

“I thought I was going to die”: Teachers’ reflections on their emotions and cognitive appraisals in response to the February 2011 Christchurch Earthquake

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This article reports a subset of findings from a mixed-methods study reporting the emotional impacts of the February 2011 earthquake on a small sample of twenty Christchurch teachers, who functioned as first responders when this struck while they were on duty at school. This article reports a qualitative analysis of their retrospectively reported emotions experienced at the impact of the disaster and early aftermath, through the lens of Lazarus's (1991) cognitive-motivational-relational emotion theory. Focusing on the emotions and appraisals as discussed in a narrative context, the qualitative findings provide support for Lazarus's core relational themes for fright/fear, anxiety and relief. The teachers' retrospective appraisals and core relational themes supported previous emotion appraisal research. The emotion findings also resonate with other Christchurch earthquake research findings.

Keywords: fear anxiety and relief, cognitive appraisals, core relational themes, teachers' emotions, February earthquake 2011 .

Introduction

On Tuesday 22nd February 2011, routine lunchtime was underway in education settings throughout Christchurch, New Zealand, when a 6.3 magnitude earthquake struck the city. Hearing the rumble of a supersonic boom and feeling the bouncing trampoline-like movements underground, teachers recalled instantly thinking or looking at each other wordlessly to convey the question, “Is this going to be a big one or not?” (Geonet Sciences [GNS], 2011a; O'Toole & Friesen, 2016, p. 61). The answer came immediately in the affirmative through the forcefulness of the earthquake's accelerations at twice the force of gravity (GNS, 2011b), making it difficult for some teachers to remain standing so that the children could see them for guidance. For schools on or close to hillsides and in central city buildings, cascading cliffs and rocks, and the “clatter of bricks” and falling masonry respectively, provided compelling evidence of the earthquake's severity (O'Toole & Friesen, 2016). This earthquake was technically part of the

aftershock sequence from a previous 7.1 magnitude earthquake that struck the region on 4th September, 2010. (GNS, 2011a). The September earthquake had been an unexpected event that shocked residents from their sleep at 4.35am on a Saturday morning, causing extensive destruction but no fatalities, mainly attributed to its timing. However the September earthquake caused significant psychological and financial impacts on the populace, and five months later, the city was in early recovery mode, while also coping with thousands of aftershocks up to and including 12.51pm that Tuesday (Rowney, Farvid & Sibley, 2014). The lower magnitude February earthquake was more violent, traumatic and devastating than its predecessor, causing further building collapses, 185 fatalities and injuring at least 8600 people (Richardson & Ardagh, 2013). The February earthquake also brought extensive further liquefaction and triggered another series of aftershocks, including two earthquakes on 13th June, 2011, another school day (GNS, 2011c).

At 12.51pm on Tuesday 22nd

February, 2011, approximately 150,000 students and 10,000 staff were in school or education settings (Education Review Office [ERO], 2013, p. 3). The teachers' unspoken question about the size of the earthquake confirms that large aftershocks were expected, in the context of thousands of aftershocks since September 2010, in a uniquely unprecedented “long drawn-out process” (Wilson, 2013, p. 209). Since September, schools had updated their safety protocols and had practised their earthquake drills such as “stop, drop and cover” or “turtles” (Education Review Office [ERO], 2013, p.8) for younger children. Despite the extreme threat to environmental and personal safety, no fatalities occurred on school premises (O'Connor, 2013). The city's children remained safely in the care of their teachers until they could be returned to the care of their families. Immediate tragedies for many Christchurch families upon this earthquake's impact, and the logistical difficulties in negotiating damaged roads, liquefaction, congested traffic, and/or travelling on foot, for caregivers to collect children from schools, meant that some teachers remained at school with children until late into the night. Beyond the first 24 hours, Christchurch teachers continued to support children and families through school based community hubs and individual communications. Three weeks later, while the city remained under a state of emergency for a further nine weeks approximately, teachers returned to duty to tend to the 84% of school children/students who had returned to 64% of schools that had reopened (Ministry of Education [MoE], 2012). Some schools were relocated temporarily or permanently and others were site sharing.

The pivotal role played by the Christchurch teachers as non-professional first responders and beyond, took some time to be acknowledged (Mutch, 2015; O'Toole & Friesen, 2016). Personal repercussions such as their increased potential for burnout as a personal cost of their immediate and continuing support of children/students and families have also recently been documented (Kuntz, Näswell & Brockett, 2013; O'Toole & Friesen, 2016). Studies of the personal repercussions on other Christchurch professionals associated with the first response, at various time frames post-earthquake such as: the police, 12 to 18 months later (Snell, Surgenor, Dorahy & Hay-Smith, 2014); hospital nurses, three years later (Johal, Mounsey, Brannelly & Johnston, 2015), and junior doctors on emergency duty up to three months later (Sheehan, Thwaites, York & Lee, 2014), indicated similar concerns that the personal impacts on helping professionals may have been under-appreciated and that these to be better understood. International post-disaster research on teachers specifically, has argued a similar need to pay more research attention to the emotional impacts on teachers, due to the nature of their role in supporting students post-disaster in a hometown disaster context (Carlson, Monk, Irons & Walker, 2010; DeVaney, Carr & Allen, 2009).

Wilson (2013) has highlighted the sudden and unexpected commencement of the 2010 series of earthquakes and the hitherto relative lack of an earthquake history, as having fostered a belief that Christchurch was "one of the safest cities in New Zealand" (p. 211). He found that this has impacted the community's resilience, which he described as, a "weakly-developed social memory has been partly responsible for relatively weak adaptive capacity so far" (p. 214). This observation is consistent with findings from a recent study investigating the core cognitive themes of Christchurch adults from two suburbs contrastingly affected by the September 2010 earthquake (Kannis-Dymand, Dorahy, Crake, Gibbon & Luckey, 2015). These authors found that despite the ongoing aftershocks, cognitions relating to "current threat" (p. 282) and "safety seeking" (p. 282) reduced post September and pre-February, perhaps

reflecting the realization that not only had they survived individually but there had been no loss of life, and possible "habituation" (p.284). However there was an increase in cognitions relating to "worry and concern" (p. 284). Kannis-Dymand et al. recommend that post earthquake peritraumatic cognitions should be examined as an important variable post-earthquake.

In light of the various findings above, the present study aims to contribute the perspectives of a small sample of teachers to the current "social memory" (Wilson, 2013, p. 214) and growing body of knowledge on the responses of helping professionals to the Christchurch earthquakes. Given the likelihood of further major earthquakes recurring (Sheehan et al., 2014; Wilson, 2013), the aim of the present study is to contribute to the ongoing recovery efforts with and for teachers as helping professionals, and assist with future disaster response planning.

Post Disaster Impacts

A community's recovery from a large earthquake can be difficult and challenging, as people try to balance their desire for normality in their daily lives, with the multiple issues that undermine their recovery (Gordon, 2013). Negative emotions that might be expected include sadness, grief, regret, anxiety, worry, fearfulness, depression and a fluctuating mood (Gordon, 2013; Rowney et al, 2014). Accompanying states may include stress, fatigue, financial stress, insecurity, loss of self-confidence and pessimism (Gordon, 2013). Sleep disturbances, hypervigilance, guilt and feeling in limbo have been reported by Christchurch residents following the September, 2010, earthquake, partly due to the relentless aftershock sequence (Rowney et al, 2014). International research focusing on teachers post disaster, has reported a similar range of negative emotions. For example, following the 7.4 and 7.3 magnitude earthquakes in Turkey in 1999 (Akbaba-Altun, 2005), and the 2008 Wenchuan magnitude 8 earthquake (Long & Wong, 2012) principals and teachers respectively reported shock, anxiety, panic, stress, hypervigilance, post-traumatic stress, depression and grief. The risk of teachers and helping professionals experiencing negative

emotions during and beyond a natural disaster, may be increased in situations where they function as untrained first responders, such as occurred following Hurricane Katrina (Campbell, 2007; Kuriansky, 2013). Hometown disasters also bring further impacts for teachers and helping professionals such as increased workload demands (Kuntz et al., 2013), and personal loss (Snell et al., 2014). Teachers are also effective facilitators of the recovery of students' psychosocial health both internationally (DeVaney, Carr & Allen, 2009) and locally, post February 2011 (Mutch & Gawith, 2014). But the impact of natural disasters on teachers themselves warrants more research attention (Seyle, Widyatmoko & Silver, 2013). Following Hurricane Katrina in 2005, and Hurricanes Rita (2005) and Ike (2008), emotions reported by teachers trying to balance their daily living needs with supporting their students at school, included poor emotional wellbeing, depression, apprehension and a number of fears related to job security, financial implications, personal property loss and functioning at home in survival mode (Carlson, Monk, Irons & Walker, 2010; DeVaney, Carr & Allen, 2009; Lowery & Burts, 2007).

