

Fostering post-disaster resilience through schools

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Declaration,

I, Elinor Parrott, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Elinor Parrott

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Impact statement

The most substantial impact of this research concerns the novel resilience building intervention, which has been empirically tested, indicating that it is efficacious, feasible and well-accepted by teachers. The intervention highlights the importance of considering local customs and norms, including drawing on socioculturally valued sources of community strength when devising an intervention, rather than applying a Western approach. The development and implementation of the intervention could provide a model for others to follow, which could be modified to other cultures and contexts.

Furthermore, the thesis offers novel empirical insights regarding how disaster survivors in a low resource context conceptualise resilience and the school's role in fostering it. In addition, the findings of this thesis contribute to recognition of the stress and trauma teachers face and their caregiving role in a global south setting following a major disaster. This is achieved by listening to the perspectives of both students and teachers, whose voices have previously been neglected in disaster research. The research has led to several practical recommendations for post-disaster resilience building via schools. These include consulting students during school redesign and reconstruction, to cultivate spaces in schools that mitigate against the loss of symbolically important places, as well as ensuring teachers are provided with ongoing professional development regarding disaster risk reduction and supporting students' mental health and psychological wellbeing.

The findings from this thesis have been disseminated at academic conferences internationally. This includes the 2023 European Society for Traumatic Stress conference and The 13th Aceh International Workshop and Expo on Sustainable Tsunami Disaster Recovery. The findings were also presented at a project wrap-up event hosted at University College London (UCL) to an expert international invited audience, including academics from a range of disciplines and institutions, non-governmental organisation (NGO) employees and the Education and Culture Attaché from the Embassy of Indonesia.

Furthermore, this research has been published in four peer reviewed publications. One of the papers has been published in *Frontiers in Environmental Psychology*, another in the *International Journal of Adolescence and Youth*, a third in *Sustainability* and a fourth in *School Mental Health*. Another is under review (in its second iteration) in *Social Science and Medicine*.

- *Mental Health*.¹ The findings have also been reported in a White Paper presented to the Indonesian government, to inform post-disaster and educational policy.

¹ This article was accepted for publication following the submission of this thesis.

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Abstract

Despite disasters' devastating impacts, disaster-affected communities can be highly resilient. However, the literature on resilience building post-disaster is dominated by top-down conceptualisations that lack local perspectives. Furthermore, although schools offer young people well-established pathways to mitigate post-disaster risk and foster resilience, research lacks consideration of schools' role from the students' and teachers' perspective, particularly in low resource contexts. Teachers may feel inadequately prepared, and their own post-disaster mental health is rarely considered. This thesis aims to understand the resilience needs of disaster-exposed educational communities in Central Sulawesi, Indonesia, to inform a culturally sensitive intervention that empowers teachers to support resilient school-based recovery.

This thesis explores disaster survivors' (n = 127) conceptualisations of community resilience based on a content analysis of open-ended questions. Additionally, thematic analysis of data from free association interviews elucidates teachers' (n = 40) subjective sources of distress and strength, as well as students' (n = 46) and teachers' sense of teachers' and schools' post-disaster roles. Having synthesised these findings, a strengths-based intervention for teachers (n = 37) is developed, implemented and evaluated.

Results establish that educational communities value community cohesion and participation, including sociocultural coping strategies rooted in collectivism, such as *gotong royong* (mutual help) and *tutura* (oral storytelling). Participants also utilise intrapersonal coping strategies to foster resilience, often interlinked with religiosity. Most students conceptualise teachers as supporting their recovery, which aligns with teachers' reported commitment to their support-based role. Nevertheless, findings highlight that teachers would benefit from psychosocial support regarding numerous disaster-related stressors. Three months after participation in a resilience-based intervention, teachers report improvements in resilient recovery measures.

The thesis offers novel empirical insights into disaster survivors' conceptualisations of resilience and schools' role in building it. Practical recommendations are presented, including how schools can effectively foster resilience and an efficacious and well-accepted intervention for teachers.

Chapter 1. Introduction

1.1. Background and aims

Disasters are inherently catastrophic. When triggered by seismic hazards, such as earthquakes and tsunamis, they tend to occur without warning, resulting in sudden onset, community-wide disruption and intense physical and emotional distress. The increasing impact, intensity and frequency of disasters over recent decades emphasises the timely and critical importance of research that aims to support the resilience of communities exposed to disasters (Paton & Johnston, 2017; Ward et al., 2020).

Despite the indisputable negative impacts of disasters for affected communities, an important advancement in the field of disaster research is the recognition that disaster exposure does not result in clinical psychopathology and chronic impairment for the majority of survivors (Bonanno, 2008; Bonanno et al., 2010). Even for young people, one of the most vulnerable groups in disaster settings, due to their ongoing development and reliance on caregivers (Norris et al., 2002; Peek, 2008), rates of psychopathology rarely exceed 30% (see Bonanno et al., 2010 for a review). This finding has been accompanied by a shift in the emphasis of post-disaster psychological research from a nearly exclusive focus on clinical psychopathology, such as post-traumatic stress disorder (PTSD), towards including research that adopts a resilience perspective. This strengths-based approach recognises the capacity of both individuals and communities to resourcefully and collectively overcome adversity in disaster settings.

Throughout this thesis, resilience is generally defined as the ‘adaptive capacity’ that supports individuals and communities to cope with and recover well from adversity (e.g., Berkes, 2007; Paton, 2007; Norris et al., 2008; Masten, 2011, 2019; Ungar, 2011a). This capacity depends on the functioning of dynamic and interconnected systems at different levels (e.g., biological, family, school and wider society) (Masten, 2019; Masten & Motti-Stefanidi, 2020; Ungar & Theron, 2020). As these systems are diverse, some determinants of resilience can vary in their presentation and impact across cultures and contexts (see Theron et al., 2015; Ungar, 2008, 2015). Definitions of resilience are discussed in depth in subsequent chapters (see Chapter 2, Section 2.2).

Consequently, to support a community's resilience, an essential starting point is to understand what resilience means to those embedded in the resilience building efforts (Kwok et al., 2016). This is particularly important in low-and-middle income countries (LMICs), as despite these world regions being most adversely impacted by disasters (UNDRR, 2019), there is a dearth of research on post-disaster coping and resilience from samples of non-Western³ survivors (Lomeli-Rodriguez et al., 2024; Theron et al., 2015; Zaumseil & Schwarz, 2014). In these contexts, caution should be taken when applying instruments with pre-determined categories to measure resilience, as these may fail to capture culturally embedded resilience factors (Ungar, 2019) and subjective experiences (Thin, 2018). Instead, qualitative methods are useful to elicit ecologically valid knowledge of disaster survivors' subjective sources of strength during adversity (Kuru & Ungar, 2021; Liebenberg & Theron, 2015; Ungar et al., 2023).

Nevertheless, few studies have directly asked disaster survivors how they *conceptualise* resilience, which is crucial to ensure resilience building efforts and intervention development are designed bottom-up and tailored to non-Western perspectives (Hajir et al., 2022; Murphy et al., 2018; Paton & Irons, 2016). It is particularly valuable to understand resilience from the perspective of the most marginalised, such as women, minority groups and people living below the poverty line, as these groups are disproportionately impacted during and after disasters (Thomalla et al., 2006), but their voices are underreported in research (Hajir et al., 2022). Furthermore, the perspectives of children and adolescents should be included, as while they have been recognised as capable of actively contributing to community resilience and recovery (e.g., Pfefferbaum et al., 2018), adults (e.g., caregivers and/or teachers) often complete measures on their behalf, neglecting the direct perspective of young people. Instead, research should allow young people to participate meaningfully and to express their views freely (Liebenberg et al., 2020; Siagian et al., 2021). It is especially important to understand the experiences of adolescents in LMICs, where a large majority of young people (approximately 90%) live, making up to 50% of the population (Patel et al., 2008; Uppendahl et al., 2020).

³ In this thesis, 'Western' refers to Western cultural zones, mainly located in Europe and North America but also including Australia, New Zealand, and Israel. 'Non-Western' denotes societies culturally outside of these regions (e.g., South Asia, East Asia, and Latin America) (Puchala, 1997). Nevertheless, we acknowledge criticisms of the Western/non-Western dualism, including cultural variations within these contexts (Kitayama & Salvador, 2024). In general, psychological research has been dominated by Western, Educated, Industrialised, Rich and Democratic (WEIRD) samples, despite this group only representing 12% of the world's population (Henrich et al., 2010).

The school system is well recognised as an accessible contextual resource for young people, which has the potential to influence their resilience (Liebenberg, 2023; Masten, 2021; Ungar et al., 2019). After a disaster, in the immediate post-disaster period, schools provide a communal physical space that is often repurposed as an evacuation location and site of aid distribution (Matsuura & Shaw, 2015; Robinson et al., 2014) and when education resumes, mental health interventions often take place in schools, where they can reach adolescents at scale (Lai et al., 2019; Masten, 2021; Masten et al., 2015; Masten & Narayan, 2012; Robinson et al., 2014). Within schools, teachers are influential non-familial adults who can play a crucial role in scaffolding students' disaster recovery (Liebenberg et al., 2016; Masten, 2021; Ungar et al., 2019). This includes by identifying and referring those experiencing psychosocial difficulties for additional support (Lai et al., 2016a; Le Brocque et al., 2017; Widyatmoko et al., 2011) and directly supporting students' psychosocial coping by providing a safe space for students to voice their anxieties, supporting emotional regulation and providing guidance (Mooney et al., 2021; Prinstein et al., 1996).

However, despite growing research in this area, the disaster literature has focused more on the role of schools for enhancing disaster preparedness and risk reduction than for their potential to support students' psychosocial needs post-disaster, particularly in the long-term recovery phases (Mutch, 2014, 2018a). When the significance of schools is acknowledged in disaster risk reduction frameworks (e.g., the Comprehensive School Safety Framework; UNDRR, 2017a), these tend to emphasise the physical infrastructure of schools rather than their capacity to provide psychosocial support (Mutch, 2023). Furthermore, most of the existing empirical work documenting the role of schools and teachers after disasters is dominated by research following major disasters in high-income countries (e.g., Christchurch earthquake in New Zealand and Hurricane Katrina in the US). In such contexts, schools are recognised as at the heart of communities as they operate as a form of social 'glue' bringing the community together and supporting effective coping (Mutch, 2014, 2016; Mooney et al., 2021). This is particularly evident in the absence of religious institutions that may have traditionally acted as a focal point for community interaction (Mutch, 2023). Nevertheless, in highly religious settings, such as Indonesia (Sari & Wasi, 2022) with its Muslim majority, schools may adopt a different role than in more secular societies. Religious institutions and leaders, such as the mosques and Imams, may fulfil these supportive community-focused roles. Furthermore, in LMICs, schools are likely to be less equipped with psychosocial and economic resources than schools in high

income contexts. Therefore, schools in low resource settings may struggle to maintain effective functioning after disasters, which may compromise the support they are able to offer to students.

Nevertheless, it is possible that schools and teachers take on a greater role and responsibility for students' psychological resilience in LMICs. In these contexts, there is often a large gap between the need and access to mental health care, due to non-availability of services, stigma and/or poor access (Pathare et al., 2018). This means that schools may be the only formal service provider available for young people in economically marginalised contexts (Liebenberg et al., 2015). In high-income countries teachers often rely on psychologists to support students' mental health (Reinke et al., 2011), whereas in LMICs, in the absence of professional psychological support, including educational psychologists, clinical psychologists and school counsellors, teachers may be required to take on a more direct role in supporting their students' psychological recovery. However, there is a paucity of research that considers how students and teachers conceptualise the role of schools and teachers after a disaster. Understanding this is crucial for developing appropriate and efficacious training programmes for disaster-affected teachers in low resource settings.

Furthermore, the roles and responsibilities of teachers to support their students' and the wider educational community's resilience after a disaster is likely to be shaped by cultural orientations. Most existing research on the role of schools in disaster settings has documented the experiences of cultures with individualistic orientations, such as Australia and New Zealand (e.g., Le Brocque et al., 2017; Mooney et al., 2021; Mutch, 2014). However, these findings may not pertain to various collectivistic cultures, due to their diverging cultural values and norms. For example, individualistic societies emphasise the inherent separateness of persons, achievement of independence and personal goals over group goals, whereas collectivistic cultures are more likely to promote interdependence, connection and responsibility to others and value collective goals (Markus & Kitayama, 1991). Therefore, teachers in cultures with strong values of collectivism may be more likely to undertake roles that involve personal sacrifices to benefit the group. They may also have a stronger belief that other community members, such as their colleagues, will also act to confront collective disaster stressors, which can make their own personal contribution more meaningful (Xiang et al., 2019). Therefore, investigating the role of schools and teachers following a disaster in a LMIC with a culture of

collectivism may yield novel findings that have the potential to inform resilience building policy and practice.

Furthermore, when teachers are willing to take on a support-based role, they may not feel adequately prepared or trained to undertake this responsibility (Johnson & Ronan, 2014). Outside of disaster settings, some teachers lack the confidence to feel able to provide optimal support to students following trauma exposure and experience difficulties related to the emotional burden of offering care (Alisic, 2012). This may be exacerbated after a collective trauma, such as a disaster, where many students are likely to require additional support, which can compromise teachers' own wellbeing, including by contributing to emotional exhaustion and burnout (Kuntz et al., 2013; O'Toole, 2017; O'Toole & Friesen, 2016). Furthermore, as teachers often live in the same region as their students, they are likely to be managing their own post-disaster stressors and may require time and psychosocial support to process their own potentially traumatic experiences before they can effectively support students (Baum et al., 2014; Seyle et al., 2013). Therefore, it is valuable for research to consider teachers' personal experiences, including their sources of distress and resilience, to inform provisions of psychosocial support.

Nascent literature suggests that teachers are likely to benefit from interventions designed to address their own psychosocial challenges, as well as their capacity to support their students (Baum et al., 2014; Berger et al., 2016; Seyle et al., 2016). To empower teachers and draw on existing community psychosocial resources, interventions may benefit from adopting a strengths-based approach to building resilience, which “... *means putting greater emphasis on what communities can do for themselves and how to strengthen their capacities, rather than concentrating on their vulnerability to disaster shocks and stresses, or their needs in an emergency*” (Twigg, 2007, pg. 8).

Consistent with this approach, the research documented in this thesis seeks to recognise and harness the disaster survivors' capacity for strength and resilience, to empower the community to better overcome disaster challenges (Snider et al., 2010). This is accomplished by designing and implementing a resilience building intervention for teachers that aims to align with their needs, priorities and lived realities (Kilpatrick, 2004; Murphy, 2018), drawing on and enhancing existing community strengths (Burgess et al., 2022), as well as incorporating

contextual and cultural understandings of mental health and resilience (Summerfield, 2004). To achieve this, the novel intervention was developed based on the analysis of initial ‘assessment phase’ data, which gained insight into educational stakeholders’ conceptualisations of resilience, teachers’ sources of post-disaster distress and coping mechanisms, and how students and teachers conceptualise the role and responsibilities of the school and teachers in facilitating resilience. These aims align with many of the research priorities identified by the Interagency Standing Committee (IASC), the humanitarian coordination forum of the United Nations, in their Consensus-Based Research Agenda for Mental Health and Psychosocial support in Humanitarian settings (IASC, 2024), including the need to investigate the determinants of resilience, develop culturally valid tools and to evaluate optimal (e.g., effective, efficient, cost effective and safe) interventions.

Overall, this thesis aims to address four overarching research questions:

1. How does the post-disaster educational community conceptualise community resilience?
2. What are the subjective sources of disaster-related distress experienced by teachers and how do teachers experience coping with this distress?
3. How do students and teachers conceptualise the role of schools and teachers after a disaster? In what ways do they foster students’ resilience?
4. Can a resilience building intervention for teachers enhance their post-disaster resilient recovery?

1.2. Research context and location

The context of this thesis is resilience development in relation to earthquake, tsunami and liquefaction in the highly seismic region of Palu in Central Sulawesi, Indonesia. My involvement in this research area was the result of a studentship granted to work on the ‘Resilient School Hubs’ project, a collaborative, interdisciplinary project that brings together University College London (UCL) and Indonesian universities (The University of Syiah Kuala and Tadulako University). The project is innovative in its approach to address post-disaster recovery through an interdisciplinary lens, by combining research methodologies from psychology, social science, and environmental, structural and infrastructure engineering, to assess and develop a multipronged intervention to foster resilient recovery through schools.

The project features three work packages focused on supporting schools' resilience related to: psychosocial factors, water sanitation and hygiene (WASH) and engineering. The research presented in this thesis was conducted as part of the psychosocial work package.

Globally, the risk of natural hazards is increasing (Paton & Johnston, 2017; Ward et al., 2020), shown by a rapid escalation of disasters recorded in the last twenty years (UNDRR, 2020). In this period, earthquakes and tsunamis constituted the deadliest disaster type, accounting for 58% of disaster-related deaths, despite only making up 8% of disasters (UNDRR, 2020). As well as causing a severe threat to life, disasters triggered by seismic hazards can have highly adverse psychological impacts. Compared to other forms of natural hazards, such as hurricanes and some types of flooding, seismic events are difficult to predict and therefore tend to lack advance warning. This can diminish survivors' feelings of control and hinder the ability of the disaster-exposed population to make the psychological adjustments that can support effective coping (Lazarus et al., 2003). In the aftermath, reminders of the disaster are likely to persist, potentially exacerbating distress, including sensory experiences of shaking and rumbling during aftershocks, as well as the smell and taste of fumes and smoke from the rubble (Lazarus et al., 2003). This underscores the importance of research that advances an understanding of how communities exposed to earthquakes and tsunamis can be supported to cope with their effects.

Among disaster-vulnerable countries, Indonesia is one of the most highly seismic (Irsyam et al., 2020). This is due to the country's location in the 'Pacific Ring of Fire', a tectonic belt surrounding the Pacific Ocean, characterised by active volcanoes and frequent earthquakes (Reid, 2015). In Indonesia, high impact disasters, such as earthquakes, volcanoes and tsunamis, occur alongside lower impact but more persistent disasters, including flooding and landslides. Cumulatively, these disasters have contributed to increasing the proportion of the population living in poverty (Seballos et al., 2011). As a natural hazard becomes a disaster due to a combination of social, political and economic factors (Massazza et al., 2019a), poverty heightens the vulnerability of the community to the impact of future disasters.

The empirical data collected in this thesis followed a major earthquake, tsunami and liquefaction disaster in Palu, Central Sulawesi, Indonesia. The earthquake, with a magnitude (Mw) of 7.5, occurred on the 28th September 2018, at 18.03 local time. The shallow earthquake, with a depth of approximately 20 kilometres at its centre, was generated at the Palu-Koro fault

(USGS, 2018). Although an earthquake of this magnitude is rare, the fast-moving fault makes the onshore region of Palu especially vulnerable to seismic activity (Cipta et al., 2017). The initial earthquake was preceded by a tsunami inundating and large-scale liquefaction⁴ in several regions, which was responsible for a large proportion of the casualties (Bradley et al., 2019; Syamsidik et al., 2019). The cumulative disaster caused catastrophic damage and loss of life in Palu and surrounding regions. Overall, 4340 people were reported to have died, 211,000 were displaced from their homes and 374 schools sustained major damage (Pemerintah Provinsi Sulawesi Tengah, 2019).

While high-profile disasters, such as the 2011 Christchurch earthquake and the large-scale 2004 boxing day Tsunami, attract a large volume of media coverage and subsequent research, disasters in LMICs with more localised impacts are often underrepresented in the media and academic research (Reyes & Elhai, 2004). Notwithstanding notable exceptions (e.g., Astuti et al., 2021; Taufik & Ibrahim, 2020), the 2018 Central Sulawesi disaster has not garnered major attention in the social sciences, despite its devastating impacts. This is consistent with Southeast Asia more broadly being underrepresented in disaster research on mental health and coping (Hechanova & Waelde, 2017). This emphasises the importance of research in this context that seeks to enhance survivors' psychosocial recovery.

1.3. Publication strategy

This thesis contains a series of manuscripts that are published, under review or prepared for submission. This includes the conceptual review (Chapter 3) and all empirical chapters (Chapter 5 - 9). For each publication, I am both the lead⁵ and corresponding author. This reflects that I conducted the data analysis, including coding, wrote the first draft of each manuscript, prepared the manuscript for publication and edited the manuscript based on reviewers' feedback. Co-authors roles in these publications include contributing to the conceptualisation, providing comments on manuscript drafts, acting as a second coder for reliability checking and/or collecting data in the field. Only Professor Helene Joffe, the

⁴ Liquefaction refers to when soil is transformed to a liquid state, typically due to strong earthquake shaking (UNDRR, 2017b).

⁵ The exception is Chapter 3, as on this manuscript I am joint first author, listed alphabetically. For this paper, a post-doctoral research fellow (Dr Emily-Marie Pacheco) and I planned and drafted the paper collaboratively. However, I finalised, submitted and edited the manuscript according to the reviewers' feedback. I am the corresponding author of this publication.

supervisor and senior author, reviewed and edited all manuscripts. In addition, the UK research team met weekly to collaboratively discuss the direction of the research, logistics of data collection and responses to reviewers' comments. The specific contributions of co-authors are detailed in the research paper deceleration forms (see Pages 4 – 13).

The published chapters underwent varying levels of alterations during the peer review process. Before publication, Chapter 3, 5 and 7 each underwent a round of minor revisions. Chapter 9 required two rounds of minor revisions and Chapter 8 received an initial round of major revisions followed by a second round of minor revisions. Specific details regarding the levels of alterations made to the manuscripts during the publication process can be found in in Appendix A. Although responses to the reviewers' comments were collaboratively discussed in team meetings among the co-authors, I was responsible for editing the manuscripts and responding to the reviewers.

