al. (1996) Cross-sectional Identify possible categories of coping and examine the association between these categories and symptoms of PTSD	<i>N</i> = 568 age 8 - 10 45% male 55% female 44% European American 26% Hispanic American 22% African American 3% Asian American 5% unknown ethnicity	- 38% managerial or professional - 35% technical or sales - 10% service - 5% operator- labourer - 88% high school - 36% college - 14% university		- Posttraumatic Stress Disorder Reaction Index for Children (child) - Kidcope (child)
Hurricane Andrew 3 months 7 months 10 months	La Greca et al. (1996) Longitudinal Evaluate the ability of exposure, pre-existing characteristics of the child, characteristics of the post-disaster environment, and coping skills to predict functioning	time 1 <i>N</i> = 568 time 2 <i>N</i> = 521 time 3 <i>N</i> = 442 33% age 8 31% age 9 36% age 10 42% male 58% female 46% European American 24% Hispanic American 24% African American		time 1 <i>M</i> = 29.5 (16.8) time 2 <i>M</i> = 24.4 (15.9) time 3 <i>M</i> = 20.8 (14.8)	- Posttraumatic Stress Disorder Reaction Index for Children (child) - Kidcope (child)

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Hurricane Hugo 5 months	Jeney-Gammon et al. (1993) Cross-sectional Examine children's coping styles and self- reported depressive symptoms	<i>N</i> = 257 36% 8 years 30% 9 years 34% 10 years 49% male 51% female			Kidcope (child)
Hurricane Floyd 6 months	Russoniello et al. (2002) Cross-sectional Analyse the relationship between coping choices and PTSD symptoms	<i>N</i> = 150 46% 9 years 45% 10 years 8% 11 years 1% 12 years 43% male 57% female 63% African-American 33% European American 4% Hispanic		9 year olds - doubtful 5.8% - mild 27.5% - moderate 31.9% - severe 24.6% - very severe 10.1% 10 year olds - doubtful 6.0% - mild 20.9% - moderate 35.8% - severe 26.9% - very severe 10.4%	- The Post- Traumatic Stress Disorder Reaction Index for Children (child) - Kidcope (child)

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Hurricane Katrina 6 months	Salloum and Lewis (2010) Cross-sectional Examine the main coping strategies of African American children and their parents	<i>N</i> = 42 children and their parents <i>M</i> = 9.18 (1.42) 69% male 31% female 100% African American	Predominantly low-income		Qualitative interviews
Hurricane Andrew 7 months	Prinstein et al. (1996) Cross-sectional To examine the specific types of coping assistance provided to children by parents, teachers, and friends	<i>N</i> = 506 (8-11 years) 32% 8-9 years 31% 9-10 years 37% 10-11years 44% male 56% female 47% European American 27% Hispanic 23% African-American 3% Asians		- 18% severe-very severe - 23% moderate - 34% mild - 24% no/doubtful	- Children's Coping Assistance Checklist (child) - Kidcope (child) - The Post- Traumatic Stress Disorder Reaction Index for Children (child)

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Hurricane Katrina 8 months	Pfefferbaum et al. (2008) Cross-sectional Examine the displacement experiences of children	<i>N</i> = 23 <i>M</i> = 13 (3) 35% male 65% female 91% African American 9% European American			Qualitative interviews
Hurricane Katrina 1 year 2 years	Kilmer and Gil-Rivas (2010) Longitudinal Examine the role of caregiver coping advice in relation to the child's development of post- traumatic growth	time 1 <i>N</i> = 66 caregiver-child dyads time 2 <i>N</i> = 51 dyads time 1 <i>M</i> = 8.5 (1.1) 64% male 56% female 77.5% African American 15% white 7.5% other ethnicities	- 68% unemployed - 56% annual household income < \$9,999 - 17% income < \$20,000	time 1 <i>M</i> = 28.23 (15.67) time 2 <i>M</i> = 23.98 (12.70)	- The UCLA PTSD Reaction Index (child) - Positive reframing coping advice items

Disaster Time post-disaster	Study Aim	Participants (<i>N</i> and other characteristics)	Socioeconomic status	PTSD symptoms	Measures
Hurricane Katrina 13 months 22 months	Gil-Rivas & Kilmer (2013) Longitudinal Determine the types of coping advice and the effect of this advice on children's PTSD symptoms	time 1 <i>N</i> = 68 caregiver-child dyads time 2 <i>N</i> = 53 dyads child <i>M</i> = 8.5 (1.1) 44% male 56% female 77% African American 15% white 7.5% other ethnicity	- 63% high school diploma or less - 68% unemployed - 56% annual income < \$9,999 - 17% annual income < \$20,000	child time 1 <i>M</i> = 27.81 (16.02) child time 2 <i>M</i> = 23.79 (12.53) parent time 1 <i>M</i> = 2.62 (1.06)	- Coping Advice Scale (parent) - The UCLA-PTSD RI-1 (child)

regarding the disaster) and initial coping abilities at one month were significant predictors of adaptive coping at three months (Huzziff & Ronan, 1999). Two studies assessed children aged eight to 10, three months post-disaster, and found that wishful thinking, a form of adaptive coping, was the most frequently reported strategy (La Greca et al., 1996; Vernberg et al., 1996). In a study examining children's responses following Hurricane Hugo, wishful thinking was reported by 94% of children aged eight to ten, assessed five months post-disaster. Distraction (another adaptive strategy) was reported by 88% of children in this study (Jeney-Gammon et al., 1993). Wishful thinking was also the most frequently used strategy, followed by distraction, in a study assessing children aged nine to 12, six months post-disaster (Russoniello et al., 2002). About 30% of children reported the use of distraction as a coping strategy in a qualitative study by Salloum and Lewis (2010) assessing 42 children aged seven to 12, six months post-disaster.

The second most frequently used category of coping reported by children in the immediate post-disaster period was active coping (Jeney-Gammon et al., 1993; La Greca et al., 1996; Russoniello et al., 2002; Salloum & Lewis, 2010; Vernberg et al., 1996). The use of positive coping, a form of active coping, was reported in two studies that took measures three months post-disaster (La Greca et al., 1996; Vernberg et al., 1996). The use of cognitive restructuring, another form of active coping, was reported by 89% of children in a study five months post-disaster (Jeney-Gammon et al., 1993). Other strategies in the active coping category, such as emotional regulation, problem-solving, cognitive restructuring, and social support, were frequently used to cope in one study six months post-disaster (Russoniello et al., 2002). In a study following Hurricane Katrina, about 15% of children reported active coping, which included strategies relating to seeking meaning and understanding, as

well as positive cognitive restructuring strategies, six months post-disaster (Salloum & Lewis, 2010).

Among the reviewed studies, avoidant coping was the least likely category of strategies to be used by children aged eight to 16 during this time period (Jeney-Gammon et al., 1993; La Greca et al., 1996; Russoniello et al., 2002; Salloum & Lewis, 2010; Vernberg et al., 1996). Blame and social withdrawal, strategies under the avoidant coping category, were the least frequently reported in four studies that took measures three months (La Greca et al., 1996; Vernberg et al., 1996), five months (Jeney-Gammon et al., 1993), and six months post-disaster (Russoniello et al., 2002). Avoidant coping was reported by about 10% of children aged eight to ten in a study that took measures six months post-disaster (Salloum & Lewis, 2010). Results from these studies show that children more often used adaptive and active coping strategies compared to avoidant coping strategies during the seven months immediately following a natural disaster.

Coping and symptoms of PTSD. In relation to PTSD, strategies under the avoidant coping category, such as blame and social withdrawal, have been found to contribute to increased symptoms (Pina et al., 2008; Russoniello et al., 2002; Vernberg et al., 1996). Symptoms of PTSD were found to be positively correlated with avoidant coping in a study assessing 46 children aged eight to 14, 17 months pre-Hurricane Katrina and six to seven months post-disaster (Pina et al., 2008). In addition to this, avoidant coping behaviours significantly predicted PTSD symptoms and anxiety. This study also found that active coping strategies were associated with PTSD symptoms, however, this category of coping was not found to be a significant predictor of these symptoms.

Additional evidence that specific coping strategies are related to symptoms of PTSD in children was found in the study by Vernberg and colleagues (1996), where results showed that symptoms of PTSD were positively correlated with blame and anger, social withdrawal, and wishful thinking strategies three months post-disaster. Although the blame and anger strategy was linked with a high level of PTSD symptoms, it was the least often used coping strategy in this sample. One study of children's coping responses six months following Hurricane Floyd found that wishful thinking was the least associated with PTSD symptoms, and the most frequently used strategy (Russoniello et al., 2002). This study also found further strategies that were not significantly associated with PTSD: distraction, social support, cognitive restructuring, and resignation. A longitudinal study examined the responses of children aged nine to 16, 12 and six months pre-disaster and one month post. Results showed that children who exhibited significantly low levels of avoidant coping strategies also had low levels of PTSD symptoms and high exposure to the disaster (Weems & Graham, 2014). In relation to depressive symptomatology, it was found that social withdrawal, self-blame, and emotional regulation were correlated with increased symptomatology, while cognitive restructuring, and seeking social support had negative correlations with symptomatology (Jeney-Gammon et al., 1993).

In contrast, the study by Huzziff and Ronan (1999) found that PTSD symptomatology at one month was not a significant predictor of coping ability at three months post-disaster. However, the authors acknowledged that the PTSD measure used may have been assessing many of the same factors as the other measures used in the study, such as the Children's Depression Inventory (Kovacs, 1978) and the Negative Affect Self-Statement Questionnaire (Ronan, Kendall, & Rowe, 1994).

Eight to Twenty-Four Months Post-Disaster

The frequency of active, adaptive, and avoidant coping categories have also been identified during the eight to 24 months following a disaster. In one qualitative study, children aged 10 to 15 reported using strategies in the active coping category, such as cognitive strategies (*"I sucked it all in, and breathed it all out. I just let it go."*), and active strategies (*"I write stuff, like I entered a poetry contest at school. I won."*), eight months following Hurricane Katrina (Pfefferbaum et al., 2008). Positive thinking (*"I had to think happy thoughts."*), attachment-seeking behaviour (*"It was quite creepy, but we were all together so I knew it was safe."*), and seeking comfort (*"When I saw that my mom and dad were scared, I became very scared, because then I knew that something wrong was happening. So I took my teddy bear"*) have also been reported in another qualitative study examining the responses of children aged nine to 14, ten months following a disaster (Jensen et al., 2013). In one study following the Sichuan earthquake, problem-solving, another form of active coping, was the most frequently used strategy for both children with high and low exposure to disaster, one year post-disaster. This strategy was followed closely by asking for help, and rationalisation; strategies that can be placed in the active coping category (Zhang et al., 2010). Braun-Lewensohn (2014) examined personal and community coping resources in a sample of children aged 12 to nineteen, one year post-disaster, and found that personal coping resources were significantly associated with fewer symptoms. Community coping resources were found to be less significantly associated, with the exception of children who had identified themselves as belonging to a collectivist culture.

A study analysing children's responses to the Southeast Asian tsunami found that distracting activities (*"...So I could think of something else, I played Gameboy."*),

a form of adaptive coping, was reported ten months post-disaster (Jensen et al., 2013). Fantasy was the second most frequently used coping strategy for both high- and low-exposed children one year following the Sichuan earthquake (Zhang et al., 2010).

In regards to forms of avoidant coping, anger (*"I just shut up, went outside, and let it, and let all the anger on the pedals of my bike."*) was described in one study of children aged nine to 17 as a helpful coping strategy eight months post-disaster (Pfefferbaum et al., 2008). Avoidant thinking (*"I thought a lot about my school... And I thought about my class and my friends."*), another form of avoidant coping, was a strategy reported in a study assessing children aged nine to 14, ten months post-Hurricane Katrina (Jensen et al., 2013). Additional forms of avoidant coping, such as self-blame and avoiding the problem, were the least used coping strategies in a study of children who had experienced the Sichuan earthquake a year earlier (Zhang et al., 2010).

Results from studies examining this time period show that strategies categorised under active coping are frequently reported, followed by forms of adaptive coping. Strategies relating to avoidant coping were least often reported. However, it has been suggested that the use of active coping strategies in situations that are uncontrollable, such as a natural disaster, are not effective (Pina et al., 2008). It may be the case that strategies relating to thoughts and feelings are more appropriate for uncontrollable situations, such as natural disasters, compared to the use of strategies that actively attempt to improve the situation (Jensen et al., 2013). It may also be the case that forms of active coping are more helpful long-term strategies.

Coping and PTSD. Forms of avoidant coping have also been assessed in relation to symptoms of PTSD (La Greca et al., 1996; Terranova et al., 2009). Terranova and colleagues (2009) found that there was a significant correlation

between negative coping and PTSD symptoms at 1.5 months post-disaster and at eight months. La Greca and colleagues (1996) found that social withdrawal strategies and blame and anger strategies were associated with increased PTSD symptomatology in a sample of children aged eight to ten, seven months post-disaster. When measures were taken again at 10 months, it was found that participants who used blame and anger as a coping strategy early in their recovery post-disaster had increased symptoms of PTSD at follow-up (La Greca et al., 1996).

In comparison, Asarnow and colleagues (1999) found that high rates of PTSD symptoms were significantly associated with the use of cognitive coping strategies, (an active form of coping) in a sample of children aged eight to 18, one year post-disaster. However, the use of active behavioural coping, for example *“Made a plan of action and followed it”* was not associated with symptoms of PTSD. High rates of avoidant coping were found to be somewhat associated with symptoms of PTSD. The authors suggested that children with increased symptoms of PTSD used both cognitive as well as avoidance strategies to manage distressing images and thoughts related to the earthquake. The use of cognitive coping strategies may also lead to increased rumination about other earthquakes or aftershocks. The type of disaster may help to explain the differences seen in the results of the study by Asarnow et al. (1999) following an earthquake and that of La Greca and colleagues (1996) following a hurricane. Children who have experienced an earthquake face the possibility of continual aftershocks causing further damage and disruption in many areas of their life. It may be the case that these children use a variety of different coping strategies to manage the ongoing threat of aftershocks.

The study by Asarnow et al. (1999) also found that the presence of a pre-disaster anxiety disorder was a significant predictor of PTSD symptoms, one year

post-disaster. Disorders such as depression and disruptive behaviour disorder were not found to be significant predictors. It was suggested that children with a pre-existing anxiety disorder were more likely to exhibit extreme subjective appraisal of the event and, when exposed to reminders of the disaster, were less able to calm themselves.

Coping and exposure. Of the studies measuring the association between coping and exposure to disaster, Terranova and colleagues (2009) found that avoidant coping strategies at 1.5 months post-disaster moderated the association between hurricane exposure and symptoms of PTSD at eight months post-disaster. Children who less frequently used avoidant coping strategies exhibited less symptoms of PTSD at eight months, regardless of their level of exposure. Weems and Graham (2014) took measures 12 and six months pre-disaster and one month post-disaster, and found that children with high exposure used avoidant coping strategies less frequently, although this was only the case with children who also had low levels of symptomatology. The authors identified these children as resilient, due to their low levels of PTSD symptoms despite high exposure to the disaster. Children who had high exposure and high levels of symptoms exhibited similar levels of avoidant coping strategies to the children who had low levels of both these factors.

Results from these longitudinal studies show that there may be an association between types of coping and symptoms of PTSD. These results suggest that the less frequent use of avoidant coping strategies may be associated with decreased symptoms of PTSD. However, Terranova and colleagues (2009) found an association regardless of level of exposure, whereas Weems and Graham (2014) only found this association when there was a high level of exposure to the disaster, indicating that further research is needed to clarify this association.

Coping and Caregivers

In addition to identifying children's strategies, it is important to examine parents' own coping abilities and the coping assistance they provide their children with, following a traumatic event (Deering, 2000). Coping assistance is a concept that is similar to coping in that it reflects active attempts to manage a traumatic event, but it is initiated by others, rather than the child (Prinstein et al., 1996). In the qualitative study by Salloum and Lewis (2010), about 49% of parents reported the use of active coping, six months post-disaster. This was followed by adaptive coping (28%) and parent-child strategies (15%), which involved the parent providing coping assistance or the child helping the parent to cope, either actively or passively. In this study about 42% of children reported coping assistance from their parents. The study found that families provided coping assistance in the form of distraction, and that schools provided coping assistance in the form of roles and routines.

In another study, coping assistance in the form of roles and routines from parents, teachers, and friends was most frequently reported by children aged eight to 11, seven months post-disaster (Prinstein et al., 1996). This was followed by distraction assistance, and emotional processing was the least reported coping assistance. Results also showed that distraction coping assistance was highly positively correlated with forms of active coping. The authors suggested that the frequency of roles and routines coping assistance reflected that reinstituting roles and routines may help to normalise children's experiences. Jensen and colleagues (2013) found that caregiver coping was reported by children ten months post-disaster, and categorised this as thoughts of parental competency and protection (*"I knew that my mom and dad would bring me to safety..."*). A longitudinal study found that forms of active and adaptive coping, such as seeking social support, positive reframing, self-

distraction, and religious coping were the most frequently provided type of coping advice at one and two years post-disaster, while avoidant forms of coping advice were less frequently provided (Gil-Rivas & Kilmer, 2013). A study carried out by these authors in 2010 found that coping assistance in the form of positive reframing was significantly associated with the child's level of post-traumatic growth at one year post-disaster (Kilmer & Gil-Rivas, 2010).