Positive emotions have also been reported post disaster. For example, Italian researchers found some increases in positive emotions and a corresponding reduction in general distress, anxiety and anger experienced by disaster volunteers who assisted in the relief phase following a fatal earthquake in L'Aquila, Italy, in 2009 (Cristea, Legge, Prosperi, Guazzelli, David & Gentili, 2014). The relief phase of this earthquake was characterized as a more positive phase that followed the "gruesome and intensive rescue operations" (p. 748), and was attributed to volunteers being able to see the benefits of their work. Similarly, following the Christchurch earthquake, alongside the negative emotions of fear, guilt, apathy, frustration, sadness and anxiety experienced by a small sample of Christchurch nurses who were working with trauma victims, the positive states of pride, gratitude, relief, empathy, and happiness were reported (Johal, Mounsey, Brannelly & Johnston, 2015). Like the Christchurch teachers (Mutch, 2015; O'Toole & Friesen, 2016), these

nurses put aside their own fears to “focus on the situation at hand” (Johal et al., 2015, p. 12). Snell et al. (2014) found similar contrasts in the coping and resourcefulness of the Christchurch Police following the earthquakes. Negative emotional impacts related to resource losses included “sadness at the loss of people and history” (p. 9), and disappointment at the lack of acknowledgement from the department for their “‘above and beyond’ work [in the equivalent of] a war zone” (p. 8). In contrast, resource gains such as enhanced self-efficacy and pride in being able to contribute in their role as police, were also found, similar to the feeling of pride expressed by the nurses above (Johal et al., 2015). These statements from the police have also indicated their perceived antecedents for their emotions. As noted by Freitag, Grimm and Schmidt (2011), the cognitive component of emotion is an aspect of post disaster emotion research that warrants further exploration, and this is the purpose of the present research.

Emotion and Appraisal

This study draws on Lazarus's (1991, 2006) cognitive-motivational-relational theory of emotion, which defines emotions as “cognitive-motivational-relational configurations” (Lazarus 1991, p.13) that change according to how we perceive and appraise our relationship with the environment at any moment. These appraisals may be automatic and unconscious, changing moment to moment, based on our interpretation of the meaning and relevance of events in everyday life (Clore & Ortony, 2000). The act of appraising or “inputting relational meaning” (Lazarus, 2006, p. 10), is an ongoing process of “detecting and assessing the significance of the environment for wellbeing” (Moors, Ellsworth, Scherer & Frijda, 2013, p. 119). Appraisal is therefore key to understanding why emotional responses might differ between individuals in similar circumstances or within individuals to similar circumstances on different occasions (Smith & Kirby, 2009). Primary appraisal occurs first, when we evaluate the importance or relevance of an event in relation to our goals, purposes or concerns (Chang, 2009; Moors et al, 2013) also known as “motivational congruence” (Bennett,

Lowe & Honey, 2003, p. 515). For example, is a stressor or event important enough to our wellbeing and safety to warrant a response (Smith & Kirby, 2009)? Is a stressor negative and therefore stressful, or positive and therefore challenging (McCuaig-Edge & Ivey, 2012)? Secondary appraisal includes our evaluations as to whether we blame ourselves or others for the event (agency), our coping potential or perceived control, and the degree to which we have certainty about what will happen next (Chang, 2009; Keltner, Oatley & Jenkins, 2014; Moors et al., 2013). Secondary appraisal therefore determines whether we feel resourceful and able enough to cope with the situation. Problem focused coping potential refers to whether we believe we can act to solve the cause of the emotion. Emotion focused coping refers to the need to make an emotional or psychological adjustment to cope with something that cannot be changed (Smith & Kirby, 2009). The appraisal process also determines the intensity and quality of the experience of an individual emotion including its physiology, action tendencies, behaviours and feelings (Clore & Ortony, 2000; Moors et al., 2013). The secondary appraisal may also be referred to as the “core relational theme” (Keltner et al., 2014, p. 168) or the meaning of the emotion, because it includes the causal attribution, how we might respond, and the future consequences.

Lazarus has identified core relational themes for fifteen basic emotions: eight negative (anger, anxiety, fright, guilt, shame, sadness, envy & jealousy) and seven positive (happiness, pride, relief, hope, love, gratitude & compassion) emotions. Negative emotions tend to be elicited by perceived threat or harm, and positive emotions by perceived benefits. For example the core relational theme for anger is “a demeaning offense against me and mine” (Keltner et al., 2014, p. 168; Lazarus, 2006, p. 16), and is usually blamed on another (Chang, 2009). For fear/fright, the core relational theme is “facing an immediate, concrete and overwhelming physical danger” (Keltner et al., 2014, p. 168). Most emotions also have a corresponding action tendency or impulse that links the emotion to its physiological or behavioural response. For example anger may prompt the

impulse to attack, compassion the impulse to reach out and fright or anxiety the need for avoidance or escape (Lazarus, 2006). Negative stimuli such as frightening sounds, may result in a more rapid and stronger physiological response (Keltner et al., 2014). This may be regarded as an unconscious primary appraisal of a situation that is then unconsciously evaluated, and may motivate a rapid approach or avoidance response (LeDoux, 1993). Recent research has further hypothesised that immediately prior to a primary appraisal there may be a moment of inaction or freezing as an “orientation response” (Schauer & Elbert, 2016, p. 111) that enables a person to stop, look and listen, before fleeing or staying, similar to a deer caught in the headlights of a car (Lazarus, 1991).

Appraisal theory has received considerable research attention, most of which has confirmed Lazarus's (1991) relationships between specific cognitive appraisals and some specific emotions such as anger's core relational theme being related to injustice and someone else to blame, fear-anxiety relating to danger, guilt to self-blame, and happiness related to the belief that one has what one wants (Bennett et al., 2003; Smith & Lazarus, 1993; Tong, Bishop, Enkelmann, Why, Diong, Khader & Ang, 2005; Wong & Tong, 2012). Nezlek, Vansteelandt, Van Mechelen and Kuppens (2008) confirmed these relationships and also found that appraisals may relate to more than one emotion. Strongman (2003) has acknowledged that Lazarus's theory has developed over thirty years, with its core elements of appraisal and coping unchanged over that time, and that this is a “substantial and complex theory, that is likely to have a lasting influence” (p. 88). Overall there is general support for appraisal as an important part of emotion, with consistency of appraisals made by individuals evident over time (Bennett et al., 2003). The veracity of the appraisals themselves cannot be confirmed in retrospective data collection, because appraisals reported after the event may reflect either “post hoc reinterpretations” (p. 519) or “current appraisal of the past event” (p. 519). However, findings on the consistency of appraisals of similar circumstances over time, together with an absence of contradiction from

other contextual observations, means that retrospective appraisals may “at least provide ‘noisy’ data when other methods of data gathering are inappropriate” (Bennett et al., 2003, p. 519). For example, retrospective appraisals by teachers when asked to remember emotional events that have angered or frustrated them, have shown consistency across more than one study, thus confirming typical triggers of these emotions, such as students not following instructions or misbehaving in class (Chang, 2009; Sutton, 2004).