As these chapters were written as standalone publications, there is some repetition in their content. The manuscripts have been included in full to maintain the integrity of each publication. Although effort has been made to ensure consistency in style, there may also be some variation in the reporting and formatting, depending on the journal's requirement.

1.4. Organisation of thesis

Following from this introductory chapter, Chapter 2 features the first part of the review of the literature. As the empirical chapters in this thesis consist of a series of manuscripts prepared for publication, each features an introduction outlining the literature relevant to the specific study. Therefore, this chapter aims to provide a broad overview of the literature relevant to understanding the psychosocial and mental health impacts of disasters, processes of resilience and the role of the school in fostering resilience, including in-school interventions.

Chapter 3 presents the second part of the review of the literature: a conceptual study of how schools can aid resilience in disaster settings by drawing on place attachment and social representations theory (SRT). Through an examination of relevant literature, this theoretical chapter contributes a novel understanding of how schools may mitigate psychosocial risk and promote resilience for young people by considering how schools are conceptualised at four levels: 1) as a physical environment, 2) as a social arena, 3) as a place with individual and 4)

group-based significance. We argue that in each of these domains, schools can foster disaster resilience in young people. This chapter has been published in the journal *Frontiers in Environmental Psychology* (Pacheco et al., 2022)⁶.

Chapter 4 outlines the research methodology. The chapter begins with a discussion of the research design of the overall research project, followed by an outline of the data collection timeline and a description of the participants and the three school sites. Since the empirical chapters contain the relevant specifics of each method, this chapter provides an overview of the methods employed in this thesis and the rationale for their use. This includes a rationale and description of the qualitative methods, including open-ended questions and interviews, and explains how they are analysed using content and thematic analysis. Subsequently, there is a brief description of the pre-and-post quantitative method used to measure the impact of the intervention study. The chapter concludes with a description of the data gathering process and the central ethical considerations.

Chapter 5 constitutes the first of five empirical chapters, which are presented as manuscripts. This chapter reports caregiver, teacher and student conceptualisations of community resilience, derived from a content analysis of open-ended survey questions. To understand the potential of schools and the role of teachers in fostering post-disaster coping and resilience, it is important to explore how the educational community *conceptualise* resilience. The results indicate that survivors value community cohesion and participation, as well as drawing on the community's intrapersonal strengths to overcome post-disaster stressors. Perspectives unique or differentially emphasised by each group are discussed. For example, students' conceptualisations of and recommendations for a resilient recovery often differ from views of important adults in their lives. For example, students are more likely to emphasise the built environment, *trauma healing* and putting trust in God during the recovery process. Caregivers prioritise building livelihood and economic resilience, whereas the importance of disaster mitigation and knowledge for a resilient recovery is more salient for teachers than caregivers and students. This chapter has been published in the journal *Sustainability* (Parrott et al., 2023a).

⁶ Pacheco and Parrott share first-authorship, listed alphabetically.

Chapter 6 builds on the findings of Chapter 5, by focusing on the subjective experiences of disaster-affected teachers in greater depth. This deeper exploration of the lived experiences of teachers ensured the intervention (as discussed in Chapter 9) was designed to respond to their needs and harnessed the power of existing sources of community strength valued by the teachers. Using elements of a phenomenological framework, this chapter features an exploration of teachers' subjective sources of post-disaster psychological distress and strength. Thematic analysis of the data casts light on the various stressors that teachers grappled with during and after the disaster, including damage to the material environment, experiences of trauma and social-related stressors, such as loss of life. To cope with these stressors, teachers reported harnessing intrapersonal strategies, social support, religiously and less often, professional psychological support (e.g., *trauma healing*). Within these themes, socioculturally specific coping strategies are discussed. A version of this paper has been prepared for submission to the *Journal of Loss and Trauma* (Parrott et al., In Preparation).

The same free association interview method used in Chapter 6 is also employed in Chapters 7 and 8; however, the focus in these chapters shifts to consider the role of teachers and schools in supporting students' resilience after disaster. Chapter 7 centres the student perspective by presenting an examination of adolescent girls' representations of the role of schools and teachers after the disaster through the lens of social representations theory (SRT). The data was organised into two salient themes that constitute a dialogical antinomy: 'the school as a place of recovery' and 'the school as a place of risk'. While the school and teachers were represented positively in that they promoted students' recovery, students also identified aspects of the post-disaster school environment that produced uncertainty, loss and discomfort, thereby heightening their sense of risk. The chapter features recommendations to promote resilience building in schools, such as ensuring teachers receive relevant training. This chapter has been published in the *International Journal of Adolescence and Youth* (Parrott et al., 2023b).

Building on the findings of Chapter 7, which concluded that teachers are considered by students to be agents of community resilience post-disaster, Chapter 8 triangulates these findings by exploring teachers' own conceptualisation of their role. A thematic analysis resulted in two themes that converge on the support-based aspects of teachers' role, including: 1) psychoeducational support (i.e., supporting students' wellbeing and educational continuity, including encouraging their return to school) and 2) practical support (i.e., assisting

administrative roles, aid distribution and disaster risk reduction). Within the chapter, these findings are contextualised to the sociocultural and educational specificities of Indonesia and interpreted through the lens of multisystem and community resilience theory. Overall, this chapter highlights the capacity and willingness of teachers to play a central role in the psychosocial recovery of students and their families. The chapter advocates for the greater recognition of the emotionally demanding dual role of teachers in providing support for others while navigating their personal disaster-stressors, necessitating teachers to receive post-disaster psychological support and training. This chapter has been published in the journal *School Mental Health* (Parrott et al., 2024).

Chapter 9 constitutes the final empirical chapter of this thesis, which reports the development, implementation and evaluation of a psychosocial strengths-based intervention to support teachers' resilience. The intervention design was influenced by the findings of preceding empirical chapters, to build on locally valued sources of strength and coping to simultaneously support teachers' own psychosocial recovery, while enhancing their capacity to support students. The mixed-methods evaluation features an analysis of pre- and post-intervention quantitative scales and open-ended survey questions. The chapter discusses the promising results of the intervention for fostering teachers' resilience post-disaster, which provides a model of an efficacious and well-accepted intervention procedure and protocol that may be relevant for future implementation in similar resource-constrained contexts. This chapter is under review in its second iteration with the journal *Social Science and Medicine - Mental Health* (Parrott et al., Under Review).⁷

Conclusively, Chapter 10 integrates and summarises the findings of the empirical chapters, by addressing each of the overarching research questions presented in the introduction. This is followed by a statement of reflexivity, before a discussion of the novel empirical, theoretical, methodological and practical implications of this research. This chapter concludes with a consideration of the limitations of this work and avenues for future research.

1.5. Research approach

⁷ A version of this chapter was accepted for publication following the submission of this thesis.

The research presented in this thesis is underpinned by the philosophical approach of critical realism. Critical realism combines an objectivist ontology, which asserts that reality has an independent existence, with a soft social constructivist epistemology, which posits that knowledge of that reality is dependent on culture and context (Elder-Vass, 2012). This approach was developed by Roy Bhaskar as a critique of empirical realism (see Bhaskar, 1975/2008), in response to a recognition of the fundamental differences between studying the human and physical world. As thoughts, feelings and experiences are shaped by social norms and environmental factors, the human world, unlike the physical world, contains subjective interpretations (Hwang, 2015; Willis, 2023). This lens is consistent with a ‘weak’ social constructivist approach (Joffe, 2012) and offers a middle ground between positivism and strong constructivism, avoiding the need to align with either side of this dualism (Joffe, 2012; Willis, 2023). Therefore, critical realism provides an appropriate philosophical basis for making inferences about unobservable entities (e.g., trauma and resilience) that impact what is observable (e.g., a participants’ behaviours and dialogue), while acknowledging the importance of the research’s social context (Willis, 2023).

This epistemological and ontological foundation aligns well with the studies presented in this thesis as critical realism is compatible with a range of data collection and analysis techniques (Willis, 2023). A pluralistic methodological approach enables this research to capture and explain the complexity of psychological phenomena using a flexible mixed methods approach involving both qualitative (e.g., interviews and thematic analysis) and quantitative (e.g., questionnaires and statistical analyses) methods. Furthermore, this epistemological position is compatible with SRT (Joffe, 2011; Lupton, 1999), as both reject pure positivism and strong constructivism, which makes SRT well suited to study social constructions of shared meanings regarding objective phenomena with a material basis. This lens is also consistent with phenomenology as both posit that complex human life cannot be reduced to a set of universal laws or theories as there is not one valid universal perspective or truth (Willig, 2012). Furthermore, critical realism has been used in studies of resilience (e.g., Ho et al., 2024; Sims-Schouten & Thapa, 2024). Consistent with the multisystem perspective of resilience, critical realism asserts that causal mechanisms are linked with complex social contexts, including personal characteristics (e.g. agency) and contextual factors (e.g., cultural norms and social structures); these interacting factors influence the processes and meanings of resilience (Ho et al., 2024; Sims-Schouten & Thapa, 2024). Therefore, a critical realist philosophy draws

together the pluralistic methods and theoretical perspectives drawn on in the studies presented in this thesis.

Chapter 2. Literature review

A review of the literature in this thesis is divided into two chapters. This chapter provides an overview of the literature relevant to understanding school-based psychosocial resilience after disasters. The next chapter features a conceptual review of the role of schools in aiding resilience after disasters through the lens of place theory and social representations theory.

The process of reviewing the literature began at the start of my PhD in October 2020, when I conducted an initial literature search to inform the development of my thesis proposal. This involved searching research databases (e.g., PsycINFO, Web of Science) and Google Scholar using key terms relevant to each section of the review, using Boolean operators (e.g., ‘resilience’ OR ‘mental health’ AND ‘disaster’ OR ‘crisis’ AND ‘teacher’ OR ‘schools’). Subsequently, from these initial searches, I engaged in an iterative process of following up relevant citations. While I prioritised including research conducted in disaster settings, studies from a wider range of contexts were included when their content was relevant. The identified literature was saved in the referencing software Mendeley, which I added to while writing the empirical chapters. This literature review chapter was written after the empirical chapters in April 2024, before the methodology, overall introduction, discussion and conclusion were completed. Updated literature searches were conducted while drafting this chapter to ensure more recent work was included. As each empirical chapter (Chapter 5 – 9) contains a review of the literature pertaining to the specific study, this chapter serves to provide an overview of the literature relevant to the thesis, rather than aiming to provide a comprehensive review.

2.1. The impact of disasters on young peoples’ and teachers’ mental health and psychosocial wellbeing

Young people are exceptionally vulnerable to the adverse psychological impacts of disasters due to their developmental stage and reliance on caregivers (Peek, 2008). Vulnerability ranges from transient psychological distress and poor mental health to chronic psychopathology (Norris et al., 2002). While most young people cope with and adapt to disaster stressors without specialised support (Alisic et al., 2011; McDermott & Cobham, 2012), for some, the consequences can be severe and prolonged. This includes post-traumatic stress disorder (PTSD), depression and anxiety, as well as externalising behavioural problems, including substance abuse (Pfefferbaum et al., 2015).

Risk factors for poor post-disaster mental health among young people include a combination of demographic indicators (e.g., being female; Furr et al., 2010; Garza & Jovanovic, 2017), pre-disaster experiences (e.g., major life events; Foy et al., 1996), peri-disaster experiences (e.g., witnessing injury and death, experiences of being trapped and hurt; Latuperissa et al., 2020; Tang et al., 2017) and post-disaster factors (e.g., parents' psychopathology and maladaptive coping strategies; Cobham et al., 2016; La Greca et al., 2013a). Close relationships with caregivers, effective schools, and individual differences (e.g., perceived self-efficacy) are all factors that can effectively scaffold a young person's mental health recovery after a disaster (see Masten, 2021; Powell et al., 2021 for reviews).

Adults, including teachers, play an important role in the risk and resilience of young people post-disaster (Masten, 2021; Masten & Narayan, 2012). However, while there is limited research that focuses exclusively on the mental health impact of disasters on teachers, existing evidence suggests that teachers are also likely to experience traumatic distress and some will grapple with post-disaster psychopathology, including PTSD and depression (Costa et al., 2015; Seyle et al., 2013; Zhang et al., 2016). Due to the limited research specifically on teacher samples, the following section references the wider literature on disaster-affected adults to highlight the implications of these findings for teachers.

Following disaster exposure, acute psychological distress, including symptoms of depression, anxiety and PTSD, can be considered normal reactions to an abnormal situation (Reyes & Elhai, 2004). In the longer-term aftermath of disaster (e.g., months to years following disaster), transient distress may develop into more chronic psychological conditions for some, including PTSD, stress-related disorders, grief, major depression and substance use disorders (North & Pfefferbaum, 2013). The adverse mental health impacts of disasters have been documented by several reviews, including a seminal systematic review of research published from 1981 - 2001 summarising the findings from over 60,000 participants from 160 independent samples (Norris et al., 2002) and more recent reviews, on mental health broadly (e.g., Goldman & Galea, 2014) and focused on specific mental health outcomes (e.g., PTSD and depression; Lowe et al., 2019; Neria et al., 2008). Mirroring findings from younger samples, the reported prevalence of post-disaster psychopathology in adults is characterised by heterogeneity, which makes estimating the adverse psychological impacts of disasters challenging (Beaglehole et al., 2018; Kessler et al., 2012). For example, a review by Beaglehole et al., (2018) reports PTSD prevalence as high as 74% (Goenjian et al., 1993) and psychiatric disorders up to 60% in disaster-exposed samples

(Cao et al., 2003; Sharan et al., 1996), while other studies report no significant differences between disaster-exposed and non-exposed samples for major depression, depressive disorders, PTSD, anxiety disorders and alcohol dependence (Bravo et al., 1990; Fergusson et al., 2014).

Some of the variability in the reported rates of post-disaster mental health disorders is likely to be accounted for by the methodological differences of studies, including the period of data collection, the measures used and the sampling techniques (Bonanno, 2008; Bonanno et al., 2010). For example, sampling biases have been proposed as a reason for the overreporting of PTSD prevalence in some past research (Bonanno, 2008; Bonanno et al., 2010). Additionally, elevated symptomatology is expected in the months following a disaster but tends to dissipate rapidly with time (Lai et al., 2017), therefore the timing of data collection post-disaster will influence findings regarding post-disaster mental health. However, some of the variation can also be attributed to the contextual factors that impact the vulnerability of the sample population. Well-established vulnerability factors for poor post-disaster mental health in adults parallel those found in young people (e.g., socioeconomic disadvantage, female gender, higher exposure to disaster-related stressors, low social support) (Galea et al., 2007; Gruebner et al., 2015; Lowe et al., 2019; Norris et al., 2002). In Southeast Asia, research indicates that collectivism, strong family ties and religious faith are among important protective factors that buffer against disasters' negative psychological consequences (see Hechanova et al., 2020 for a review).

Despite only a minority of disaster survivors reaching clinical diagnostic criteria (Bonanno et al., 2010), PTSD is the most studied reaction to trauma exposure (Trickey et al., 2012). Post-traumatic stress symptoms (PTSS) include avoidance, excessive hypervigilance and re-experiencing the traumatic event accompanied by emotions of fear and horror (Caringi et al., 2015), which can disrupt social and educational functioning, family relationships and overall wellbeing (Kirkpatrick & Heller, 2014). There are numerous criticisms of applying PTSD, based on Western conceptions of mental health, to non-Western societies, including the risk of psychological imperialism and the medicalisation of suffering (Pupavac, 2002; Summerfield, 2004). However, other researchers argue for the application of the measure in non-western societies due to evidence of cross-cultural trauma symptomatology (e.g., see Hinton & Lewis-Fernandez, 2011) and the practical utility of the construct for identifying mental health needs and organising care in Indonesia (Good, 2015). Elevated rates of PTSS have been reported in

an Asian context post-disaster (Udomratn, 2008) and may be exacerbated in LMICs due to a scarcity of psychological services, poverty and prolonged social and educational disruption (Dawson et al., 2014). PTSD prevalence in LMICs has also been found to be persistent overtime. After an earthquake in Nepal in 2015, Jha et al. (2017) reported a PTSD prevalence of 33% in 2015 and 28.5% in 2016. Three years after the earthquake, Acharya Pandey et al. (2023) found PTSD prevalence at 18.9% among adult survivors. Notwithstanding debates of the utility of the diagnosis of PTSD in non-Western contexts, these findings indicate that for some disaster survivors, psychological distress is enduring in the aftermath of the disaster and interventions to support adults' psychological recovery may continue to be beneficial beyond the disasters initial impact into the post-disaster years.

Longitudinal studies often report three clusters of distinct post-trauma outcome trajectories: 1) gradual recovery (e.g., Mayou et al., 2002), 2) elevated symptomatology below diagnostic threshold (e.g., Cukor et al., 2010), and 3) resilience, involving a minimal impact (Bonanno, 2008; Bonanno & Diminich, 2013) (see Galatzer-Levy et al., 2018 for a review). Hence, in instances when the diagnostic criteria for mental health disorders, such as PTSD, are not reached, as is the case for most trauma exposed individuals (Bonanno et al., 2010), manifestations of subclinical mental health problems and psychological distress frequently occur (Chapman et al., 2018; Galatzer-Levy et al., 2018). For example, numerous studies have found that elevated PTSS are reported by nearly half of disaster-exposed young people (Adams et al., 2014; Danielson et al., 2017; Furr et al., 2010; La Greca et al., 2013b). Furthermore, in some instances of mass and chronic trauma, particularly when the stressor is ongoing and intentional such as in political conflicts, the psychological risk may be greater than some forms of interpersonal trauma (Hobfoll et al., 2009; Shalev et al., 2004). Particularly as secondary stressors following a disaster (e.g., ongoing damage to community infrastructure, long-term displacement from a region) (Lock et al., 2012) can adversely impact mental health and functioning in the long term (Tempest et al., 2017). Therefore, non-clinical samples of disaster survivors are likely to benefit from interventions that aim to bolster their broader psychosocial recovery.

Furthermore, populations exposed to disaster also frequently report increased anxiety related symptoms and disorders (Norris et al., 2002; Park & Bae, 2022), which may be related to the occurrence of future disasters (i.e., 'hazard anxiety', Paton et al., 2003). For example, victims

of flooding reported checking river levels and heightened experiences of anxiety during subsequent rainfall (Tapsell et al., 2002; Tapsell & Tunstall, 2008). Becker et al. (2017) highlight that the emotional arousal experienced during anxiety can lead to inefficient information processing, poor recall and result in difficulties performing complex tasks (Teigen, 1994); this may impair teachers' occupational performance. Furthermore, high levels of anxiety can reduce the likelihood of preparedness behaviours for future disasters as well as reducing willingness to discuss hazard preparedness and mitigation with others (Paton et al., 2005, 2008).

In highly seismic regions such as Indonesia, repeated exposure to natural hazards that can lead to disasters is likely, which may exacerbate the negative impacts of the initial disaster on psychosocial wellbeing. While the effect of experiencing multiple community-wide traumas, such as repeated disasters, is poorly understood (Garfin et al., 2015), the available evidence from various contexts suggests that experiencing a collective trauma predisposes survivors to experience greater acute stress following a subsequent disaster (Garfin et al., 2015). For example, regarding an Italian earthquake, repeated disaster exposure and evacuating due to damage was associated with higher levels of stress (Bland, 1996). Corroborating this, an additive effect of repeated exposure to disaster has also been found to impact Chinese adolescents' mental health (Geng et al., 2018). Therefore, interventions to foster a resilient recovery are particularly important in hazard-prone regions, such as Indonesia.

Furthermore, as well as producing clinical symptoms, disasters can impact survivors' broader wellbeing, including both mental health issues (e.g., stress and anxiety, as discussed) and emotional distress, happiness and life satisfaction (Macdonald et al., 2015; Walker-Springett et al., 2017). In Indonesia, Burrows et al. (2021) found that survivors' livelihood and connection to the land was deeply interlinked with their mental wellbeing. Therefore disaster-related displacement disrupted meaningful connections to places, with negative psychosocial impacts. In a European context, victims of flooding sometimes reported a reluctance to return to inhabit their homes, disrupting positive emotional attachments and impacting their wellbeing (Harries, 2013; Seebauer & Winkler, 2020; Sims et al., 2009). Qualitative research methods were valuable in these studies for gaining insight into the impacts of disasters beyond preconceived understandings of mental health. Therefore, adopting a holistic perspective that examines the impacts of a disaster on broader psychosocial wellbeing, rather than purely on

clinical symptoms and diagnosis, can reveal the diversity of mechanisms that impact disaster survivors' recovery trajectories.

The adverse impacts of disasters for teachers' mental health and wellbeing may be exacerbated by their support-based role. Teaching is widely considered a highly stressful profession (Agyapong et al., 2022), including in Indonesia (Mulyono et al., 2022). Teachers' stress is likely to be heightened by additional post-disaster responsibilities, including supporting trauma-related distress (Alisic, 2012), which can contribute to emotional exhaustion and burnout (Kuntz et al., 2013; O'Toole, 2017; O'Toole & Friesen, 2016). Furthermore, exposure to students' disaster narratives could trigger teachers' own trauma memories and increase their distress (Livanou et al., 2024). Thus, teachers are vulnerable to experiencing traumatic stress due to both their personal direct disaster exposure, and their vicarious exposure to students' trauma narratives (Zhang et al., 2016), which can contribute to developing secondary traumatic stress (STS). Secondary traumatic stress, referred to as the '*cost of caring*' (Figley, 2013), involves the person providing care mirroring the trauma symptoms of the traumatised person they are supporting. This has been identified as a risk to a range of professionals working with young people following potentially traumatic events, including educational psychologists (e.g., Hayes & Frederickson, 2008), social workers (e.g., Bercier et al., 2015) and teachers (e.g., Berger et al., 2016). Therefore, caring for students places an additional emotional burden on already trauma-exposed teachers. This experience may be exacerbated in Indonesia, as those from collectivistic cultures can sometimes experience trauma interdependently, characterised by feelings of self-blame, guilt and shame when a member of one's group experiences trauma (Engelbrecht & Jobson, 2016).