Coping assistance and PTSD. Coping assistance has also been examined in relation to children's PTSD symptoms (Prinstein et al., 1996). Prinstein and colleagues (1996) found that the children in the sample with PTSD symptoms that were moderate to very severe (41% of the sample) reported increased emotional processing and distraction coping assistance from parents, teachers, and friends, compared to children with low levels of PTSD symptoms. Those with doubtful symptoms of PTSD reported increased roles and routines coping assistance compared to children with mild to very severe symptomatology.

Another study found that caregiver coping advice relating to all forms of coping was associated with increased symptoms of PTSD at one year post-disaster. However, at two years post-hurricane, advice relating to avoidant forms of coping was the only coping category significantly associated with increased symptoms of PTSD (Gil-Rivas & Kilmer, 2013). Results from these studies focussing on caregiving variables appear to support the evidence found in the literature reviewed above; active and adaptive strategies were reported most frequently, and avoidant strategies were reported least frequently but were most often associated with increased symptoms of PTSD.

A prospective study observed parenting behaviours pre-disaster and examined the influence of these, as well as post-disaster parental stress, on their child's distress

following the Northridge earthquake (Proctor et al., 2007). Measures of parenting behaviours were taken, on average, 15 months pre-disaster, and measures of parenting stress and child distress were taken eight months post-disaster. Children's ages ranged from four to eight years at this time point post-disaster. Results showed that the association between increased earthquake impact and increased levels of child distress was not found for families with fathers showing high levels of negative parenting behaviours with daughters, or for mothers showing low levels of positive behaviours with sons. Additional results showed that post-disaster parental stress significantly mediated the effect of disaster impact on boys' distress, and that this factor only partially mediated the effect of disaster impact for girls' levels of distress. Results from this study suggest that it is important to explore the differences that may be found between boys' and girls' responses to disaster.

Additional Variables

Age. Results from the reviewed literature regarding the relationship between age and the use of coping strategies are mixed. In some of the reviewed studies, no association was found between these variables (Jeney-Gammon et al., 1993; Kilmer & Gil-Rivas, 2010; La Greca et al., 1996; Russoniello et al., 2002; Zhang et al., 2010). One study found that an increase in age was associated with an increase in coping ability (Huzziff & Ronan, 1999). Another study found that helping others was only reported by older youth, but parental competency and protection, attachment seeking behaviour, distraction, seeking information, and talking were reported irrespective of age (Jensen et al., 2013). The study by Prinstein and colleagues (1996) found that younger children compared to older children reported emotional processing coping assistance more frequently. Another study found that younger children reported more

dependency on caregivers and extended family members rather than friends, compared to adolescents (Salloum & Lewis, 2010).

Gender. In some of the reviewed studies, no significant association was found between gender and coping strategies (Gil-Rivas & Kilmer, 2013; Huzziff & Ronan, 1999; Jeney-Gammon et al., 1993; La Greca et al., 1996; Prinstein et al., 1996). The study by Russoniello et al. (2002) found that girls used social support more often than boys. Zhang et al. (2010) found that girls had increased scores of self-blame compared to boys, and that boys were more likely to use problem-solving than girls.

Patterns in the Research

As discussed above, some coping strategies were used more frequently than others. A consistent pattern was seen in the coping research that took measures during the seven months post-disaster, with all the studies reviewed finding that forms of adaptive coping were most frequently used. This was followed by forms of active and, finally, avoidant coping. In terms of the research during the eight to 24 months post-disaster, it was found that forms of active coping were most frequently reported, followed by adaptive and avoidant coping. In regards to symptoms of PTSD, the increased use of avoidant coping was most frequently associated with increased symptomatology (La Greca et al., 1996; Pina et al., 2008; Russoniello et al., 2002; Terranova et al., 2009; Vernberg et al., 1996). One study found that the use of wishful thinking (a form of adaptive coping) was also associated with increased symptoms of PTSD (Vernberg et al., 1996), however, another study found that wishful thinking was the strategy least associated with symptoms of PTSD and the most often used (Russoniello et al., 2002). These differing results regarding strategies and symptoms of PTSD indicate that further research is required in order to more fully understand the association between these factors.

Summary of the Literature

Studies. Seventeen studies examining coping post-disaster with children aged six to 19 were identified. The oldest reported age was 19 years (Braun-Lewensohn, 2014) and the youngest was 6 years (Jensen et al., 2013; Pina et al., 2008). Thirteen of these studies were carried out in the U.S., one in Norway, one in China, one in Israel, and one in New Zealand. Ethnicity was reported in 15 studies and the predominant ethnic groups were White/European, African American, and Hispanic. Socioeconomic status was reported in seven studies. A total of 2,454 females and 1,944 males participated in these studies, and samples were majority female. A total of 4,398 children participated with sample sizes ranging from 23 (Pfefferbaum et al., 2008) to 1,143 (Braun-Lewensohn, 2014). A cross-sectional design was used in nine studies (Braun-Lewensohn, 2014; Jeney-Gammon et al., 1993; Jensen et al., 2013; Pfefferbaum et al., 2008; Prinstein et al., 1996; Russoniello et al., 2002; Salloum & Lewis, 2010; Vernberg et al., 1996; Zhang et al., 2010). A longitudinal design was used in eight studies and measures were taken post-disaster (Asarnow et al., 1999; Gil-Rivas & Kilmer, 2013; Huzziff & Ronan, 1999; Kilmer & Gil-Rivas, 2010; La Greca et al., 1996; Pina et al., 2008; Terranova et al., 2009; Weems & Graham, 2014). Two studies took prospective measures at 12 months pre-disaster (Asarnow et al., 1999) and at 17 months pre-disaster (Pina et al., 2008). One study took measures 12 and six months pre-disaster (Weems & Graham, 2014).

Disaster type. There were twelve studies post-hurricane (Gil-Rivas & Kilmer, 2013; Jeney-Gammon et al., 1993; Kilmer & Gil-Rivas, 2010; La Greca et al., 1996; Pfefferbaum et al., 2008; Pina et al., 2008; Prinstein et al., 1996; Russoniello et al., 2002; Salloum & Lewis, 2010; Terranova et al., 2009; Vernberg et al., 1996; Weems & Graham, 2014), one study post-tsunami (Jensen et al., 2013), two studies post-

earthquake (Asarnow et al., 1999; Zhang et al., 2010), one study post-forest fire (Braun-Lewensohn, 2014), and one study post-volcanic eruption (Huzziff & Ronan, 1999).

Time period. One study took measures 12 and six months pre-disaster (Weems & Graham, 2014), and two studies took measures at 12 (Asarnow et al., 1999) and at 17 months pre-disaster (Pina et al., 2008). Eight studies took measures within ten months following the disaster (Huzziff & Ronan, 1999; Jeney-Gammon et al., 1993; Jensen et al., 2013; Pfefferbaum et al., 2008; Prinstein et al., 1996; Russoniello et al., 2002; Salloum & Lewis, 2010; Vernberg et al., 1996). Two studies took measures one year post-disaster (Weems & Graham, 2014; Zhang et al., 2010). The seven longitudinal studies took several measures during a time-period ranging from one to 24 months post-disaster (Asarnow et al., 1999; Gil-Rivas & Kilmer, 2013; Huzziff & Ronan, 1999; Kilmer & Gil-Rivas, 2010; La Greca et al., 1996; Pina et al., 2008; Terranova et al., 2009).

Limitations of the Coping Research

Developmental stage. Children with a wide age-range were examined in these studies and different developmental considerations are required for eight-year-old children and for 16-year-old children (Kail & Barnfield, 2012). In terms of cognitive development, children aged seven to 11 are in the concrete operational stage, meaning they are beginning to use mental operations to solve problems and to reason. The strategies and rules children begin to use result in thinking that is more systematic (Kail & Barnfield, 2012). Children from age 11 onwards are in the formal operational stage of development and exhibit more sophisticated thinking. In terms of coping, it is likely that the core characteristics of coping seen in young children are not the same as those seen in adolescents (Compas et al., 2001). Increasingly complex coping

strategies appear in early to middle childhood, as well as increasingly complex language and abilities relating to metacognition. Strategies that emerge include cognitive reframing, the use of self-talk to combat negative emotions, or the generation of other possible solutions (Compas et al., 2001). A child's coping abilities will rely on behavioural and cognitive responses, as well as developmental level, the stressful context, and learned styles of coping with stress. The inclusion of children at very different developmental stages makes it difficult to understand developmental differences in coping, and make accurate conclusions about participants.

Defining coping. Definitions of coping are important for consistency in measurement, and different aspects of coping were measured in each of the studies identified. For example, avoidant and active coping was measured (Pina et al., 2008), coping assistance was examined (Prinstein et al., 1996), coping strategies were identified (Russoniello et al., 2002), and negative coping was measured (Terranova et al., 2009). As can be seen in these studies, a wide variety of coping strategies have been measured in research. According to Compas et al. (2001), there has been minimal consistency in the use of the varying types of coping in both measures and research. The various definitions of coping result in difficulties when comparing results across studies and when identifying differences in coping in relation to age, gender, and other individual variables. This has also affected the development of an accurate picture of the nature of coping in children and adolescents (Compas et al., 2001).

Strategies and PTSD criteria. The revised DSM-5 diagnostic criteria for PTSD now includes socially withdrawn behaviour under Criteria C, resulting in social withdrawal now being seen as both a symptom of PTSD as well as a coping strategy (American Psychiatric Association, 2013). In the literature reviewed above, avoidant

coping strategies, such as social withdrawal, were reported less frequently than other types of strategies. However, children reporting the use of these strategies also exhibited increased symptoms of PTSD. It may be that results regarding social withdrawal and symptoms of PTSD now need to be examined more closely in order to separate symptoms from strategies.

Measures. The use of developmentally appropriate measures is important when studying children (Shaw et al., 2012). Models of adult coping have been drawn on for research with children and adolescents (Compas et al., 2001). Compas and colleagues (2001) suggested that the use of interview questions may provide a more accurate reflection of coping in young children compared to checklist or scale measures, as this offers the opportunity for a more in-depth understanding of coping strategies, as well as the ability to further question the nature and goals of the reported coping strategies. However, few studies used this method to gain information regarding the coping strategies used by participants.

Closed question measures. The use of closed question checklists or scales requires participants to respond within pre-selected categories. Responses are usually made in the form of a Yes/No choice, a choice of one response from multiple options, or in the form of choosing one or more items that apply (Barker, Pistrang, & Elliott, 2003). The majority of the identified studies used checklist or scale measures to gain information from participants. In terms of coping measures, the clarity of items is affected by measures combining strategies within a single item (Compas et al., 2001). An example of this, from the Kidcope (Spirito et al., 1988) measure, clearly shows this limitation. The item *“I stayed away from other people, kept my feelings to myself, and just handled the situation on my own”* reflects social withdrawal (*“stayed away from other people”*), emotional regulation (*“kept my feelings to myself”*), and

problem-solving (“*handled the situation on my own*”). A child may report that the item applies to them for a number of reasons, or may not identify this item as only one aspect matched their behaviour (Compas et al., 2001). Therefore, the information provided by these measures gives evidence for the use of coping strategies, but does not give participants the opportunity to provide more detailed answers regarding their experiences following a traumatic event (Barker et al., 2003).

Validity. There are issues of validity when using self-report measures. Participants may not answer truthfully, or may have their own version of events that differ from those of parents or researchers (Barker et al., 2003). All studies used child self-report measures. In terms of bias, respondents may be unwilling to report using strategies that were unsuccessful, or that may not appear to be socially desirable (Compas et al., 2001). The respondent’s own level of psychological distress following a natural disaster may also influence the responses given (La Greca & Prinstein, 2002). The addition of multi-informant measures may support and build on the self-report responses, and provide more reliable evidence for the hypotheses of the study, as well as decreasing the issues of validity surrounding the use of self-report measures (Barker et al., 2003; Compas et al., 2001).

Pre-disaster measures. Measures of coping pre-disaster provide important information regarding the coping process (Compas et al., 2001). For example, the study by Pina and colleagues (2008) utilised data that had been taken 17 months before Hurricane Katrina and were able to analyse coping as a predictor of PTSD symptoms. The study by Asarnow and colleagues (1999) used information regarding pre-earthquake disorders to predict symptoms of PTSD post-earthquake. The study by Weems and Graham (2014) examined the relationship between exposure, symptoms of PTSD, and avoidant coping. Prospective studies are necessary in order to control

for initial symptoms and to be able to use coping variables to account for changes that may be seen over time.

Summary

It is clear that children's responses to natural disasters are influenced by a number of contextual factors including the child's level of cognitive development, parental ability to cope with the disaster and its aftermath, and factors outside the family such as community functioning, governmental response, and ethnicity. Symptoms of PTSD may also be present following a disaster and these symptoms, alongside other disorders such as anxiety and depression, may also hinder children's ability to restore pre-disaster functioning.

A number of studies have examined coping strategies following a natural disaster and have highlighted children's ability to manage their changed circumstances. Authors have used various definitions and measures in order to do this, therefore an attempt was made in the current study to clarify the sub-types of coping strategies seen in the literature and to categorise these. As seen in Table 2, examples of statements from the reviewed literature describing coping strategies have been categorised under active, adaptive, and avoidant coping, indicating the validity of this classification. The strategies in this table have been further categorised using items from the Kidcope measure (Spirito et al., 1988). As seen in the table, various names have been given to these coping strategies by researchers, and examples from participants are given in order to clarify the aim of the strategy. In addition, the various types of coping assistance provided to children by caregivers is included in order to highlight this type of coping discussed by children in these studies. The review by Compas and colleagues (2001) discussed the need to identify specific sub-types of coping and this table is an attempt at clarifying the sub-types seen in the

literature and categorising these under broad categories of coping. Through this categorisation of coping strategies, patterns regarding the use of specific categories of coping were found in the current literature, specifically, children more frequently reported using adaptive and active coping strategies, followed by avoidant strategies.

This attempt to categorise the variety of coping strategies seen in the literature reflects a major limitation of the current research regarding children's coping. This factor, in addition to the overuse of checklist measures and the lack of multiple informants, suggests that the proposed study may provide beneficial information regarding children's coping strategies.

Research Questions

The current study aimed to explore the following research questions:

1. What are the coping strategies described by children in response to commonly occurring childhood upsets?
2. How do parents and teachers describe the children's coping strategies?
3. What do parents and teachers do to help children cope with the effects of the earthquakes?

Rationale for the Present Study

An aspect of the current study that may differ from the literature regards the post-disaster experiences of residents in Christchurch. Residents have been living with the threat of unpredictable aftershocks for many years; aftershocks that have continued to occur since the September 2010 earthquake. Specifically, during 2011, multiple aftershocks ranging from magnitude 5.5 to 6.2 and above occurred ("Christchurch earthquake 13/06", 2011, June 13; "Swarm of quakes hits Christchurch", 2011, December 23). In 2012, a magnitude 5.5 aftershock occurred

Table 2. *Categories of Coping and Specific Coping Strategies*

Coping Category (Compas et al. 2001)	Kidcope Strategies (Spirito et al. 1988)	Descriptor from Researchers	Examples	Age	Sources
Active	Cognitive restructuring	Cognitive restructuring	"Tried to see the good side of things."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) Russoniello et al. (2002) <i>p. 469</i> Vernberg et al. (1996) <i>p. 242</i>
		Positive cognitive restructuring	"Remember the positive things in New Orleans."	8 - 10 years	Salloum & Lewis (2010) <i>p. 38</i>
		Positive reframing	"I've been looking for something good in what is happening."	7 - 9 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
		Positive thinking	"Everything will be OK."	9 - 15 years	Jensen et al. (2013) <i>p. 99</i>
		Rational thoughts	"I am safe in the jungle because so high up in the hills."	9 - 15 years	Jensen et al. (2013) <i>p. 98</i>
		Cognitive	"I sucked it all in, and breathed it all out. I just let it go."	10 - 16 years	Pfefferbaum et al. (2008) <i>p. 315</i>

Coping Category (Compas et al. 2001)	Kidcope Strategies (Spirito et al. 1988)	Descriptor from Researchers	Examples	Age	Sources
	Problem-solving	Problem-solving	"Tried to fix the problem by thinking of answers."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
		Planning	"I've been trying to come up with a strategy about what to do."	7 - 9 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
		Active coping	"I've been taking action to try to make the situation better."	7 - 9 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
	Emotional regulation	Emotional regulation	"Tried to calm myself down."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
		Emotional expression	"I allow myself to express my emotions."	7 - 9 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
	Social support	Social support	"Tried to feel better by spending time with others."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 76</i> Vernberg et al. (1996) <i>p. 242</i>

Coping Category (Compas et al. 2001)	Kidcope Strategies (Spirito et al. 1988)	Descriptor from Researchers	Examples	Age	Sources
		Emotional support	"I've been getting comfort and understanding from someone."	7 - 9 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
Adaptive	Distraction	Distraction	"Did something like watch TV to forget."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
		Self-distraction	"I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, or sleeping."	7 - 9 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
	Wishful thinking	Wishful thinking	"Wished the problem had never happened."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
		Denial	"I've been refusing to believe that it has happened."	7 - 9 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>

Coping Category (Compas et al. 2001)	Kidcope Strategies (Spirito et al. 1988)	Descriptor from Researchers	Examples	Age	Sources
	Resignation	Resignation	"Just accepted the problem because I couldn't do anything."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
Avoidant	Social withdrawal	Social withdrawal	"Stayed by myself."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
	Self-criticism	Self-blame	"Blamed myself for causing the problem."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
	Blaming others	Blaming others	"Blamed someone else for causing the problem."	8 - 11 years	Jeney-Gammon et al. (1993) <i>p. 263</i> La Greca et al. (1996) <i>p. 718</i> Prinstein et al. (2008) <i>p. 469</i> Russoniello et al. (2002) <i>p. 67</i> Vernberg et al. (1996) <i>p. 242</i>
		Venting	"Getting mad and throwing or hitting things."	9 - 13 years	Terranova et al. (2009) <i>p. 346</i>

Coping Category	Descriptor from Researchers	Examples	Age	Sources
Coping assistance	Distraction	"I've been [suggesting my child] do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping."	8 - 10 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
	Distraction	"When I started to feel bad ..., I did something fun with ____."	8 - 11 years	Prinstein et al. (1996) <i>p. 469</i>
	Distraction	"Playing with siblings, going places with family members"	8 - 10 years	Salloum & Lewis (2010) <i>p. 37</i>
	Emotional processing	"I take time to figure out what [my child] is really feeling."	8 - 10 years	Gil-Rivas & Kilmer (2013) <i>p. 415</i>
	Emotional processing	"I played a game with ____ ... pretended we were in the hurricane again."	8 - 11 years	Prinstein et al. (1996) <i>p. 469</i>
	Emotional processing	"I feel better knowing where everyone is and talking to family."	8 - 10 years	Salloum & Lewis (2010) <i>p. 37</i>
	Roles and routines	"I did things with ____ like we used to do..."	8 - 11 years	Prinstein et al. (1996) <i>p. 469</i>
	Roles and routines	"Going to school makes me feel better."	8 - 10 years	Salloum & Lewis (2010) <i>p. 37</i>

("Quake swarm rattles Christchurch", 2012, January 2) and minor aftershocks continued to be felt throughout Christchurch during 2013 and 2014.. These aftershocks represent an additional stressor for individuals living in Christchurch that may not have been present, and has not been mentioned, in the current literature examining coping post-earthquake. Additionally, many families have experienced delays in repairs to homes, schools, and infrastructure (SCIRT, 2014). These delays, as well as other post-disaster factors, have been associated with an increase in mental health difficulties (Carville, 2013, April 2).