Appraisals in Teaching, Emotion Regulation and Emotional Labour

Teachers experience a wide range of positive and negative emotions on a daily basis in the classroom (Hargreaves, 1998; Sutton, 2004; Taxer & Frenzel, 2015), for which their appraisals are the most likely antecedents (Becker, Keller, Goetz, Frenzel & Taxer, 2015). Teachers’ positive and negative emotions may be elicited naturally in response to their appraisals of student successes and failures respectively (Sutton, 2004). Alternatively, in order to artificially self-generate positive emotions such as enthusiasm, teachers might use self-talk as a reappraisal or “cognitive change” (Sutton, 2004, p. 389) to elicit the feeling of enthusiasm for their teaching. This is one of a number of emotion regulation strategies used by teachers on a daily basis (Jiang, Vaurus, Volet & Wang, 2016; Sutton, 2004). Emotion regulation is defined as “the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (Gross, 1998, p. 275). Emotion regulation may be activated consciously or unconsciously before, during or after an emotional response, and may be preventative (antecedent focused) or responsive (response-focused) (Gross, 2013). Of the various antecedent focused methods, reappraisal is regarded as more effective and better for wellbeing (Gross, 2013), and draws on earlier appraisal and coping theory (Folkman & Lazarus, 1988, cited in Gross, 1998). Other cognitive appraisals that teachers report include their beliefs about presenting a professional image by not acting out negative emotions in front of students

and being positive role models for children (Sutton, 2004). These appraisals are consistent with the emotional labour perspective that service-related professionals should exhibit some, but not other emotions as part of their job requirements (Hochschild, 1983). This may be achieved through surface acting, or deep acting. Whereas there may be some similarities between the emotion regulation strategy of reappraisal and the emotional labour strategy of deep acting (Grandey, 2015; Gross, 2013), it is a topic of debate as to whether teachers actually perform emotional labour or emotion work (Oplatka, 2007). Emotion work refers to teachers’ autonomous management of their workplace emotions unrelated to their remunerated job performance criteria, and motivated by their beliefs such as the importance of caring and warmth as underpinning their work (Hargreaves, 1998; Oplatka, 2007). In New Zealand, registered teachers are bound by their Code of Ethics, of which one of the four fundamental principles is “responsible care” (Education Council of New Zealand, 2017, p.1). This is in alignment with the Maori concept of Manaakitanga, meaning an “ethos of care” (Macfarlane, 2010, p. 7). In teaching this hospitable approach gives teachers the same responsibility to their students as a host would demonstrate in caring “for their visitor’s emotional, spiritual, physical and mental wellbeing” (ERO, 2016, p.7).

Regarding specific negative emotions in teaching as may be elicited in a natural disaster, fear has not appeared in recent literature that has focused on discrete negative emotions, whereas anxiety has been included (Lee, Pekrun, Taxer, Schutz, Vogl & Xie, 2016; Taxer & Frenzel, 2015). Examples of appraisals made by teachers when retrospectively reflecting on their anxiety include feeling unprepared for teaching, relationships with colleagues and students, and for new teachers feeling concerned about having enough knowledge (Chang, 2009). As noted by Chang, these appraisals fit with Lazarus’s (2006) core relational theme for anxiety as facing uncertain existential threat. Anxiety is a “circumstance caused emotion triggered by uncertainty” (Chang, 2009, p. 207). Together with this commonly stated core relational theme, teachers’ retrospective appraisals on other

negative and positive emotions such as anger have tended to be consistent rather than contradicted, and have contributed to our understanding of teachers’ emotional experiences and emotion regulation in their routine teaching (Sutton, 2004, 2007). In situations where teachers’ current perceptions are relevant, such as for the purpose of current emotion regulation (Gross, 2013), their present appraisals of past events may be relevant. Overall, the mechanism of the appraisal process is worthy of further insights for the benefits of emotion regulation, and “there appears to be a movement towards greater agreement about the core features of appraisal theories” (Moors et al, 2013, p. 123).

Antecedents attributions and appraisals

Further analysis of the appraisal process itself has identified the importance of distinguishing between knowledge of the cause of a situation, and the evaluation of its impact (Smith, Haynes, Lazarus & Pope, 1993). Knowledge in this case is the causal attribution (Weiner, 2010) or the individual’s inferred cause of the event (David, David, Cristina, Macavel & Kallay, 2006). This precedes the appraisal or evaluation that elicits the emotion. Causal attribution alone as a cognitive process does not elicit the emotion; the evaluated or appraised impact of the event must also occur (Smith et al., 1993). Smith et al. (1993) confirmed the theoretical distinction between attributions and appraisals, the latter being more strongly related to emotional experience, confirming that the attribution needs to be evaluated in terms of its significance to goals and wellbeing, in order for emotion to be experienced. David et al. (2006) repeated and extended Smith et al.’s (1993) results by testing the contributions of appraisal, irrational beliefs and attributions relating to a range of functional and dysfunctional emotions. For anxiety-related emotions they found that irrational beliefs contributed marginally more than appraisals for anxiety, depression, and guilt, while appraisals contributed significantly more to the emotions of concern and anger. For all the anxiety-related emotions tested, the attributions contributed very little. They also noted that there was a qualitative experiential

difference between concern and anxiety.

Emotions and appraisals in a natural disaster

Exposure to any trauma is likely to elicit fear, anger, sadness and disgust (Bovin & Marx, 2011), described as “peritraumatic” (p. 53) because they originate with the trauma and have been associated with subsequent posttraumatic stress disorder (PTSD), which is beyond the scope of this report. Emotional numbing may also occur, perhaps due to the shock of the event itself, or to the speed of events not allowing time for emotional processing. Aside from the typical appraisals associated with these four emotions, Bovin and Marx have noted that individuals may appraise the same event differently based on perceived differences in specific impacts to their wellbeing. In order to understand the peritraumatic response better, Bovin and Marx argue that the peritraumatic experience should be conceptualized as “a rich integration of appraisals, action tendencies, and physiological changes” (p. 60). Grimm and colleagues (2012) have investigated the peritraumatic and post disaster cognitions and emotions of individuals through linguistic analysis of the narratives of trauma victims from seven different types of disasters across seven European countries. Emotional states that they identified as most frequently reported included peritraumatic detachment, fear, and panic with some reports of anger, sadness and depression. Fear was expressed in “gradations [of] nervous, scared and scared to death” (p.117) and was the greatest predictor of subsequent psychological distress. Less frequently reported emotions were “guilt, shame or feeling horrified or helpless” (p. 117). Grimm and colleagues have recommended that future research should investigate peritraumatic emotions and cognitions during different stages of a disaster.

The present study

This article draws on a subset of data from a mixed methods investigation into how twenty Christchurch teachers functioned as first responders on 22nd February 2011 and beyond (O’Toole & Friesen, 2016). Relevant to the present study are the findings that almost half

of the present teachers were in highly dangerous environments at the time, and that the teachers’ emotion perception and emotion regulation were significant predictors of their teaching efficacy. Although reference was made in the previous report to the teachers managing their fears, the scope of the previous article did not allow for detailed analysis of the discrete emotions elicited at the time nor their cognitive appraisals. Having identified the emotions that teachers most frequently recalled having experienced at the time the aims of the present study were to:

1) Identify the core relational themes of the emotions as retrospectively reported and compare them to those of Lazarus (2006). This will indicate whether the emotions and core relational themes as enunciated and elaborated on during the teachers’ narrative and semi-structured interviews, follow the previously reported patterns of Lazarus and others since.

2) Improve our understandings of the relationships between specific emotions and the teachers’ cognitive appraisals as recalled from a real life post-disaster context, through the lens of Lazarus’s (1991) cognitive appraisal theory.