Furthermore, in many countries, including Indonesia, a large proportion of classroom teachers are female (Airin, 2010). As females have been found to be particularly vulnerable to traumatic stress (Dell'Osso et al., 2011; Guo et al., 2017; Jafari et al., 2020), female teachers may constitute a vulnerable group post-disaster who could benefit from interventions to support their psychosocial recovery.

In summary, this section has outlined the potential psychosocial impacts of disasters, focusing on their implications for teachers in Indonesia. Despite an emphasis on clinical psychopathology (e.g., PTSD) in the disaster literature, more commonly, disaster-exposed

individuals experience sub-clinical symptoms, such as elevated levels of emotional distress. Although young people are recognised as a particularly vulnerable group, teachers, as integrated members of the place-based community, are also likely to be impacted by the disaster. Furthermore, their support-based role makes them particularly vulnerable to poor post-disaster mental health and wellbeing.

2.2. Conceptualising resilience in disaster settings

Disasters undoubtedly cause extreme psychological distress in affected populations. However, in the past decade, it has become increasingly well recognised that there has been a historical overemphasis on researching the negative outcomes following traumatic stress, such as chronic psychopathology and impairment, while research on the factors that contribute to resilience have been neglected (Southwick et al., 2014). Early research in this area perpetuated what are now considered outdated conceptualisations of resilience as an abnormal trait-based characteristic of ‘invulnerable’ (Anthony, 1974), ‘stress-resistant’ (Garmezy, 1985) or ‘invincible’ (Werner and Smith, 1982) children who performed unexpectedly well considering adverse circumstances, such as poverty (see Masten et al., 1990). The misconception that resilience relies on rare traits has since been widely acknowledged and challenged. As Masten (2001) commented over two decades ago in a seminal paper, “*resilience does not come from rare or special qualities, but from the everyday magic of the ordinary, normative human resources in ... children, in their families and relationships, and in their communities*” (pg. 227). That resilience is a common response to disasters is evidenced by recent research that reports resilience in 60-80% of samples exposed to adversity (Bonanno, 2021; Bonanno et al., 2010; Masten, 2014).

Most early resilience research focused on mapping the intrapersonal characteristics that mitigated the negative impacts of adversity, such as personality and individual coping styles (see Luthar, 2006 for a review), whereas more recent research emphasises the influence of interpersonal, contextual and cultural factors on resilience (Ungar et al., 2023). This conceptual shift in psychological research from a focus on individual coping to a broader conceptualisation of resilience redistributes the accountability for disadvantaged individuals’ outcomes from solely the self to the broader social context, including institutions such as schools (Hart et al., 2016). This aligns with multisystem social ecological perspectives, which emphasise the role

of person-environment interactions, including the cultural and contextual factors that operate at multiple systemic levels to influence an individual's resilience (e.g., see Masten et al., 2021; Ungar, 2011b; Ungar & Theron, 2020; Ungar et al., 2023). Accordingly, resilience should not be conceptualised as a fixed trait possessed by certain individuals; resilience describes the processes that occur over time to enable positive outcomes despite adversity (Zuilkowski et al., 2016). This lens recognises the contribution of successful coping strategies to resilience processes, however, offers a more holistic perspective by considering the importance of systems external to the individual for contributing to positive outcomes, such the importance of safe neighbourhoods and adequate financial assistance (Ungar et al., 2023). For young people exposed to a community-wide stressor, resilience is often associated with the re-opening of schools, completion of education and resuming other context-specific, age-appropriate responsibilities (Betancourt et al., 2008).

From the perspective of developmental psychology, Ann Masten's work (e.g., 2001, 2014, 2018, 2019) has been highly influential in theorising the influence of interdependent systems in scaffolding the optimal functioning of children who have experienced adversity, including following disasters (Masten, 2021; Masten & Motti-Stefanidi, 2020; Masten & Narayan, 2012; Masten & Obradovic, 2008). Her research defines resilience as the capacity to adapt positively to adversity, which depends on the functioning of dynamic and interacting systems at different levels (e.g., family, school, wider community and policy sector) (Masten, 2001, 2019, 2021). For example, parents and schools often work together to influence outcomes for students and educational policies decided at government level can trickle down to impact the actions of teachers, which in turn cumulatively impacts students' adaptation. According to Masten (2021), it is these interconnected systems in a child's social ecology that influences their resilience after a disaster in tandem with other key protective factors, such as their level of disaster exposure, developmental stage and individual differences.

Advancing the multisystem social ecological perspective, the seminal cross-cultural work of Michael Ungar and colleagues foregrounds the role of culture in resilience processes (e.g., Ungar, 2008, 2011b; Ungar et al., 2005, 2007, 2008, 2023) emphasises the role of psychological, social, cultural and physical resources for influencing resilience. Ungar conceptualises resilience as the capacity of individuals to access the resources that sustain their wellbeing, as well as their ability to utilise these resources (Ungar, 2008). This perspective foregrounds the influence of culture and context on the processes that influence resilience

(Masten et al., 2021; Ungar & Theron, 2020). While well-established resilience factors have been identified as cross-culturally consistent: agency, hopefulness, sense of belonging, high quality relationships (Masten, 2018, 2021; Masten & Motti-Stefanidi, 2020; Ungar, 2008), the relative importance of these factors can be culturally and temporally dependent (Ungar, 2008). Some pathways to resilience are more heavily influenced by cultural values, beliefs and norms than others, such as the impact of religiosity and/or spirituality (Masten, 2019).

Although the construct of resilience remains complex and contested (see Southerwick et al., 2014), there is growing consensus for its conceptualisation from a multisystem perspective (Ungar et al., 2023; Ungar & Theron, 2020). The methodological implication of this perspective includes the need to analyse resilience factors that exist at multiple levels, including the influence of contextual variables on a child's resilience. This perspective emphasises the benefits of using qualitative or mixed methods approaches to research the sociocultural determinants of resilience, particularly to avoid cultural bias in non-Western contexts (Tummala-Narra, 2007), where current analyses in disaster settings are scarce (see Lomeli-Rodriguez et al., 2024; Parrott et al., 2023a: Chapter 5).

Aligned with this perspective, a small but rich body of ethnographic research explores resilience through a multisystem social ecological lens in diverse contexts. This includes the work of Lawrence Kirmayer and colleagues (Kirmayer et al., 2011), who advance understandings of processes of resilience from the perspective of indigenous populations in Canada. This research elucidates culturally distinct concepts, including 'débrouillardise', which translates closely to resourcefulness, to capture the importance of perseverance and being solution-oriented when experiencing adversity among the Métis people (Kirmayer et al., 2011). Among Inuit populations, cultural idioms of resilience include 'iriunniq', which refers to a sense of hope, while 'ajurnarmat' (cannot be helped) and 'isumamminik' (on its own will) both express the belief that aspects of health and well-being are beyond individual control due to physical, social and cosmological forces (Kirmayer et al., 2011). Furthermore, reclaiming indigenous identities is central to the resilience of many Aboriginal groups, such as by learning about native language, culture and traditions to foster cultural identity and solidarity. Among these groups resilience can also be built by honouring deep connections to the land and challenging negative media portrayals (e.g., of vulnerability) by reflecting on historical strengths demonstrated in negotiations, treaties and acts of resistance (Kirmayer et al., 2011).

Further advancing a cultural perspective of resilience, Anthropologist Catherine Panter-Brick and colleagues apply the multisystem perspective to explore resilience in non-Western contexts of conflict and forced displacement (e.g., Panter-Brick & Eggerman, 2012; Panter-Brick 2021, 2023). Her research in Afghanistan highlights that resilience is underpinned by expressions of hope, supported by cultural values related to faith, the family unit, the pursuit of honour and respect (Panter-Brick & Eggerman, 2012). Further informing a culturally grounded understanding of resilience, qualitative research with Palestinian youth elucidates the cultural concept of ‘sumud’, which refers to determination to be rooted to the land (Nguyen-Gillham et al., 2008). The authors argue that research from Western settings and Western style counselling often neglects such local idioms of communal care and collective resilience (Nguyen-Gillham et al., 2008). Therefore, researchers and practitioners should go beyond simplistically ‘tweaking’ Western resilience interventions by incorporating culturally specific sources of strength.

While some aspects of these studies may be relevant to disaster contexts, the adversities that occur in conflict settings and that impact Aboriginal communities are often less sudden and more personal than the impacts of a disaster incurred by natural hazards. For example, many of the adversities impacting Aboriginal communities are due to long historical processes based on deliberate human actions, including policy decisions aiming to suppress culture, oppress and marginalise certain groups (Kirmayer et al., 2009). Thus, while resilience in disaster settings captures a crisis response, resilience among Aboriginal groups and in conflict contexts captures a response to structural violence that is more directly the result of human action. As a result, interventions are required to take a long-term approach to achieve social justice by rebuilding and revitalising community strengths and institutions (Kirmayer et al., 2009). Nevertheless, research in contexts of conflict, political violence and disasters incurred by natural hazards share findings regarding intense humanitarian need and loss alongside striking human resilience (Panter-Brick, 2023). Furthermore, this research highlights the value of adopting a multisystem approach to explore the cultural nuances of resilience across diverse contexts.

Closely related to the concept of resilience, Tedeschi and Calhoun (1995) coined the term ‘posttraumatic growth’ to capture the positive changes that can occur after struggling with a traumatic or highly stressful experience. This often manifests as a greater appreciation for life, enhanced sense of personal strength, closer relationships and spiritual development (Tedeschi & Calhoun, 2004). This theoretical approach moves beyond resilience to focus on exclusively

on *improvements* to life after adversity, rather than the process of ‘bouncing back’ to a baseline functioning (Ulloa et al., 2016). According to this approach, following exposure to trauma, an individual may experience PTSS initially, before experiencing growth by resolving world assumptions and meaning systems that were shattered by the trauma (Henson et al., 2021). To engage in the meaning-making behaviours associated with such growth may necessitate a higher level of perceived threat and existential struggle than is experienced by those with resilient outcomes (Westphal & Bonanno, 2007). Therefore, the concept may only be relevant to the most initially traumatised individuals (Westphal & Bonanno, 2007). While some literature suggests ‘growth actions’ (e.g., volunteering) are associated with sustained posttraumatic growth (Anderson et al., 2016; Pat-Horenczyk & Brom, 2007; Hobfoll et al., 2007a), other research emphasises the influence of cognitive processes (Calhoun & Tedeschi, 2013). Furthermore, debates in the literature remain regarding whether measures of posttraumatic growth tend to reflect actual transformative change or perceived growth, which may be a self-protective mechanism (Boerner et al. 2017; Henson et al., 2021).

Nevertheless, there is a conceptual overlap between resilience and posttraumatic growth, as both processes involve positive adaption despite adversity (Brooks et al., 2020; Luthar, 2006; Manyena, 2006; Masten, 2001, 2019, 2021; Ungar, 2015). Some authors argue that discussions of resilience should not be limited to situations in which people or systems return to pre-stress levels of functioning, as resilience often leads to an enhanced capacity for adaptation and transformation, which is similar to posttraumatic growth (Kirmayer et al., 2008; Murphy et al., 2018; Zautra et al., 2010). Furthermore, a growth-focused approach is consistent with how resilience is commonly conceptualised in the disaster literature, which emphasises the need to ‘*build back better*’ following disasters to reduce vulnerabilities to future natural hazards and foster long term development (Joseph & Juncos, 2019; Khasalamwa, 2009; Matyas & Pelling, 2015). Therefore, the definition of resilience used in this thesis encompasses the varying levels of positive adjustment to adversity (i.e., includes both resilience and posttraumatic growth).

Psychological research has focused mainly on the individual and interpersonal factors that foster resilience; however, disasters are characterised by their *collective* nature (Cadamuro et al., 2021). Unlike many other stressors, disasters impact whole communities, including disruptions to infrastructure systems and the community’s economic development (Koliou et al., 2020). The distress experienced during and after disasters can transcend the individual by

relating to group dynamics and belonging, including discrimination faced by minority groups (Cadamuro et al., 2021). Witnessing others experiencing distress can also contribute to one's own distress, producing a lack of agency and sense of helplessness, therefore inhibiting recovery (Cadamuro et al., 2021). Furthermore, the actions of the collective community can determine the post-disaster outcomes of both the community and the individuals within the disaster-affected community (Ungar, 2011a). In the immediate aftermath, it is often members of the public who collectively act as first responders and offer lifesaving assistance to other community members, rather than formal emergency service workers. This is especially the case when disasters are unanticipated, such as during earthquakes (Aldrich & Meyer, 2015). Therefore, it is important to consider the *community's* capacity to adapt, recover and restore functionality in the aftermath of a disaster.

The collective form of resilience is captured in the concept of 'community resilience', which, in recent years, has received widespread academic and policy attention (Patel et al., 2017). For example, the UK government's strategy to deal with the impacts of flooding has been through the development and facilitation of community resilience (see Ntontis et al., 2018, 2019). Similarly, the US government aimed to foster disaster resilience at the community level by promoting social coordination, communication and planning (see Cutter et al., 2008 and Ji & Lee, 2021). Community resilience has also become embedded in United Nations disaster risk management frameworks, including the Hyogo Framework for Action 2005-15 (UNDRR, 2005) and the Sendai Framework for Disaster Risk Reduction 2015-30 (UNDRR, 2015).

While the 'community' is an essential unit of analysis for understanding the impact of and recovery from disasters (Norris et al., 2008), the literature on 'community resilience' lacks critical discussion of the definition of 'community'. Particularly in the field of disaster risk reduction and management, definitions of 'community' are often taken for granted and rarely explicitly defined (Räsänen et al., 2020). When defined, the literature tends to refer to a static, place-based community, comprised of individuals and social structures within a geographically bound area (Räsänen et al., 2020). Often, the place-based communities discussed are also united by a shared fate (e.g., as survivors of disaster) (Norris et al., 2008). However, communities can be dynamic, porous and transcend place-based boundaries; they can be constituted via shared objectives and actions (Howarth et al., 2014, 2015). These can take many forms, including communities of practice (e.g., shared profession as teachers) or communities of faith (e.g., shared identity as Muslim) (see Elias et al., 2021). Therefore, people can belong

to multiple communities (see Burgess & Mathias, 2017), which may experience disparate impacts from the same disaster. In this thesis, unless otherwise stated, reference to ‘community’ describes the place-based school community, which includes the school environment and associated groups, such as teachers, students and their caregivers. We recognise that within this geographical space, since many participants share their vocation as teachers, the majority are Muslim and all participants survived the disaster, participants are likely to belong to simultaneous shared communities.

Due to disputed definitions of both the terms ‘community’ and ‘resilience’ and the multidisciplinary use of the concept, community resilience has been defined in several ways. Debates include whether community resilience is dynamic or stable, characterised by equilibrium or evolution and best conceptualised as a process or an outcome (Ntontis et al., 2020). Heterogenous definitions are united by the concept’s positive connotations, often indicating increases in social support (e.g., Aldrich & Meyer, 2015), citizen engagement and empowerment (e.g. Zautra & Reich, 2010), local capacity (e.g., Kennedy et al., 2013), and resources (e.g., Pfefferbaum et al., 2010). The concept also denotes a decrease in disaster risk, including of poor communication (e.g., Chandra et al., 2011) and related to trauma (e.g., Bonanno et al., 2008) (see Patel et al., 2017 for a systematic review of community resilience definitions).

Many researchers converge on a conceptualisation of community resilience as an ‘adaptive capacity’ that serves to foster a positive trajectory of recovery and adaptation to adversity, while also supporting the preparation and planning for future disasters (e.g., Berkes, 2007; Chandra et al., 2011; Norris et al., 2008; Paton, 2007). This approach incorporates principles of recovery (i.e., the community’s ability to bounce back from adversity) and sustainability (i.e., the community’s ability to effectively build and maintain capacity over time to respond to ongoing chronic stressors) (Zautra et al., 2008). This conceptualisation rejects that community resilience is a static outcome by highlighting its dynamic nature (Norris et al., 2008). The emphasis is on community members being resilient *together*, rather than functioning as individuals, meaning that a collection of individuals who demonstrate resilience following a disaster does not equate to *community* being resilient (Brown & Kulig, 1996; Pfefferbaum et al., 2005).

Based on this conceptualisation, Norris et al. (2008) present a well-cited model to unite diverging strands of community resilience as 1) a buffer against community mental health challenges and 2) promoting effective behaviour and disaster management. The evidence-based model features four interlinked resources that promote community resilience: economic development (e.g., equity of resource distribution), social capital (e.g., trust, cooperation and shared community values, received and perceived social support and sense of community), information and communication (e.g., trusted sources of information) and community competence (e.g., community efficacy and empowerment). The figure by Norris et al. (2008) (see Figure 1) depicts the various facets of each resource.

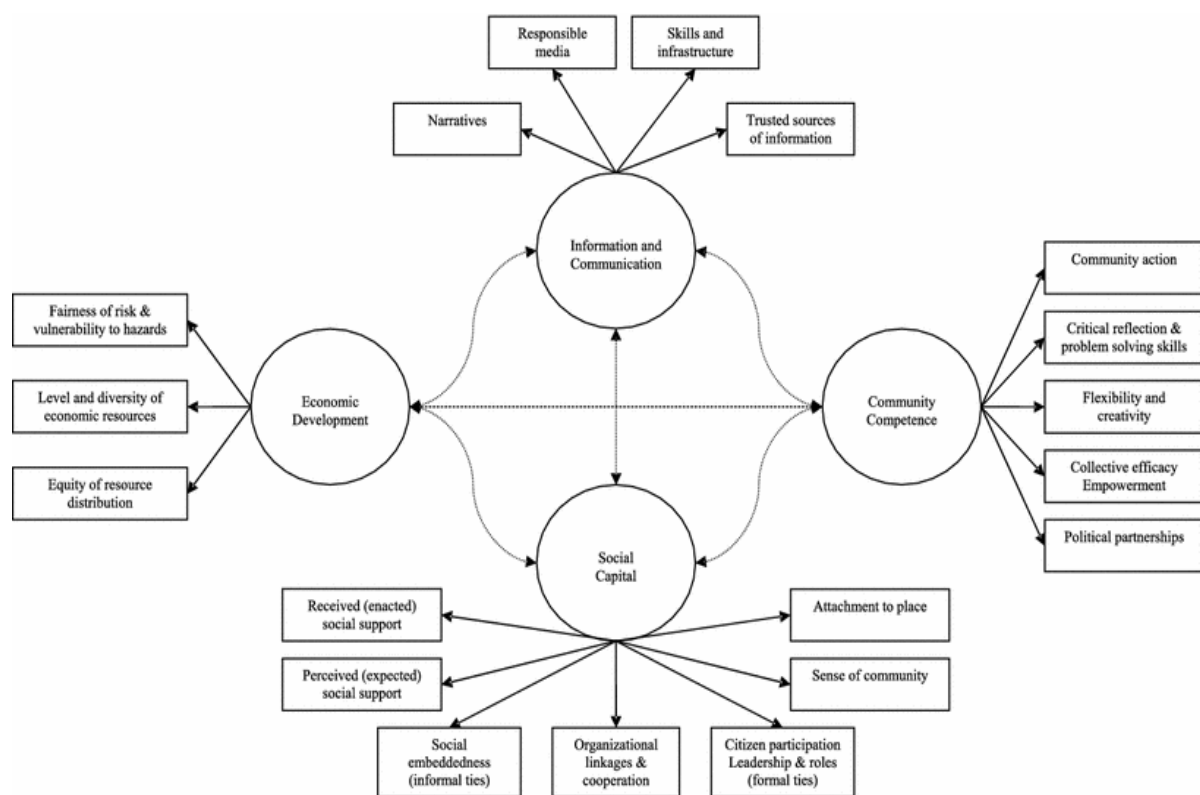


Figure 1. *The four interlinked adaptive capacities of community resilience from Norris et al. (2008) pg. 136*

This model has implications for resilience building interventions (see section 2.4). Interventions that seek to promote community resilience should consider how to facilitate the development of these adaptive capacities. This can be done, for example, by bolstering and protecting naturally occurring social support systems that form following disasters and by encouraging a problem-solving approach to foster innovation, collective efficacy and empowerment, which are core components of community competence (Norris et al., 2008).

While the model neglects to consider the role of culture in defining these adaptive capacities, the authors suggest that the resources are broad enough that they are likely to be cross-culturally beneficial. However, how each adaptive capacity manifests and its relative importance may depend on the culture-specific pathways of resilience (Norris et al., 2008). For example, while social support is considered cross-culturally beneficial for resilience, there are well recognised cultural variations regarding familial obligations (de Vries, 1995; Kaniasty & Norris, 2000) and expressions of emotional support (Taylor et al., 2004). Nevertheless, the model's wide-ranging application, such as in Chile (Moreno & Shaw, 2019), Liberia (Alonge et al., 2019) and Malawi (Dewa et al., 2023), suggest that the model is well suited for application in a variety of non-Western contexts.

Some social psychologists have proposed that research on community resilience can be advanced by considering the influence of group psychology (Ntontis et al., 2020). Closely aligned with the 'social capital' element of Norris et al.'s (2008) model of community resilience, this area of research examines the social identity-based processes that operate during and after disasters, impacting the resilience of the community (e.g., Drury et al., 2016; Drury et al., 2019; Ntontis et al., 2020). Evidence of camaraderie and support among disaster victims, who are often the 'first responders' to the scene, has long been observed during and in the aftermath of a range of disasters (Solnit, 2009), including earthquakes (Prati et al., 2012) and hurricanes (Rodríguez et al., 2006). However, the social psychological mechanisms that underpin this group-based behaviour have more recently been encompassed in the framework of the 'social identity model of collective resilience' (SIMCR) (Drury, 2018; Drury et al., 2019; Ntontis et al., 2021).