Disasters have a long-term effect on children's development and well-being and, although research has shown the presence of these effects, children are often overlooked in the aftermath of a disaster. In particular, the coping strategies used by children who are able to maintain competent functioning post-disaster require further exploration. The current dearth of literature examining what children have to say about their own coping strategies reflects another limitation of the research in this area. In addition, a limited number of studies have sought information from parents and teachers in relation to the child's coping. An exploration of strategies, as described by children, their parents, and their teachers, may add to the current understanding of coping in response to a natural disaster, as well as in response to commonly occurring childhood upsets.

Therefore, the current study aimed to contribute to the available research on children's coping by gaining information from multiple informants using semi-structured interviews. An attempt was also made to categorise the various coping strategies found in the current literature and to apply these to responses from a group of well-functioning children and their families. This information will provide an

insight into the coping strategies used by young children living in earthquake-affected Christchurch.

Chapter 3: Method

The aim of the current study was to explore the coping strategies used by well-functioning children who had experienced the earthquakes and subsequent aftershocks that occurred in Christchurch in 2010 and 2011. The children in the current study were aged approximately three years, two months when the magnitude 6.3 earthquake occurred in February 2011. However, these children and their families had been experiencing aftershocks over a period of 70 weeks, starting with the magnitude 7.1 earthquake in September 2010. The stressors associated with these ongoing aftershocks may have been present throughout pre-school for the children in the current study. An exploration of the coping strategies used by these children may provide further understanding of the strategies used by children who have experienced a natural disaster during their early years of development.

Design

The current study employed a qualitative design and participants were drawn from a larger existing study, the “Junior Children’s Wellbeing” study (Liberty et al., 2013). The “Junior Children’s Wellbeing” study is following children living in Christchurch who experienced the February 2011 earthquake during pre-school and who started primary school aged five to six. In the current study, qualitative interviews with the children’s parents and teachers were used to gain information regarding coping strategies and the child’s experiences of the September 2010 and the February 2011 earthquakes. Children were asked to discuss coping strategies used in response to various situations unrelated to the earthquakes. Interviews may be the

most appropriate method for gaining information from younger children, as discussed by Compas et al. (2001).

Qualitative methods have increasingly been applied in research across many settings (Wertz, 2011). Qualitative research uses language as its raw data and the aim of this method of research is to study people's thoughts, experiences, and feelings in depth and detail (Sandelowski, 2000). This type of research enables the more complex aspects of experience to be examined and the open-ended self-report methods used give participants the opportunity to respond in their own words. In this way, participants are able to describe their experiences and their unique responses to various situations (Pich, Hazelton, Sundin, & Kable, 2011). The current study applied a Qualitative Descriptive design, and semi-structured qualitative interview questions were used to gain information regarding coping strategies from three different sources. This design was chosen as it allows for the exploration, description, and interpretation of participants' experiences. In addition to this, Qualitative Descriptive studies may be seen as the least theoretical in the range of qualitative approaches, as pre-existing hypotheses are not required (Sandelowski, 2000). This approach follows the assumptions of naturalistic enquiry in which it is not necessary to pre-select variables to study, or to manipulate variables (Sandelowski, 2000). When using this design, it is possible to minimise potential limitations by collecting information in a natural setting that reflects the context of the participant, as well as by maintaining an interview manner that is purposeful and without bias (Mackintosh, 2006).

Ethical Implications

There were several ethical implications that needed to be considered. For this study, written informed consent was required from the children and from their parents and teachers. Parents also gave consent for the researcher to examine the scores from

the teacher report measures used in the study by Liberty and colleagues (2013). Ethical approval for this study was obtained through the Educational Research Human Ethics Committee at the University of Canterbury with approval number ERHEC 2014/39 (see Appendix D) prior to any data being collected. Through this process, it was ensured that the information given was appropriate for, and able to be understood by, children.

For this type of research, harm is most likely to result when a participant re-experiences discomfort from feelings or memories, threats to self-image, or humiliation (Barker et al., 2003). The nomination of children with high self-regulation and low behavioural problems resulted in the exclusion of children who were not functioning well and also minimised the risk of harming participants by discussing earthquake-related topics. Participants were provided with details regarding the kind of information that was to be discussed, as well as contact details for a support service. Participants were aware that they could withdraw at any time from the study without penalty. In terms of the interviews themselves and the questions regarding coping, children were asked about situations that may potentially have caused distress. The researcher was prepared for this, and if a child were to become distressed, they would have been thanked for their time and effort, and the interview would have finished. In terms of confidentiality, it was important to ensure anonymity of participants and the data they provided. This was achieved through the use of pseudonyms in the write-up of the study.

Development of Interview Questions

Children. Questions regarding coping were based on interview questions developed by Band and Weisz (1988; 1990), which assess the coping strategies children use in multiple situations, and the efficacy of these strategies. Basing

questions used in the current study on those used by Band and Weisz ensured that questions regarding coping strategies, and the reasoning behind asking these questions, were appropriate and resulted in accurate information being gathered. As the children in the current study were not asked questions regarding their experiences during and following the earthquake, situations were provided for children to respond to. Again, these situations were based on those used by Band and Weisz, as these provided a range of situations that children may have experienced. Situations used by Band and Weisz that were not applicable to the children in the current study (e.g., *getting a grade on an exam or your school report card that you didn't like.*) were not used. Situations that were included in the current study consisted of: *"Has one of your friends moved to another city or to a different school?"*, *"Has another kid ever said mean things to you?"*, *"Has there been a time when someone was mad at you?"*, *"Have you ever had an accident and been hurt?"* The child was to be asked about two of the situations (Band & Weisz, 1990) that have happened to them. The aim of gathering information for two different situations was to develop a general understanding of the child's use of coping strategies.

The child would then be asked: *"How did it feel when ____ happened? Tell me about what you did or thought to help make things better."* In order to assess the underlying goal of the strategy, the child would be asked: *"How did those things make you feel better?"* (Band & Weisz, 1988). To assess their perceptions of the efficacy of the strategies used in these two situations, the child would be asked to rate how much what they did helped them to feel better, using a 5-point scale ranging from 1 = *it only helped a little bit* to 5 = *it really helped a lot* (Band & Weisz, 1990). If a child did not want to discuss any of the described situations, or if the situations had not occurred to the child, they would have been asked to *"Think of a time when*

you were feeling a bit unhappy. What did you do or think to help make things better? How did that make you feel better?" They would then have used the rating scale to describe how effective the strategy was for them (see Appendix E).

Parents and teachers. The interview questions used in the parent interviews regarding exposure to the effects of the earthquakes were based on the exposure questions used in the reviewed studies (Pina et al., 2008; Salloum & Lewis, 2010; Terranova et al., 2009; Vernberg et al., 1996). Examples of these questions include: *"Tell me about where you and (child) were during the September earthquake or the February earthquake", "What was the state of your house following the earthquakes?"* and *"Tell me about your child's pre-school experiences following the earthquakes."* Questions would then be asked regarding the child's coping, as seen by the parent: *"When people are in these difficult situations, different coping strategies are used to help feel better about the situation. After the earthquake happened, what kind of things did you notice (child) do and think to make things better? Do you think that the strategies (child) used were effective?"* This would be followed by: *"How about yourself, how did you cope following the earthquake? How did you or other family members help (child) cope?"* The questions for the teachers were similar, with a focus on the child's coping in relation to the school environment and school staff, rather than family members.

Selection Process

A sub-sample of children from the study by Liberty and colleagues (2013) was invited to participate in the current study. The Qualitative Descriptive design of this study allowed for purposive sampling, meaning that it was possible to examine a target phenomenon in a sample of participants representing a combination of pre-selected variables (Sandelowski, 2000). Children from this larger study by Liberty et

al. (2013) were identified as being eligible to participate in the current study if the following inclusion criteria were met:

- Aged seven or eight at the time of the interview (i.e., within a single developmental stage. In the case of the current study, children were in the concrete operational stage of cognitive development (Piaget, 1929))
- Started primary school at age 5 (in second year or completing second year of school at the time of the current study)
- Experienced the September 2010 earthquake and lived in Christchurch continuing to the time of the current study
- Not currently exhibiting symptoms of PTSD. However, these symptoms may have been identified in the study by Liberty and colleagues (2013), in which a sub-scale was constructed using various measures to estimate symptoms of PTSD (Frem, 2013; Loeb, Stettler, Gavila, Stein, & Chinitz, 2011; Scheeringa, 2013)
- Below clinical levels on the Behaviour Problem Index (Zill & Peterson, 1986). Possible scores range from 0 – 26 with low scores indicating minimal behaviour problems. This score was based on teacher report from the Liberty et al. study (2013)
- Average or above average scores on the self-regulation sub-scale of the Positive Behaviour Scale (Polit, 1998). Possible scores range from 0 – 25, with high scores indicating an increased ability to self-regulate. This score was also based on teacher report from the Liberty et al. (2013) study
- Not receiving special education support

Participants

Following the inclusion criteria outlined above, a number of children were found to be eligible to participate in the current study. Five of these children, their parents, and their teachers were invited to participate in the current study, and all participants agreed to take part. When taking into consideration the children's parents and teachers, it was decided that 13 was a feasible number of participants for the scope of the current study. A sample of this size permits an in-depth focus on each case, providing ample detail regarding participants' experiences (Hill et al., 2005; Sandelowski, 1995). In addition, sufficient information is gathered, resulting in informative findings and a contribution to the current understanding of the coping strategies used by children affected by a natural disaster.

The final sample of participants consisted of five male children, three mothers, two fathers, and three female teachers. All five boys attended the same Decile 10 contributing school in Christchurch. Children at this school range from ages five to 10. A report from 2012 showed that a high proportion of students at the school were achieving at or above the National Standards in reading, writing, and mathematics at most year levels. In addition to this, parental involvement in children's learning was seen to be an important part of their school experience (Education Review Office, 2012). With the teacher's permission and prior to the interviews being carried out, time was spent in the classroom in order to get to know the boys and build rapport. One teacher was asked to review the child interview questions to ensure that they were appropriate. The teacher found the questions suitable and no suggestions for changes were given.

The boy's scores on the BPI and PBS measures, as rated by their teacher for the Liberty et al. (2013) study, will be briefly outlined. The first set of scores was

reported three years after the initial September 2010 earthquake (one year eight months following the end of the disaster exposure period in January 2012). The second set of scores was reported three years seven months after the initial earthquake (two years three months following the end of the exposure period), with the exception of Tom's second scores, which were reported at three years nine months. Interviews for the current study were carried out approximately four years after the initial earthquake (approximately two years eight months following the end of the exposure period). This information will help to provide some context to the children's use of coping strategies and the findings of the current study.

Philip first participated in the Liberty et al. (2013) study at age 5, and his teacher ratings showed that he had a score of 19 on the self-regulation sub-scale of the PBS, and a BPI score of 1. In Term 2 of the following school year, Philip had a self-regulation score of 23 and a BPI score of 0. Philip was seven years, two months at the time of the interview, and in Year 2 at school.

At study entry in 2013, one year eight months following the end of the exposure period, Harry had a self-regulation score of 24 and a BPI of 0. Seven months later, in Term 2, Harry's self-regulation score was 25 and his BPI score remained at 0. Harry was seven years, two months at the time of the interview, and in Year 2 at school.

Fred's initial self-regulation score at study entry was 22 and he had a BPI score of 0. In Term 2 of the following school year, a relief teacher rated his self-regulation score as 18. It may have been the case that this teacher was not able to provide an accurate score, due to limited time spent in the classroom with Fred. His BPI score remained at 0. Fred was seven years, one month at the time of the interview, and in Year 2 at school.

At three years following the September earthquake, Kieran had a self-regulation score of 20 and a BPI score of 0. Seven months later, Kieran had a self-regulation score of 23 and his BPI remained at 0. Kieran was seven years, three months at the time of the interview, and in Year 2 at school.

Tom's scores at study entry were 19 for self-regulation and 0 on the BPI. In June 2014, three years nine months following the initial earthquake, Tom had a score of 25 for self-regulation and a BPI score of 0. Tom was seven years, two months at the time of the interview, and in Year 2 at school.

Procedure

All five eligible children and their parents were initially contacted for this study via a letter (see Appendix A), summarising the aim of the study and inviting families to participate. A letter was also sent to the principal (see Appendix A) of the children's school, which outlined the aims of the study and requested the opportunity to meet with the teachers of the eligible children. Follow-up phone calls were made to the five families a week later, and times for interviews were arranged. Copies of the information sheets and consent forms were also emailed out to parents at this time. All five children and their parents agreed to participate in the current study. The three teachers of the children also agreed to participate. No participants declined to be part of the study. A meeting was held with the three teachers, where information sheets and consent forms were discussed and signed, before times for interviews were arranged.

Teacher interviews took place at school, and the teachers were asked to comment on the coping strategies they had seen the child use while in their class. Following this, parent and child interviews were conducted in the family home. Informed consent was obtained from the five children and their parents prior to the

commencement of each interview. The completed consent form was collected and participants were provided with an explanation of what would be discussed during the interview. The parent was interviewed regarding their child's exposure to the earthquakes, as well as coping strategies used by the child following these events. Responses from parents and teachers provided additional, specific information regarding the child's coping strategies directly related to the earthquakes. The child was then asked to describe their coping strategies regarding various situations. This provided an understanding of the child's general coping strategies. Children also had the option to draw while the interview was being conducted. The child interviews were audio-recorded for later transcription.

Interviews were conducted during Terms 3 and 4 of the child's second year in school, and lasted between 20 and 30 minutes. When necessary, specific question prompts and minimal probes such as "*What else did you do?*" were used to gain a clearer understanding of the participants' experiences. At the completion of the interview, participants were thanked for their time and informed that they would be sent a short summary of the study upon completion. Transcriptions of the child interviews were made immediately following the interviews.

Data Analysis

Directed Content Analysis was used to analyse the data in the current study. Directed Content Analysis is a form of Qualitative Content Analysis that aims to validate or extend an existing theoretical framework or theory (Hsieh & Shannon, 2005; Kyngäs & Vanhanen, 1999). This type of analysis has also been labelled Deductive Content Analysis, where existing theory or research is used to help determine the initial coding of data, or where existing categories are applied to a new context (Elo & Kyngäs, 2008). The categories used for the analysis of the data from

the current study can be found in Table 1, Chapter 2. This is seen as the first stage of data analysis in Directed Content Analysis, where the categories that will be applied to the data are defined (Hsieh & Shannon, 2005).

The second stage of data analysis involved the reading and re-reading of transcripts, as well as of notes taken during the parent and teacher interviews. As the aim of the current study was to explore coping strategies used by participants, transcripts and notes were examined for what appeared to be, on first impression, coping strategies (Hsieh & Shannon, 2005). Notes were made on the transcripts regarding the categorisation of these potential strategies.

The third stage of analysis involved the highlighting of strategies using the predetermined categories summarised in Table 1 (Hsieh & Shannon, 2005). This allowed for the emergence of coping strategies as seen in the reviewed literature. The majority of the potential strategies identified in the second stage of analysis matched those found in the third stage using predetermined categories. Occasionally, the coding of a strategy was ambiguous or it matched more than one strategy found in the reviewed literature. When this was the case, a review of the definitions and aims of the strategies in the literature was carried out. This enabled the categorisation of ambiguous strategies, as context and aim were taken into account.