3) Gain further insights into the teachers’ experiences of this disaster and to contribute their perspectives and voices to the growing body of research on the Christchurch earthquakes

Method

Participants

Following review and approval of the study by the university human ethics committee, participants were recruited by invitation to all primary schools in the greater Christchurch area, in July 2012. Principals forwarded the invitation to their staff to contact the researcher confidentially to learn more about the project and to arrange their individual interview. The invitation was also extended to any teachers who registered with the University of Canterbury’s (2012) QuakeBox research project that was set up to record Cantabrians’ earthquake stories (Clark, McGougan, Hay & Walsh, 2016).

Twenty teachers volunteered for the study (17 women and 3 men). These included 15 primary school, two early childhood, two secondary school teachers and one tertiary teacher. Their teaching experience ranged from two to thirty-two years with 45% of the participants having more than 20 years teaching experience ($M = 17.15$ years; $SD 10.05$).

Procedures

Following their individual detailed telephone conversation with the researcher and having received further emailed information as to the purposes and procedures of the study, the teachers were invited to participate in an individual interview. These were held in a research interview facility at a local university, away from their current school environment, in a safe suburb of the city relatively undamaged by the earthquakes. All participants were referred to local counselling professionals if the interview raised issues that required further exploration.

At the interview, after reviewing the information and signing consent forms, the teachers told their personal earthquake story and related experiences in the aftermath of the February earthquake. At the conclusion of their retrospective earthquake narrative, the semi-structured interview drew upon the topics discussed in the narratives with more specific focus on their emotions, including how they recalled managing the situation at the time of the earthquakes and during the ensuing 18 months. The semi-structured interviews were based on Sutton’s (2004) method investigating teachers’ emotion regulation strategies, which was also based on retrospective reports of emotion regulation goals and strategies that teachers recalled using in specific situations. Other open-ended questions discerned further themes and sub-themes (Murray, 2015). The narratives and interviews were recorded, and transcribed verbatim. The strategies of Lincoln and Guba (1985) as recommended by Teddlie and Tashakkori (2009), including independent parallel coding (Thomas, 2006) were employed to ensure trustworthiness of the qualitative analyses.

Results and discussion

Recalled earthquake experiences

Eighteen of the twenty teachers recalled and described their experiences in terms of what they had heard, seen and felt, as though they were re-experiencing the moment through these three senses. For example one teacher recalled:

"I could hear a clatter of bricks and it was like I imagine if you bounced loose bricks up and down on top of each other – that's what I was hearing. I thought the building was going to collapse. I was trying to work out what I would do and I knew there was a student right behind me" (Teacher 15).

Other examples of what was heard included, the sounds of children screaming, and the sonic boom of the earthquake itself (GNS, 2011b), and *"the incredible noise"* (Teacher 11), *"intense noise, like a train"* (Teacher 20). What teachers recalled *seeing* included the children running towards them, children taking the "turtle position" and other trauma, such as *"I saw [my colleague] being thrown against the wall"* (Teacher 19). Teacher 1 was in a school that was close to cliffs that had collapsed. They rushed to the area.

"We could see lunch boxes everywhere. We could barely see anyone, but we were looking for little bodies or if somebody had been pinned by rock. Fortunately, nobody had been. We couldn't see anyone and we did double checks and triple checks 'cos I thought, they're the youngest, the most vulnerable" (Teacher 1).

Examples of what teachers recalled *feeling* included being, *"under the table, and my back was hitting the top of the table"* (Teacher 5), *"the whole building just rocked and swayed and did this judder-type thing"* (Teacher 7), *"these two steel girders and I could feel them, hear them graunching and moving"* (Teacher 6). Teacher 9 explained, *"I was knocked under the table. I found myself there."* Having come to that realization, Teacher 9 then thought, *"What am I doing here? I need to see where the children were."* Almost half of the

teachers also recalled similar immediate inner thoughts and self-dialogue such as, *"is this going to be a big one or not? Is it just a small aftershock?"* (Teacher 20).

Other sensory recollections included electrical smells, and the dust hindering one's breathing. Two teachers whose first recollections did not immediately refer to the three senses, commenced their earthquake stories from their cognitive perspectives. Teacher 3 explained, *"then the quake hit and to start off with, I thought, what's going on?"* She explained it was a "big shock", and *"I was just like, what do you do?"* For the first moment, *"I just stood there – kind of froze"*. Teacher 16's first recollection was more summative as she explained, *"we realised it was severe, and decided it was sensible to get under the table, so the children all got under the table."*

Due to the majority of the teachers' recollections including descriptions of what they had seen, their memories contained a high degree of visual imagery. This is a feature of *vivid memory* defined as "a memory with a clear, vivid, almost lifelike property" (Rubin & Kozin, 1984, cited in Koss, Tromp & Tharan, 1995, p. 119). Vivid memories tend to be created from personally significant autobiographical events and according to Koss et al., may include many extraneous details of the context at the time, similar to Brown and Kulik's "flashbulb memories" (1977, p. 73). Flashbulb memory refers to an individual's memory of a shocking public event such as the assassination of President Kennedy, at which one was not directly present yet recalls vividly, due to remembering what one was seeing, doing and generally experiencing at the time of hearing the news. In the case of the earthquake, this was both a shocking public event and a significant autobiographical event for the teachers with personal ramifications and individual responsibility for other peoples' children, likely to elicit strong emotions. For public and personal autobiographical events, vivid recall is generally attributed to the intensity of the surprise/shock and emotions (usually negative but not solely) experienced at the time, and the personal impacts and consequences for the individual creating the memory (Koss et al., 1995). Even when the event is not entirely unexpected such as the earthquake being

part of an aftershock sequence, the more surprising and intensely emotionally-engaging an event is, the more likely the memory will persist and be resistant to intrusions (Hirst & Phelps, 2016; Koss et al., 1995). Another important variable is that "differential attention" (Koss et al., 1995, p. 121) during the event being processed into memory contributes to better memory for the central details that are capturing one's full attention, and less accurate memory for the peripheral details. Although some memory decay can be anticipated, more recent research has shown that cognitive appraisals as to the novelty of the event, as distinguished from the personal and social impacts of the event, may be relevant in the creation of a flashbulb memory (Curci, Luninet, Finkenauer & Gisle, 2001). Even allowing for decay, these findings suggest that the present teachers' earthquake memories may be "well-retained" (Koss et al., 1995, p. 124), with such "longevity [having been] created at encoding" (p. 125).

Assessing the situation

Having described these first moments, confirming the whereabouts and ensuring the safety of the children or colleagues nearby were stated as the next behavioural priorities (O'Toole & Friesen, 2016). Their recollected cognitive appraisals also revealed their rapid summation of the situation and assessment of what was needed to be done. As one teacher explained, *"Well, if you were being a professional, this is the time to have your act together and make it all about all of these children in your care."* Another teacher explained, *"You just had to. You were now...you became now not only the teacher but you became the caregiver of these children."* These cognitive appraisals are indicative of secondary appraisals (Lazarus, 2006; Keltner et al., 2014), confirming their agency and responsibility for these children in their care, with the motivational relevance being the children's/students' safety, which tended to be expressed by the majority of the teachers (O'Toole & Friesen, 2016).

Discrete emotions and core relational themes

The transcripts were imported into NVIVO 11, and 120 nodes were created for the various emotion and emotion-related words that were uttered by the participants during the narratives and interviews. The nodes provided the summary of frequencies of utterances, expanded sections of the transcripts and the sources of these. This enabled accurate and readily available data on the frequencies and grouping of the texts (transcript excerpts) to compare the examples. The emotion data presented here are confined to the terms that relate to Lazarus's basic emotions and core relational themes, for the emotions that were most commonly referred to in the teachers' narratives and interviews as having occurred *early* in the disaster. These emotions were fear/fright, anxiety, and relief. Any exceptions to this are due to the same emotion being expressed in the present day context with similar core relational themes, and will be indicated. Briefer results for stress, sadness and gratitude will then be summarised.