The SIMCR framework explains that the emergent solidarity demonstrated during and in the immediate aftermath of a disaster is an outcome of a cognitive and relational shift among disaster survivors from a sense of '*me*' to '*we*' (i.e., from self to collective interest) (Drury 2012, 2018). This occurs due to the sense of a common fate triggered by the disaster, resulting in a shared social identity among previous strangers, while the disaster becomes the 'other' in relation to identity formation (Drury, 2018; Ntontis et al., 2020). This shared social identity can lead to an emergent sense of togetherness (e.g., Fritz & Williams, 1957; Kaniasty, 2020; Solnit, 2009), contributing to enhanced social support, collective efficacy and wellbeing (Haslam et al., 2018; Jetten et al., 2017; Wakefield et al., 2019), therefore protecting mental health and becoming a source of community resilience (Ntontis et al., 2018, 2019, 2020). For

example, after an earthquake in Chile in 2010, disaster exposure was related to common fate, which was in turn related to a shared social identity, which predicted the provision of emotional support (Drury et al., 2016). Therefore, disaster policies to enhance community resilience should recognise the dynamic nature of group behaviour and the capacity of survivors to express solidarity and self-organise after disasters. The emergent solidarity and support demonstrated by disaster survivors should be treated as a resource that can be intentionally and actively sustained to foster a community's resilient recovery (Ntontis et al., 2020).

In summary, while acknowledging the psychological distress disasters cause, a theoretical shift has moved the research focus away from emphasising the vulnerability of disaster-exposed populations to recognising their capacity for positive adaption to adversity. This has led to a growing consensus that most disaster survivors demonstrate resilience, influenced by the social ecological systems in which they are embedded, forming the premise of the well-accepted multisystem theory of resilience. The concept of 'community resilience' is particularly relevant to understanding recovery from collective stressors, such as disasters. Post-disaster resilience building interventions may aim to facilitate community resilience by considering group dynamics to promote a positive trajectory of recovery and bolster preparedness for future disasters.

2.3. The role of schools and teachers in fostering resilience after disaster

Schools are an important component of a young person's social ecological system, influencing how they respond to adversity (Liebenberg et al., 2023). According to a social ecological perspective (e.g., see Bronfenbrenner, 2000; Bronfenbrenner & Morris, 2007), schools are situated in a child's microsystem, which refers to the child's immediate environment, and their mesosystem, which refers to the connections between elements of the microsystem, such as parent-teacher relationships. Schools also interact with the proximal and more distal systems surrounding the child, including the exo-system, featuring factors that indirectly impact the child (e.g., local non-governmental organisations (NGOs)) and the macro system, which refers to the sociocultural characteristics of the child's context (e.g., a culture of collectivism) that encompasses all the inner systems. These systems interact to scaffold a child's development and can buffer against the adverse impacts of experiencing adversity, including disasters. Outside of disaster settings, school ecologies are well recognised for their role in fostering

students' resilience, particularly with the potential to benefit the most disadvantaged students (see Theron, 2016 and Ungar et al., 2019 for reviews).

In disaster settings, schools are also widely acknowledged for their capacity as supportive educational institutions, including for disaster preparedness and risk reduction education, as well as their capacity to act as resource distribution centres following disaster (e.g., Mirzaei et al., 2019; Sakurai et al., 2018). This is embedded in The United Nations Comprehensive School Safety (2017) framework, which highlights the role of schools for protecting children and school staff when exposed to disaster. However, the role of schools as a psychosocial support has received less attention (see Pacheco et al., 2022: Chapter 3). This is highlighted by the framework's omission of psychological guidance, for which it has drawn criticism (see Lai et al., 2016b and Pacheco et al., 2021). Lai et al. (2016b) and Pacheco et al. (2021) converge in arguing for the inclusion of a fourth pillar related to psychological support. The former emphasises the role of schools for children's post-disaster mental health assessments and interventions (see Figure 2), while the latter advocates for the inclusion of psychosocial support (Figure 3).

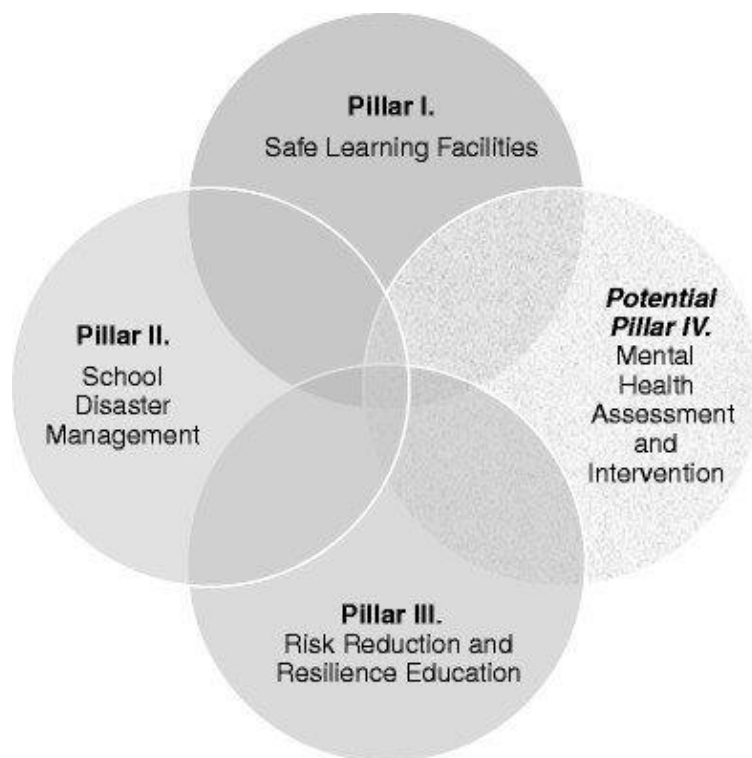


Figure 2. *Proposed adapted framework featuring a fourth pillar for mental health assessment and intervention from Lai et al. (2016b) pg. 2*

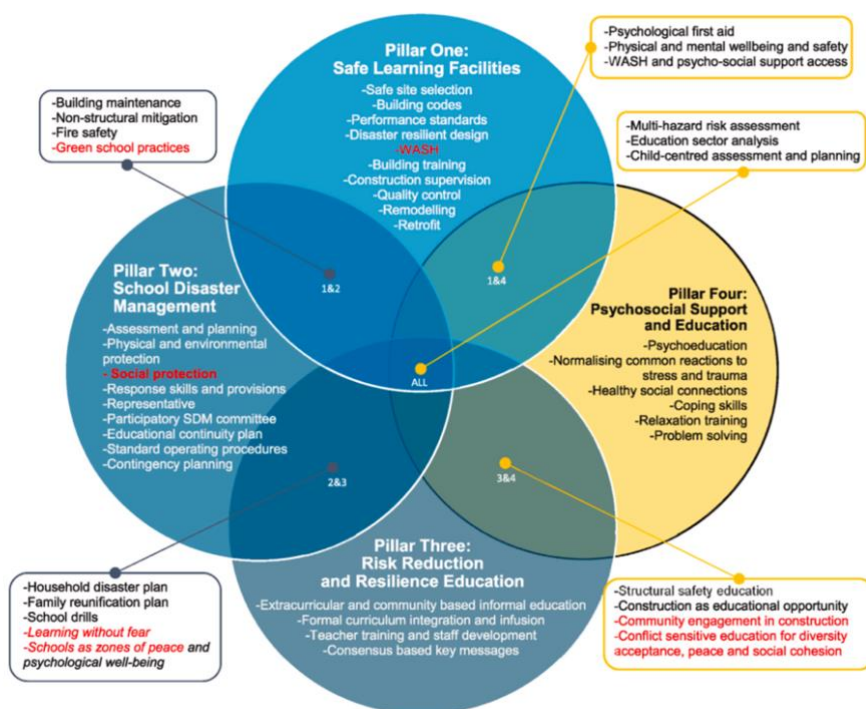


Figure 3. *Proposed adapted framework featuring a fourth pillar to integrate psychosocial support from Pacheco et al. (2021) pg. 8*

In practical terms, incorporating a fourth pillar into the framework may require school staff to take on a more central role in delivering psychological support. This is consistent with the gradual expansion of teachers' academic duties to include supporting students with trauma and delivering mental health interventions (Alisic, 2012; Alisic et al., 2012; Franklin et al., 2017). According to a 'trauma informed' approach (see SAMHSA, 2014), which is growing in acceptance in educational settings, teachers are a key component of a multitiered system of trauma support (Chafouleas et al., 2016; Thomas et al., 2019). Following a collective trauma such as a disaster, teachers, as a familiar and significant adult in students' lives, are well positioned to scaffold their recovery and to support their adaptive coping (Le Brocque et al., 2017). Research from an Indonesian context suggests that teachers, who know their students well, can effectively assess trauma-exposed students to identify those experiencing concerning levels of distress, including PTSS (Widyatmoko et al., 2011). Due to the large amount of time spent together, they are likely to recognise when a child is deviating from their normal behaviour (Widyatmoko et al., 2011).

Teachers' support-based role may be particularly vital in instances when children's primary caregivers are unable to fulfil their needs, such as when parents are grappling with personal disaster impacts (Juth et al., 2015) or are injured or deceased. A teacher's support can enhance the child's positive adaption during adversity, as connection with competent, responsive and caring adults, including service providers, is a crucial protective factor for at-risk children (Gil Rivas & Kilmer, 2016; Luthar et al., 2000). Through fostering feelings of protection and care, the teacher-student relationship has the potential to reduce acute traumatic symptoms (Silove & Zwi, 2005). As children develop through interactions with others (Wong et al., 2010), supportive teachers can play a role in guiding and supporting children to develop their competence to participate in community activities, which can benefit their own and the wider community's recovery (Pfefferbaum et al., 2018). Teachers also have the potential to expand their influence to contribute to the community's wider recovery, as they are often considered a source of information and support post-disaster (Fu & Zhang, 2024). Disaster-related support and knowledge provided by teachers can result in a 'ripple effect', as students often transmit their learning to caregivers (see Fu & Zhang, 2024). If this knowledge and behavioural practices becomes embedded in the family context, this can have a positive cascading benefit for the wider community's resilience.

The expansion of teachers' roles beyond the academic to delivering psychosocial guidance and mental health support (e.g., see Franklin et al., 2017) is consistent with the 'task-shifting' approach to mental health provision. This involves a redistribution of mental health support from specialist, highly qualified health care workers to those with fewer relevant qualifications (Patel et al., 2010a). Task shifting approaches have increased in popularity over the last decade to treat, prevent or promote mental health in low income and disaster and/or conflict contexts (Papola et al., 2023; Patel et al., 2010a; Purgato et al., 2020), including in Indonesia (Efendi et al., 2022). The efficacy of psychosocial interventions delivered by lay workers in LIMCs is indicated by promising results in randomised control trials (RCT) (see Purgato et al., 2018 for a systematic review). While task-shifting usually takes place in primary health care settings (e.g., lay health workers in Goa India, Patel et al., 2010b), outside of healthcare settings, teachers are increasingly responsible for promoting mental health, such as by being trained to deliver psychosocial interventions (e.g., Damiani, 2011; Wolmer et al., 2011). Although a large volume of previous research involving training teachers to deliver psychosocial interventions in disaster settings has taken place in high income countries, such as the US (see Coombe et

al., 2015 and Rolfsnes & Idsoe, 2011 for reviews), this approach holds potential for increasing the availability and accessibility of support for young people in low-income settings. Furthermore, in-school support by teachers is likely to be less stigmatised than provision from formal mental health services (Morganstein & Ursano, 2020). This also aligns with calls for promoting mental health beyond the health sector, such within the educational settings (Hamoda et al., 2022; WHO, 2018).

An exception to this dearth of research is the work of Mutch (2023), whose recent study draws similarities between the role of schools in low-income and high-income settings after disasters, including Nepal, Japan, New Zealand and Samoa. This study features an analysis based of interviews and/or arts-based data from samples of principals, teachers, caregivers and students. While insightful, the study features small samples, especially in the low resource contexts. For example, the Nepal sample features two principals and no teachers, and the Samoa sample consists of two principals, one teacher and one arts educator. Such small samples may cause the analysis to be overly influenced by idiosyncrasies in the data (Joffe, 2012). Furthermore, the aim of the study was to draw similarities between the school sites rather than make comparisons. Therefore, the study may not reveal aspects of the schools' and teachers' roles that are specific to the LMICs.

Research has examined the role of school and educational psychologists during crisis response (e.g., Adamson & Peacock, 2007; Bennett et al., 2021). However, this work is likely to be inapplicable to schools in low resource settings (e.g., LMICs), due to the likely dearth of professional psychological support available. Instead, the spontaneous support of teachers is likely to be of greater interest in these contexts (see Seyle et al., 2013; Parrott et al., Under Review: Chapter 9). A large volume of previous research regarding the roles and responsibilities taken on by teachers after large scale disasters is from Western contexts (see Parrott et al., 2024: Chapter 8), for example, following Hurricane Katrina in the US and the Christchurch earthquake in New Zealand. While these studies (e.g., Mutch, 2013, 2015a, 2018a; Mutch & Gawith, 2014; Mooney et al., 2021) document the essential role played by teachers in fostering students' and the communities' recovery after disaster, they neglect teachers' conceptualisations of their post-disaster roles and responsibilities. Understanding this would be valuable to inform post-disaster policy, psychosocial interventions and training programmes for teachers.

In a non-disaster setting, Alisic's (2012) novel qualitative investigation of teachers' perspectives on supporting students following trauma found that most teachers expressed uncertainty about the definition of their role, as they grappled with providing optimal support to students and faced an emotional burden when doing so. Many teachers also voiced a desire for enhanced support and training to develop their knowledge and skills on how to effectively support trauma-exposed students. Given the increased burden of poor mental health and trauma among students following disasters (see Section 2.1.), it is likely that in a post-disaster context teachers' needs for additional support and training will be heightened. However, additional research is necessary to better understand this understudied area.

Overall, this section has described the potential role of schools and teachers for bolstering students' resilience after a disaster. Consistent with a multisystem perspective of resilience, this section has highlighted the school as an important component of children's wider social ecological systems. While schools have been long been recognised for their role in disaster preparedness and risk reduction, their capacity for providing psychosocial support is often overlooked. The existing evidence makes clear that teachers play an important role in the provision of student's psychosocial support. However, teachers may feel uncertain and desire additional training when working with trauma exposed students. This underscores the need for further research to understand teachers' conceptualisations of their expanding role in disaster settings, particularly in LMICs.

2.4. The role of in-school psychosocial interventions for fostering resilience

Having established the context and rationale for developing a psychosocial intervention to support disaster-affected teachers, the aim of this section is to examine the literature relevant to fostering post-disaster resilience through in-school, community-based psychosocial interventions for teachers. Specific attention is focused on the mechanisms shown to nurture resilience in the Indonesian context, as this review informs the development of the teacher resilience building intervention in Palu, Indonesia (Parrott et al., Under Review: Chapter 9).

The provision of evidence-based and culturally appropriate post-disaster psychosocial support can ameliorate the negative impacts of disasters and support the recovery of both individuals

and their communities (Jacobs et al., 2019). Psychosocial support refers to the assistance designed to prevent and reduce psychological and social problems, by restoring social cohesion, independence, dignity, mental health and wellbeing of disaster-affected individuals and groups (Aaarts, 2000; Rao 2006). Interventions designed to facilitate psychosocial support, termed a ‘tier 1’ level of support, involves broadly promoting psychological adjustment and normal development, as well as preventing psychological, behavioural or functional problems. This differs from higher tiers of support which generally involve diagnostic screening, specialist services and trauma focused therapy (Reinbergs & Fefer, 2018). Interventions that aim to foster psychosocial support (‘tier 1’ support) tend to be delivered in accessible community sites, including schools, rather than in medical health care settings (Pfefferbaum et al., 2014a, 2014b).

In-school, trauma-related group interventions most often focus on alleviating student’s own trauma (Chafouleas et al., 2016). Rather than focusing on students directly, universal (i.e., provided based on trauma exposure rather targeted to a specific clinical group by symptoms screening), whole-school interventions shift the focus to teachers’ ability to support students and the influence of the wider school climate. According to multisystem, social ecological perspectives (e.g., Masten, 2021; Ungar et al., 2023), proximal adults have a profound influence on young people’s adaptation after a disaster. Therefore, whole-school interventions may be more effective for promoting resilience than programmes targeted directly at young people to teach them individual-focused coping skills (Alisic et al., 2012; Castro-Olivo et al., 2013; Chafouleas et al., 2016). School-based post-trauma interventions with teachers often focus on training teachers to support students by becoming intervention facilitators and clinical mediators, with several studies demonstrating the positive impacts of teacher-led psychosocial interventions for student mental health, including PTSD (see Coombe et al., 2015; Rolfsnes & Idsoe, 2011; Fu & Underwood, 2015 for reviews). For example, in Turkey, teachers were trained to implement cognitive behavioural techniques and psychoeducational sessions to students following an earthquake, demonstrating evidence of a reduction of PTSS in students up to three years post-disaster (Wolmer et al., 2005).

Despite the emphasis on training teachers to support their students, there is a growing recognition of the need to simultaneously support teachers’ own psychological recovery post-disaster. In acknowledgement of this, a small number of interventions focus on supporting

teachers' capacity to offer psychosocial support to students and on their own recovery as disaster survivors. For example, after Hurricane Katrina, an intervention aimed to develop teachers' self-regulation and self-awareness, with reported improvements for teacher confidence to support and empathise with students (Baum et al., 2014). In New Zealand following the Christchurch earthquake, an intervention featuring cognitive-behavioural techniques (e.g., challenging 'faulty thoughts'), contemplative practices (e.g., mindfulness) and bodily techniques (e.g., breathing) reduced teachers' PTSS, secondary traumatic stress and maladaptive coping strategies, as well as increasing self-efficacy, optimism and engagement in positive coping strategies (Berger et al., 2016). In a low resource context, a novel intervention devised by Seyle et al., (2013) that mainly featured psychoeducation, rehearsing relaxation and adaptive coping strategies, indicated positive outcomes for reducing teachers' depression and PTSS. By benefiting a teachers' own recovery, psychosocial interventions can have a cumulative impact for the recovery of their students and the wider community, as a teacher with better mental health and wellbeing will be better equipped to meet their students' psychological needs (Pacheco et al., 2022: Chapter 3; Sadri et al., 2018). Therefore, developing and implementing appropriate and efficacious psychosocial interventions for teachers is a beneficial research endeavour in post-disaster contexts.

Although this section focuses on insights from interventions implemented in contexts of mass trauma exposure, it is important to acknowledge that interventions to support teachers' resilience in broader contexts constitute a small but growing area of research. This is exemplified in a systematic review of interventions to promote teachers' resilience by Kangas-Dick and O'Shaughnessy (2020). The authors conceptualise resilience as resulting from both individual level and environmental factors (Ungar, 2013), consistent with the multisystem perspective of resilience adopted in this thesis (see Section 2.2). While the review does not exclude contexts with mass trauma exposure, resilience in the context of trauma is not explicitly discussed. Instead, the review emphasises wellbeing, burnout and job satisfaction as central components of resilience and draws on the bioecological systemic levels described in Bronfenbrenner ecological systems theory (Bronfenbrenner & Morris, 2007) to structure their review. The authors argue that even in normative (i.e., not disaster or crisis) contexts, teachers require high levels of resilience to manage the professional demands of their role and to respond to community-wide challenges. Most relevant to this thesis, the review highlights an intervention implemented in post-earthquake Turkey that trained teachers in coping and

regulation skills using cognitive behavioural therapy (CBT), which found improvements to teacher performance and self-efficacy (Wolmer et al., 2016). Overall, the authors emphasise the importance of macro-level factors for affecting resilience rather than focusing exclusively on enhancing personal resources. Their implications focus on the role of school psychologists for supporting schools to become resilience-promoting environments. This reflects their finding that research in this area has mainly taken place in high resource contexts where school psychologists are available, predominantly in English-speaking and European nations. To enhance the present understanding of resilience-building interventions for teachers, the authors call for studies to take place in a more diverse range of social and cultural contexts.

To guide the content of psychosocial interventions following a disaster or crisis, an international panel of experts collaborated to provide an evidence-based consensus on recommendations for psychosocial support following mass trauma in the short to midterm (Hobfoll et al., 2007b). These encompass promoting: 1) a sense of safety, 2) calm, 3) self and community efficacy, 4) social connectedness and 5) instilling hope (see Parrott et al., Under Review: Chapter 9 for further details). Psychosocial interventions should aim to enhance these elements of resilience through programmes of support that are adapted to meet the disaster-affected community's needs (Morganstein & Ursano, 2020). For example, a sense of safety and hope can be achieved by safeguarding disaster survivors from secondary traumatisation and by proving reassurance that their responses are often normal reactions to their circumstances, which are likely to diminish over time (Morganstein & Ursano, 2020).

Interventions can also aim to build positive coping resources, including emotional regulation strategies, to reduce participants' distress and promote a sense of calm, thereby contributing to resilience (Papola et al., 2024). While an individual's coping strategies cannot fully account for processes of resilience after adversity, adaptive coping can contribute to post-disaster resilience (see Section 2.2.). Coping refers to the dynamic cognitive and behavioural strategies developed to manage external and internal demands that threaten to overwhelm an individual's resources (Lazarus & Folkman, 1984), thereby influencing physiological and emotional reactions to stress (Goh et al., 2010). Coping is often categorised into 'emotional focused coping' for regulating internal distress and 'problem focused coping' for confronting the cause of distress (Lazarus & Folkman, 1984). According to Lazarus and Folkman (1984), the efficacy of a strategy is influenced by its '*goodness of fit*' between the strategy and the appraisal made by the individual about the stressor. Accordingly, interventions may aim to promote positive

coping strategies to reduce distress and promote a sense of calmness, such as by facilitating perspective-taking, relaxation techniques, positive reappraisal and acceptance (Morganstein & Ursano, 2020; Thompson & Waltz, 2010; Vujanovic et al., 2009; Wisco et al., 2013a, 2013b). Interventions can also reduce participants' reliance on maladaptive coping strategies, such as emotional suppression and avoidant coping (Chung et al., 2014; Mason et al., 2010; Steinhardt & Dolbier, 2010).