Quotes were then taken from the transcripts and the notes in order to highlight the coping strategies that had been identified. Child, parent, and teacher responses were grouped together, forming a more in-depth picture of the strategies used by the child, and by the adults present in the child's environment.

According to the Directed Content Analysis approach, any text that is not categorised during this process can be viewed as newly identified strategies that may

differ from those found in the literature and, in turn, may help to refine or extend the existing research (Hsieh & Shannon, 2005).

Chapter 4: Results

Interviews with Philip (child), Kate (mother), and Isobel (teacher)

Interviews were conducted with Philip and his mother Kate in the family home, during the afternoon. An interview was conducted with Philip's teacher Isobel at the school, during the morning.

Exposure. Philip was aged three years, three months at the beginning of the earthquake exposure period, in September 2010. Kate stated that the September earthquake did not significantly affect her and her family. The family home and Philip's pre-school were in a suburb of the city where the majority of properties withstood the damaging effects of both earthquakes, although many houses lost chimneys ("Earthquake damage by suburb", 2011, February 27). Properties in this area experienced liquefaction and considerable settlement during the earthquake period, however, land was considered suitable for residential construction (CERA, 2012).

Philip was at pre-school during the February 2011 earthquake, an experience Kate described as "*calm*", according to the pre-school teacher. He was constantly supervised and did not see anyone get hurt. Soon after the earthquake, Philip was picked up by Kate and the family stayed together at the family home, outside in the backyard. The house was undamaged and safe to live in, however, the family left the Christchurch area and went on holiday for three weeks. Following this, Kate stated that Philip was happy to go back to pre-school and there were no disruptions in terms of teachers or friends leaving. The pre-school was not significantly damaged and was able to open soon after the earthquake. Kate took a year off work during this time, in order to "*spend some time with Philip before school started.*"

Coping. Philip described his coping strategies in response to a friend moving away (unrelated to the earthquakes). Philip stated that *“I tried to make new friends and I did.”* This statement was identified as social support, an active form of coping, as Philip spent time with others to help him feel better. He also stated that, to help make things better, he thought *“Get some people to make me happy and to do some funny jokes.”* This statement indicated that Philip tried to resolve the difficult situation he was in by thinking of solutions (Jeney-Gammon et al., 1993; La Greca et al., 1996; Prinstein et al., 1996; Russoniello et al., 2002; Vernberg et al., 1996), therefore it was categorised as problem solving, an active form of coping. He rated the effectiveness of his strategies as a 5. The second situation Philip had experienced regarded having an accident. In response to this, Philip said: *“I went to the office and the sick bay and I got a plaster. And then when I felt better, I came out and played.”* Again, this indicated that Philip attempted to come up with solutions to what had happened, and this statement was also categorised as problem solving. He rated the effectiveness of his strategies in this second situation as a 3.

Kate stated that Philip had told her *“It will be OK because I can talk to someone.”* This statement indicated that Philip was using rational thoughts, or cognitive restructuring (a form of active coping), to manage a difficult situation. Kate described Philip’s coping strategies as effective. Kate reported that she had not noticed any significant changes in the coping strategies used by Philip. Philip’s current teacher, Isobel, stated that he is able to *“...go to a teacher and explain.”* and that he *“...can calm himself, hold it together.”* These statements indicated problem solving and emotional regulation, respectively, strategies that are forms of active coping. Isobel stated that Philip’s strategies were effective.

Coping assistance. Kate reported noting that Philip “...looks to adults for direction...for guidance whether he should be concerned.” When asked about how she and other family members helped Philip cope, Kate stated that she and her husband “... didn’t show fear or upset during the aftershocks. We didn’t panic or break down. We kept calm and explained to the children how earthquakes work so that the kids could understand why things were shaking, that it was a natural thing.” Isobel reported using emotional processing strategies (“...mediate talking through, coming to a conclusion.”) and roles and routines (“Sticking to a routine.”) in the classroom to help the children cope with the effects of the earthquake.

Triangulation of responses. As seen in Table 3, all strategies reported by child, parent, and teacher were categorised under the active coping category, indicating that Philip, Kate, and Isobel had similar views of Philip’s coping strategies.

Table 3. *Philip's Coping Strategies*

Source	Statement	Strategy	Coping Category
Child	<i>“I tried to make new friends and I did.”</i>	Social support	Active
	<i>“I went to the office and the sick bay and I got a plaster. And then when I felt better, I came out and played.”</i>	Problem solving	Active
	<i>“[I thought] Get some people to make me happy and to do some funny jokes.”</i>	Problem solving	Active
Parent	<i>“It will be OK because I [Philip] can talk to someone.”</i>	Cognitive restructuring	Active
Teacher	<i>“...go to a teacher and explain.”</i>	Problem solving	Active
	<i>“...can calm himself, hold it together.”</i>	Emotional regulation	Active

Interviews with Harry (child), Kim (mother), and Isobel (teacher)

Interviews were conducted with Harry and his mother Kim in the family home, during the afternoon. An interview was conducted with Harry's teacher Isobel at the school, during the morning.

Exposure. Harry was aged three years, two months in September 2010. Kim reported that the family was relatively unaffected by both earthquakes. The family home and Harry's pre-school were in a suburb of Christchurch that did not experience significant damage during the September 2010 and February 2011 earthquakes. The land was deemed suitable for any reconstruction necessary (CERA, 2012).

Kim had dropped Harry off at pre-school a few minutes prior to the February earthquake, so she was able to immediately take him home again. Kim described Harry's experience at the pre-school as "*safe*" and Harry did not see anyone get hurt. The pre-school was closed for three weeks and Harry did not experience any disruptions regarding teachers or friendships upon returning to pre-school. The family house had superficial cracks but was safe to live in. Kim stated that things carried on as normal for the family following the earthquakes, and that they stuck to "*regular routines*". Kim was a stay at home mother during this time period.

Coping. Harry described his coping strategies in response to a friend moving away (unrelated to the earthquakes). He stated that "*I looked for a new best friend.*" This strategy was identified as social support, an active form of coping, as Harry sought out the company of others in order to feel better. Harry said that what he did made him feel better because "*If I look for a new best friend then I would have another person to play with. And then I wouldn't feel left out and sad because no-one wanted to play with me.*" He rated the effectiveness of his coping strategies as a 3. Harry also described his coping strategies in response to another child saying mean

things to him. He said: *"I thought about if it was a day off school and there was lots of snow I could build an even bigger one."* *"...he wouldn't come and kick it over because he didn't know where I lived."* This strategy was identified as wishful thinking, a form of adaptive coping, as Harry indicated that he would have liked things to have been different. Another statement made by Harry in response to this situation (*"We went and kicked over that boy's snowman. It made me feel a bit better so now he could feel what it was like."*) was identified as venting coping, which has been placed within the avoidant coping category. The aim of this strategy is to temporarily release negative emotions that may have a negative impact on those involved (Xia, Ding, Hollon, & Yi, 2014). Harry rated the effectiveness of his coping strategies in this situation as a 5.

Kim stated that Harry *"...comes and tells a parent."* when there is an issue, indicating that Harry uses problem solving, an active form of coping, to improve the situation. She also stated: *"He takes himself off to his room to read a book."* This strategy relates to emotional regulation, an active form of coping, as Harry is attempting to calm himself down when he does this. Kim rated Harry's strategies as *"quite effective."* Kim reported that she had not noticed any changes in his coping strategies. Harry's current teacher Isobel reported that, in the classroom, Harry *"...tends to stay calm."* and that he *"...would confront the issue, then go to teacher if he couldn't fix it himself."* These strategies indicate emotional regulation and problem solving strategies, respectively, both forms of active coping. Isobel stated that Harry's strategies were effective, however, he often became frustrated if the other person involved could not articulate in response to his efforts to manage situations within the classroom.

Coping assistance. Kim described how Harry would “...look at mum” when aftershocks occurred. In terms of helping Harry to cope, Kim stated that she was very conscious of remaining calm and that she “...saw other people and their child, and I could see why the child had reacted the way they did.” Kim stated that she found the aftershocks “quite scary” and that, if she was worried, she made sure it was “...not in front of the kids”. In the classroom, Isobel reported using emotional processing strategies (“...mediate talking through, coming to a conclusion.”) and roles and routines (“Sticking to a routine.”) to help the children cope with the effects of the earthquake.

Triangulation of responses. As seen in Table 4, Harry’s responses were placed under all three categories of coping, while responses from his mother and his

Table 4. *Harry's Coping Strategies*

Source	Statement	Strategy	Coping Category
Child	<i>“I looked for a new best friend.”</i>	Social support	Active
	<i>“I thought about if it was a day off school and there was lots of snow I could build an even bigger one.” “...he wouldn’t come and kick it over because he didn’t know where I lived.”</i>	Wishful thinking	Adaptive
	<i>“We went and kicked over that boy’s snowman. It made me feel a bit better so now he could feel what it was like.”</i>	Venting	Avoidant
Parent	<i>“...comes and tells a parent.”</i>	Problem solving	Active
	<i>“He takes himself off to his room to read a book.”</i>	Emotional regulation	Active
Teacher	<i>“...tends to stay calm.”</i>	Emotional regulation	Active
	<i>“...would confront the issue, then go to teacher if he couldn’t fix it himself.”</i>	Problem solving	Active

teacher were consistent. These responses indicated that there were some similarities in the views of Harry's coping strategies, however Harry described more varied strategies not discussed by Kim or Isobel.

Interviews with Fred (child), Tina (mother), and Helen (teacher)

Interviews were conducted with Fred and his mother Tina in the family home, during the afternoon. An interview was conducted with Fred's teacher Helen at the school, during lunchtime.

Exposure. Fred was three years, two months at the time of the September 2010 earthquake. The family home and Fred's pre-school were in a suburb where there was no obvious damage structurally following the September earthquake, although a large hole formed in one of the roads and many properties experienced liquefaction ("Earthquake damage by suburb", 2011, February 27). Following the February earthquake, the land was classified as suitable for repair and rebuild (CERA, 2012).

Fred was at pre-school during the February earthquake and his mother Tina was at work. Tina stated that Fred was looked after by "*well trained staff*" at the pre-school. The building was safe and Fred did not see anyone get hurt. Once she had picked Fred up from pre-school, the family stayed together in the family home. Tina stated that, although the family home "*moved a lot*" during the earthquake, especially in September 2010, it was structurally sound to live in. Following the earthquake, a friend was able to bring around water and the family had gas to cook with. Tina stated that, once reopened, the transition back to pre-school went well and that Fred had "*no sense of separation*". According to Tina, he did not experience any disruptions regarding teachers and friendships. Tina took 18 months off work following the

February earthquake, in order to “...*take time to have some control, to relax, and to take stock.*”

Coping. Fred described his coping strategies in response to a friend moving away (unrelated to the earthquakes). Strategies discussed by Fred included: “*Playing [soccer] with my friends. Playing chess. Playing checkers. And touch rugby and cricket.*” He also said “*I usually just think about something better and just forget about it.*” The first strategy was identified as social support (a form of active coping) and the second as distraction (a form of adaptive coping), as Fred attempted to find other, more positive things to think about in order to help himself feel better. Fred stated that what he did made him feel better “*Because probably they just remind me of what I like.*” He rated the effectiveness of his coping strategies as a 3. The second situation that Fred responded to involved having an accident. He stated that he “...*played one of my favourite games called ball tag [with friends].*” This was identified as social support. Fred also reported that he would “...*just try and forget about it.*” This strategy was categorised as distraction. Fred rated the effectiveness of his coping strategies for this situation as a 2.

Tina stated that Fred had “...*identified a good friend at school.*” indicating that he had used social support as a strategy for managing a difficult situation. She also reported that Fred has a “...*close relationship with the teacher. He is able to access his teacher and talk to her about problems.*” This was identified as emotional support, another form of active coping that closely relates to social support but is more focussed on receiving comfort and understanding (Gil-Rivas & Kilmer, 2013). Tina rated Fred’s strategies as “*very effective*”. Tina stated that she had not noticed a change in the coping strategies used by Fred. Helen, Fred’s current teacher, reported that he is “...*safe and secure with one friend.*” a further indication of social support

strategies. She also stated that “...*talking nicely, then to the teacher if it’s not working.*” is another strategy used by Fred to manage conflict with other children. This was identified as problem solving, an active form of coping. Helen stated that Fred’s coping strategies were effective, and that he was usually able to resolve issues quickly.

Coping assistance. In terms of her own coping regarding the effects of the aftershocks, Tina stated that she has been “*normalising the whole event, not dwelling on it.*” She also stated that, if she was “*...discussing earthquake worries, it was not in front of the kids. We didn’t talk about it endlessly, the children weren’t aware of the effect on us.*” Tina also discussed how she and her husband “*stood together*” throughout the experience and stated that this “*made all the difference, really.*” Tina discussed how a sense of community helped her and her family, “*the world shrunk to the local neighbourhood.*” This meant that she and her family had closer relationships with their neighbours, the local shop owners, and the children’s school. Tina stated that she and her husband had developed coping strategies from previous situations that could be applied to their experiences following the February earthquake, indicating that they were well equipped to manage the effects of this event. In the classroom, Helen reported that a resiliency programme had been put in place that had taught the children various strategies, including emotional processing, for managing difficult situations.

Triangulation of responses. As seen in Table 5, responses from Fred, Tina, and Helen indicated a high level of consistency regarding Fred’s coping strategies. Fred also discussed adaptive coping strategies that were not described by his mother or his teacher.

Table 5. *Fred's Coping Strategies*

Source	Statement	Strategy	Coping Category
Child	<i>"Playing (soccer) with my friends. Playing chess. Playing checkers. And touch rugby and cricket."</i>	Social support	Active
	<i>"...played one of my favourite games called ball tag [with friends]."</i>	Social support	Active
	<i>"I usually just think about something better and just forget about it"</i>	Distraction	Adaptive
	<i>"...just try and forget about it."</i>	Distraction	Adaptive
Parent	<i>"...identified a good friend at school."</i>	Social support	Active
	<i>"...close relationship with teacher. Able to access teacher and talk to her about problems."</i>	Emotional support	Active
Teacher	<i>"...safe and secure with one friend."</i>	Social support	Active
	<i>"...talking nicely, then to the teacher if it's not working."</i>	Problem solving	Active

Interviews with Kieran (child), Evan (father), and Nicole (teacher)

Interviews were conducted with Kieran and his father Evan in the family home, during the afternoon. An interview was conducted with Kieran's teacher Nicole at the school, during the afternoon.

Exposure. Kieran was three years, three months at the time of the September earthquake. The family home was in a suburb of Christchurch that withstood the majority of the effects of the September earthquake ("Earthquake damage by suburb", 2011, February 27). Following the February earthquake, land was deemed suitable for repair or rebuild. However, some properties required geotechnical assessment due to major land damage (CERA, 2012). This was the case for Kieran's family.

Kieran was with his mother and grandmother during the February earthquake, and they were on their way to kindergarten. Kieran was not hurt during the earthquake and he did not see anyone get hurt. The family home, relatively unscathed by the September earthquake, was destroyed by the February earthquake. The family moved to a friends' house that was "*cramped*". In addition to this, Evan was made redundant during this time. Evan stated that: "*Looking back, it was pretty stressful.*" When kindergarten reopened, Kieran did not experience any disruptions in terms of teachers or friendships. Kindergarten was "*the rock that families relied on, they helped kids work through any issues.*" Evan reported thinking that Kieran was unaffected by the earthquake, until he saw a picture Kieran had drawn at kindergarten as part of a group exercise regarding drawing and writing about earthquake experiences. Evan stated that the picture opened his eyes to the response Kieran was having to the earthquake. Evan saw the drawing exercise as a "*good coping mechanism.*" The family eventually rented another house before deciding to buy their own home. Evan stated that their "*...biggest struggle was financial security with a young family, until I landed a permanent role.*"

Coping. Kieran described his coping strategies in response to a time when someone was mad at him. Kieran stated that he "*...went somewhere else [to] find my friends.*" He also said: "*Try to run away.*" Finding friends was categorised as social support, an active form of coping. Kieran's second statement regarding running away was categorised as social withdrawal (an avoidant form of coping) as Kieran was attempting to withdraw from the people around him. Kieran stated that what he did made him feel better "*Because I couldn't remember what happened.*" Kieran rated the effectiveness of his coping strategies as a 4. The second situation Kieran responded to involved having an accident. Kieran stated: "*I went to the sick bay. I got*

a plaster.” This strategy was identified as problem solving, an active form of coping, as Kieran took steps to improve his situation. Kieran said that what he did helped him feel better because: *“I forgot about it.”* Kieran rated the effectiveness of his coping strategies in this second situation as a 2.5.