Fright and fear

The most frequently recalled emotion reported by the teachers 18 months later, was fright/fear. Lazarus (1991) used the terms *fright* and *fear* synonymously to denote the response to concrete and sudden threats. He regarded *fright/fear* as a more primitive response than anxiety, which is part of the same emotion family, and relates to threats that are less obvious. Both emotions are future focused. The core relational theme for "fright" is "confronting an immediate, concrete and overwhelming physical danger" (Lazarus, 2006, p. 16), with the associated action tendency of avoidance or escape. As the teachers recalled their fear/fright emotions as experienced during the earthquake at 12.51pm, they used these terms in different ways to describe their immediate fear-related emotions, and included descriptions of their antecedents, attributions and/or appraisals, as presented in Table 1.

As shown in the examples in Table 1, "fright" was stated in several different ways by the teachers as they described the first moments of the earthquake. The terms "fright" and "frightening" were often used to indicate specific antecedent

events that suggested imminent danger and causal attributions for fright such as the teacher being hit by the clock. Unless the teachers followed up their antecedent description with a statement about how they felt, having actually experienced the emotion may not be confirmed. They have made the causal attribution and then described their behavioural response, and may or may not have actually experienced the fright/fear. Therefore this may indicate an objective approach in order to not feel frightened. One teacher stated very clearly having been "frightened", and in order to cope with the experience of this fear, this teacher took a deep breath and "put on the teacher's hat" in order to get on with what was needed next. Similar appraisals of imminent of death were stated by several teachers, mainly those in buildings that

partly collapsed or who were near or on hillsides that collapsed, for whom the danger was immediately obvious and the fear more visceral (O'Toole & Friesen, 2016).

Consistent with Lazarus's core relational themes, were the high perceived relevance and goal incongruence (Table 1), meaning that the present situation was incongruent for the children's and students' safety, and had to be escaped. Where the action tendencies could be followed, this enabled problem focused coping (Smith & Kirby, 2009) through facilitating the children's escape to safety. When action was not immediately possible there was evidence of emotion focused coping (Smith & Kirby, 2009). For example, the teacher who was trapped in a stairwell (Table 1), was immobilised in that one spot until the shaking stopped,

Table 1
Teachers' terms, contexts and appraisals for fright/fear at 12.51pm on 22.02.11

Emotion	Context	Antecedent/Attribution/Appraisal	Relevance & Goal Congruence
Fright	Standing in classroom	"It was the classroom that gave me the fright the most, with everything spinning around it..	... and I remember the windows and I was like, 'Are they going to break?' And the kids were right beside them and I was like, 'Oh no. What's going to happen?' As soon as it stopped, we grabbed the kids as you could – it didn't matter how you could grab them, and exited the building"
Frightening	In the resource room	"One thing that was actually frightening was that I got hit by a clock and all the glass like smashed on me. I hadn't been hit by anything before, so that was new experience...	...and then of course, I didn't leave. I just kind of stepped over the glass and went and my grabbed two kids that I was responsible for."
Frightened	Collapsing building	"I mean I was frightened, yes, but I thought, 'Ok this is it. The world's going to end and I'm going to die..."	... you take a deep breath and put on your teacher hat you go and do whatever it is you've got to do. You push down anything that you were feeling yourself."
Fearful	Trapped in stairwell	"I was just very fearful and I remember I could hear my heart beating rapidly and I could feel my breath [demonstrates shallow breathing] and I just thought, I really thought that I was going to die. My mind was just blank. I just thinking, "This is the end for me. Please don't let it be the end, you know, but it seemed you know, I was getting ready for it...the whole building was just going to go 'bang!' you know and bury me in rubble and the funny thing was that for [a long time] after it, every day I was back there in some point during the day..."	... I shouted, "Is everybody ok in there?" And as soon as I said that, there were two young international students who'd been in the kitchen just a little bit further down and they came running out at the speed of a cat...they'd been frightened and they ran down those stairs!
Fear	Running to the children outside	"I was just thinking there was so much fear and panic running through us, so I remember after that, I just - as fast as I could move, tried to get round our classroom, around to where the kids were and I only just got to the end of the room, the end of the classroom and then all the dust was just coming like a massive sea and then all the kids were coming round and then I was the first teacher they saw after the duty teacher was scooping them out, I was the first one to greet them and they all just started dropping at my feet 'til they made a turtle on the ground and I was trying tell to them that this was not a good place to make a turtle..."	... we have to get away from the cliff you know and they were just covered in dust and it was quite horrific. In my class, I did have two quite needy wee girls and most of my class actually clung to me like in a line – they clung to a tee-shirt piece each in a line and held hands. These other 2 girls just couldn't walk, so I had to pick them up and carry them and they'd all wet themselves and it was just like once we kind of got them off the ground and we kind of were ushering them in the right direction and I had a girl in each arm, which is just ridiculous – there's no way I can usually carry them. My class like were behind me like a big line holding on"

and unable to do anything physical in response to the action tendency to escape (Lazarus, 1991). This teacher could only resort to emotion-focused coping through praying for this to not be the end of his life, until the shaking stopped, before then checking on others. This teacher has revisited this fear at least once per day over an extended period of time since.

Other derivatives of fright

Lazarus (1991) has indicated that fear/fright may be expressed in other terms, which may indicate different intensities of the emotion experience, similar to the “gradations” noted by Grimm and colleagues (2012, p. 117). Other terms that fall within the category of *fright/fear*, include *horror*, *terror* and *fear*. A further group of terms including *dread*, *alarm* and *panic*, may be regarded as more “ambiguous” (p.238) and applicable to either *fright* or *anxiety*. Five of these other terms were used by the teachers, to describe their fear-related emotions, as presented in Table 2.

I’d been supporting all afternoon, were there supporting me.”

“Horrible” was used by a number of teachers as an antecedent to feeling possibly horror or fear. The horror inducing premonition that the bridge might collapse as this teacher was driving home that day was a logical fear, given the number of bridge approaches that did collapse. Similar to the variations on “fright”, “scared” described the emotional state. In Table 2, the teacher was scared that she might not be able to control herself in front of the children, if there were severe aftershocks upon returning to work. Similar to “frightening”, scary described antecedents to being scared, such as the rippling ground, fire and smoke making the school grounds a “scary place” expressed as causal attributions yet not confirming whether the teacher actually experienced being scared. The teacher’s use of “terrified” indicates her then current emotion in anticipation of the possibility of another earthquake.

action tendencies of Lazarus (2006; 1991). Furthermore they reveal various discriminations, reflecting the teachers’ individual differences in their physical context at the time of the earthquake and the differences in their recollected experiences and responses to their fears elicited by the disaster. As noted by Lazarus, the various other terms used “carry multiple connotation having to do with the intensity of the reaction, its source, ambiguity, action tendency and mixtures of other meanings, as in panic, and horror” (1991, p. 239). These various discriminations may also be an indicator of their emotion perception ability previously identified in this sample as related to their teaching self-efficacy beliefs (O’Toole & Friesen, 2016). Emotion perception refers to the ability to accurately perceive or identify emotions in the self or in others, and requires us to pay attention to and decode emotional signals (Papadogiannis, Logan & Sitarenios, 2009). This includes labeling and discriminating between specific negative emotions, and their intensities (Mayer & Salovey, 2004). Previous research has shown that the better people are at discriminating between their negative emotions, the better they are at regulating these (Feldman-Barrett, Gross, Christensen & Benvenuto, 2001).

Anxiety related emotions

The core relational theme for anxiety is “facing uncertain, existential threat” (Lazarus, 2006, p. 16). It is similar to fear, except that the antecedents are less clear, the appraisals less directive and the future focus less specific. To feel anxious is to feel a sense of unease due to an uncertain threat, which may be experienced as a current or future oriented appraisal. The action tendency for anxiety is also avoidance or escape, but the problem is that it is not clear what one needs to escape from. Other terms that Lazarus regarded as associated with anxiety include *unease*, *concern*, *apprehension* and *worry*. Lazarus (1991) regarded worry as an attempt to make the existential component of anxiety more tangible and argued against separating these two. David et al. (2005) noted that there was a qualitative experiential difference between concern and anxiety. In line with Lazarus’s (1991) theory, the teachers’ experiences of anxiety and worry are presented in Table 3.