To foster resilience among students, interventions can encourage teachers to recognise their influence on students' coping with disaster stressors and to harness teachers' potential to encourage students' self- and collective efficacy, which has been consistently associated with lower rates of PTSD in trauma exposed young people (e.g., see Benight & Bandura, 2004; Gallagher et al., 2020 for reviews). Additionally, it is important to ensure interventions recognise the existing coping strategies and inherent resilience of trauma exposed populations (Snider et al., 2010). As well as empowering individuals, this emphasises that the coping mechanisms that may be adaptive in one cultural context may not be in another, such as the varying role played by religion and spirituality for coping depending on the context (Ungar, 2015). Interventions that are well intentioned but are insensitive to the context fail to offer survivors the psychological resources necessary for long-term coping (Norris et al., 2008). Therefore, interventions that cultivate and promote adaptive coping strategies that are valued by the community can reduce risk and increase the resilience of disaster survivors.

Social support is one of the most reliably established protective factors for fostering resilience. It is associated with less adverse and more positive psychological outcomes across diverse post-disaster contexts (Guilaran et al., 2018); this can be harnessed and developed in interventions (Hechanova et al., 2015). This aligns with Hobfoll et al.'s (2007) intervention principle of 'connectedness' and the 'social capital' element of Norris et al.'s (2008) model of community resilience. Social capital refers to the actual or potential resources linked to a network of relationships (Bourdieu, 1986), often categorised into forms such as bonding (i.e., within group connections), bridging capital (i.e., connections between social groups) and linking (i.e., connections to organisations and institutions) (Bourdieu, 1986). Social support is a component of social capital, which refers to the interactions and social relationships that provide assistance, most often encompassing familial and friendship-based support. However, social support may also come from neighbours and other community members who may offer care during adversity (Norris et al., 2008; Perkins et al., 2002). The social support construct is

multifaceted, encompassing: 1) actual assistance received, 2) perceived availability of support and 3) being integrated into a network of supportive individuals (Guilaran et al., 2018).

As disasters cause community wide disruption that can compromise access to social support, interventions can benefit from strengthening survivors' existing social support networks and, if appropriate, developing and enhancing additional support systems (e.g., between colleagues, neighbours and friends) (Morganstein & Ursano, 2020). Furthermore, while the initial impact of a disaster often increases social support and altruistic behaviours, the supportive 'disaster communities' typically quickly decline over time (Kaniasty, 2020; Kaniasty & Norris, 2004). This occurs as disaster-affected individuals become depleted of resources and energy, causing divisions to emerge between groups, often due to inequalities in resource allocation and material recovery (Kaniasty, 2020; Kaniasty & Norris, 2004). This is especially the case when secondary stressors, such as rehousing, can take many years to fully resolve (Ntontis et al., 2020). To mitigate this, interventions can focus on sustaining the sense of camaraderie and togetherness experienced during a disaster by providing specific, accessible community spaces to function as sites of social interactions. Commemorations and other memorial acts can also contribute to re-affirming a sense of community identity (Ntontis et al., 2019), which may encourage disaster survivors to engage in support-based behaviours.

Related to social support, the cultural construct *gotong royong*, which translates closely to *mutual help*, has been found to contribute to resilience building after adversity in Indonesia (Paton & Sagala, 2018; Taylor & Peace, 2015). Traditionally a Javanese practice, *gotong royong* fosters social cohesion and sense of community as disaster survivors' reciprocally support one another (Paton & Sagala, 2018; Taylor & Peace, 2015). The concept often denotes practical support, such as removing disaster debris and rebuilding infrastructure, to benefit the community's collective recovery (Schwarz, 2014). Therefore, psychosocial interventions in Indonesia may benefit from considering how to strengthen and reinforce the culturally valued practice of *mutual* support.

Psychosocial interventions often adopt a group-based structure. This intervention format can support the 'community competence' and 'social capital' elements of the Norris et al. (2008) model of community resilience, by encouraging community engagement, collective efficacy and social support (Papola et al., 2024). This is supported by research demonstrating that disaster survivors' engagement in collaborative efforts to achieve collective goals can be

beneficial for post-disaster mental health (Gil-Rivas & Kilmer, 2016; Zaumseil et al., 2014). For example, participation in post-disaster volunteering groups has been associated with decreased PTSD among individuals exposed to bushfires in Victoria, Australia (Gallagher et al., 2019). The authors propose that this is due to increases in social cohesion by volunteering involvement. Supporting this point, after an earthquake and tsunami in Japan, individual and community level social cohesion was associated with lower risk of PTSS when controlling for disaster damage and pre-disaster mental health problems (Hikichi et al., 2016). A central pathway linking community cohesion to reduced PTSS is likely to be the '*informal insurance*' offered by social networks during the post-disaster period, such as by providing both practical and emotional information and support (Aldrich, 2012). Cohesive post-disaster communities can also benefit resilience building by effectively advocating for the needs of the group, such as to government and relief agencies (Aldrich, 2012).

Besides volunteering, group-based interventions can incorporate activities that leverage similar processes to empower disaster-affected communities. These interventions can promote positive aspects of mental health by facilitating activities that promote group involvement, participation and commitment (Quinn et al., 2022). This can enhance both pre-existing bonds and develop novel connections between individuals and communities, strengthening peer relations and increasing social support. By focusing on group empowerment, collaboration and participation, collective coping capacity and resilience can be developed (Papola et al., 2024). Furthermore, by creating a safe and supportive space to reflect on their collective experiences, interventions can reduce psychological shame, alienation and isolation (Engelbrecht & Jobson, 2016). Importantly, the physical spaces chosen for psychosocial interventions should be scrutinised to ensure their accessibility and that they do not exclude any sub-groups of disaster survivors (e.g., see Gorman-Murray et al., 2018; Stough et al., 2016).

Many interventions, including the widely applied psychological first aid (PFA), are designed for implementation in the immediate disaster aftermath (i.e., days-weeks post-disaster) (Allen et al., 2010; Everly & Lating, 2021). However, due to potential ongoing adverse psychological impacts of disasters, the unavailability of immediate mental health services and the impact of secondary stressors, such as due to long-term displacement and/or a protracted reconstruction period, similar interventions can be beneficial several years post-disaster (Cain et al., 2010). Despite a clear need for interventions beyond the immediate aftermath, there is often a dearth

of support available during the longer-term recovery period, which can leave survivors feeling isolated, unsupported and unable to address psychosocial concerns (Reifels et al., 2013).

Interventions are particularly important in disaster-prone regions where there is likely to be ongoing exposure to other natural hazards (e.g., highly seismic areas prone to earthquakes and tsunamis); as discussed in Section 2.1., the psychological impact may be heightened for individuals exposed to multiple disasters (e.g., Garfin et al., 2015). Furthermore, in these contexts, interventions are well suited to support post-disaster recovery, while simultaneously building resilience by preparing for future disasters. To best facilitate community engagement in participatory risk reduction activities for future hazards, the post-disaster period provides a ‘*window of opportunity*’, when the population tends to be most receptive to interventions (Becker et al., 2017). However, the efficacy and cultural applicability of interventions must be carefully evaluated, as enthusiastically implemented interventions have occasionally been found to be ineffective and even harmful (e.g., see Wei et al., 2010).

It is important that interventions are adapted to the specific disaster context where they are implemented. This can be achieved by listening to the voices of disaster-affected community members regarding their needs, in order for the interventions to align with the priorities of the community, which may shift over time (Murphy et al., 2018). This is important as resilience-promoting resources, including psychological, social and material resources, are only valuable to the recovery of the disaster-survivor if they align with their needs and values (Ungar et al., 2011a). For example, after the 9/11 terrorist attacks in the US, funds were allocated to therapy and professional psychological services, but not to building community capacity or allowing the affected community the time and space to discuss their experiences with one another, which is what they desired (Saul, 2014; Ungar, 2011a). Therefore, collecting in-depth data from the disaster-affected community to determine their needs and priorities should feature as a crucial stage of intervention design. This can be empowering since disaster survivors are often excluded from discussions with Western researchers and practitioners regarding their own recovery needs, particularly in non-Western, economically marginalised contexts (Murphy et al., 2018).

Furthermore, contextualisation of an intervention is crucial to ensure that it is sensitive to culturally specific beliefs and practices and that the community’s existing coping strategies are

incorporated and strengthened. This can increase intervention buy-in and reduce risk of survivors' dissatisfaction of having recovery imposed without their consultation (Mooney et al., 2011; Rajkumar et al., 2008). To advance this aim, the mental health competency approach provides a framework for prioritising positive mental health and sustainable community recovery in complex settings (Burgess & Mathias, 2017; Campbell & Burgess, 2012). Consisting of three core competencies, the 'knowledge' competency promotes recognition of the meaningful knowledge of community members about their realities and sources of distress. To share this knowledge, the second competency advocates for the creation of safe social spaces for dialogue, involving identifying the groups' local strengths and promoting solidarity. The final competency involves fostering partnerships with external agencies that can support mental health, to ensure ongoing support beyond the intervention from sources such as public health services and NGOs. Consideration of these competencies can support long-term community recovery by sustaining intervention effects beyond their initial implementation (Burgess & Mathias, 2017; Campbell & Burgess, 2012).

Further contributing to sustaining intervention effects, theory from the burgeoning field of behaviour change research can be drawn on to promote and sustain adaptive coping behaviours. Highly influential in this field, the 'COM-B' model conceptualises behaviour as a part of a series of interrelated factors that occur when one has the capability, opportunity and motivation to engage in the behaviour (Michie et al., 2011). For example, an intervention should consider teachers' capability to support themselves and their students (e.g., having the necessary knowledge and skills), motivation (e.g., habitual processes, emotional responses and analytical decision making) and opportunities (e.g., external or environmental factors that influence engagement in a particular behaviour); these three elements interact reciprocally to influence one another. One of the main causal determinants of behaviour is self-efficacy, which refers to a person's belief about their success in a prospective situation (Bandura, 1977). This can be influenced by techniques such as 'mastery experiencing', which involves practising a skill to increase a person's confidence regarding their chances of future success, 'modelling/vicarious experiences', when someone observes others similar to themselves sustaining the effort to engage in a behaviour and achieve a desired outcome, and engaging in a 'physiologically compatible experience', which involves aligning the experience with an individual's physical capabilities (Bandura, 1997; Michie et al., 2008). The design of a cross cultural disaster preparedness 'Fix It' intervention, for example, was informed by behaviour change research,

which contributed to the intervention's success in increasing long-term multi-hazard preparedness (Joffe et al., 2016, 2019). This included rewards and incentives to increase motivation and sustain the intervention's effects and learning coping skills and social encouragement to increase self-efficacy (Joffe et al., 2016, 2019). While the focus of this intervention was disaster preparedness, recovery interventions may also benefit from incorporating evidence-based behaviour change techniques to sustain adaptive coping behaviours in the long term.

Overall, this section has emphasised the importance of devising and implementing evidence-based and contextually appropriate programmes of psychosocial support post-disaster. In school contexts, interventions can develop teachers' capacity to support their students, but should also crucially focus on fostering teachers' own resilience. Interventions may benefit from developing adaptive coping, social support and community cohesion through participatory and group-based approaches. To promote community engagement and sustainability, interventions should be context-specific and culturally sensitive. Sustainability can also be achieved through adopting a mental health competency approach and by incorporating principles from theories of behaviour change.

2.5. Chapter Summary

In summary, this literature review has outlined the devastating impacts of disasters on individuals and communities, including teachers. Teachers often play an important role supporting students' psychosocial needs, while also experiencing personal psychological distress and poor mental health, potentially exacerbated by their support-based role. Despite this, there has been a noticeable shift in the focus of research and policy towards recognising the inherent resilience of disaster-affected communities. Multisystem social ecological theories of resilience emphasise the role of contextual factors in promoting resilience, including the influence of the school on students' resilience. Resilience can also be conceptualised at the level of the community, encompassing group-based elements, such as social capital and community competence. Although the relative importance and manifestation of the factors that foster resilience can vary depending on the cultural context, a large volume of the existing research comes from Western, high-income countries, which necessitates qualitative research methods to better understand disaster survivors' experiences of resilience in under-researched settings. These findings have the potential to inform context specific resilience building

interventions that foreground the needs of the disaster-affected community. These interventions should empower teachers by supporting their confidence and capacity to assist students' psychosocial needs while, crucially, supporting their own psychosocial recovery.

Chapter 3. Conceptual Review

How schools can aid children's resilience in disaster settings: The contribution of place attachment, sense of place and social representations theories

Building on Chapter 2, which provided an overview of the literature related the psychosocial impacts of disasters for students and teachers, resilience building, the role of schools and school-based interventions for fostering resilience after disasters, this theoretical chapter draws on social representations and place attachment theories to explore how schools in disaster settings may be vital to resilience building efforts. This theoretical lens is subsequently applied in the third empirical study (Chapter 6) to elucidate adolescent girls' representations of the school and teachers.

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3.1. Abstract

Disasters incurred by natural hazards affect young people most. Schools play a vital role in safeguarding the wellbeing of their pupils. Consideration of schools' psychosocial influence on children may be vital to resilience building efforts in disaster-vulnerable settings. This paper presents an evidence-based conceptualisation of how schools are psychosocially meaningful for children and youth in disaster settings. Drawing on social representations and place attachment theories, we explore the nature of group-based meaning-making practices and the meanings that emerge concerning school environments in disaster settings. We contribute a novel understanding of how schools may mitigate psychosocial risk for young people by considering how schools are conceptualised at four levels: (1) as a physical environment, (2) as a social arena, (3) as a place with individual and (4) group-based significance. In each of these domains schools can foster disaster resilience in young people. This paper highlights the evidence concerning the functions of schools beyond their capacity as educational institutions, critically considering their social and physical functions in their communities. This evidence can inform stakeholders involved in disaster resilience building.

3.2. Introduction

Children are uniquely vulnerable to the negative consequences of disasters, in part due to their dependence on adults and their ongoing development (Peek, 2008). Schools are essential sites for safeguarding children and youth in disaster settings (Mutch, 2014; see also, ACFCSS, 2016; Paci-Green et al., 2020; UNDRR, 2014). Though the significance of their role as educational institutions and resource distribution centres in disaster contexts is well-established (e.g., Sakurai et al., 2018; Mirzaei et al., 2019), consideration of schools' psychosocial influence may be vital to disaster risk management and resilience building (IASC, 2006; Pacheco et al., 2021). Many works explore the socio-physical dynamics of spaces such as cities or the home (e.g., Bechtel, 2010; Clayton, 2012; Fleury-Bahi et al., 2017; Sawyer et al., 2022), yet to our knowledge, the literature lacks academic conceptualisation of the socio-physical elements of schools. This conceptual analysis explores the evidence regarding how children conceptualise schools in disaster settings; it examines how schools may mitigate psychosocial risk for children by considering the function of these conceptualisations from a social psychological perspective. We conclude with a series of recommendations for utilising schools as hubs for enhancing resilience in disaster contexts.

Before we begin our conceptual analysis, we briefly clarify definitions of key concepts used throughout this paper. Since the United Nations International Strategy for Disaster Reduction adopted the Hyogo Framework for Action (HFA) 2005–2015: 'Building the Resilience of Nations and Communities', disaster policy, planning and research has focused on the capacity of the community to bounce back from adversity. Yet despite the rise in popularity of the resilience rhetoric, there has been a lack of interdisciplinary consensus on how the concept is defined (Bonanno et al., 2015; Mayunga, 2007). We view it as the 'adaptive capacity' that supports individuals and the community to cope with and recover from adversity (e.g., Berkes, 2007; Masten, 2011; Norris et al., 2008; Paton, 2007; Ungar, 2011b). The adversity we refer to is that experienced in settings affected by disasters. While disasters vary in the scale of disruption and loss of life caused, a disaster setting is an area that has experienced widespread human, material, economic and/or environmental loss as a result of the interaction of a hazard (e.g., an earthquake, tsunami, flooding) with social vulnerability (Massazza et al., 2019a). Resilience building is facilitated through a system of processes that buffer the impact of such disaster scenarios and improve circumstances in both the short-term response and long-term planning (Pacheco et al., 2021).

3.3. Background and framework

This section explores how spaces can protect the psychosocial resilience of individuals and communities; we approach this through lenses of social representations theory (SRT), sense of place and place attachment theory. Subsequent sections apply this knowledge to understand the significance of schools (as physical and social environments) for children and youth in disaster settings. Within this paper, ‘schools’ refers to primary and secondary, but not tertiary, education.

3.3.1. Social representations theory

Social representations are the product of group-based meaning-making practices whereby groups socially construct common knowledge on topics of social relevance (Clémence, 2001; Moscovici, 1961/1976, 1984). Abstract concepts are made concrete by their transformation into elements that are easier for people to engage with and discuss, such as integrating the concept into images or examples with relevance to everyday life (Clémence, 2001). The objectified concepts become fully integrated into contemporary meaning systems when connected to pre-existing meaning systems (Joffe, 2003). Such representations exist not only in belief and discourse but influence, and are inseparable from, social behaviour (Sammut & Howarth, 2014; Wagner, 2015). It is therefore useful to draw on SRT to explore the symbolic meaning with which schools are infused in disaster settings.

People can differ in how they represent an entity. When people represent important social issues, their pre-existing cognitive-emotional frameworks are imposed upon the newer ideas; groups within the wider public draw on diverse information sources to understand a phenomenon (Abreu Lopes & Gaskell, 2015). The pre-existing frameworks are shaped by the complex social worlds within which the people exist (e.g., religious, cultural, ethnic, political, socioeconomic and ideological; Clémence, 2001; Staerklé et al., 2011; Wagner, 2012) so that contemporary societies experience a plurality of representations of the same object (Abreu Lopes & Gaskell, 2015). Such frameworks influence belief structures, life experience and knowledge acquisition (Staerklé et al., 2011); they become more salient when a threat is encountered (Jaspal et al., 2022; Joffe, 2003).

Although SRT has been applied to understanding risk (Joffe, 2003; Lemée et al., 2019) and representations of the home (Harries, 2013) in disaster settings, it has yet to be applied to understanding the content or implications of conceptualisations concerning schools in disaster settings.

3.3.2. Sense of place

The literature provides a plethora of definitions and concepts for characterizing the complex processes whereby humans develop connections to places, such as place attachment (Altman & Low, 2012; Hidalgo & Hernández, 2001; Manzo & Devine-Wright, 2020; Scannell & Gifford, 2016, 2017), sense of community (McMillan, 1996; Obst et al., 2002), sense of place (Jorgensen & Stedman, 2001; Pretty et al., 2003; Silver & Grek-Martin, 2015), place identity (Devine-Wright, 2009; Foroudi et al., 2020; Twigger-Ross & Uzzell, 1996), rootedness (Relph, 1976; Tuan, 1980), belonging (Di Masso et al., 2017; Inalhan & Finch, 2004; Rogaly & Taylor, 2016), place-making (Friedmann, 2010; Pierce et al., 2011; Trudeau, 2006; Ujang, 2012) and making sense of place (Convery et al., 2014; Matthews, 1992; Powell, 2010; Relph, 2009). Each of these terms appears across disciplines interested in place-related research (e.g., urban studies, psychology, human geography, sociology), and has been operationalised across the research literature within concrete variables (e.g., quantitatively captured in years lived in an area) as well as abstract variables (e.g., qualitatively captured in how one understands one's experience of or in a place; see Greer et al., 2020; Lewicka, 2010; Williams, 2014). While many authors use these terms interchangeably, a rich literature is dedicated to untangling each of these concepts (e.g., Collins-Kreiner, 2020; Hashemnezhad et al., 2013). Lewicka (2010), who provides an extensive review of several hundred empirical and theoretical works, argues that the literature should turn away from pursuit of defining these terms within rigid parameters and, instead, work toward extending theory and conceptualisations of person-place attachments in under-researched populations and settings. We respond to this challenge: there is little previous thought concerning the meaning ascribed to schools within communities, and none, to our knowledge, concerning this topic in disaster settings.

Schools' meaning in disaster settings can be informed by understanding how individuals and groups develop psychological ties to places. All environments are social and physical (socio-

physical), allowing person-place interactions to be bidirectional on a series of interacting levels: The thoughts, feelings, and behaviours of a person influence the elements of a place, and the elements of a place influence the thoughts, feelings, and behaviours of the individual experiencing that place (Sörqvist, 2016). Places contain three components: location (i.e., absolute and relative space), locale (i.e., material features that exist in that space), and sense of place (i.e., affective interactions with elements of that space; Silver & Grek-Martin, 2015). Location and locale refer to the external elements (built and natural) of a space. Sense of place refers to the affective psychological orientation – memories and experiences - that individuals or groups have in relation to a spatial setting. These contribute to the location and locale becoming a meaningful place (Jorgensen & Stedman, 2001; Silver & Grek-Martin, 2015). Jorgensen and Stedman (2006) further describe sense of place as a general complex psychosocial structure that organises beliefs, emotions, and behaviours. Since sense of place acknowledges that the meaning people ascribe to a place is a dynamic, multidimensional product of subjective processes, disaster studies tend to favour sense of place as a lens to explore the psychosocial ways in which communities have been affected by natural hazards (e.g., Bonaiuto et al., 2016; Chamlee-Wright & Storr, 2009; Silver & Grek-Martin, 2015; Smith & Cartlidge, 2011). Thus, sense of place research strongly informs and guides this work in conceptualising schools' symbolic and affective meaning for communities in disaster settings.