Evan stated that: *“He [Kieran] initially likes to go away and sort it out. We need to give him time process. An hour later, he will come and verbalise what he’s thinking.”* This was categorised as emotional regulation, an active form of coping, as Kieran was attempting to calm himself down. Evan stated that Kieran *“...seems to be able to resolve things well.”* Evan also said that he had not noted any changes in Kieran’s coping strategies. Kieran’s current teacher, Nicole, reported that: *“He comes to the teacher or he goes to friends to talk over what has happened.”* This strategy was identified as problem solving (coming to the teacher) and emotional support (talking over what has happened with friends), both forms of active coping. Nicole stated that Kieran’s strategies had *“quite good success.”*

Coping assistance. In terms of his own coping, Evan stated that his workplace provided courses on coping with stress and that these were *“...valuable for my personal life, too.”* When asked how the family helped Kieran to cope, Evan stated that he did not think the earthquake was *“...much of a trauma for him [Kieran].”* However, this is in contrast to Evan’s statements regarding Kieran’s coping drawing. Therefore, Evan’s view of the effect of the earthquakes on Kieran was unclear and, unfortunately, this was not discussed further in the interview. In the classroom, Nicole reported using *“...circle time as a restorative practice process where children air their views.”* This coping assistance strategy was categorised as emotional processing, as it was aimed to help the children remain calm while managing difficult situations that had arisen.

Triangulation of responses. As seen in Table 6, there was a high level of consistency in the responses of Kieran, Evan, and Nicole regarding Kieran's use of active coping strategies. Kieran discussed an additional avoidant coping strategy not described by his father or his teacher.

Table 6. *Kieran's Coping Strategies*

Source	Statement	Strategy	Coping Category
Child	<i>"...went somewhere else [to] find my friends."</i>	Social support	Active
	<i>"I went to the sick bay. I got a plaster."</i>	Problem solving	Active
	<i>"Try to run away."</i>	Social withdrawal	Avoidant
Parent	<i>"He initially likes to go away and sort it out. We need to give him time process."</i>	Emotional regulation	Active
Teacher	<i>"He comes to the teacher or he goes to friends to talk over what has happened."</i>	Problem solving	Active

Interviews with Tom (child), Ben (father), and Isobel (teacher)

Interviews were conducted with Tom and his father Ben in the family home, during the evening. An interview was conducted with Tom's teacher Isobel at the school, during the morning.

Exposure. Tom was three years, one month during the September earthquake. The family were away from Christchurch at this time but returned soon after. The family home and Tom's pre-school were in a suburb of Christchurch where properties were not significantly damaged by either earthquake ("Earthquake damage by

suburb", 2011, February 27). Despite liquefaction and settlement of the land, construction was considered safe (CERA, 2012).

Tom was at kindergarten during the February earthquake. He was not hurt and he did not see anyone get hurt. Ben stated that the building was safe and that the *"teachers knew what to do."* The family home was also safe, with *"cracks and minor damage."* Following the earthquake, the family left the Christchurch area to live with family for a few weeks. Upon returning to kindergarten, Tom did not experience any disruptions in terms of teachers or friends leaving.

Coping. Tom described his coping strategies in response to having an accident. Tom said: *"I went to my bed and read a book."* This strategy was identified as distraction (a form of adaptive coping), as Tom was attempting to do something to take his mind off the pain he was experiencing that had been caused by the accident. Tom rated the effectiveness of his coping strategies as a 5. The second situation Tom responded to regarded being asked to do maths exercises by the teacher. Tom stated that this had made him feel *"very bad"* and that *"Just going on the iPads"* to play maths games helped him manage this. This strategy was categorised as problem solving (a form of active coping), as Tom attempted to improve the situation by using the iPad to complete maths activities, rather than avoiding what the teacher had asked him to do by using it to play other games. Tom rated the effectiveness of his coping strategies for this second situation as a 3.

Ben stated that Tom *"... calms down by playing with toys, reading a book, or going to his room."* These strategies were categorised as emotional regulation as, by doing these activities, Tom was attempting to calm himself following a difficult situation. Ben was unable to provide an answer regarding the effectiveness of Tom's strategies but stated that his strategies *"...allow him to wind down."* Ben stated that he

had not noticed any significant changes in Tom's coping strategies. Tom's teacher Isobel reported that she often notices him "... *taking a step back to think carefully.*" This strategy was categorised as problem-solving, as it shows an ability to plan the management of a stressful situation. Isobel stated Tom's coping strategies were "good" and said that Tom "...*gets overwhelmed easily and taking a step back helps.*"

Coping assistance. Ben stated that talking to other people in the community was helpful for managing the effects of the aftershock. In regards to helping Tom cope, Ben stated that they "...*stayed calm and talked a lot about how they're [the children] feeling.*" He said that his children found the experience "*quite fun*" and saw it as an adventure. He stated that: "*We were lucky. We didn't have financial issues, work looked after us.*" Isobel reported using classroom strategies involving emotional processing ("*...mediate talking through, coming to a conclusion.*") and roles and routines ("*Sticking to a routine.*") to help the children cope with the effects of the earthquake.

Table 7. *Tom's Coping Strategies*

Source	Statement	Strategy	Coping Category
Child	<i>"Just going on the iPads."</i>	Problem solving	Active
	<i>"I went to my bed and read a book."</i>	Distraction	Adaptive
Parent	<i>"... calms down by playing with toys, reading a book, or going to his room."</i>	Emotional regulation	Active
Teacher	<i>"... taking a step back to think carefully."</i>	Problem solving	Active

Triangulation of responses. As seen in Table 7, responses regarding Tom's coping strategies were consistent, with the exception of an adaptive coping strategy

described by Tom. These responses indicate that Tom, Ben, and Isobel had similar views of Tom's coping strategies.

Chapter 5: Discussion

The current study aimed to explore the coping strategies used by children who were exhibiting adequate self-regulation skills and minimal behaviour problems at age 7, and who experienced the February 2011 earthquake in Christchurch while at pre-school. Children's descriptions of their own coping strategies in response to various situations unrelated to the earthquakes were gathered. The study employed the use of multi-informant triangulation by also exploring the coping strategies parents and teachers observed the child using. The use of a qualitative descriptive methodology allowed information to be gathered from participants with a particular set of characteristics. This chapter will include a discussion of a number of important factors, as well as strengths and limitations of the current study, and implications for future research.

Summary of Findings

An analysis of the responses of the five children and their parents and teachers resulted in the emergence of similarities and differences in the children's experiences of coping. All five participants were boys, of the same age, predominantly of European ethnicity, and of similarly high socioeconomic status, based on the decile of the school they attended and the socioeconomic status of the suburbs they lived in.

Philip, Fred, and Tom experienced similar levels of minimal exposure to the effects of the earthquakes. All three received coping assistance in the form of emotional processing and roles and routines at home and at school. Philip reported the use of active coping strategies only, while Fred and Tom reported using active and adaptive coping strategies. Harry was also minimally exposed to the effects of the

earthquakes and received coping assistance from his parents and his teacher. He reported the use of active, adaptive, and avoidant coping strategies. Kieran also reported the use of these three types of coping strategies, however, he was significantly more exposed to the effects of the earthquakes compared to the other four children, and only his teacher reported providing coping assistance for Kieran. All strategies reported by the parents and teachers regarding all the children were categorised under the active coping category. The results will now be discussed further in relation to the current literature.

Exposure. In terms of exposure, Philip, Harry, Fred, and Tom did not experience significant adverse effects related to the earthquakes. This minimal exposure may have had an effect on the children's experience of the earthquakes, as seen when one of the parents stated that his children saw the experience as "*an adventure*" (*Ben*). Kieran was the only child who experienced significant adverse effects related to the February 2011 earthquake. His family lost their home and there were continual disruptions in housing, meaning that Kieran's experience of the earthquake was very different to that of the other children in the current study. This damage to, or loss of, the family home was also found in the study by Asarnow and colleagues (1999) following the Northridge earthquake. Damage to homes was reported by 62% of participants in the study, with 11% reporting more severe structural damage and 51% reporting minor non-structural damage. This high level of damage was not experienced by four of the children in the current study as they were living in areas of Christchurch where the land was able to withstand the majority of the effects of the earthquakes.

Exposure and coping. As discussed in previous chapters, children living in Christchurch have been experiencing continual aftershocks and disruptions that have

affected their families, schools, and communities since the first earthquake in September 2010. A long exposure period (approximately 17 months) may have resulted in children continually experiencing the physiological arousal and heightened sense of fear that is associated with a traumatic event. When children are in this constant fearfully expectant state, they may experience impairment in their ability to use their cognitive, social, and emotional experiences to adequately manage their current situation (Shaw et al., 2012). The boys in the current study may represent children who have the necessary resources and skills to effectively cope with the ongoing effects of the earthquake.

The children in the current study were rated as having high self-regulation and low behavioural problems. In addition, no children were experiencing symptoms of PTSD at the time of the study, and four of the five children experienced minimal exposure to the earthquakes. The presence of post-disaster symptomatology and exposure to the effects of a disaster may impact on children's ability to cope with their new circumstances (Weems & Graham, 2014). The study by Weems and Graham (2014) found that children with low symptoms of PTSD exhibited lower levels of avoidant coping strategies. However, these same children had also experienced a high level of exposure to the disaster. In contrast, the children in the current study were not experiencing PTSD symptoms, avoidant coping was used less frequently, and the parents of four of the five children reported minimal exposure to the effects of the earthquakes. However, the children in the current study may have been exposed to disruption outside the family, such as the temporary closure of schools, damaged roads and buildings, and highly stressed individuals in the community. These factors may also impact on a child's response to a disaster (La Greca & Prinstein, 2002) and may help to explain the children's use of coping

strategies when comparing the current study and the study by Weems and Graham (2014).

PTSD and coping. No children were exhibiting symptoms of PTSD at the time of the current study. The research regarding types of coping and PTSD has found a link between avoidant coping strategies and symptomatology. In particular, Vernberg and colleagues (1996) found that, although the blame and anger strategy was related to a high level of PTSD symptoms, it was the least frequently reported coping strategy. Conversely, Russoniello and colleagues (2002) found that strategies such as distraction, social support, and cognitive restructuring were not significantly associated with PTSD. Children in the current study frequently reported the use of distraction and social support. When taking into consideration the absence of PTSD symptoms, these results appear to be congruous with the current research. The children in both of these studies were similarly aged to those in the current study; however, the studies were carried out within six months post-disaster, meaning the effect of time elapsed since disaster must be taken into account. In the current study, it is not known whether the children experienced symptoms of PTSD immediately following the earthquakes, as the study was carried out four years post-disaster.

However, some comparison can be made with the study by Asarnow and colleagues (1999), which was carried out one year post-earthquake. This study also found that avoidant coping strategies were associated with symptoms of PTSD. Therefore, it appears that the current literature has shown evidence of the association between avoidant coping and PTSD symptoms in a variety of disaster contexts. In addition, this may also provide evidence for the suggestion that better mental health outcomes in children following a disaster may be associated with a lower frequency of the use of avoidant coping strategies. The active and adaptive coping strategies

used by the well-functioning children in the current study may be partly related to their lack of symptomatology.

Coping strategies in the current study. Philip, Harry, Fred, and Tom most often reported using strategies in the active and adaptive coping categories and they least often reported using strategies in the avoidant coping category. These results are encouraging, as they can also be seen in the qualitative literature regarding coping during the eight to 24 months post-disaster. The study by Pfefferbaum and colleagues (2008) found that positive active strategies were identified as useful by children aged nine to seventeen, eight months following Hurricane Katrina. The socioeconomic status of the families in this study and in the current study appeared to be at a similar level. Pfefferbaum and colleagues (2008) discussed the impact of having sufficient economic means to evacuate prior to the onset of Hurricane Katrina. The families in the current study were from high decile neighbourhoods, indicating that they may have also been in the position to maintain a secure environment for their children.

In the current study, children reported the use of active coping strategies such as social support and problem solving. Adaptive forms of coping that were reported included wishful thinking and distraction. The study by Jensen and colleagues (2013) found that positive thinking (a form of active coping) was most frequently reported by a group of children aged six to seventeen, ten months following the Southeast Asia tsunami. Many children also reported the use of distraction. Although this study covered a large age group, the quotes given came from children who were of a similar age to those in the current study. For example, one child (aged 7) stated: *"I had to think happy thoughts."* Comparatively, in the current study, Fred stated: *"I usually just think about something better."* This suggests that these children were able to

utilise similar coping strategies, despite the very different contexts of the current study and that of the two studies following Hurricane Katrina and the tsunami.

Kieran and Harry were the only participants to report the use of an avoidant coping strategy. The exposure period following the onset of the Christchurch earthquakes lasted from September 2010 until January 2011. As described previously, this time period has been characterised by many post-disaster stressors that have resulted in a severely affected school and community environment. There are many possible reasons why Kieran and Harry used avoidant coping strategies, and this experience may provide only some explanation. However, the majority of the coping strategies described by these two boys and their parents and teachers fell under the active and adaptive coping category. In Kieran's case, it may be that other factors such as social support, continued routines at school, and family cohesion may have helped to mitigate the effect of losing his family home and the disruptions he experienced (Masten & Narayan, 2012; Power, 2004).

In the literature, avoidant coping strategies were also the least often reported, with one study finding that about 10% of children used this category of coping six months post Hurricane Katrina (Salloum & Lewis, 2010). This study was made up of children aged seven to 12, indicating that some comparison to the current study is possible. In addition, many families and children were experiencing significant disruption during these six months following Hurricane Katrina, including damaged homes, limited access to amenities, and the relocation of family members and friends (La Greca & Prinstein, 2002; Salloum & Lewis, 2010). This experience may be similar to those of families living in Christchurch, although the period of exposure to these factors continued for well over a year following the initial earthquake.

Findings from these studies, as well as from the current study, suggest that children exposed to disasters are capable of using strategies that help them to obtain some personal control over their environment and emotions, primarily through positive activities or thoughts. This finding was present regardless of the amount of time elapsed since the disaster and is consistent with the findings of the current study, which was carried out four years post-disaster. No literature was found regarding this time period post-disaster, therefore the current study provides some insight into the coping strategies used by children four years following a disaster. In addition, this pattern of results was found following a variety of disasters (hurricanes, earthquakes, etc.), indicating some consistency in the current literature regarding children's coping in response to disasters.

Coping assistance. When discussing parental coping assistance in the current study, only Harry's mother mentioned roles and routines. All parents, with the exception of Kieran's, mentioned emotional processing strategies such as discussing the earthquake with their children and talking to the children about how they were feeling. The teacher of three of the boys stated that maintaining a regular routine for the children was important, and all teachers reported using emotional processing strategies related to managing conflict in the classroom. Prinstein and colleagues (1996) also found that parents and teachers provided coping assistance in the form of roles and routines and emotional processing, seven months post-disaster.

Coping assistance involving avoidant strategies was not mentioned by any of the parents in the current study. The longitudinal study by Gil-Rivas and Kilmer (2013) found that, at 13 months, parents most often provided assistance in the form of seeking social support and positive reframing. Avoidant coping strategies were less frequently reported. Measures were taken again at 22 months, and it was found that

coping assistance involving avoidant strategies was related to increased levels of child-reported PTSD symptoms. The children in this study were of a similar age to those in the current study, and the length of time elapsed (22 months) indicates that it may be appropriate to compare the results of this study to those of the current study. A major point of difference lies in the gathering of information regarding coping assistance. In the Gil-Rivas and Kilmer study, parents used a checklist to report the frequency of various types of coping assistance provided. In the current study, parents were asked semi-structured questions regarding what they did to help their child cope. This may have resulted in parents providing socially desirable responses rather than discussing responses that had the potential for embarrassment. The anonymity and absence of an interviewer when using a checklist to gather information may result in more honest answers from participants (Grimm, 2010). However, the findings from these studies, along with those of the current study, suggest that the coping assistance provided to children by their parents and teachers continues to be an important factor for children years after a disaster.

Some parents in the current study stated that they discussed the earthquakes and attempted to explain them to their children, in order to help them cope. Salloum and colleagues (2010) found that children reported coping assistance in the form of emotional processing, which included the sharing of emotions, thoughts, and reactions to the disaster. The discussion of post-disaster experiences was a primary recommendation by these authors. Parents in the current study also mentioned avoiding the discussion of parental concerns regarding the earthquakes in front of their children. The parents' statements often reflected an understanding of their child's awareness of parental stress and an ability to manage their own anxiety. Jensen and colleagues (2013) found that children felt reassured and safe after

observing that their parents were in control of the situation and of their feelings of anxiety and fear.

Children may often reproduce feelings of anxiety and distress if displayed by their parents, and levels of child distress following a disaster are associated with the child's observation of their parents' reactions to the disaster and their use of coping strategies (Dogan-Ates, 2010; Shaw et al., 2012). These findings suggest that the calm, supportive coping assistance provided to the children in the current study may have had an important effect on their adjustment following the earthquakes and subsequent aftershocks. Parents were able to remain calm and model emotional regulation for their child. In addition, the discussion of parental concerns regarding the earthquakes in front of their child was kept to a minimum, meaning that the child had less exposure to their parents' anxiety regarding disaster factors.

Developmental pathways. The hypothesised pathways of children's development following a disaster (as seen in Figure 1, Chapter 1) provide a framework for speculation regarding the pathways of the children in the current study. Based on the supportive comments made by parents (e.g., "*...stayed calm and talked a lot about how they're [the children] feeling.*" Ben); the high socioeconomic status of the suburbs the families were living in; and the high decile school the children attended, these children may have been functioning within the 'normal zone' pre-disaster. Their self-regulation and behaviour scores, (reported at three years and at three years seven months following the initial September 2010 earthquake), and their descriptions of using active and adaptive coping strategies in the current study (four years after the initial earthquake) can also be taken into account. With these factors in mind, it may be possible to suggest that the children in the current study may be developing along a pathway represented as Pathway A in Figure 1, which, as

theorised by Masten and Narayan (2012), indicates stress resistance or resilience. As it is not known whether the children exhibited symptoms of PTSD immediately following the earthquake or at any point in time up until entry into the Liberty et al. (2013) study, it may also be possible to suggest that these children may be developing along Pathway B, which reflects PTSD following the disaster and eventual recovery. It must be reiterated that these are speculations regarding the children's development, and that further information would be required to confirm these trajectories.