Table 2
Examples of teachers’ contexts and appraisals for other fright/fear related emotions

Emotion	Context	Antecedent/Attribution/Appraisal
Panic	22.02.11 Same day, several hours later at the evacuation & triage point.	“There was a vicious aftershock. I saw a building collapse and I had a complete panic attack. I was on my hands and knees on the ground vomiting into the grass. It hadn’t been the building. It was actually a devastating feeling that I had to get myself out of this.”
Horrible	22.02.11 Same day later, teacher travelling home	“I had this horrible premonition that the bridge would collapse underneath us.”
	22.02.11 Same day later, teacher collecting her son from camp, I had to go with my son to get his bag out....	and I thought ‘what if there’s an after-shock while I’m in there?’ It’s like going down, it’s built into the hillside and you’re going down 3 levels. And there was no electricity, so it was really dark. And going down to get his bag out! I thought, ‘Thank goodness, they didn’t bring the kids back in here to get their gear out.’ It was horrible. I’ll never forget”
Scary	22.02.11 During first minutes, outside at school	“Our front field felt like a metre ripple. It was really full on. It wasn’t a calm place to be. There was fire all around us and black smoke, so it was a scary spot”.
Scared	Three weeks later, returning to school	“I was really scared when we went back to school that I wouldn’t be able to hold it together.”
Terrified	18 months later, current feeling	“I’m terrified of another quake.”

In addition to derivatives of “horror”, “terror”, “fear” and “panic”, that Lazarus (1991, p. 238) has noted, teachers also used “scared” and “scary” (Table 2). The teacher who experienced a panic attack did not follow the action tendency to leave this environment and stayed with her students until their parents came. She explained that “the poor kids that

In summary, the causal attributions or antecedents and the cognitive appraisals that were expressed during the teachers’ informal retrospective narratives using their everyday terminologies to describe their fright and fear related emotions in response to the February earthquake, align with the core relational themes, antecedents, appraisals and

Table 3
Teachers' terms, contexts and appraisals for anxiety and worry

Emotion	Context	Antecedent/Attribution/Appraisal
Anxiety	June 2011: Just when things seem to be getting back to normal. Uncertainty & existential issues:	"June. It was a bit like 'Groundhog Day' in some ways, except that at least, that there wasn't the same situation in the central city because of course, that had already happened. We had time off work again and then just went back into it, so it was just 'carry on', but I think in terms of my own I guess anxiety, that was by far the worst day for me, much worse than February".
Anxious	June 2011: Just when things seem to be getting back to normal. Uncertainty & existential issues:	"After the June one – I was actually really affected by that one because I just thought it wasn't fair and it was just starting to get back into normal and I got really tearful after that one and I ended up going to the doctor because I couldn't sleep and I was just like, 'Ah, the world's going to end', so I ended up going on anti-depressants after that because I was quite anxious"
Worried	February 2011: Returning to school three weeks later Uncertainty:	"A wee bit tentative and worried. When we walked back into our classrooms, there were plenty of things that had fallen down and things that needed cleaning up, which didn't give long to do that before the children came back".
Worry	February 2011: Uncertainty & existential issues:	"It wasn't until a wee bit later until you get the chance to get a breather that you start to worry about your own family a little bit, but then, I remember thinking my son would be at school and it would be exactly the same thing there as it was here. I knew that there would be people taking care of him and likewise my daughter at day-care";
Worrying	Eighteen months on: Uncertainty & existential issues:	"I think she's been working really hard and it's taken a little bit of a toll on her health a little, which is a little bit worrying".

As shown in Table 3, five terms were used to categorize anxiety and worry. For example, having survived the September and February earthquakes, the 6.3 magnitude June earthquake was the 'final straw' for a number of the teachers, because this also occurred on a school day, so quickly after an earlier 5.6 magnitude earthquake that same day. This event brought into question a new existential threat and the unanswerable question of how much more do we have to deal with in the future. The June earthquake was also a strong reminder of 22nd February, especially due to teachers and children being back in school. Worry was expressed about family members at the time of the February earthquake until the uncertainties could be resolved, similar to fear in the previous section. This worry tended not to intrude until there was time to focus on it. As also shown in Table 3, the worry that one teacher expressed about his children was reduced based on his trust in their teachers to be looking after his children in the same way he was doing for others'

Table 4
Teachers' terms, contexts and appraisals for other anxiety related emotions

Emotion	Context	Antecedent/Attribution/Appraisal
Apprehensive	Three weeks post February 2011: Returning to work Uncertainty & existential issues	"But just getting back to work – and yeah, I was really apprehensive about getting back into the classroom, 'cos it had frightened me so much and the children."
Nervous	Three weeks post February 2011: Returning to work Uncertainty & existential issues	"I think we were nervous, thinking what if there's more (big earthquakes) and because at that time, they were constantly in the news – statistics about the percentage of risk"
Concern	22.02.11 at the time of the earthquake	"My first concern was their safety"
Concern	22.02.11 Later in the day waiting for parents to come and collect children from school	"There was the concern that those parents might not be alive to come and get their children."
Concerned	22.02.11: Shortly after 12.51pm, outside the principal dropped to the ground when a large aftershock struck	"And when a strong person falls [...] I was concerned about what the kids were thinking because I know how I was thinking. If he's dropping to the ground, what are my kids thinking?"

children. Several teachers said the same. As regards Lazarus's (1991) argument that worry represents an attempt to "make existential anxiety concrete and external in order to better deal with it"

(p. 238), the teachers' appraisals appear to confirm this.

Other derivatives for anxiety

Similar to the various connotations in the different terms used for fear, other various terms were used for anxiety and related emotions, as presented in Table 4. These were consistent with Lazarus's (1991) alternative terms.

These various other terms shown in Table 4, used in relation to anxiety are consistent with Lazarus's "associated terms" including *apprehension*, *nervous* and *concern*. Feeling apprehensive and nervous appeared to be more aligned with the core relational theme for anxiety, as "facing an uncertain, existential threat" (2006, p. 16), and they were beyond the original event and related to previous fear. Having a "concern" expressed appeared to be stating a priority at the time, and may be regarded as a causal attribution. Feeling "concerned" about what the children were thinking, was less certain and existential, and occurred early in the event. The context for this concern was that the principal had been standing talking to the whole school outside after the first earthquake, when a big aftershock hit, and "then he dropped". She explained that:

"It scared the living daylights out of me to see him do that. That's how we knew how bad it was.. [seeing him do that] it felt like

the ground was going to open up and to see him go from standing talking to us [snaps fingers] .. it was panic.”

These descriptions show the teacher’s strong fear, which preceded her feeling concerned about what the children would think, based on her appraisal. Consistent with previous research, anxiety and related emotions were generally latter emotions, that originated in the fear of the previous trauma and the reminders of these (e.g. Rowney, Farvid & Sibley, 2014).

Relief

Positive emotions were also evident at the time of the earthquake. One of the more prevalent emotions was relief, for which the core relational theme is “a distressing goal-incongruent condition that has changed for the better or gone away” (Lazarus, 2006, p. 16). Relief is “unique” (Lazarus, 1991, p. 281) because it occurs only if some goal incongruent course has been eliminated, thereby reducing emotional distress. In that regard, it is not surprising that relief was one of the most frequent positive emotional states experienced on 22nd February, 2011. Examples of the types of improvements to distressing situations that resulted in the sense of relief for the teachers are presented in Table 5.

day of the earthquake and in line with Lazarus’s (2006) core relational theme. For example one teacher expressed her “utter relief” that they had avoided any fatalities by staying put in their classroom as practised in their drills. Relief that the children in their charge were finally reunited with families was the recurring theme for the teachers. One teacher who was in a worst hit area was relieved when her daughter’s text indicated that her daughter was in a safer situation than herself. The action tendency for relief is difficult to identify, except that relief *removes* the action tendencies associated with the distressing emotion that it has actually relieved (Lazarus, 1991). Physiologically this might be seen through bodily relaxation, such as shoulders slumping forwards or a deeply exhaled breath out, as the bodily tension is released.