3.3.3. Place attachment

Most scholars consistently uphold that sense of place is a product of place attachment (e.g., Kudryavtsev et al., 2012; Shamsuddin & Ujang, 2008). Even though the literature lacks a clear, single definition of place attachment, it is most consistently described as the subjective bonds people develop with particular places they hold to be important or meaningful (Greer et al., 2020; Hidalgo & Hernández, 2001). Place attachment has commonality with attachment to a person (Fullilove, 1996), encompassing the emotional and cognitive experience linking people to places (Bonaiuto et al., 2016) and captures the meaning individuals make of their environments and how they interact with those environments (Greer et al., 2020; Lewicka, 2005).

Scannell and Gifford (2010) synthesise the literature concerning the various elements that contribute to place attachment in a well-cited and evidence-based tripartite model that

envision place attachment as a product of three dynamic elements. The person element concerns the actor who is attached; place concerns the object of attachment, including concrete and abstract elements of a place to which one is attached; psychological process refers to how the attachment manifests and the psychological elements of attachments (see also, Counted, 2016; Lewicka, 2011; Manzo & Devine-Wright, 2020). To contextualise this framework for disaster settings, Jamali and Nejat (2016) provide a broad conceptual map of demographic, socioeconomic, spatial and psychological factors that act as ‘parameters of place attachment’. However, they do not delve into the psychological factors. In a review of the literature on community disaster risk reduction, recovery, and resilience as well as place attachment and young people’s experiences of place in disaster settings, Scannell et al. (2016) argue that place attachment is important for young people’s experiences at each stage of the disaster (e.g., preparedness, experience, recovery and resilience). However, they find that while themes relevant to place attachment are often mentioned in empirical findings in disaster social science research, they are rarely discussed in the context of specific place attachment theory, especially in research on children and youth. A social psychological lens has been notably missing from the place attachment and disaster resilience discourses (Lewicka, 2011; Pacheco et al., 2021). This paper endeavours to address this gap as a social psychological lens can help us to conceptualise how places (i.e., schools) can act as icons of recovery for youth (Cox et al., 2017), such as by fostering emotional regulation and positive affect.

3.4. Framework and method

This paper seeks to explore how pupils represent schools in disaster settings and the implications of these representations for resilience building. Existing evidence is assimilated and combined to support arguments using a theory synthesis (Jaakkola, 2020). This is a conceptual integration across multiple literature streams. It offers an enhanced view of a phenomenon by linking previously unconnected pieces in a novel way.

This paper seeks to synthesise the sense of place, place meaning and place attachment literatures insofar as they characterise the person-place bond (see Figure 4). This bond contains psychosocial, affective and bidirectional facets (see also, Lewicka, 2011). Doing so provides an academic foundation for understanding how schools are ascribed meaning by people in disaster contexts (sense of place) and the socio-physical elements of schools that may influence these representations (place meaning and place attachment). We also consider the nature of

individual and group-based (i.e., community) ties to schools in disaster settings and explore identity dynamics that contribute to these environments being represented as personally and symbolically significant. Overall, we consider how schools may mitigate psychosocial risk for young people across four elements; these elements are conceptualised based on a unified framework between place attachment, sense of place and social representations theories.

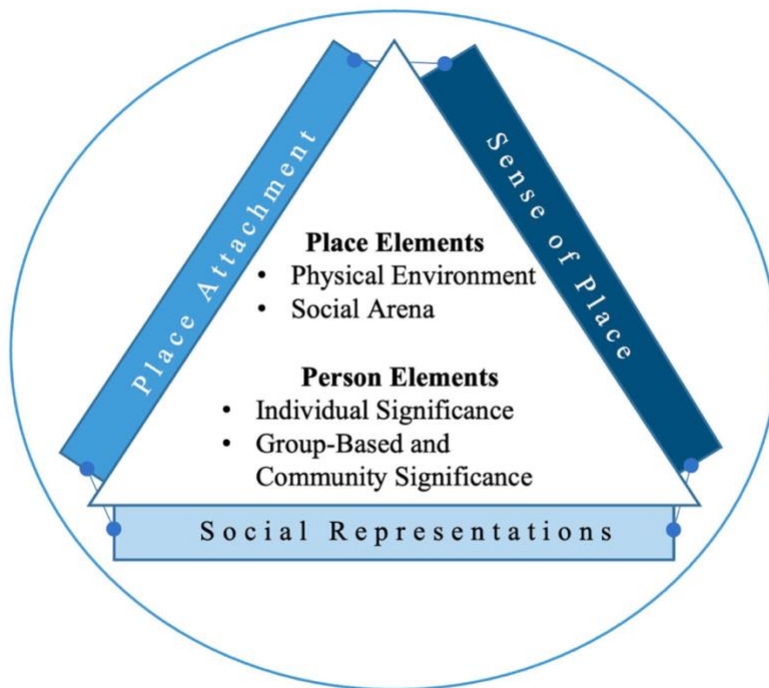


Figure 4. *Conceptual framework for understanding the functional resilience building elements of schools*

3.5. Schools as meaningful places in disaster settings

Young people's representations of schools are characterised by cognitive-affective meaning. Beyond their capacity as educational institutions, schools provide their communities with necessary, supportive resources during disaster response and recovery phases. They are often repurposed as shelters or evacuation centres (Mutch, 2015a). Beyond these practical functions, schools are also important social environments to which people develop physical, moral, social, emotional, spiritual, aesthetic, and academic attachment (Noddings, 2005; Rich & Schachter, 2012). Such attachments are especially salient for young people and may endure over the life course. For example, young people often represent schools as protective spaces (Sinkkonen, 2012). Research suggests young adults continue to retain these representations; Scannell and

Gifford (2017) found that spontaneously visualising familiar places, including schools, enhanced undergraduates' sense of belonging, self-esteem, and meaningfulness. These findings suggest that schools have enduring socio-physical qualities and demonstrate that the person-place bond between pupils and schools may provide psychological benefits.

We structure our conceptualisation of the place meaning of schools for children and youth in disaster settings by considering the meaning of schools as (1) physical built environments, (2) social arenas, (3) places with personal, and (4) group-based significance. We draw on the Scannell and Gifford (2010) model of place attachment as it provides a systematic pathway through the core elements that interact in fostering a place bond.

3.5.1. Schools as physical places and built-environments

The concept of place, most commonly defined as space endowed with meaning (Low & Altman, 1992; Relph, 1976; Tuan, 1977), is the object of attachment within place-attachment theory (Scannell & Gifford, 2010). It is well-acknowledged that the physical attribute of 'place' has been under researched compared to the over-emphasis on the social dimension of place attachment (Droseltis & Vignoles, 2010; Lewicka, 2011; Sebastien, 2020; Stedman, 2003). This absence is particularly notable concerning young people in the disaster literature (Cox et al., 2017). In child samples, much of the recent research concerning the meaning of physical places considers the importance of green spaces (see Little & Derr, 2020 for a review) and the promotion of pro-environmental behaviour through place attachment (Cole et al., 2021). In this body of research, the scale of meaningful built environments in a child's life vary, from the small-scale (e.g., a bedroom) to the large scale (e.g., a city; Little & Derr, 2020). For children and youth, the physical aspects of such environments may be more salient than for adults. Morgan (2010) explains that adults' attachment is driven by their feelings of a place and the meaning attributed to those feelings. In contrast, children understand places based on what one can do in the place (e.g., play, self-directed exploration) with little regard for the purpose of the place or the social meanings. As the environment is a passive element in relation to the activity, the bonds fostered in children are initially unconscious but become conscious as children are involved in repeated person-environment interactions and begin to develop feelings about those interactions (Jack, 2010). Significant physical places can benefit young people by satisfying physical and emotional needs, as they have been found to provide a sense

of comfort that supports cognitive restoration and emotional regulation (Korpela et al., 2002). Important physical places can also provide a symbolic function. In disaster settings there is emerging evidence that a range of physical places, including the home and school, become symbols of recovery for young people. For example, arts workshops involving youth between the ages of 13–22 across four disaster-affected communities in the United States and Canada highlighted key people, places, and activities that supported their recovery (Cox et al., 2017); these insights were based on local knowledge and lived experience, demonstrating that it is important to collect and document youth perspectives when contextualising theories of disaster recovery. The finding that physical places symbolise recovery after disaster has been well-evidenced in adult samples (Cox and Perry, 2011; Silver & Grek-Martin, 2015).

The development of person-place bonds varies according to developmental need (Morgan, 2010), and the role of schools in children's lives continues to evolve, as do the nature of the interactions. For example, the journeys to and from school are important person-place interactions for children. They provide valuable opportunities for unstructured interaction with their social and physical worlds, which contribute to the development of their personal and community identities (Jack, 2010; see also O'Brien et al., 2000; Ross, 2007; Scannell & Gifford, 2017). These journeys allow children to actively engage with local space, contributing to secure attachments to the broader school locale and belonging to place (Jack, 2010). Future research could explore whether different modes of transport have unique psychological benefits, for example whether walking may foster attachment to the locale whereas a car journey may foster parent-child attachments. After Hurricane Katrina Fortherrgill and Peek (2015) conducted interviews and observations of children that revealed playgrounds and ball fields to be important places for recovery. Overall existing research supports the notion that schools exist as important physical places in children's lives as they provide a context that scaffolds developmental growth and contributes to sustained psychological wellbeing.

3.6. Evidence

3.6.1. Schools as built environments

3.6.1.2. Macro-level assessment of how the overall physical environment directly impacts pupils' lives

The built environment of schools has been empirically documented to impact pupils directly. For example, environmental psychologists demonstrate that the architectural environment of American primary schools predicts both attendance and academic achievement after controlling for other predictors such as socioeconomic status, ethnicity, school size, and teacher quality (Durán-Narucki, 2008). There is also a positive association between academic achievement and middle-school building conditions, mediated by social climate and student attendance (Maxwell, 2016). The destruction of school settings following natural hazard events prevents children from returning and receiving education (e.g., Adeagbo et al., 2016; Kousky, 2016; Mudavanhu, 2014). Thus, the maintenance of adequate school facilities is essential to protecting children's right to education and their psychological wellbeing. These studies offer a macro-level assessment of how the overall physical environment directly impacts pupils' lives, demonstrating that poorer facilities correlate with poor attendance and, therefore, poorer academic outcomes.

3.6.1.3. Micro-elements of spaces

Micro-elements of spaces that carry little meaning for adults have been shown to have great significance for young people (Koller and Farley, 2019). For example, Fleet and Britt (2011) found that children placed significance in a brick wall, which researchers initially saw as meaningless. Drawing on Stedman's (2003) 'meaning-mediated model', it is unlikely children were attached to the wall per se, but instead, the meaning represented by the wall, such as warmth and laughter (Koller & Farley, 2019). This is consistent with findings reported by Fleet and Britt (2011), that children often climbed and sat on the wall, creating new narratives of the wall's significance through play. These person-place interactions also effectively subvert the adult narratives of safety and surveillance, which creates a sense of adventure and freedom that Scannell and Gifford (2016) theorise fosters positive attachments to place elements in children. Other studies have also documented differing affective responses to micro place elements. Koller and McLaren (2014) found that children shared spontaneous and charged emotional responses to hospitals' physical design and decor that was not shared with adults. This demonstrates the importance of eliciting children's insight into the meaning with which certain physical aspects of the school environment are endowed, as adults may be unaware of the meanings bestowed on seemingly mundane features of the school environment.

3.6.1.4. Place loss in disaster settings

The literature concerning place loss in disaster settings provides further insight into the relationship between bonds to physical places and psychological wellbeing. According to the disaster literature, the loss of physical place, most notably the home, is devastating for adults. Feelings of grief and emotional distress often accompany place loss, as cognitive-affective attachments are ruptured (Cox & Perry, 2011). This occurs beyond the initial disaster impact, as ongoing demolition leads to feelings of disorientation throughout the reconstruction period (Silver & Grek-Martin, 2015). Such disruption to one's significant places can lead to 'solastalgia', which refers to the distress produced by environmental change (Albrecht et al., 2007). When 'solastalgia' occurs, the environment no longer offers solace, sense of place and place identity, causing feelings of powerlessness that negatively impacts wellbeing (Albrecht, 2019; Galway et al., 2019; Warsini et al., 2014).

The impact of place loss on children is likely to become more salient for children post-disaster since they become aware of the attachment they had to the destroyed place and experience exacerbated feelings of distress due to the suddenness and unexpected nature of the impact (Cheng & Chou, 2015; Relph, 1976). To understand the symbolic significance of the loss of physical place, we turn to research that examines material loss through the lens of Moscovici's (2001) social representations theory. The home is often depicted as a place of safety, security and relaxation. Harries (2013) found that residents at risk of flooding in the UK are motivated to protect elements of the home that facilitate feelings of safety; the elements which function in this way are largely determined by social representations. However, traumatic or repeated damage to a home can threaten residents' ontological security (Harries, 2013; Hawkins & Maurer, 2011), which occurs when a sense of trust in the stability of the home environment is undermined. Just as the home is associated with notions of continuity and safety for adults (see Mallett, 2004 for a review), many young people often see the school as a place of inclusion and safety (Butler et al., 2017). As children spend a large amount of time at school, a similar process may occur: the group-based sense of the school as a safe space (pre-disaster) may be challenged by a school becoming a place of danger, especially where there has been a threat to life (e.g., building collapse during an earthquake). This will have an emotional impact on the children. If both a sense of safety and of danger are held simultaneously, this may lead to what Moscovici (1984) terms 'cognitive polyphasia': representations may be plural and even contradictory, activated depending on the social context. For example, post-disaster children may

simultaneously represent the school as a place of safety when among supportive peers and adults, and danger when witnessing infrastructural damage. Although this provides insight into the unique subjectivity of person-place bonds for children (versus adults) and peripherally informs our understanding of meanings made of schools, this area remains under-researched.

The process of rebuilding schools should be emphasised in community response and recovery plans. Scholars argue that involving children and youth in the design efforts is likely to benefit their wellbeing and cultivate positive place-attachment bonds to the place they have agency in creating. For example, Koller and Farley (2019) advocate for the right of children to be involved in the design of the spaces they inhabit. Research from disaster-affected areas has also shown that young people eager to be active in community recovery post-disaster (Peek, 2008; Taylor & Peace, 2015). Further, Pivik (2010) argues that children's insights into place differ from adults' and documents instances where children have identified barriers to the inclusion of disabled children that relevant adult stakeholders were unable to identify. The unique student perspective should be harnessed when physically rebuilding the school post-disaster to ensure the built environment meets young people's needs, to truly 'build back fairer' (Sendai Framework for Disaster Risk Reduction 2015–2030) from a child-centred perspective.

3.6.2. Schools as social arenas

This paper has thus far explored place meanings in terms of the physical, built environment. However, place is often considered a dual concept that incorporates a social element within the physical environment (Koller & Farley, 2019; Riger & Lavrakas, 1981; Scannell & Gifford, 2010). The relationship between both dimensions is symbiotic: bonds to physical places facilitate meaningful networks of relationships, just as meaningful relationships shape the meanings attributed to a physical place (Hay, 1992; Tuan, 1977). Schools are key sites for developing and maintaining social relationships, especially for children (Ellis, 2005). Yet, little research has explored or conceptualised the role of schools as social arenas and how they may come to exist as meaningful places for communities in disaster settings. This section outlines the social aspects of schools that serve significant functions in supporting children and youth in resilience building and psychosocial recovery.

3.6.2.1. Social support networks

For children in disaster settings, social support networks are vital resources. They introduce a plethora of protective psychosocial factors, such as sense of belonging and connection, into their lived experiences; these buttress psychological wellbeing. The notion that social support can ‘buffer’ the negative effects of stress on mental health for children and adults is well supported by contemporary research (Cohen, 2004; Olstad et al., 2001; McGoron et al., 2020; Sharp et al., 2018). As young people are happiest in places that facilitate access to peers and supportive adults, schools are especially significant social arenas for children in disaster settings because these environments provide access to multiple social actors (Chawla, 1992, cited by Ellis, 2005).

Schools provide opportunities for unique social connections that would not normally exist outside the school environment but are vital for safeguarding children’s wellbeing. For example, positive teacher-student relationships are protective against a series of risk factors for children, including depression, neglect, and bereavement (Sharp et al., 2018; Wang et al., 2013). These adult-child relationships are unique to the school settings (i.e., non-familial) and are often central in safeguarding children (Bhadra, 2016). After Hurricane Katrina, for young people required to change school, the positive support received from school staff was instrumental in supporting their wellbeing (Barrett et al., 2008). Teachers have been shown to go beyond their traditional roles to aid children in processing their disaster experiences, which involves regulating their own emotional responses to model effective coping (Mooney et al., 2021).

Schools also provide the greatest opportunity for friendships amongst children; these social relationships have been found to promote positive coping with psychological distress following a disaster. For example, a seminal study found children’s friendships to be the most salient providers of emotional support and coping assistance following a hurricane – more so than parents and teachers (Prinstein et al., 1996). Emerging insights from disaster settings also show friendships as drivers of returning to school. Empatika (2018) reports that young people in Palu, Indonesia, ranked highly their desire to return to school and reconnect with friends following the 2018 earthquake and tsunami. Play and sport are critical school-based activities that scaffold such peer-to-peer social connection; they foster psychological wellbeing and post-traumatic growth for children in disaster settings (Goodyear-Brown, 2019; Henley, 2005; Ray

& Bratton, 2010). These activities are also drivers of childhood attachment to schools as play and sport are mechanisms through which children engage in valued person-place interactions and build a salient, positive place-bond with their schools (Scannell & Gifford, 2016).

After a disaster, the restoration and rebuilding of schools can symbolise the community's resilience. School recovery allows children to return to normality and replace their emotional crises with the joy of being surrounded by other children and having a space to learn and play simultaneously (Fernandez et al., 2015; Telford & Cosgrave, 2006). Young people are more likely to engage in their usual activities (relative to local context) when they believe their teachers and friends support them, even when faced with considerable difficulties (Wickrama & Kaspar, 2007). It is especially important for children to re-engage in play, as it can alleviate traumatic stress (Fernandez et al., 2015). School recovery also benefits communities since it allows parents and guardians to focus on returning to their regular work, to sustain their families, while their children are at school. Returning to work activities also aids in the recovery of communities by contributing to economic recovery. Communities with high social capital and a history of community activities can take an active role in the process of economic recovery and contribute to its success and speed (Nakagawa & Shaw, 2004), which is essential in safeguarding children's wellbeing.

3.6.2.2. Sense of connectedness between community members

Beyond what they symbolise for children, schools are important social arenas that facilitate and embed a vital sense of connectedness between community members. When a community harbours a sense of social connectedness (e.g., between family, friends, and neighbours) before a disaster, it benefits from a greater sense of community and camaraderie post-event, which then promotes its adaptive potential and resilient capacity (Mutch, 2015b; Thornley et al., 2014). This effect is consistent with the 'social cure' in the context of public health, where group-based processes of social support and social integration are found to contribute to positive health outcomes (Haslam et al., 2018). However, communities require appropriate local infrastructure and a community hub for community connectedness to benefit preparedness, adaptation, and recovery in disaster settings (Thornley et al., 2014). Schools are well-documented as ideal community hubs for local disaster risk management planning: from a disaster risk perspective, schools are often built better and built safer; from a psychosocial perspective, they are familiar, stable, and often locally accessible environments in times of

emergency (Amini Hosseini & Izadkhah, 2020; Leadbeater, 2013; Mutch, 2015a; Oktari et al., 2018).

Overall, social networks play an important role in promoting wellbeing and resilience for children and communities. Cohesion in the community reduces the mental health burden on a community post-disaster. As social connections are documented protective factors, which buffer against (dis)stress, the importance of promoting and protecting social connection within communities in disaster settings is emphasised. Schools are meaningful places that act as repositories of social relationships with protective functions vital to safeguarding the wellbeing of children and their communities post-disaster.

3.6.3. Schools as places of personal significance

The paper has thus far explored the meaningfulness of schools as built-environments and as social arenas, supporting the wellbeing and resilience of children in disaster settings. It moves on to the personal elements contributing to the person-place bond for these children. Specifically, we consider the nature of individual factors, such as lived experience, and group-based ties, such as religion and history, in disaster settings. We demonstrate how such psychosocial ties are often the cause and consequence of complex identity dynamics, which influence how schools are represented.

3.6.3.1. *Place identity*

The process of person-place bonding is marked by direct and indirect interactions between the person and the place (Scannell & Gifford, 2010). These interactions include what one does in the place (e.g., activities, social interactions) and how one feels about it (e.g., safe, comfortable, welcome). The paper has previously discussed the significance of what one does in the place, and now considers the significance of how one feels about a place.

When the meaningfulness of a place deepens over time, place attachments can evolve further into place identity: a process through which individuals come to incorporate cognitions about the physical environment into their self-definitions (Clayton, 2003; Gifford, 2014). Prolonged and repeated exposure imbue environments with meaning at the individual level, especially

where these exposures provide opportunities for interaction with the environment and people within it (Anton and Lawrence, 2014; Lewicka, 2011). Repeated experiences of places in childhood contribute greatly to lifelong person-place bonds (Jack, 2010), which function in a similar way psychologically to an interpersonal attachment (e.g., Fried, 2000; Donovan et al., 2012; Kelly & Hosking, 2008; Morgan, 2010; Scannell & Gifford, 2014, 2017).

Child-school bonds can comprise strong affective, social, and cognitive elements that often endure throughout the life-course. The mechanisms that shape such feelings about a place and foster such enduring person-place bonds also shape sense of self and community, and influence psychological wellbeing (Ellis, 2005). There is a well-established link between identity consistency and psychological wellbeing in the academic literature (Greenaway et al., 2016; Phinney et al., 2001; Rogers, 1951, as cited in Suh, 2002); this includes place identity as it is a substructure of social identity, similar to gender or social class (Shamsuddin & Ujang, 2008; Qazimi, 2014). Though the complex relationship between identity and wellbeing is not clearly understood at present, the literature reflects that the gaining of identity and consistency can protect and enhance wellbeing (e.g., Praherso et al., 2017; Ysseldyk et al., 2012) while disruptions to identity can be severely problematic and are linked with deleterious outcomes.