Further Comments

Agreement in responses. Upon analysis of the responses made by participants, it became clear that there was a high level of agreement regarding the children's use of active coping strategies. For example, responses from Philip, his mother, and his teacher were all categorised as active coping. These strategies included social support ("*...I tried to make new friends and I did.*" Philip), rational thoughts ("*...it will be OK because I [Philip] can talk to someone.*" Kate), and emotional regulation ("*...can calm himself, hold it together.*" Isobel). These coping strategies were in response to events both related and unrelated to the earthquakes, indicating a consistency in Philip's ability to cope with difficult situations. This suggests that the children were able to utilise effective coping strategies in multiple situations, and that other informants such as parents and teachers were able to observe and comment on similar strategies.

No studies were found comparing the responses of children, their parents, and their teachers regarding the child's coping strategies following a natural disaster. However, the predominant use of active and adaptive coping strategies has also been found in the current literature. In particular, the qualitative study carried out 10 months post-disaster by Jensen and colleagues (2013) found that children most often

reported using positive thinking (a form of active coping). This ability to use active and adaptive coping strategies may be a reflection of school-aged children's increasing ability to be self-reliant and utilise strategies involving problem-solving, positive cognitive restructuring, and emotional regulation (Compas et al., 2001). As discussed previously, children of this age may also be more able to take the perspective of others (Piaget, 1929), and this may allow them to effectively manage commonly occurring events such as interpersonal difficulties. Therefore, the results from the current study support the suggestion that children of this age are beginning to display increasingly complex and selective coping strategies that reflect active and adaptive coping (Compas et al., 2001).

Contexts. Due to ethical reasons, the children in the current study were not asked to comment on their coping strategies in response to the earthquakes; this information was collected from parents and teachers. Children were asked to respond to various situations that had been difficult for them. Upon analysis, it appeared that the children who responded to having a friend move away or having an accident, reported using active and adaptive strategies. Harry and Kieran, the only children to report the use of an avoidant coping strategy, responded to situations involving another child being mean to them, and someone being upset with them, respectively. From these results, it appeared that the children who experienced events that were out of their control, such as a friend moving away, were more able to utilise active and adaptive strategies. Harry and Kieran may have responded to events with avoidant coping strategies, as they may have been feeling personally attacked or provoked.

Jensen and colleagues (2013) noted that children's amount of perceived control over the situation may influence their choice of coping strategies. The authors stated that the children's descriptions of their coping strategies following a tsunami

suggested that coping strategies such as problem solving were more effective in controllable situations, and that strategies such as positive thinking were more effective in uncontrollable situations. This is in contrast to the results from the current study, where children who were faced with uncontrollable situations often used strategies such as problem solving. Therefore, it is difficult to conclude whether these children would have described similar coping strategies when discussing the earthquakes. However, the high level of agreement between responses from other informants and from the children suggests that there may be some consistency in coping responses across contexts.

Gender. The children in the current study were all male. In the current literature, evidence of a significant association between gender and coping strategies has not been found (Gil-Rivas & Kilmer, 2013; Huzziff & Ronan, 1999; Jeney-Gammon et al., 1993; La Greca et al., 1996; Prinstein et al., 1996). However, it has been shown that girls are more likely to experience a higher level of PTSD symptoms, as well as other internalising disorders, when exposed to trauma (Russoniello et al., 2002; Shaw et al., 2012). As seen in the review of the current literature, evidence has also been found regarding the association between symptoms of PTSD and the use of avoidant coping strategies. It may be possible that the interplay between gender and choice of coping strategies is associated with children's experiences regarding symptoms of PTSD. In addition, the finding that parental stress post-disaster significantly mediated the effect of disaster impact on boys' distress (Proctor et al., 2007) may have some relevance in the current study. These comments are, however, purely speculative, and the scope of the current study is not sufficient to support conclusions regarding gender, coping, and experiences of distress following disasters.

Additional factors. An important factor for the families involved in the

current study was the ability of each parent to be with their child soon after the February earthquake occurred. In addition, all mothers in this sample were in the position to choose to stay at home with their child or children during this time period. One of the primary factors that has been discussed as promoting resilience during times of adversity is keeping children united with their carers (Masten & Osofsky, 2010). Jensen and colleagues (2013) found that many children directed their actions and thoughts towards becoming reunited with their parents following a disaster, and this response was found regardless of age.

Strategies such as social support, a form of active coping, were also mentioned by parents in the current study (e.g., “*The world shrunk to the local neighbourhood.*” Tina). This reliance on the local community provides further evidence for the importance of community functioning following a disaster (Shaw et al., 2012). As was the case for two families in the current study, the additional stress caused by the aftermath of the February 2011 earthquake was reduced by the presence of a strong community, including school staff, local shops, and neighbours. Braun-Lewensohn (2014) also found that community coping resources was an important factor for participants one year post-disaster. Parents’ description of increased community support and involvement, as well as the results from the Braun-Lewensohn study (2014), suggest that community resources may play an important role in the post-disaster recovery.

Limitations of the Current Study

Due to the exploratory nature of the current study, there are a number of limitations of the current study that should be discussed. Qualitative Descriptive design has often been criticised for lacking clarity and a theory-base. In particular, there is no theory involved in the analysis of data, making this process a partly

subjective one as it involves the researcher's perceptions and interpretations (Neergaard, Olesen, Andersen, & Sondergaard, 2009). However, Qualitative Descriptive is the method of choice when describing a phenomenon (Sandelowski, 2000), and ensuring that certain criteria are met reduces the influence of these factors.

Lincoln and Guba (1986) devised criteria that paralleled those found in quantitative research, specifically, reliability and validity. These criteria included credibility, transferability, and confirmability, and are collectively known as criteria of trustworthiness (Lincoln & Guba, 1986). A limitation of the current study relates to the inability to meet aspects of all three criteria, including prolonged engagement with the participants and member checks (criteria relating to credibility). These were not possible due to the scope of the current study. However, triangulation of data was achieved, indicating the partial fulfilment of these criteria.

Another limitation of the current study is that the children were not asked about their earthquake experiences; instead the children discussed commonly occurring childhood upsets. However, this was done in order to minimise any distress the children may have felt regarding the earthquakes. In addition, it is not known whether the children were experiencing PTSD symptoms or other difficulties prior to starting school and participating in the study by Liberty and colleagues (2013).

Finally, although discussions with the children were audio taped and transcribed, discussions with parents and teachers were recorded through note taking. This may have resulted in the loss of some information, as the researcher was attempting to ask questions and take in the answers while writing. However, detailed notes were taken, and particular care was given when respondents were discussing specific coping strategies.

Strengths of the Current Study

A major strength of the current study relates to the similarities between the responses from participants and the results found in the literature. All five children reported the use of active and adaptive coping strategies, and only Harry and Kieran reported using an avoidant strategy, indicating that these children most often utilised strategies involving positive activities and thoughts. This pattern was also seen in research during the 24 months following a disaster, where children most often reported the use of active and adaptive coping strategies. In addition, a wide variety of coping strategies, descriptions, and categories of coping was used in these studies. This has resulted in inconsistent application of the various sub-types of coping throughout studies, and has therefore limited the current understanding of children's coping (Compas et al., 2001). Compas and colleagues (2001) stated that broad dimensions, as well as distinct sub-types, of coping were required in order for research to make a significant contribution to the current understanding of coping (Compas et al., 2001). Consequently, an examination of the strategies used in the reviewed literature was carried out for the current study, and specific coping strategies, as well as examples of these, were placed within broader categories of coping. This categorisation provided a clear framework for analysing the results of the current study, and for summarising patterns that emerged.

Another strength of the current study is the use of multiple informants to gain an understanding of children's coping following a natural disaster. The combination of information from the child, their parent, and their teacher provided a deeper understanding of self-perceived coping strategies and of observed coping strategies. This triangulation of data is an important technique used for increasing the credibility, and therefore the trustworthiness, of qualitative research (Graneheim & Lundman,

2004; Lincoln & Guba, 1986). In addition, the participants' memory regarding certain events may have been influenced over time, and the use of reports from multiple respondents may have helped to mitigate this effect, as more evidence was provided for the consistency of the child's use of coping strategies. Furthermore, the semi-structured approach used in the current study for gathering information allowed for an increased understanding regarding context-specific coping (Compas et al., 2001), as well as for the collection of the most pertinent responses for participants regarding coping strategies (Salloum & Lewis, 2010).

Implications and Areas for Future Research

The results of the current study contribute to the understanding of what well-supported children with no current symptoms of PTSD do to cope with various difficult situations. In addition, the combination of information from parents and teachers with the child's report of coping strategies provides a more holistic view of what effective coping looks like for children who have experienced a natural disaster. Although the concept of coping and of coping strategies requires further clarification, it may be possible to utilise the overall findings of the research in this field, as well as of the current study, to build an understanding and awareness of effective coping strategies and the long-term outcomes relating to the use of these. With this knowledge, parents and teachers can guide children to use coping strategies that have been shown to result in improved outcomes following disaster.

In relation to this, the findings from the current study and the research in this field can be used to create programmes for teaching children more about these effective coping strategies. It is vital that professionals are able to identify and understand a child's attempts to 'self-protect' (Saylor & DeRoma, 2002). As disasters such as earthquakes often occur without warning, preparing parents and children with

these skills may provide them with the best opportunity to manage the effects of the disaster and the subsequent changes in their lives. Preparing children for future disasters may also aid in the recovery process and provide children with a sense of self-efficacy (La Greca & Prinstein, 2002). Therefore, it is important that future research continues to identify effective coping strategies in the face of traumatic events such as natural disasters, and how best to implement the knowledge and use of these strategies in a post-disaster environment. La Greca and Prinstein (2002) found that the most promising interventions following a natural disaster, such as an earthquake, have a focus on processing the traumatic event, improving coping, and increasing social support.

Participants in the current study often mentioned strategies regarding social support. Examples of these included *“I looked for a new best friend.” (Harry)* and *“Playing (soccer) with my friends. Playing chess. Playing checkers. And touch rugby and cricket.” (Fred)*. Research has shown that social support may help to reduce the negative effect of a natural disaster on children and adolescents (La Greca et al., 1996; Vernberg et al., 1996). The findings from the current study, along with the literature regarding social support in the post-disaster environment, suggest that a major goal for future research regarding children’s adjustment following a natural disaster should be to focus on increasing a child’s social support from parents, teachers, and friends. This can also be incorporated into education regarding coping strategies and can be used to help raise awareness regarding a child’s need for extra support and assistance following a disaster.

Conclusion

This study contributes to research on children’s coping following a natural disaster by providing information regarding well-functioning children’s own

perception of coping strategies used in response to difficult situations. This is presented in combination with parent and teacher reports regarding exposure to the effects of the disaster and coping strategies used at home and in the classroom following a natural disaster. The findings of the study provide an insight into the coping strategies used by five boys living in Christchurch following the 2010 and 2011 earthquakes. Coping assistance was also highlighted as an important factor that was present in these children's environments post-disaster. The knowledge gained from the current study may be helpful when spreading awareness regarding effective coping strategies and when guiding children living within communities affected by disaster towards using strategies that are related to positive long-term outcomes.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Association.
- Asarnow, J., Glynn, S., Pynoos, R. S., Nahum, J., Guthrie, D., Cantwell, D. P., & Franklin, B. (1999). When the earth stops shaking: Earthquake sequelae among children diagnosed for pre-earthquake psychopathology. *Journal of the American Academy of Child & Adolescent Psychiatry*, 38(8), 1016-1023.
- Ayers, T. S., Sandier, I. N., West, S. G., & Roosa, M. W. (1996). A dispositional and situational assessment of children's coping: Testing alternative models of coping. *Journal of Personality*, 64(4), 923-958.
- Band, E. B., & Weisz, J. R. (1988). How to feel better when it feels bad: Children's perspectives on coping with everyday stress. *Developmental Psychology*, 24(2), 247-253.
- Band, E. B., & Weisz, J. R. (1990). Developmental differences in primary and secondary control coping and adjustment to juvenile diabetes. *Journal of Clinical Child Psychology*, 19(2), 150-158.
- Barker, C., Pistrang, N., & Elliott, R. (2003). *Research methods in clinical psychology: An introduction for students and practitioners*. West Sussex: John Wiley & Sons.
- Bayer, K. (2012, October 5). Christchurch quake response 'effective' - review, *The New Zealand Herald*. Retrieved from <http://www.nzherald.co.nz/>
- Braun-Lewensohn, O. (2014). Coping resources and stress reactions among three cultural groups one year after a natural disaster. *Clinical Social Work Journal*, 42(4), 366-374.
- Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. *Archives of General Psychiatry*, 55(7), 626-632.
- Brigg, L., & Roark, M. H. (2013). Personal reflections: What happens when disaster hits? *Aotearoa New Zealand Social Work*, 25(2), 98-104.
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the BRIEF cope. *International Journal of Behavioral Medicine*, 4(1), 92-100.
- Carville, O. (2013, April 2). Worry, despair plague Christchurch residents, *Stuff*. Retrieved from <http://www.stuff.co.nz/>
- Causey, D. L., & Dubow, E. F. (1992). Development of a self-report coping measure for elementary school children. *Journal of Clinical Child and Adolescent Psychology*, 21(1), 47-59.
- CERA. (2012). *Canterbury Earthquake Recovery Authority*. Retrieved from <http://cera.govt.nz/my-property>
- "Christchurch earthquake 13/06". (2011, June 13). *Stuff*. Retrieved from <http://www.stuff.co.nz/>
- Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: problems, progress, and potential in theory and research. *Psychological Bulletin*, 127(1), 87-127.

- Deering, C. G. (2000). A cognitive developmental approach to understanding how children cope with disasters. *Journal of Child and Adolescent Psychiatric Nursing*, 13(1), 7-16.
- Dogan-Ates, A. (2010). Developmental differences in children's and adolescents' post-disaster reactions. *Issues in Mental Health Nursing*, 31(7), 470-476.
- "Earthquake damage by suburb". (2011, February 27). *The Press*. Retrieved from <http://www.stuff.co.nz/>
- Education Review Office. (2012). *School reports*. Retrieved from <http://www.ero.govt.nz/Early-Childhood-School-Reports/School-Reports>
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107-115.
- Frem, T. (2013). PTSD in children: A review and synthesis of research on the need for a separate DSM category. *Concept*, 36., Retrieved from <http://concept.journals.villanove.edu/article/viewFile/1529/1346>.
- Giaconia, R. M., Reinherz, H. Z., Silverman, A. B., Pakiz, B., Frost, A. K., & Cohen, E. (1995). Traumas and posttraumatic stress disorder in a community population of older adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34(10), 1369-1380.
- Gil-Rivas, V., & Kilmer, R. P. (2013). Children's adjustment following Hurricane Katrina: The role of primary caregivers. *American Journal of Orthopsychiatry*, 83(2-3), 413-421.
- Gil-Rivas, V., Silver, R. C., Holman, E. A., McIntosh, D. N., & Poulin, M. (2007). Parental response and adolescent adjustment to the September 11, 2001 terrorist attacks. *Journal of Traumatic Stress*, 20(6), 1063-1068.
- Gist, R., & Lubin, B. (1989). *Psychosocial aspects of disaster*. Oxford, England: John Wiley & Sons.
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts, procedures, and measures to achieve trustworthiness. *Nurse Education Today*, 24(2), 105-112.
- Green, B. L., Grace, M. C., Vary, M. G., Kramer, T. L., Gleser, G. C., & Leonard, A. C. (1994). Children of disaster in the second decade: A 17-year follow-up of Buffalo Creek survivors. *Journal of the American Academy of Child & Adolescent Psychiatry*, 33(1), 71-79.
- Green, B. L., Korol, M., Grace, M. C., Vary, M. G., Leonard, A. C., Gleser, G. C., & Smitson-Cohen, S. (1991). Children and disaster: Age, gender, and parental effects on PTSD symptoms. *Journal of the American Academy of Child & Adolescent Psychiatry*, 30(6), 945-951.
- Green, B. L., Lindy, J. D., Grace, M. C., Gleser, G. C., Leonard, A. C., Korol, M., & Winget, C. (1990). Buffalo Creek survivors in the second decade: stability of stress symptoms. *American Journal of Orthopsychiatry*, 60(1), 43-54.
- Grimm, P. (2010). *Social desirability bias*. Wiley International Encyclopedia of Marketing, London: John Wiley & Sons.
- Hill, C. E., Knox, S., Thompson, B. J., Williams, E. N., Hess, S. A., & Ladany, N. (2005). Consensual qualitative research: An update. *Journal of Counseling Psychology*, 52(2), 196-205.
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288.
- Hume, M., O'Connor, S.-J., Gulliver, A., & Gorman, P. (2015, January 6). Thousands jolted by major 6.4 Canterbury earthquake, *Stuff*. Retrieved from <http://www.stuff.co.nz/>