Other Emotions

Stress

Stress and related states such as “overdrive and adrenaline” (O’Toole & Friesen, 2016, p. 62) were excluded from this detailed analysis as they do not occur in Lazarus’s list of basic emotions, although Lazarus’s (1993) theory of stress is closely aligned with his theory of emotion, for which stress may be an antecedent, correlate or consequence. Whereas a number of the

moments of the earthquake, descriptions of “feeling stressed” and similar (e.g. overwhelmed) tended to be reported in the later aftermath and associated with ongoing recovery issues. This was also similar for anger and guilt. A minority of teachers, including those who had witnessed death and major destruction considered the possibility that they may have been in shock at times due to not remembering some details, as they reflected back eighteen months on (O’Toole & Friesen, 2016). Peritraumatic dissociation was also evident for some teachers. This will be explored in a further article.

Sadness

The core relational theme of sadness is “ having experienced irrevocable loss” (Lazarus, 2006, p. 16). This sense of sadness tended to occur for teachers once the loss was later realised. For some it was immediate, having lost friends and/or loved ones who were killed at the time. There is no action tendency for sadness, rather there is “inaction” which is defined as “withdrawal into oneself, that seems consistent with the concept of a mood” (Lazarus, 1991, p. 251). The losses that teachers experienced since the September earthquake were similar to those of all Cantabrians affected (Rowney at al., 2014), and their sadness was similarly expressed. As Lazarus (1991) explained, if a loss is irrevocable there is nothing that one can take action against. Sadness is most likely to be experienced when there is no-one else to blame for this. However if blame can be apportioned, then it is likely that anger - if someone else is perceived to be to blame, or guilt - if the self is perceived to be to blame, will be experienced. At the time of data collection, the teachers expressed a mix of anger and sadness about the personal and professional impacts of the school closures. While closures were understandable, some anger was expressed. The teachers also expressed grief and sadness at the loss of the city and the loss of communities in areas that had been rendered uninhabitable. One type of relief expressed at the interview time was stated by a minority of teachers who for various reasons would not have to deal with the school renewal/restructuring programme.

Table 5
Teachers’ contexts and appraisals for relief and relieved

Emotion	Context	Antecedent/Attribution/Appraisal
Relief	22.02.11: Realization of what could have happened but did not	“My very first sense was utter relief that it had come at 12.51pm and not 9 minutes later because we would have been in the street or under the buildings that collapsed”.
Relief	22.02.11: Improvement of the situation	“It was a relief when the last child went home”.
Relief	22.02.11: News that parents who had not arrived yet, were on their way	“That was such a relief because I thought, ‘What am I going to say to these children if their parents don’t turn up?’”
Relieved	22.02.11: Later in the day, received a reply from her daughter to a text sent asking how she was	“I was just so relieved that my daughter texted back and said, ‘You’re in the centre of it’”. I don’t know how she knew so quickly that XX was in the epicentre. But she said, “You’re at the centre and we’re alright here.” So that I thought, ‘Well, if she’s alright, H (boy) should be alright.’

Table 5 shows the antecedents and appraisals related to teachers’ feelings of relief, most of which occurred on the

teachers described their physiological responses that were consistent with Seyle’s (1974) stress response in the early

Other positive emotions

Teachers reported feeling pride in their students and/or colleagues for the ways that they coped with the immediate earthquake response. "Happy" or "happiness" tended to be similar to "relief" at the time of the earthquake and earlier aftermaths. "Compassion" and "empathy" were mentioned infrequently, the latter more in the context of feeling unappreciated and the lack of empathy for the teachers from some of the authorities. Love was often expressed for the children, and was the antecedent for some teachers' prioritising of their safety. All twenty teachers expressed love or related terms for teaching as a profession, which was a separate issue from their anger at the changes. Gratitude, and thankfulness were experienced both at the time of the earthquakes and latterly. Consistent with Lazarus's (2006) core relational theme the teachers expressed their gratitude for 'gifts' that resulted from events beyond their control. For example, in hindsight, the September earthquake was perceived as a gift in that - had it not occurred, we would have not been as well prepared. The same teacher who had expressed her "utter relief" in Table 5, expressed her gratitude "to this building in that it had done a brilliant job of staying intact". Having survived these earthquakes there was an overall sense of gratitude for the simple things in life, and for life itself.

Discussion

The results of this qualitative analysis provide insight into the retrospectively recalled emotional responses of the Christchurch teachers that they remembered when they thought back to the moment that the February 2011 earthquake struck. Having identified the most frequently reported emotions of fear/fright, anxiety and relief that were identified during the teachers' narratives, the first aim of this study was to examine their core relational themes, as evidenced in their naturally recounted narratives and semi-structured interviews. The qualitative data revealed their individual variations in describing their emotions, antecedents and appraisals in line with Bovin and Marx's (2011) perspective that naturally occurring emotions are a combination of richly integrated appraisals, action tendencies and

physiological changes. The teachers' descriptions revealed similar core relational themes to those of Lazarus (2006) and as found in other research with different samples (e.g. Nezelek et al., 2008). The teachers' immediate fear/fright emotions retrospectively reported in response to the earthquake were consistent with expectations as to trauma elicited emotions (Bovin & Marx, 2011; Gordon, 2013), and with previous disaster research both generally (Grimm et al, 2012) and with teachers (e.g. Long & Wong, 2012; Carlson et al, 2010). This article provides a more naturally-occurring, ecologically valid set of examples of core relational themes for fear, albeit retrospectively reported, which appear to follow the same patterns as found in Lazarus's (1991) theory.

The second aim was to improve our understandings of the relationships between these emotions and their cognitive appraisals in a real life post-disaster context. The teachers' reported antecedents, attributions and appraisals revealed some consistencies across the emotion families of fear/fright, anxiety, and relief specific to the disaster context, while also revealing individual variations in their expression of these. Similar to the point made by Bennett et al. (2003) the consistency is confirmatory, even if the veracity cannot be fully confirmed. From the total set of examples, ranging from fright to relief, the range of appraisals provides a series of retrospective windows to the disaster, providing a rich description of the earthquake and its effects on teachers across the city, as they reflected back 18 months later. In his posthumous publication, Lazarus described his lattermost perspective that emotions could be "best regarded and studied as dramatic stories or narratives" (2006, p.28) which he proceeded to explain commence with the emotion and its background proceeding "continuously over time" (p. 28). This description aptly describes the emotion provocation of the earthquake experiences in the teachers' evolving interpersonal and environmental interactions.

The third aim was to gain further insights into the teachers' experiences of this disaster and to contribute their perspectives and voices to the growing body of research on the Christchurch earthquakes. As Cantabrians, these

teachers' fear/fright and anxiety reports also align with previous retrospective findings on fear and/or anxiety of Rowney and colleagues (2015), the Christchurch police (Snell et al., 2014), and Christchurch nurses (Johal et al, 2015). These latter two similarities should not be surprising as like teachers, police and nurses are also caring professionals. Furthermore, all three groups were first responders in this natural disaster, which puts all three groups at similar higher risk of adverse psychological outcomes than the general population (Snell et al., 2013). Other psychological outcomes in the community reported by Rowney and colleagues (2014) also resonated with the emotion data from this study. For example, Rowney found that faith/religion was "an asset for getting them through" (p. 9). In the present study, the teacher trapped in the stairwell without the ability to take physical action, prayed for his safety. Other emotions discussed more briefly in this report such as sadness, relief and gratitude, as occurring over time, were also echoed in the wider Canterbury sample. Finally, the wider community entrusts their children to the teaching profession, which then brings these ongoing community impacts into the classroom, with the potential to increase the emotional workload for Christchurch teachers.