When place identities are threatened, this can also lead to place-protective action, including local opposition to proposed developments to the built environment, such as wind turbines (e.g., Devine-Wright, 2009; Stedman, 2002). Following disasters, schools may be relocated, merged or closed if they are in a dangerous zone or no longer have enough pupils to remain viable. After the Canterbury earthquake, this was found to exacerbate the social and emotional stress of a trauma-affected community (Mutch, 2018b). Although unexplored in the existing literature concerning schools, place identity may impact the community response to such closures, in the form of protests and legal action. Thus, identification with places that are stable, enduring environments can act as a protective mechanism, but can also become problematic and undermine resilience when left unmitigated. For example, Bihari et al. (2012) found that place attachment was associated with greater knowledge of wildfires and effective preparedness across six communities in the United States. However, Donovan et al. (2012) found place attachment to territory and landmarks interacted with culture to minimise evacuation behaviours for an Indonesian community under threat of volcanic activity. Beliefs in protective ceremonies and spiritual forces minimised evacuation behaviours.

3.6.4. Meaning-making and appraising traumatic events

Schools may foster positive meaning-making outcomes because they exist as trusted places to which pupils and communities harbour positive cognitive and affective ties. As schools provide many resources to support their communities, accessing these places post-disaster can support adaptive coping practices. For example, being in a state of disrupted identity can be traumatic, especially for children who may not have the cognitive-affective tools to independently cope with or appraise events. Such adverse responses to traumatic experiences are due to the loss of ‘meaningful’ resources, including psychological and cultural resources (Hobfoll, 1989). Meaning-making is a key process through which people rectify disturbances in their sense of identity and maintain homeostasis (see King & Hicks, 2021; Linley & Joseph, 2005; Park, 2010). Finding meaning in a traumatic experience is an example of this process; which can be a stressful-inducing process, but also has the potential to lead to outcomes that enhance psychological wellbeing (King & Hicks, 2021). The meaning-making process is central to supporting recovery after disaster (Park & Blake, 2020). Schools are a vital resource drawn upon to influence how stressful a disaster is for its pupils. For example, after Hurricane Katrina, pupils who felt more connected to the school they had been relocated to reported fewer negative symptoms and more protective factors (Barrett et al., 2008). Schools may potentially act as places that can activate positive representations post-disaster as they are familiar spaces.

3.6.5. Social representations and attachments to schools

To understand the psychosocial significance of schools in disaster settings, it is necessary to consider how they are valued by the communities within which they exist. The significance that individuals ascribe to a place is shaped by their lived experience in the context of the group-based meaning system of their community (Bruner, 1990; Van Patten & Williams, 2008); when a person’s social world has already identified a particular place as meaningful, the place symbolises the group-based cognitions that formed the social representation(s) of that place, according to how or why it is valued by the group (Joffe, 2003; Low & Altman, 1992; Scannell & Gifford, 2010). In Social Representational terms, this section explores how the socio-cultural group representations of the school become internalised in the individual, that is, *“how the ‘we’ becomes contained in the responses of the ‘I’”* (Joffe, 2003, p.60).

Representations of schools influence how these places are encountered and utilised by their communities. Like religious institutions or museums, schools are associated with their specific function and are valued according to how these functions serve their communities. Social representations that circulate in a given culture refer to shared understandings of phenomena among a specific group (Joffe, 2003). While there is plurality of representations of school depending on socio-cultural, historical context, and group-specific ideologies, schools tend to be regarded as trustworthy places dedicated to the betterment of the character and knowledge of their pupils and cultivating their growth and resilience (Bryan, 2005; Luetz, 2019). In addition, in disaster settings, schools are also regarded as disaster risk reduction centres that support their communities at all stages of disaster: preparedness, response, and recovery (e.g., Sakurai et al., 2018). Schools facilitate the resilient recovery of post-disaster communities through educational disaster preparedness programs, staff safeguarding of children's wellbeing peri- and post-event and converting the building into a resource distribution centre (Mutch, 2015a). By bringing people together in a shared and familiar space, schools also promote a 'culture of caring' in communities post-disaster (Mutch, 2015b). Each of these functions reinforces the community's representation of their local school as a trustworthy place and further informs their representations of the significance of schools in disaster settings. As schools continue to support their communities in this way, shared beliefs that they are valuable becomes increasingly reinforced.

The significance of schools as symbols can also be understood by considering the psychosocial functions of memorials. Bonder (2009) explains that memorials help individuals and communities reappraise past traumatic events, while also existing to remind them about conduct and future events. It is well-established that a sense of shared identity emerges amongst survivors in post-disaster settings, as the communal experience of the disaster prompts a sense of 'we-ness' (Drury et al., 2016; Rodríguez et al., 2006). While post-disaster gains in social capital are often short-term (Kaniasty & Norris, 1993), memorials can function to maintain these ties and evolve into a source of enduring community resilience (Ntontis et al., 2020). Memorials are also inextricably linked to space, thus if schools are used as a site of memorial the physical space of the school has the potential to become an 'anchor of shared identity' (Ntontis et al., 2020, p. 7) rooted in deeply person-centric elements of individual and group attachment. Therefore, schools can benefit from harnessing this sense of 'we-ness' experienced

by shared fate after an earthquake in order to build resilient communities in highly seismic/disaster-prone regions.

3.7. Conclusion

This paper has presented an evidence-based conceptualisation of how and why schools exist as meaningful environments for children and their communities in disaster settings. It has considered the physical and social environments of schools and their significance at the individual and group levels (e.g., community). We have explicated a series of specific functions within each of these domains that make schools distinctly meaningful to their communities and highlighted the capacity of schools to foster community resilience and safeguard the wellbeing of children. We have also considered the nature of individual and shared ties to schools in disaster settings and demonstrated how such psychosocial ties are often the cause and consequence of complex identity dynamics that contribute to these environments being represented as symbolically significant. The mechanisms uncovered concerning how schools can provide these functions have important implications for the role of schools in mitigating the adverse impacts of disasters.

3.8. Recommendations for future research

Based on the evidence concerning place bonds, we have attempted to synthesise existing frameworks to contribute a holistic conceptualisation of how schools can bolster resilience in disaster settings. We intend for this knowledge to allow academics and practitioners in disaster preparedness and response to better understand and harness the school environments' latent capacity to improve and protect community members before, during, and after disasters. For example, by exploring schools through a broad social psychological lens of place-bonds and attachment, we highlight that rebuilding the school's physical infrastructure should be a priority in community disaster response and recovery efforts. We use a social representations theory approach to highlight that schools are community resources that can be used to foster community integration and cohesion, provide children a sense of stability and continuity, and provide pragmatic support to community members. Each of these functions safeguards wellbeing and fosters resilience across a series of psychosocial domains. Thus, while the loss of the physical place is traumatic, rebuilding a school after a disaster may symbolise community and communal continuity. Contemporary scholarly works have only begun to

capture this notion; Dimension.ai, an opensource database that offers analytics of linked data, including grants, publications, datasets, patents, and policy documents, reports that interest in schools in disaster settings has been steadily increasing. This paper provides a foundation for dialogue to consider the socio-physical function of schools in communities and the lives of the individuals who spend time in these spaces (e.g., pupils, staff, parents/families). Future research should also aim to establish insight into how place attachment functions in seismic areas pre-disaster.

3.9. Limitations

This paper expands on the contributions and syntheses provided by well-cited, prominent works concerning the person-place bond. However, it does not adhere to a single model or rigid conceptual framework. We acknowledge that this approach may have left some aspects of the place bond to schools unexplored and recommend that future research expand on our preliminary conceptual insights by empirically exploring the role and meaning of schools in disaster settings. We consider existing knowledge in social psychology, such as the person-place-process (Scannell & Gifford, 2010) and the self-other-environment (Gustafson, 2001) models of place attachment, but future research would benefit from approaching this topic through other lenses in order to deepen understanding. While this paper has regarded schools and the school environment as a place with positive valence, we also acknowledge that schools may not provide a positive experience for all people or in all places. For example, some schools have a more positive climate than others, which can impact mental health (Patalay et al., 2020). Just as social representations of the ‘home’ as a sanctuary do not reflect the lived experience of everyone (Mallett, 2004), we acknowledge that this may also be the case for representations of the school. Furthermore, some young people may have negative experiences of bullying, lack of belonging, and loneliness. This concern is especially important to note as children with special educational needs may be more vulnerable to feeling excluded (e.g., Cullinane, 2020). Future research should explicitly explore the critical role played by schools for children with special physical and educational needs, as schools may have different value and significance than captured in this paper. Finally, it must be recognised that the type of attachments pupils have may vary according to their age; future research should empirically explore the psychosocial role of schools for children and adolescents separately.

Chapter 4. Methodology

This chapter provides a discussion of the research design and methods used in this thesis. A methodology section is also included in each of the empirical chapters (Chapter 5 - 9), as each of these chapters consist of independent manuscripts. Thus, the purpose of this brief chapter is to provide an overview of the methods used and their rationale, while each chapter contains relevant specifics. This begins with an overview of the research design, followed by a description of the participants and the three school sites. The chapter includes the rationale for the methods used, including open-ended questions, a free association interview technique and a pre- and post- quantitative survey evaluation. The data analysis methods are also discussed, with a focus on thematic analysis, as this is the central method employed to analyse the qualitative component of this thesis (as reported in Chapters 6 – 8). The chapter concludes with a description of the data gathering process and the ethical considerations.

4.1. Design

The design of this study featured three data collection timepoints: 1) assessment phase data collection (qualitative interviews and pre-intervention quantitative survey), 2) the day of the intervention (feedback forms) and 3) evaluation phase data collection (post-intervention quantitative survey) (see Figure 5). Between the first data collection phase and the intervention, the qualitative findings were analysed and based on these findings, the intervention was devised to be both evidence-based and to align with the values and needs of the disaster-affected teachers. Data was collected from teachers, students and their caregivers as part of the assessment phase, while the intervention evaluation reported in this thesis and focused exclusively on teachers.

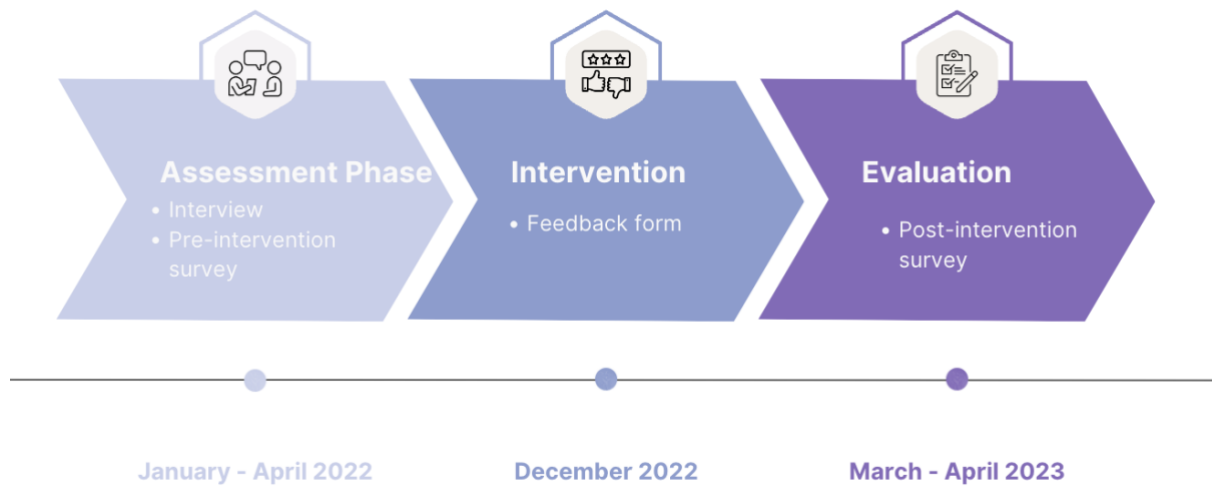


Figure 5. *Infographic of data collection time points*

While this research does not claim to be participatory action research (PAR), the design of this study closely aligns with it. PAR is a form of action research which involves the systematic analysis of data with the aim of fostering positive social change through specific action(s) (Greenwood & Levin, 1998; MacDonald, 2012). This constitutes a dynamic research process, characterised by foregrounding the specific needs, challenges and learning experiences of the participants, with an emphasis on understanding the local context (Kidd & Kral, 2005; MacDonald, 2012). This approach is influenced by Paulo Freire, who claimed that social change relies on critical reflection (Maguire, 1987; Selenger, 1997). Reflection is an essential component of PAR, which involves a cyclical process of research, reflection and action (Selenger, 1997). This is congruent with the design of the research reported in this thesis (see Figure 5), as this research featured an assessment phase before a period of reflection on the data to devise and implement a resilience building intervention, followed by an evaluation of the intervention. In line with the objective of PAR, the present research aimed to reflect on participants' lived experiences from their own viewpoint, to devise an intervention that would empower teachers to foster meaningful social change to improve the educational community's resilience.

PAR is well suited to research that aims to enhance community resilience (Chowdhoree et al., 2020). This is because the process of developing community resilience necessarily involves communities participating in bottom-up processes and the ownership of decision making (Chowdhoree et al., 2020). A bottom-up approach to designing interventions, such as that of

PAR, can enhance the quality of decision making and enables communities to develop the capacity to contribute to their own and their community's development (Chowdhoree et al., 2020). This recognises the need for local people to have a say in their own solutions to ensure sustainable development. A review of literature on community and disaster recovery (see Mayer, 2019) found that collaboration with other stakeholders within a community and/or between communities is essential for building resilience. Furthermore, a commitment to understanding the processes operating in a local context, rather than aiming to discover and act upon universal truths, is central to PAR (Marshall & Rossman, 2006). This aligns with the ecological multisystem perspective of resilience (see Section 2.1.), which considers the influence of contextual factors and resources on one's resilience, as well as recognising that diverse manifestations of resilience-influencing factors can depend on one's culture (Ungar, 2008; Ungar et al., 2023).

However, the approach used in this research diverges from PAR regarding the extent to which all participants were actively involved in each aspect of the research process, (MacDonald, 2012; Stringer, 1999). PAR should feature true collaboration with the participants at each research stage, including participants taking on the role of co-researcher, which would not have been feasible in this project's context due to the challenges of collecting data in the post-disaster setting.

Nevertheless, the intervention's design was influenced by an analysis of teachers' interview data regarding their post-disaster needs and valued sources of strength. Furthermore, to empower teachers and foster a sense of ownership over the intervention outcomes, participants were actively consulted on certain decision-making processes. For example, following the intervention, poster designs were shared with teachers and feedback was invited before they were printed and displayed in schools (see Parrott et al., Under Review: Chapter 9). Additionally, during this project, a collaboration formed with a local mental health non-governmental organisation (NGO) experienced in working with disaster-affected groups. As well as supporting data collection, the organisation's knowledge of the local context fed into the interventions design to ensure it was feasible, well-accepted and culturally relevant.

4.2. Site selection and participants

Participants were recruited from three schools located in the Palu region of Central Sulawesi.

State run schools in the Palu region of Central Sulawesi were selected to represent schools affected by different types of hazards during the 2018 earthquake, tsunami and liquefaction disaster. Although a description of the sites is included in the empirical chapters, this section includes a brief overview of each school site.

School A is situated in a rural area in the Sigi District. The region is vulnerable to liquefaction. The school campus consists of blocks of two-storey buildings, which experienced structural damage due to the 2018 earthquake. Around 50% of the buildings either collapsed or were severely damaged. There are ongoing concerns regarding the structural integrity of the buildings.

School B is located in the urban area of the capital city, Palu, which was impacted by the earthquakes. The school is located approximately 2 kilometres from the coastline of Palu Bay. The school campus consists of two-storey building blocks, which were moderately damaged by the 2018 earthquake. The school fence collapsed and most buildings experienced cracking and some partially collapsed but have remained functional.

School C represents schools located in an area prone to tsunami. The school is located 500 metres from the coastline of Palu Bay, surrounded by a densely populated village dominated by the fishing industry. The school campus consists of single-storey buildings. The school was affected by tsunami flooding and sediment deposition, which caused a loss of educational items, including desks and chairs. In addition, since the disaster, the coastal area where the school campus is situated has subsided by approximately one metre. This has caused the school to experience ongoing and frequent flooding. Despite minimal initial damage to the structure of the school buildings, they are slowly corroding due to the seawater. As the school is in the region designated the 'Red Zone' based on its disaster vulnerability, it has not been reconstructed. This means that the school remains in a precarious position as relocation of the school site has been recommended. However, there has been strong local opposition from teachers and caregivers, who work primarily in the fishing industry on a low income, as the school would be at a greater distance from their homes and employment.

Information regarding the resumption of education following the disaster was gleaned from discussions with school principals. School A and School B returned to school a few weeks after

the disaster, but due to infrastructural damage and concerns regarding aftershocks, classes were held in temporary tents. Furthermore, a series of earthquake aftershocks which followed the main disaster event caused psychological distress amongst staff and students, resulting in further educational disruption and school closures. School C required two months of closure after the tsunami due to the extensive sediment deposition, which reached 1.5 metres, both on the school sites and in the buildings. Sixty dump trucks were involved in the removal of the deposited mud and debris from the school site. During that time, the students were educated in temporary tents spread across the region, including at a university campus. Normal school activities had not yet fully resumed at the sites during the time of data collection, particularly as the reconstruction phase was exacerbated by the Covid-19 pandemic.

A non-probability quota sample was recruited from three selected school site. School principals were asked to select, at random⁹, disaster-affected teachers, female adolescent students (aged 14-16) and their caregivers to participate. Selected participants were contacted by phone to grant permission for their own and/or their children's participation. Each participant was provided with verbal and written information about the study and provided consent for themselves, and for caregivers their children, to participate.

For the assessment phase survey, the plan was to recruit equal numbers of teachers, female adolescent students and their caregivers ($n = 48$ per participant group). This was based on guidance for the interview method to use medium sized samples (i.e., $n = 40 - 144$) that are divisible in equal numbers by demographic group, to allow for the analysis of meaningful comparisons and trends (Joffe, 2012). Determining an appropriate sample size is important to prevent the analysis being overly influenced by idiosyncratic patterns in the data if the sample is too small, while also ensuring that the depth of analysis is not compromised by an excessively large sample (Joffe, 2012). Most of the selected caregiver-child dyads were from low-income families, indicated by 95% of the sample falling below the average monthly income for Indonesia (Wage Centre, 2023).

However, the challenge of participant recruitment in a disaster-affected area was exacerbated by the implementation of Covid-19 virus containment measures, including school closures.

⁹ This does not intend to imply that a randomised sampling technique was used. Principals were asked by local researchers to select female students and teachers without criteria in mind.

Parents were especially difficult to recruit, as often they worked long hours, including in the fishing and market trading industries, and so it was difficult to organise a time for data collection. As the data collection phase was more time intensive than anticipated, the initially planned sample size was not feasible. Instead, 127 participants were recruited (40 parent–child dyads ($n = 80$), 7 additional students (students, $n = 47$) and 40 teachers) from the three selected school sites. The whole sample completed the assessment phase survey, featuring a series of quantitative scales and open-ended questions (see Appendix B). In-depth qualitative interviews were completed by 40 teachers, 40 caregivers and 46 students. However, the caregivers' interview data is not reported in this thesis and has been analysed and reported elsewhere (e.g., Lomeli-Rodriguez et al., 2024). All participants' views ($n = 127$) are included in Chapter 5, whereas the other chapters include sub-sets of participants (i.e., the teachers or students). Therefore, the demographic details of the samples are reported in the relevant empirical chapters (Chapter 5 – 9).

The decision to focus exclusively on female adolescents was informed largely by the nature of the wider interdisciplinary project that this PhD is one facet of. The project aimed to simultaneously foster post-disaster resilient recovery psychosocially and through improving water sanitation and hygiene (WASH) facilities for girls. This focus was considered important as females are particularly vulnerable to the psychological impacts of disasters (See Section 2.1.) and are disproportionately impacted by inadequate WASH facilities, due to both social and biological reasons (see Garfias Royo et al., 2022). For girls, the age range selected (14–16-year-olds) corresponds with experiencing menstruation, meaning they are at risk of regular school absences when WASH facilities are inadequate or unavailable, due to the stress of handling menarche. Adolescent girls are also vulnerable to being withdrawn from school as an economic coping mechanism to either run the household, due to the gendered division of domestic labour, or to enter early marriage (Rahiem, 2021). The decision to include this age range was also informed by guidance from local NGOs, which identified that female adolescents of this age range struggled more with basic needs, psychosocial wellbeing and returning to school (see Empatika, 2018). Therefore, gaining insight into girls' perspectives and experiences was considered a valuable aim.

4.3. A mixed methods design

This thesis adopts a mixed methods research design by integrating qualitative and quantitative methods. This flexible approach allows the choice of methods to be guided by the research problem, rather than the need to adhere to either side of the qualitative/quantitative divide (Creswell & Plano Clark, 2011). This enables the research questions to be comprehensively addressed, as combining methods can harness the benefits of each, resulting in stronger and more valid inferences than when solely qualitative or quantitative approaches are used (Tashakkori et al., 2010). This is particularly valuable when the research explores complex and multifaceted social phenomena and evaluates interventions (Mukumbang, 2021).