- Huzziff, C. A., & Ronan, K. R. (1999). Prediction of children's coping following a natural disaster - the Mount Ruapehu eruptions: A prospective study. *Australasian Journal of Disaster and Trauma Studies*, 1999(1), Retrieved from <http://gr2tq4rz9x.scholar.serialssolutions.com/?sid=google&auinit=CA&aulast=Huzziff&atitle=Prediction+of+Children%27s+Coping+Following+a+Natural+Disaster-the+Mount+Ruapehu+Eruptions:+A+prospective+study&title=Australasian+journal+of+disaster+and+trauma+studies&volume=21&date=1999&spage=1999&issn=1174-4707>.
- Jeney-Gammon, P., Daugherty, T. K., Finch Jr, A. J., Belter, R. W., & Foster, K. Y. (1993). Children's coping styles and report of depressive symptoms following a natural disaster. *The Journal of Genetic Psychology*, 154(2), 259-267.
- Jensen, T. K., Ellestad, A., & Dyb, G. (2013). Children and adolescents' self-reported coping strategies during the Southeast Asian Tsunami. *British Journal of Clinical Psychology*, 52(1), 92-106.
- Kail, R. V., & Barnfield, A. (2012). *Children and their development*. Upper Saddle River, NJ: Pearson.
- Kendall, P. C. (1994). Treating anxiety disorders in children: results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 62(1), 100-110.
- Kilmer, R. P., & Gil-Rivas, V. (2010). Exploring posttraumatic growth in children impacted by Hurricane Katrina: Correlates of the phenomenon and developmental considerations. *Child Development*, 81(4), 1211-1227.
- Kilpatrick, D. G., Ruggiero, K. J., Acierno, R., Saunders, B. E., Resnick, H. S., & Best, C. L. (2003). Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: Results from the National Survey of Adolescents. *Journal of Consulting and Clinical Psychology*, 71(4), 692-700.
- Kovacs, M. (1978). *Children's depression inventory (CDI)*. Unpublished manuscript. University of Pittsburgh.
- 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.
- Kuntz, J. R. C. (2014). The protracted effect: Surveying teachers' experiences in the aftermath of the Christchurch earthquakes. *Natural Hazards Review*, 16(1), Retrieved from [http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)NH.1527-6996.0000147](http://ascelibrary.org/doi/abs/10.1061/(ASCE)NH.1527-6996.0000147).
- Kyngäs, H., & Vanhanen, L. (1999). Content analysis as a research method. *Journal of Nursing Science*, 11(1), 3-12.
- La Greca, A. M., & Prinstein, M. J. (2002). Hurricanes and earthquakes. In A. M. La Greca, W. K. Silverman, E. M. Vernberg & M. C. Roberts (Eds.), *Helping children cope with disasters and terrorism* (pp. 107-138). Washington, DC, US: American Psychological Association.
- 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), 712-723.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lengua, L. J., Long, A. C., Smith, K. I., & Meltzoff, A. N. (2005). Pre-attack symptomatology and temperament as predictors of children's responses to the

- September 11 terrorist attacks. *Journal of Child Psychology and Psychiatry*, 46(6), 631-645.
- Liberty, K., Macfarlane, S., Basu, A., Gage, J., & Allan, M. (2013). *PTSD symptoms and coping in children beginning school: Preliminary findings. Christchurch, New Zealand: Researching the Health Implications of Seismic Events (RHISE) Symposium, 22 November 2013*. Retrieved from <http://journal.nzma.org.nz/journal/126-1386/5930/>
- Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. In D. Williams (Ed.), *Naturalistic Evaluation* (pp. 15-25). New Directions for Evaluation, no. 30. San Francisco: Jossey-Bass.
- Loeb, J., Stettler, E. M., Gavila, T., Stein, A., & Chinitz, S. (2011). The child behavior checklist PTSD scale: Screening for PTSD in young children with high exposure to trauma. *Journal of Traumatic Stress*, 24(4), 430-434.
- Mackintosh, C. (2006). Caring: The socialisation of pre-registration student nurses: A longitudinal qualitative descriptive study. *International Journal of Nursing Studies*, 43(8), 953-962.
- Masten, A. S. (2007). Resilience in developing systems: Progress and promise as the fourth wave rises. *Development and Psychopathology*, 19(03), 921-930.
- Masten, A. S., & Narayan, A. J. (2012). Child development in the context of disaster, war, and terrorism: Pathways of risk and resilience. *Psychology*, 63, 227-257.
- Masten, A. S., & Osofsky, J. D. (2010). Disasters and their impact on child development: Introduction to the special section. *Child Development*, 81(4), 1029-1039.
- McSaveney, E. (2013). *Historic earthquakes - The 2011 Christchurch earthquake and other recent earthquakes*. Retrieved from <http://www.TeAra.govt.nz/en/historic-earthquakes/page-13>
- 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.
- Moos, R. H., Cronkite, R. C., Billings, A. G., & Finney, J. W. (1988). *Health and Daily Living Form*. Palo Alto, CA: Social Ecology Laboratory.
- Neergaard, M. A., Olesen, F., Andersen, R. S., & Sondergaard, J. (2009). Qualitative description - the poor cousin of health research? *BMC Medical Research Methodology*, 9(52), 1-5.
- Pfefferbaum, B., Houston, J. B., Wyche, K. F., Van Horn, R. L., Reyes, G., Jeon-Slaughter, H., & North, C. S. (2008). Children displaced by Hurricane Katrina: A focus group study. *Journal of Loss and Trauma*, 13(4), 303-318.
- Piaget, J. (1929). *The child's conception of the world*. Lanham: Rowman & Littlefield.
- Pich, J., Hazelton, M., Sundin, D., & Kable, A. (2011). Patient-related violence at triage: A qualitative descriptive study. *International Emergency Nursing*, 19(1), 12-19.
- Pina, A. A., Villalta, I. K., Ortiz, C. D., Gottschall, A. C., Costa, N. M., & Weems, C. F. (2008). Social support, discrimination, and coping as predictors of posttraumatic stress reactions in youth survivors of Hurricane Katrina. *Journal of Clinical Child & Adolescent Psychology*, 37(3), 564-574.
- Polit, D. (1998). *The positive behavior scale*. Saratoga Springs, NY: Humanalysis.
- Power, T. G. (2004). Stress and coping in childhood: The parents' role. *Parenting: Science and Practice*, 4(4), 271-317.

- Prinstein, M. J., La Greca, A. M., Vernberg, E. M., & Silverman, W. K. (1996). Children's coping assistance: How parents, teachers, and friends help children cope after a natural disaster. *Journal of Clinical Child Psychology*, 25(4), 463-475.
- Proctor, L. J., Fauchier, A., Oliver, P. H., Ramos, M. C., Rios, M. A., & Margolin, G. (2007). Family context and young children's responses to earthquake. *Journal of Child Psychology and Psychiatry*, 48(9), 941-949.
- Program for the Prevention Research. (1999). *Manual for the Children's Coping Strategies Checklist and the How I Coped Under Pressure Scale*. Tempe: Arizona State University.
- Pryor, N. (2013, March 15). Medical staff "held back disaster planning", *Stuff*. Retrieved from <http://www.stuff.co.nz/>
- "Quake swarm rattles Christchurch". (2012, January 2). *Stuff*. Retrieved from <http://www.stuff.co.nz/>
- Ronan, K. R. (1997). The effect of a series of volcanic eruptions on emotional and behavioural functioning in children with atopic disorders. *The New Zealand Medical Journal*., in press.
- Ronan, K. R., Kendall, P. C., & Rowe, M. (1994). Negative affectivity in children: Development and validation of a self-statement questionnaire. *Cognitive Therapy and Research*, 18(6), 509-528.
- Russoniello, C. V., Skalko, T. K., O'Brien, K., McGhee, S. A., Bingham-Alexander, D., & Beatley, J. (2002). Childhood posttraumatic stress disorder and efforts to cope after Hurricane Floyd. *Behavioral Medicine*, 28(2), 61-71.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57(3), 316-331.
- Salloum, A., & Lewis, M. L. (2010). An exploratory study of African American parent - child coping strategies post-Hurricane Katrina. *Traumatology*, 16(1), 31-41.
- Sandelowski, M. (1995). Sample size in qualitative research. *Research in Nursing & Health*, 18(2), 179-183.
- Sandelowski, M. (2000). Focus on research methods - whatever happened to qualitative description? *Research in Nursing and Health*, 23(4), 334-340.
- Saylor, C. F., & DeRoma, V. (2002). Assessment of children and adolescents exposed to disaster. In A. M. La Greca, W. K. Silverman, E. M. Vernberg & M. C. Roberts (Eds.), *Helping children cope with disasters and terrorism* (pp. 35-53). Washington, DC, US: American Psychological Association.
- Saylor, C. F., Swenson, C. C., & Powell, P. (1992). Hurricane Hugo blows down the broccoli: Preschoolers' post-disaster play and adjustment. *Child Psychiatry and Human Development*, 22(3), 139-149.
- Scheeringa, M. S. (2008). Developmental considerations for diagnosing PTSD and acute stress disorder in preschool and school-age children. *American Journal of Psychiatry*, 165(10), 1237-1239.
- Scheeringa, M. S. (2013). *PTSD for children 6 years and younger*. National Center for PTSD: US Department of Veteran Affairs. Retrieved from http://www.ptsd.va.gov/professional/PTSD-overview/ptsd_children_6_and_younger.asp.
- SCIRT. (2014). *South New Brighton - storm water and roading repair work*. Retrieved from <http://strongerchristchurch.govt.nz/work/activity/4400>

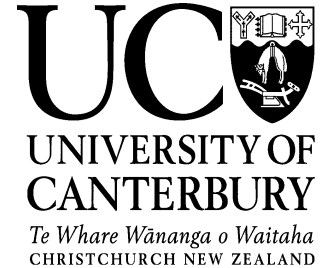
- Shaw, J. A., Applegate, B., & Schorr, C. (1996). Twenty-one-month follow-up study of school-age children exposed to Hurricane Andrew. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35(3), 359-364.
- Shaw, J. A., Espinel, Z., & Shultz, J. M. (2012). *Care of children exposed to the traumatic effects of disaster*. Arlington: American Psychiatric Publishing.
- Shirlaw, N. (2014). *Children and the Canterbury Earthquakes. Child Poverty Action Group Background Paper*. Retrieved from <http://www.cpag.org.nz/assets/Backgrounders/140227%20CPAG%20Children%20and%20the%20Canterbury%20Feb2014.pdf>
- Silverman, W. K., & La Greca, A. M. (2002). Children experiencing disasters: Definitions, reactions, and predictors of outcomes. In A. M. La Greca, W. K. Silverman, E. M. Vernberg & M. C. Roberts (Eds.), *Helping children cope with disasters and terrorism* (pp. 11-33). Washington, DC, US: American Psychological Association.
- Spirito, A., Stark, L. J., & Williams, C. (1988). Development of a brief coping checklist for use with pediatric populations. *Journal of Pediatric Psychology*, 13(4), 555-574.
- Staab, J. P., Fullerton, C. S., & Ursano, R. J. (1999). A critical look at PTSD: Constructs, concepts, epidemiology, and implications. In R. Gist & B. Lubin (Eds.), *Response to disaster: Psychosocial, community, and ecological approaches* (pp. 101-132). Philadelphia: Brunner/Mazel.
- Stanton, A. L., Kirk, S. B., Cameron, C. L., & Danoff-Burg, S. (2000). Coping through emotional approach: Scale construction and validation. *Journal of Personality and Social Psychology*, 78(6), 1150-1169.
- Statistics New Zealand. (2012). *Vulnerable children and families: Some findings from the New Zealand General Social Survey*. Retrieved from www.stats.govt.nz.
- "Swarm of quakes hits Christchurch". (2011, December 23). *Stuff*. Retrieved from <http://www.stuff.co.nz/>
- 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.
- Valentiner, D. P., Holahan, C. J., & Moos, R. H. (1994). Social support, appraisals of event controllability, and coping: An integrative model. *Journal of Personality and Social Psychology*, 66(6), 1094-1102.
- Vernberg, E. M., La Greca, A. M., Silverman, W. K., & Prinstein, M. J. (1996). Prediction of posttraumatic stress symptoms in children after Hurricane Andrew. *Journal of Abnormal Psychology*, 105(2), 237-248.
- Weems, C. F., & Graham, R. A. (2014). Resilience and trajectories of posttraumatic stress among youth exposed to disaster. *Journal of Child and Adolescent Psychopharmacology*, 24(1), 2-8.
- Wertz, F. J. (2011). The qualitative revolution and psychology: Science, politics, and ethics. *The Humanistic Psychologist*, 39(2), 77-104.
- Wills, T. A. (1985). Stress, coping, and tobacco and alcohol use in early adolescence. *Coping and Substance Use*, 5(6), 67-94.
- Xia, L.-X., Ding, C., Hollon, S. D., & Yi, Y. (2014). Interpersonal self-support, venting coping and Post-Traumatic Stress Disorder symptoms among adolescent earthquake survivors. *Current Psychology*, 1-12.
- Xiao, J. H., & Xu, X. F. (1996). The study on reliability and validity of "The Coping Scale". *Chinese Mental Health Journal*, 10(4), 164-166.

- Zhang, Y., Kong, F., Wang, L., Chen, H., Gao, X., Tan, X., . . . Liu, Y. (2010). Mental health and coping styles of children and adolescent survivors one year after the 2008 Chinese earthquake. *Children and Youth Services Review*, 32(10), 1403-1409.
- Zill, N., & Peterson, J. (1986). *Behavior problem index*. Washington DC: Child Trends, Inc.

Appendices

Appendix A: Advertisement

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Dear *(parent name)*

My name is Solfrid Gillman and I am a Masters student in the Child and Family Psychology programme at the University of Canterbury. I am inviting you and your child, *(child name)*, to participate in my study so that I can learn more about the coping strategies children use. *(Child name)* is participating in the “Juniors Settling into School” study. Study records indicate that *(child name)* has demonstrated high levels of positive behaviour at school. I am interested in talking to your child about the coping strategies *(he/she)* has used and how helpful *(he/she)* thinks these strategies were. I am happy to provide in advance a copy of the questions I would ask in the interview.

If you agree to participate, I would also like to conduct an interview with you about your child’s experiences during the earthquakes, as well as the coping strategies *(child name)* has used since 2010 and 2011. I would also like to invite *(child name)*’s teacher to participate in an interview regarding your child’s coping strategies at school. If you and your child participate in the study, two movie tickets will be provided to compensate for your time.

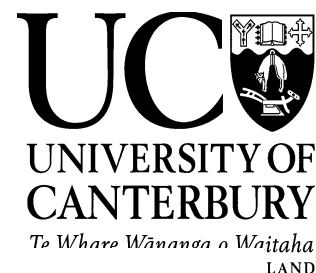
People involved in the “Juniors Settling into School” study are supervising my study. I hope that the study will help us learn more about children’s coping skills, so that other children can benefit from this knowledge.

Please email, call, or text me (027 739 7005) if you are interested in participating and I will telephone you in the evening to answer any questions you may have and give you more information about the study. Or you can telephone or text my senior supervisor, Kathleen Liberty. I will make a follow-up call to confirm, if I do not hear from you.

Thank you for your time,

Solfrid Gillman

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Dear *(teacher name)*

My name is Solfrid Gillman and I am a Masters student in the Child and Family Psychology programme at the University of Canterbury. For my study, I am interested in learning about the coping strategies children have used since 2010 and 2011. *(Child name)* is participating in the “Juniors Settling into School” study. Study records indicate that *(child’s name)* has demonstrated high levels of positive behaviour at school. I have contacted *(child and parent name)* and I have received their consent to participate in my study.

I would like to invite you to participate as well. Participation would involve a 15-minute interview regarding coping strategies that you have noticed *(child name)* use since entering your class. As part of the study, I would also like to spend time in class getting to know the children. If this suits you, I am happy to help with different class activities such as reading to the class or supervising on the playground. I would also appreciate your advice on the questions I will be asking the children. All of the above is optional and not required for participation, but your involvement would be appreciated. If the child interview takes place at school, I would clarify with you when would be the most appropriate time for this. I am happy to provide a copy of the interview questions in advance. If you participate in the study, a gift voucher will be provided to compensate for your time.

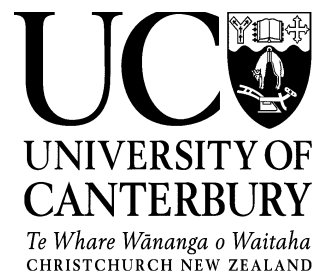
People involved in the “Juniors Settling into School” study are supervising my study. I hope that the study will help us learn more about children’s coping skills, so that other children can benefit from this knowledge.

Please email, call, or text me (details above) if you are interested in participating and I will telephone you in the evening to answer any questions you may have and give you more information about the study. Or you can telephone or text my senior supervisor, Kathleen Liberty. I will make a follow-up call to confirm, if I do not hear from you.

Thank you for your time,

Solfrid Gillman

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Dear (*principal name*),

My name is Solfrid Gillman and I am a Masters student in the Child and Family Psychology programme at the University of Canterbury. Researchers involved in the “Juniors Settling into School” study are supervising my research into children’s coping following the earthquakes. I hope that the study will help us learn more about children’s coping skills, so that other children can benefit from this knowledge.

Study records indicate that a number of children at (*name of school*) are demonstrating high levels of positive behaviour at school, and these children would be ideal for my study. I hope to talk with five of these children, their parents, and their teachers for my study.