Teachers and their caring

One of the striking features of the teachers' retrospective data was their prime focus on the safety of the children in their care, on this very significant day of disaster. As noted above approximately 150,000 students were in school when the February earthquake struck. This event was an extreme threat to environmental and personal safety. Like all workplaces in New Zealand, schools are bound by health and safety legislation to provide a safe physical and emotional environment for students and employees (Ministry of Education [MoE], 2017). Part of this requirement includes disaster preparedness such as the earthquake safety protocols and ongoing drills, which were led mainly by the teachers. Other ethical commitments include teachers' primary professional obligation "to those they teach" (Education Council of New Zealand, 2017, p.1). They must strive to nurture

their students' capacities for thinking and developing their independence, and promote their physical, emotional, social, intellectual and spiritual wellbeing, in line with the Maori concept of hospitality known as Manaakitanga, (Macfarlane, 2010). In education, this is achieved through teachers' kindness and caring (Macfarlane, 2010). The teachers' emotions and appraisals as recalled 18 months later, reflect their ongoing care and concern for their children/students. Not only does their care demonstrate the ethical requirements of their profession, they are also in alignment with international perspectives as to what constitutes 'care' and the role of teachers in providing such care. Examples include: the "caring orientation" (Hargreaves, 1998, p. 836) articulated by feminist authors denoting the interpersonal relationships with students (Noddings, 1992), and sensitivity to students' needs (Bieg, Rickelman, Jones & Mittag, 2013; Oplatka, 2007); the basic human need for relatedness through feeling cared for and cared by others (Deci & Ryan, 2014), and Paulo Freire's "pedagogy grounded in love" (O'Connor & Takahashi, 2014, p. 52) to denote the type of care that should facilitate post-disaster recovery. Teachers themselves have also identified caring as a characteristic of effective teachers, with the converse description of ineffective teachers as "uncaring" (Walls, Nardi, von Minden & Hoffman, 2002, p. 45). Caring is a "nonprescribed role element in teaching" (Oplatka, 2007, p. 1390). Rather than being dictated by regulations, the professional culture and ethical responsibilities of teaching foster the expectation that teachers should "express love, sympathy, compassion, concern and dedication to others, not merely because they are paid to do so" (Oplatka, 2007, p. 1379). Thus, caring is an important component of teachers' emotion work (Oplatka, 2007). From the emotional labour perspective, caring may be an example of positive emotional labour. For example, when enjoyment is experienced in the role of nurturing and in the challenges of teaching, this is positive labour and may reflect why people choose certain occupations that "require particular kinds of emotional labour" (Isenbarger & Zembylas, 2006, p. 132). Isenbarger and Zembylas also observed that "emotional labour seems just an inextricable part of caring teaching" (p.

132), yet caring as emotional labour, has received little research attention to date. In general, caring may be regarded as both an approach and an emotion, requiring both labour and love (Isenbarger & Zembylas, 2006) consistent with previous descriptions of teaching as "a labour of love" (Hargreaves, 1998, p. 840).

Strengths and limitations

This study provides a first in-depth qualitative insight into the specific emotions that a small sample of teachers has retrospectively reported in response to a destructive earthquake that struck while they were on teaching duty. Fear and fright related emotions were the most frequently recalled emotions 18 months later. Fear related emotions have received little research attention in teachers to date, perhaps reflecting the relative uniqueness of the timing of such a disaster, and yet the emotions reported were in line with those of teachers who were on duty during the 2008 Wenchuan earthquake (Long & Wong, 2012). However, there are several limitations that must be acknowledged, which may have relevance for future research. The first concerns the validity and reliability of self-report as a methodology. The teachers' recollections may not be accurate reflections of their peritraumatic cognitions (Kannis-Dymand et al., 2015). People's cognitions and emotions may be influenced by factors that cannot be recalled through reflection (Oatley & Duncan, 1992). However, emotions as self-reports are "subjective phenomena and have an objective existence" (p. 282), and self-reports of emotions and emotion-related cognitions are necessary when seeking personal perspectives (Csikszentmihalyi & Larson, 1992; Lazarus, 1991). Second, self-report data may be susceptible to social desirability bias (Parayitam & Dooley, 2007). Social sharing of emotions may be also biased towards the response of the listener (Pasupathi, 2003). As noted by Bennett et al. (2003), although retrospective appraisals may be "post hoc reinterpretations" (p. 519), in the absence of contextual contradictions, retrospective appraisals may be a useful contribution. The successful safe-keeping of the city's children provides contextual support for taking

an interest in the teachers' retrospective reports. Potential for bias in selecting the examples to include in this article is also acknowledged. These limitations may be countered by the similarity of the findings to previous research on the Christchurch earthquake (Kannis-Dymand et al., 2015; Snell et al., 2014), and other appraisal research with teachers (Chang, 2009; Sutton, 2004) and post-disaster (Bovin & Marx, 2011; Grimm et al., 2012).

Implications and future research

The findings have implications for future research. First the findings confirm the teachers' ability to retrospectively reflect upon their emotions in order to understand them, which is an indicator also of their emotion perception ability (Mayer & Salovey, 2004). Emotion perception precedes emotion regulation ability (Gross, 2013), which was a feature of Christchurch teachers' emotional management in their role as first responders (O'Toole & Friesen, 2016). Future research should focus more on how teachers specifically achieved this regulation, for which this report provides an important first step. Future research could also investigate the cognitive appraisals of other professionals as to whether their core relational themes follow the patterns of Lazarus (2006) in a comparative study.

In line with the recommendations of Rowney et al. (2014), future research could investigate interventions for preparedness. New Zealand will continue to experience earthquakes and the findings from Christchurch studies could be applied to preparedness research and ongoing interventional research. Rimé (2009) has indicated a purpose for people sharing their emotion experiences. Rimé argues that social sharing demonstrates that emotions do not disappear, as soon as the event is over. In collectively experienced public events, social sharing of the emotions contributes to the construction of the collective memory (Rimé, 2009), similar to the creation of a "social memory" (Wilson, 2014, p. 214).

Finally, based on the potential for peritraumatic fear and anxiety to contribute to clinical psychological outcomes such as anxiety, depression and PTSD, future research might consider including teachers in any broader clinical investigation and support that might

be considered for the community as whole, as recommended by Rowney and colleagues (2014). Considering the similarity of the present findings to those of Cantabrians in general, the work of teaching is an “emotional practice” (Hargreaves, 1998, p. 835), with significant emotional labour (Hochschild, 1983) at the best of times. Add to this, teachers’ caring orientation (Hargreaves, 1998) and tendency to put the children’s needs first, and teachers may be at risk of undetected PTSD or other adverse psychological conditions. For example there is already an indication of post-earthquake burnout in Christchurch teachers (Kuntz et al., 2013; O’Toole & Friesen, 2016). International research has shown that teachers can benefit from interventions even several years post-earthquake (Seyle, Widyatmoko & Silver, 2013). Looking ahead, the school renewal programme has a ten-year forecast (MoE, 2012) and the city’s recovery horizon has been estimated as a 10+ year plan (Canterbury Earthquake Recovery Authority [Cera], 2012, cited in Regional Institute of Australia, 2013). Therefore there are continued recovery related stressors yet to be encountered, for the foreseeable future and beyond.

Conclusion

The Christchurch teachers have shared their personal emotional responses to one of the most significant disasters in New Zealand’s history. Lazarus (1991) has said that emotions tell us how well we are getting along in our world. The teachers’ earthquake emotions as recalled provide a retrospective insight into how they remember getting along on 22nd February 2011 and during the early aftermath. By focusing on their recalled emotions and then investigating the associated appraisals, we have shown the wide array of experiences of this disaster that the Christchurch teachers remember. That they were able to attend to our children safely, and continue back at work so soon after the earthquakes is testimony to their competence, their caring and commitment and their willingness to continue their role despite their intense experiences.

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