Kathleen has not shared with me any details of names or addresses of potential participants.

I will be preparing letters to the parents using procedures approved by the UC ethics committee, which Kathleen will address privately. If parents are interested in participating with their son or daughter, the parent will get back to Kathleen or me directly and only then will I learn their identity.

Once I obtain parent consent and parent permission to contact their child’s teachers, I will also be inviting teachers of these children to also be interviewed for about 20 minutes about their perceptions of the child’s coping. Kathleen has told me that this includes the teachers from rooms (*numbers*).

I would be grateful if you would consider allowing me to talk with these teachers next week if possible. I am able to come in and meet the teachers to discuss my study and respond to any questions during morning tea, lunch or after school. I would also like to spend time in the classroom helping the teachers as a way of supporting them for their time helping me with my study. The results of the study will be shared with the teachers and parents after the thesis is completed.

This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee (reference number 2014/39/ERHEC).

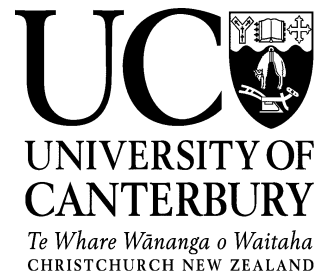
Thank you for consideration of my request to meet with the teachers. I would be happy to answer any questions you may have (027-739-7005), or you may wish to phone Kathleen.

Sincerely,

Solfrid Gillman

Appendix B: Information Sheets

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Descriptions of coping with commonly occurring events by highly regulated boys living in earthquake-affected Christchurch

Information Sheet for Parent/Caregiver

My name is Solfrid Gillman and I am completing a Masters thesis in Child and Family Psychology. The aim of my thesis is to explore what children say about coping and what their parents and teachers say about the children's coping strategies following the earthquakes.

I would like to invite you and your child to participate in my study. Participation will involve a 25-minute interview with the parent and a 15-minute interview with the child. The parent interview will consist of questions relating to the child's experiences during the earthquakes, as well as questions regarding the child's coping strategies. The child interview will consist of questions regarding the child's coping strategies in everyday situations. We will begin the child interview by doing some drawing. Your child will not be asked to describe their experiences during the earthquakes. Please note that the interview with your child will be recorded for analysis purposes. Hand-written notes will be taken during the parent interviews. Two movie tickets will be provided as compensation for your time spent on this study.

If you and your child are interested in being involved in this study, please read through the attached information sheet and consent form with your child to ensure that he/she understands the study.

Please note that participation in this study is voluntary and the right to withdraw at any stage without penalty is maintained. If this occurs, all related information will be erased. Your child will be asked for their individual assent to participate in the interview. If at any point your child expresses that he or she does not want to participate, then the interview will finish.

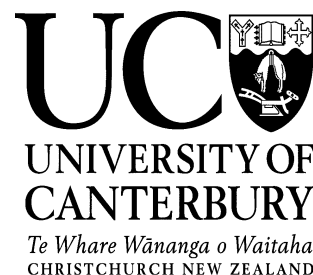
I will take particular care to ensure the confidentiality of all data gathered for this study. I will also take care to ensure anonymity in publications of the findings. Coded data will only be accessible by me and by my supervisors prior to submission. All the data will be securely stored in password protected facilities and locked storage at the University of Canterbury and will be destroyed after five years following the study. You are able to request a summary of this study. Data from this study will be published in a thesis and may be published in an academic journal or presented at a conference.

If you require further information, please contact the researcher, Solfrid Gillman (details above) or her supervisor, Kathleen Liberty.

This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee. Participants should address any complaints about the study to the Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz). If required, the Canterbury Support Line is available to provide support and advice (0800 777 846).

Thank you for thinking about helping me with my study

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Descriptions of coping with commonly occurring events by highly regulated boys living in earthquake-affected Christchurch

Information Sheet for Child

My name is Solfrid Gillman and I am doing a study at the university. I would like to talk to you about what you do and think to help make yourself feel better when things are a bit scary or upsetting. I would also like to talk with your teacher and your parents/caregivers to learn more about what you do. What we talk about will be recorded so that I can listen to it again when I am writing my project. What you say is very important and I don't want to miss anything, so I will also be taking notes while we talk.

You will be given a code name in the write-up of my study so that no one will know your name, your parents'/caregivers' names, or your teacher's name.

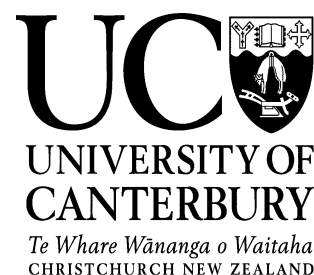
We will start by doing some drawing, and we will talk for about 15 minutes, either at your house or at your school.

Your parents/caregivers and your teacher have also been asked to help. If you have any questions, you can talk to them or to me. If you change your mind about being in this study, that is fine too. All you have to do is tell your parents/caregivers or me.

Thank you for thinking about helping me with my study,

Solfrid Gillman

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Descriptions of coping with commonly occurring events by highly regulated boys living in earthquake-affected Christchurch

Information Sheet for Teachers

My name is Solfrid Gillman and I am completing a Masters thesis in Child and Family Psychology. The aim of my thesis is to explore what children say about coping and what their parents and teachers say about the children's coping experiences following the earthquakes.

I would like to invite you to participate in my study. Participation will involve a 15-minute discussion consisting of questions regarding the child's coping strategies since entering your class. This discussion will be conducted at school. If the child interview is conducted at the school, I will clarify with you when would be most appropriate. A gift voucher will be provided as compensation for your time spent on this study.

Please note that participation in this study is voluntary and the right to withdraw at any stage without penalty is maintained.

I will take particular care to ensure the confidentiality of all data gathered for this study. I will also take care to ensure anonymity in publications of the findings. Coded data will only be accessible by me and by my supervisors prior to submission. All the data will be securely stored in password protected facilities and locked storage at the University of Canterbury, and will be destroyed after five years following the study. You are able to request a summary of this study. Data from this study will be published in a thesis and may be published in an academic journal or presented at a conference.

If you require further information, please contact the researcher, Solfrid Gillman (details above) or her supervisor, Kathleen Liberty.

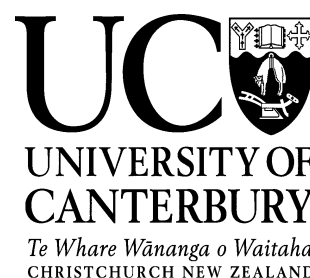
This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee. Participants should address any complaints about the study to the Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz). If required, the Canterbury Support Line is available to provide support and advice (0800 777 846).

Thank you for thinking about helping me with my study,

Solfrid Gillman

Appendix C: Consent Forms

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Descriptions of coping with commonly occurring events by highly regulated boys living in earthquake-affected Christchurch

Consent Form for Parent/Caregiver and Child

I have been given a full explanation of this study and have been given an opportunity to ask questions. I understand what will be required of myself and of my child if we agree to take part in this study.

I understand that my participation and that of my child is voluntary and that we may withdraw at any stage without penalty. It is also understood that if this occurs, all information regarding my child and myself will be removed from the study and destroyed.

I understand that data from this study will be published in a thesis and could be published in an academic journal or presented at a conference. I understand that any information or opinions I, or my child, provide will be kept confidential to the researcher and will not identify us.

I understand that all data collected for this study will be kept in locked and secure storage facilities at the University of Canterbury and will be destroyed after five years.

I understand that I am able to request a report on the findings of this study.

I understand that if I require further information I can contact the researcher, Solfrid Gillman, or her supervisor, Kathleen Liberty. If I have any complaints I can contact the Chair of the University of Canterbury Educational Research Human Ethics Committee.

By signing below I am declaring that I have read and understood the statements above and agree to fulfil my role to allow the completion of this study. I have also read the information sheet to my child and I give my consent for him/her to participate in this study. If I have provided an email address, I would like to receive a summary of the findings.

Name (please print): _____ Child's name: _____

Your signature: _____ Date: _____

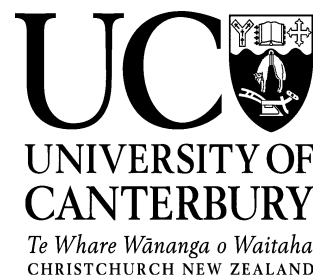
Address (for movie tickets): _____

Email address: _____

Preferred place of parent interview: home/other (please circle)

Preferred place of child interview: home/school (please circle – if school, I will clarify with the teacher when would be most appropriate)

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Descriptions of coping with commonly occurring events by highly regulated boys living in earthquake-affected Christchurch

Consent Form for Child

My parent has told me about your study.

I am happy to help you with your study about the things I do and think to help make myself feel better when things are a bit scary or upsetting.

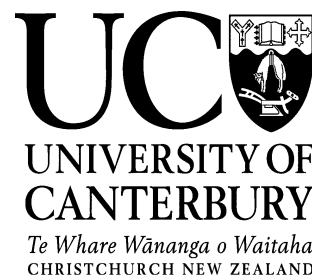
I know that any information collected about me will not be told to anyone else and will be stored away in a locked cabinet. Solfrid will not use my name or my parents'/teacher's names in the study. All information will be destroyed after the study has been written up. My parents/caregivers can ask to receive a small report of the study.

I understand that I can change my mind about being in this study and no one will mind.

I know that if I have any questions I can ask my parents, my teacher, or Solfrid.

Child's name (please print): _____ Date: _____

Solfrid Gillman
School of Health Sciences, College of Education
University of Canterbury
Private Bag 4800
Christchurch 8140
Telephone: 027 739 7005
Email: solfrid.gillman@pg.canterbury.ac.nz



Descriptions of coping with commonly occurring events by highly regulated boys living in earthquake-affected Christchurch

Consent Form for Teacher

I have been given a full explanation of this study and have been given an opportunity to ask questions.

I understand what will be required of me if I agree to take part in this study.

I understand that my participation is voluntary and that I may withdraw at any stage without penalty. It is also understood that if this occurs, all information regarding myself will be removed from the study and destroyed.

I understand that data from this study will be published in a thesis and could be published in an academic journal or presented at a conference. I understand that any information or opinions I provide will be kept confidential to the researcher and will not identify me.

I understand that all data collected for this study will be kept in locked and secure storage facilities at the University of Canterbury and will be destroyed after five years.

I understand that I am able to request a report on the findings of this study.

I understand that if I require further information I can contact the researcher, Solfrid Gillman, or her supervisor, Kathleen Liberty. If I have any complaints I can contact the Chair of the University of Canterbury Educational Research Human Ethics Committee.

By signing below I am declaring that I have read and understood the statements above and agree to fulfil my role to allow the completion of this study. If I have provided an email address, I would like to receive a summary of the findings.

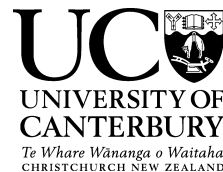
Name (please print): _____

Signature: _____ Date: _____

Address (for gift vouchers): _____

Email address: _____

Appendix D: Ethics Approval Letter



HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen
Email: human-ethics@canterbury.ac.nz

Ref: 2014/39/ERHEC

4 August 2014

Solfrid Gillman
School of Health Sciences
UNIVERSITY OF CANTERBURY

Dear Solfrid

Thank you for providing the revised documents in support of your application to the Educational Research Human Ethics Committee. I am very pleased to inform you that your research proposal "Young children's experiences of coping three years after the Christchurch earthquakes" has been granted ethical approval.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 1 August 2014.

Should circumstances relevant to this current application change you are required to reapply for ethical approval.

If you have any questions regarding this approval, please let me know.

We wish you well for your research.

Yours sincerely

A handwritten signature in black ink, appearing to read 'N Surtees'.

Nicola Surtees
Chair
Educational Research Human Ethics Committee

"Please note that Ethical Approval and/or Clearance relates only to the ethical elements of the relationship between the researcher, research participants and other stakeholders. The granting of approval or clearance by the Ethical Clearance Committee should not be interpreted as comment on the methodology, legality, value or any other matters relating to this research."

F E S

Appendix E: Interview Questions

Descriptions of coping with commonly occurring events
by highly regulated boys living in earthquake-affected
Christchurch



Parent form

Child name:

Name: _____ Date: _____ Time: _____ - _____

Exposure Questions	Specifics
1. Tell me about where you and (<i>child</i>) were during the September and February earthquakes.	<i>Where, who,</i>

2. Tell me about what happened to <i>(child)</i> during the earthquakes	<i>Separated, see someone get hurt, hurt themselves</i>
3. What was the state of your house following the earthquakes?	<i>Badly damaged</i>

4. How were things for you and your family immediately following the February earthquake?	<i>Access to food and water</i>
5. Tell me about <i>(child)</i> 's school experiences following the February earthquake?	<i>New school/teacher/class</i>

6. How were your (<i>child</i>)'s friendships following the February earthquake?	<i>Friends moved away</i>

Coping Questions
1. When people find themselves in difficult situations, different coping strategies are used to help feel better about the situation. After the earthquakes happened, what kind of things did you notice (<i>child</i>)
do to make things better

or think to make things better

2. How effective do you think these strategies were?

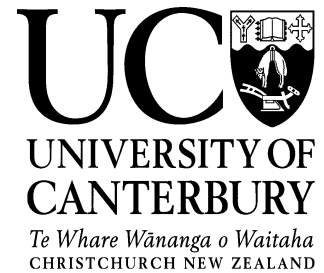
3. Have you noticed any change in coping strategies since (*child*) has been at school?

4. How about yourself, how did you cope following the earthquakes?

5. How did you or other family members help (*child*) cope?

6. What sort of information regarding coping were you able to find which was helpful for you and (*child*)?

Descriptions of coping with commonly occurring events
by highly regulated boys living in earthquake-affected
Christchurch



Child form

Name: _____ Date: _____ Time: ____ - ____

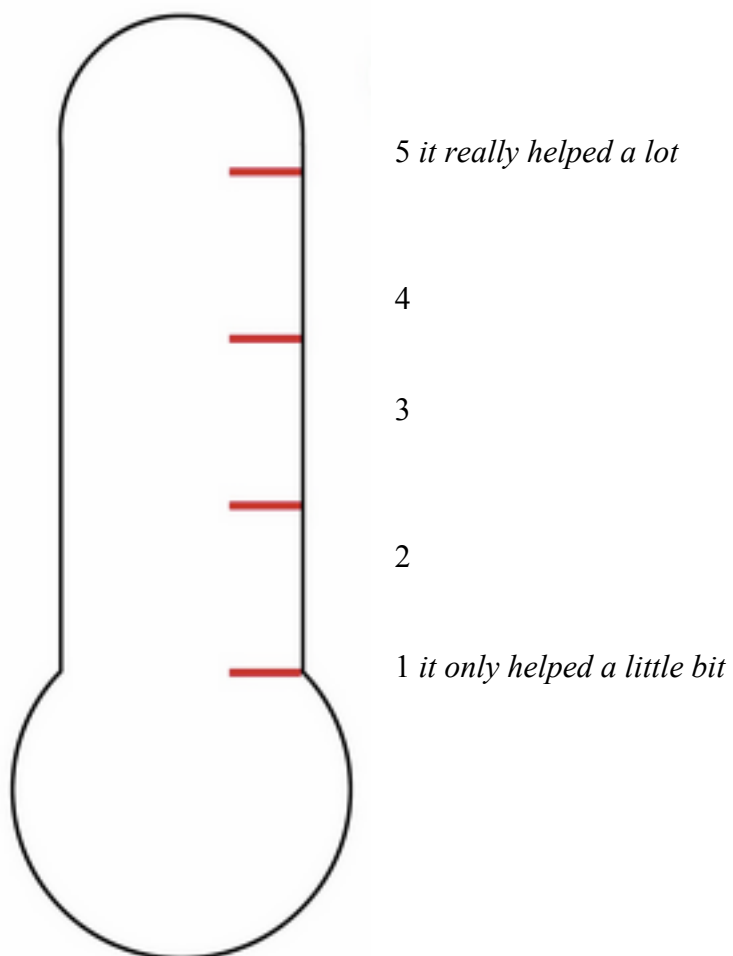
Coping Questions		
1. When scary or upsetting things happen, people try and do things to make themselves feel better. I would like you to tell me about some times when you tried to make yourself feel better. For example		
a. Has one of your friends moved to another city or to a different school?	Yes	No
b. Has another kid ever said mean things to you?	Yes	No
c. Has there been a time when someone was mad at you?	Yes	No
d. Have you ever had an accident and been hurt?	Yes	No
e. (back-up option) Think of a time when you were feeling a bit unhappy.	Yes	No
2. How did it feel when ____ happened?		

3. Tell me about what you
did to help make things better

or thought to help make things better

4. How did those things make you feel better?

5. Please rate how much you think what you did helped





UC
UNIVERSITY OF
CANTERBURY
Te Whare Wānanga o Waitaha
 CHRISTCHURCH NEW ZEALAND

Name: _____ Date: _____ Time: ____ - ____

Coping Questions
1. When people find themselves in difficult situations, different coping strategies are used to help feel better about the situation. Since coming into your class, what kind of things have you noticed (<i>child</i>)
do to make things better

think to make things better

2. How effective do you think these strategies were?

3. How did you or other staff members help (*child*) cope?

4. What sort of information regarding coping were you able to find which was helpful for you and (*child*)?