Nevertheless, mixed methods research has been criticised for switching between positivist and constructivist paradigms, which some purists argue should not be combined due to their incompatible assumptions (see Danermark, 2002; McEvoy & Richards, 2006). Alternatively, pragmatists propose that accepting diverse ways of knowing is beneficial when it provides the best research outcomes (Johnson & Onwuegbuzie, 2004). Mitigating debates surrounding paradigm switching and incompatibility, critical realism (see Section 1.5.) offers an epistemological and ontological alternative (Mukumbang, 2021). As a methodologically neutral approach (Clark et al., 2008), critical realism is well suited to mixed methods research as integrating quantitative and qualitative methods aligns with the aim of critical realism to facilitate a deep understanding of the links between the context, mechanisms and observations central to the research (Mukumbung, 2021).

This thesis employs a sequential mixed methods approach, with greater weight given to the qualitative methods, which are reported in four out of five empirical chapters. The qualitative studies aimed to explore subjective conceptualisations of resilience and the role of the school after the disaster, without reference to a ‘correct’ response. This phase informed the development of the resilience-building intervention, to ensure it addressed context-specific issues and incorporated local forms of knowledge, including cultural idioms of coping and resilience. The intervention’s impact was subsequently assessed quantitatively, to understand the direction of any potential changes to resilience-related measures. The intervention evaluation also featured a qualitative component, as open-ended questions aimed to garner an insight into participants’ subjective experiences of the intervention. Both approaches were

integrated in the discussion, to provide a more complete understanding of the intervention's potential impact than would have been possible using solely quantitative or qualitative methods.

Furthermore, the chosen methods aimed to minimise potential tensions between strongly idiographic and nomothetic values. While idiographic approaches generally align with qualitative methods that emphasise the uniqueness of individual experiences, nomothetic approaches tend to involve quantitative methods aiming to establish generalisable inferences across a larger population. Although the use of quantitative measures, including standardised scales of resilience, may suggest the research leans towards nomothetic values, this work does not aim for generalisability or the discovery of universal truths about social and psychological phenomena. Nevertheless, employing these quantitative scales was important to gain insight into the pattern of change and statistical trends of the specific participant group before and after their intervention engagement, while acknowledging the context-specific nature of the data collected. This allows the work to build on previous research and can have a stronger policy influence, such as by contributing to informing decisions on whether the intervention should be considered efficacious and its potential to be scaled up.

Consistent with this approach, the qualitative component of this research aimed to provide a deep understanding of the patterns of meanings and experiences among the participant group, rather than focusing on individual participants' narratives in isolation (i.e., a single case study). While elements of a phenomenological framework were drawn on to explore participants' lived experiences, the data were analysed using thematic analysis rather than a strongly idiographic approach, such as interpretive phenomenological analysis (IPA). While IPA is deeply committed to idiographic accounts by emphasising understanding individual experiences (Smith, 2017), thematic analysis focuses on identifying salient patterns in the qualitative data across the participant group (Joffe, 2012). Therefore, while tensions between nomothetic and idiographic values may be present during mixed methods research, the methods used in this thesis were consistent in their focus on understanding context-specific patterns and themes among a participant group, rather than claiming universal truths or seeking to generalise beyond the context.

4.4. Qualitative phase: open-ended questions

Open-ended questions were embedded in the assessment phase survey (see Parrott et al., 2023a: Chapter 5 and Appendix B) to gain an overview of teacher, student and caregiver perspectives regarding a resilient post-disaster recovery. They were also incorporated in the intervention feedback form (see Appendix C) and the post-intervention assessment phase survey (see Appendix D) to gauge teachers' subjective experiences of the intervention (see Parrott et al., Under Review: Chapter 9). As these are reported in the respective chapters, this section provides a brief overview and rationale of the method.

4.4.1. Coping – adaptation – transformation open-ended questions: rationale and design

The open-ended questions posed to participants in the assessment phase survey were influenced by the method employed by Murphy et al. (2018) to gain insight into survivors' perspectives of resilience. This approach aims to generate practical recommendations to inform community resilience building efforts in humanitarian settings, therefore empowering local communities and improving the sustainability of disaster recovery initiatives. Murphy et al. (2018) collected data from purposively sampled survivors and key informants, such as local leaders, who had been involved in humanitarian interventions, using semi-structured interviews and focus groups. In their study, participants were asked to reflect on their vision of a resilient community, whether they felt the community had coped, adapted or transformed, the challenges they faced and to give any recommendations regarding what should be done before/during crisis to improve humanitarian and development initiatives to foster long-term community resilience.

As Murphy et al.'s (2018) method (referred to as the 'coping-adaptation-transformation method') aims to generate social values and local knowledge to inform intervention design, the approach aligns with the aim of this project to ensure a locally led and participatory approach to sustainable resilience building. However, to feasibly collect data from a relatively large number of participants ($n = 127$) from three groups (teachers, students and their caregivers) in the challenging post-disaster context, the coping-adaptation-transformation method was modified to an open-ended question format. This was also important to reduce the burden of time taken for data collection, as alongside this method, participants were also asked to complete a quantitative survey and a two-part free association interview. Furthermore, an advantage of this method is that, compared to interviews, it may be less prone to social

desirability bias (i.e., participants' tendency to align their responses to social norms rather than to their true feelings and experiences) (Bergen & Labonté, 2020). As a written response does not require the participant to communicate directly with a researcher, this can reduce the pressure to respond in a way considered socially normative (Bergen & Labonté, 2020).¹⁰ While the written format may have sacrificed the depth of responses generated, this facilitated gathering a comprehensive overview of perspectives from different groups within the educational community. This broad overview was then expanded on in teachers' qualitative interviews to provide a more in-depth analysis of their conceptualisations. Further details regarding the method, including the specific questions asked, is presented in Chapter 5 (Parrott et al., 2023a).

4.4.2. Intervention evaluation open-ended questions: rationale and design

As the content of the intervention is novel, it was important to understand the participants' subjective experiences of the intervention, including its acceptability and feasibility. This has been recognised as a valuable but often overlooked aspect of evaluating school-based interventions (Zakszeski et al., 2017). This data is particularly useful to consider context-specific factors that may influence the interventions effectiveness and can be used to inform decisions related to scaling up the intervention in future work. To understand teachers' perspectives, open-ended questions were incorporated into the feedback form completed by participating teachers immediately after the intervention (see Appendix C) and in the three month follow up evaluation survey (see Appendix D). The questions were designed to elicit teachers' subjective preference of activities, their beliefs regarding the purpose of the intervention and any potential impact on themselves and their students. Further details are reported in Chapter 9 (Parrott et al., Under Review).

4.5. Data analysis: content analysis

Content analysis was used to analyse the data gathered via the open-ended questions. This method involves devising categories and determining the frequency of occurrences of the category in either text or images to produce numerical descriptions of the data (Joffe & Yardley,

¹⁰ As we were unsure of the caregivers' literacy levels, research assistants offered to dictate and/or transcribe the survey questions and responses, however this was not required by any participants.

2004). Frequently used in mass media analysis, the method provides a systematic and manageable approach that is useful for analysing large data sets (Joffe & Yardley, 2004; Krippendorff & Bock, 2009). However, content analysis has been criticised as banal when the analysis is reduced to solely discussing the frequency of outcomes (i.e., exclusively counting words, e.g., Berelson, 1952) (see Joffe & Yardley, 2004). Exclusive reliance on frequency counting can strip the data's meaning from its context, as numerical descriptions do not reveal the rich meanings that people attach to concepts. Furthermore, the frequency of a word in a participants' response may result from multiple factors, including that it is easily to articulate, rather than its importance to the participant. In response to these criticisms, frequency data obtained by a content analysis method can be combined with an analysis of the data's meaning in its context (Joffe & Yardley, 2004). This involves a shift from categorising words to evaluating key symbols and meanings in the data to provide a more nuanced analysis (Krippendorff, 2018). In this analysis, conceptual nuances within the responses pertaining to each coding category were considered and quotations were included in the presentation of the results to provide context to the frequency data (see Parrott et al., 2023a: Chapter 5 and Parrott et al., Under Review: Chapter 9).

In a content analysis, the coding categories can be determined inductively, which allows the categories to be shaped by the content of the data, or deductively, where the researcher pre-determines the category, based on existing research (Joffe & Yardley, 2004). In this thesis, inductive coding was used to explore novel and unexpected responses, as this aligns with the aim of understanding the priorities and values of disaster survivors by allowing their views to guide the analysis and findings. Further details regarding the practicalities of applying the method are featured in Chapter 5 (Parrott et al., 2023a) and 9 (Parrott et al., Under Review).

4.6. Qualitative phase: interviewing

Interviewing is used as the method of data collection reported in empirical Chapters 6 - 8. This section begins with a rationale for the use of interviews and a discussion of depth interview techniques before presenting the specific interview method used in this thesis: the Grid Elaboration Method (GEM).

Resilience studies often rely on quantitative measures (Lomeli-Rodriguez, 2024; Tummala-Narra, 2007). In this thesis, quantitative scales were used to assess pre- and post-intervention

changes in resilience-related measures (see Parrott et al., Under Review: Chapter 9). However, such methods do not provide insight into participants' lived experiences and subjectivity (Thin, 2018). Furthermore, limiting participants to pre-defined responses can fail to capture the contextually and culturally specific dimensions of resilience and recovery (Ungar, 2019). Instead, the interview provides an appropriate tool to elicit qualitative data that allows the researcher to understand and interpret local meaning (Braun & Clarke, 2013). This aligns with the aim of this thesis to develop a the local-perspective informed intervention for teachers, based on teachers' and students' lived experiences and subjective representations of disaster phenomena. Therefore, interviewing was appropriate for this research endeavour.

The interview is a popular method used in psychological research to generate rich qualitative data. Interviews typically involve a question-and-answer format, in which the interviewer directs its focus and influences the dialogue by selecting the topic and how the questions are phrased and ordered (Bauer, 1996). However, these impositions can risk amplifying the perspective of the interviewer while potentially limiting the extent the interviewee engages in openly telling their stories (Hollway & Jefferson, 2000). Instead, alternative depth interview styles draw on narrative and free association techniques to minimise the input from the researcher to elicit less constrained and less intellectualised responses (e.g., Hollway & Jefferson, 2000; Joffe & Elsey, 2014). These open-ended interview techniques are useful for eliciting unanticipated findings and trends regarding how participants represent or experience the topic under investigation.

Nevertheless, depth interviews remain subject to several limitations. The data elicited can foreground the ideas, thoughts and feelings easily articulated by participants (Joffe, 2012), which may leave representations of phenomena that are difficult to verbalise unexplored. Furthermore, the emphasis on verbal data that can neglect other contextual cues, such as visual expressions of emotions (Gaskell, 2000). Moreover, researchers should not assume interviewees will always be transparent in their responses (Hollway & Jefferson, 2000), for example, due to embarrassment regarding sensitive topics or social desirability bias (Bergen & Labonté, 2020). Despite these shortcomings, as all research methods are subject to limitations, a depth interview technique was considered the most appropriate method for the purpose of this research.

The same depth interview technique, the Grid Elaboration Method (GEM), is used in three of the empirical studies presented in this thesis (Chapter 6, 7 and 8). The GEM is a free association technique for investigating how lay people make sense of a given social phenomenon or topic (Joffe & Elsey, 2014). This technique builds on a long history of the use of free association techniques within psychology. In the late 19th century, Galton (1879) was struck by the free-flowing thoughts he associated with specific places and objects during walks in London. Based on his observation that these associations reoccurred each time he encountered specific objects and places, he began investigating the connections between stimulus words and the ideas they invoked in his mind. This observation marked the inception of psychological investigations into the nature of free associations (Joffe & Elsey, 2014). Building on Galton's founding work, subsequent laboratory studies by Wundt and colleagues, using less ecologically valid but more systematic techniques, instructed larger samples of participants to express rapid one-word responses to a stimulus (Cattell, 1887). Despite these origins, free association is most often associated with Sigmund Freud's work due to his development of it as a therapeutic, psychoanalytic technique, to facilitate the expression of a patients' free-flowing thoughts associated with symptoms and dreams (Joffe & Elsey, 2014). The method is underpinned by Freud's notion that free associations are related to chains of unconscious content that influence behaviour without an individual's conscious awareness (Joffe & Elsey, 2014). The GEM adapts free association as a technique historically associated with psychoanalytic clinical practice into a research method (O'Connor & Joffe, 2014) and builds on free association methods that tend to elicit a word, short phrase or an image to yield rich, in-depth and ecologically valid qualitative data (Joffe & Elsey, 2014).

The method features a two-part process: an initial free association task followed by a depth interview. The first element asks participants to generate four initial associations in the form of words or drawings in response a prompt that is devised based on the phenomenon or issue being researched. The four associations, written or drawn on a blank grid of two-by-two empty boxes on A4 paper, provides a stimulus for the subsequent interview, during which the participant is asked to elaborate on each association sequentially. This second interview element allows the researcher to clarify the participants' subjective meanings and provides a more in-depth and nuanced insight into participants' representations (Joffe & Elsey, 2014). To achieve this, researchers minimise the content they insert into the interview, by either repeating/paraphrasing the interviewees responses back to them or probing them to elaborate further, such as: 'can you tell me more about that?'. To elicit naturalistic thoughts and feelings

that foreground emotive, symbolic and spontaneous elements, direct questions such as ‘when?’, ‘why?’ and ‘how?’ are avoided, as these are more likely to prompt rational and intellectualised explanations (Hollway & Jefferson, 2000). Limiting the researchers’ interference in the interview process distinguishes the second part of the GEM from semi-structured interview methods.

The GEM has been used in psychological research investigating subjective experiences of a wide range of social phenomena, including representations of earthquakes (Joffe et al., 2013), the home (Sawyer et al., 2022), global warming (Smith & Joffe, 2013), neuroscience (O’Connor & Joffe, 2013), chronic pain (Keen et al., 2021) and cities (Joffe & Smith, 2016). Its use to examine the role of resilience and the school’s role in the post-disaster recovery period is novel. Although the method is not tied to a specific theoretical framework, it is well suited for use in conjunction with social representations theory (SRT) (e.g., see Joffe et al., 2013; O’Connor & Joffe, 2013; Sawyer et al., 2022) and, less often, phenomenology (e.g., see Fardghassemi & Joffe, 2021, 2022).

SRT is concerned with analysing ‘common sense’ thinking, which can be accessed through the GEM, as the method provides a valuable tool for researchers to gain insight into the implicit structures underpinning how lay people represent a given phenomenon or issue (Joffe & Elsey, 2014). The GEM is also well suited for research using a phenomenological framework. The participant led interview process enables researchers to gain insight into the essence and meaning of the phenomenon being researched, eliciting rich descriptions of participants’ ‘lived experiences’ (Finlay, 2013). This is achieved in the GEM through minimising researcher distortion of participants’ accounts. Therefore, the GEM is theoretically consistent with the research in this thesis, which draws on elements of a phenomenological framework in Chapter 6 and social representations theory in Chapter 7.

As discussed in Chapters 6-8, the GEM is beneficial for investigating the subjective meanings and experiences of participants, including unanticipated aspects of a given issue (Joffe & Elsey, 2014). This aligns closely with the aims of this thesis, which seeks to expand on past resilience research by investigating novel and contextually dependent factors that may underpin educational stakeholders’ subjective conceptualisations of resilience and the role of the school in the Palu post-disaster context. The open-ended structure of the GEM facilitates the naturalistic generation of bottom-up knowledge by minimising the interviewers’ interference

and foregrounding the content that is most salient to the participant (Joffe & Elsey, 2004). This approach increases the likelihood of eliciting novel ideas (O'Connor & Joffe, 2014) and may reduce social desirability bias compared to other interview techniques, due to the open-ended and non-judgemental style of questioning encouraging participants to speak freely (Bergen & Labonté, 2020). Furthermore, the GEM aims to elicit implicit, emotive content, rather than focused on reason-based or intellectualised explanations (Joffe & Elsey, 2014). Therefore, the method is well suited to facilitate an exploration of participants' symbolic, affective and cultural conceptualisations of resilience and the role of the school in supporting resilience after a disaster.

4.7. Data analysis: thematic analysis

All three interview studies feature a thematic analysis of the data. The analysis was conducted separately for each study using a unique coding frame for each; however, the process of analysis remained consistent. This section provides a description of the thematic analysis method and the data analysis procedure followed.

Thematic analysis is a method for analysing meaning-based patterns in a qualitative data set (Braun & Clarke, 2006). As a popular qualitative data analysis technique in the social sciences, various published guidelines exist (e.g., see Attride-Stirling, 2001; Braun & Clarke, 2006; Joffe, 2012; Joffe & Yardley, 2004). Thematic analysis extends the method of content analysis (see Section 4.4.) by allowing the researcher to obtain frequencies of codes while also facilitating a more subtle, complex and in-depth analysis of the data (Joffe, 2012). In doing so, thematic analysis addresses the criticisms directed towards content analysis, particularly regarding that an exclusive focus on frequency counting can de-contextualise the data (Silverman, 1993). Diverging from content analysis, thematic analysis is concerned with the development of *themes*, based on prevalent conceptual patterns in the data (Boyatzis, 1998; Joffe, 2012). These salient patterns of meaning can relate to affective, cognitive and symbolic elements (Joffe, 2012). Themes incorporate manifest content, which is directly observable, and latent content, which is more implicit and requires a greater level of interpretation (Joffe & Yardley, 2004). As discussed in Section 4.4., regarding content analysis, themes can be theoretically informed ('deductive') or devised from a bottom-up interpretation of the raw data ('inductive') (Joffe, 2012). An analysis may include a combination of inductive and deductive

themes. This takes heed of previous research but remains open to novel findings, to develop and expand on existing theory (Joffe & Yardley, 2004).

An advantage of employing thematic analysis is that it provides a systematic and transparent process of qualitative analysis, without compromising on depth of analysis (Joffe & Yardley, 2004). This is achieved, following the approach of Joffe (see Joffe, 2012; Joffe & Yardley, 2004), through the emphasis on creating a clearly defined coding frame, conducting reliability checks and reporting the prevalence of themes (Joffe, 2012). These steps provide transparency regarding how the results were determined, while acknowledging that all qualitative data analysis necessarily involves interpretation and is influenced by the researcher (Joffe, 2012).

Although thematic analysis is theoretically flexible, the method aligns with theories characterised by weak constructionist tenants (Lupton, 1999), which propose that an individual's engagement with a given issue is socially constructed, while simultaneously recognising the material basis of the issue itself (Joffe, 2012). This is because thematic analysis is concerned with analysing the shared meaning-making that underpins conceptualisations, rather than discovering an objective truth that is 'out there' (Braun & Clarke, 2019). This includes social representations theory (SRT) (Moscovici, 2000), which has been applied alongside TA to investigate how a range of social issues are represented (see Section 4.5.). Thematic analysis is also well matched with phenomenology (Joffe, 2012), as is suitable for analysing participants' subjective experiences and their lived social reality (Fereday & Muir-Cochrane, 2006). These theoretical lenses are employed in Chapters 6 and 7 respectively. Therefore, thematic analysis is well suited to the endeavour of the present thesis, for investigating how participants subjectively experience and conceptualise processes of coping and resilience, as well as the role of schools and teachers in either facilitating or hindering these processes.

Regarding the procedural aspects of conducting a TA, the analysis employed in Chapters 6 -8 follows Joffe's (e.g., Joffe 2012; Joffe & Yardley, 2004) systematic thematic analysis technique, which she has used extensively in her work (e.g., Joffe & Bettega 2003; Joffe et al., 2011; Yun et al., 2023) and is well suited for analysing data obtained using the GEM (Joffe & Else, 2014). To begin this process, a central step in the analysis is devising the coding frame (Joffe & Yardley, 2004). The coding frame is an analytic tool for facilitating a structured and

organised analysis of the data by methodically labelling conceptually relevant segments of all transcripts with descriptive labels (i.e., ‘codes’) (Braun & Clarke, 2013). In this thesis, a coding frame was devised for each study inductively, which features salient groupings of meaning present in the data that are relevant to the research question. To create the coding frame, a co-researcher (Dr Martha Lomeli-Rodriguez) and I became immersed in the data by independently reading the entire data set, adding memos to note salient patterns, before collaboratively devising a series of codes that clustered into meta-codes. Each coding frame features a table including the code name, a quotation from the data exemplifying the presence of the code and a description outlining what should and should not be classified as a code. These are presented in the appendices (Appendix F – H).

Before beginning the analysis, for each empirical study, the coding frame was tested for reliability. This involved two coders independently applying the coding frame to approximately 10% of interviews (O’Connor and Joffe, 2020). Agreement was quantified as a percentage agreement between the two coders and is reported in each chapter. Reliability checking is contentious within qualitative epistemology (Keen et al., 2021), as some argue that the process aligns with a post-positivist paradigm given its emphasis on mitigating researcher bias and generating reliable results (Terry et al., 2017). In the present study, the process aimed to promote reflexivity, as comparing discrepancies in coding facilitated a discussion between myself and another researcher regarding our, at times, divergent interpretations of codes, which facilitated a deeper and more nuanced investigation of the data and refinement of the final coding frame.

Once the coding frame had been finalised, I used Atlas.ti software to apply it to all interview transcripts. Coding involved systematically highlighting segments of data that corresponded to a particular code. Once they are highlighted, each segment of text becomes a ‘quotation’, that can be retrieved using Atlas ti’s functionalities. Once the entire data set was coded, the analysis began. For the analysis, a frequency table of all codes was produced by the software, which I exported into an Excel file. I exported all quotations corresponding to codes into a word document for conceptual analysis. Although reporting frequency data in thematic analysis can be contentious (Braun & Clarke, 2013), the frequency table aided my analysis of the patterning of codes, such as whether some are idiosyncratic (Joffe, 2012). Idiosyncratic findings are not reported as prevalent themes, nevertheless, codes with a low frequency may retain importance in the analysis, as these participants’ may be voicing a view that is important but hard to

articulate (Joffe, 2012). Participants were also grouped based on the location of their school site using the ‘document groups’ feature of the Atlas ti software to compare the prevalence of themes and any conceptual distinctions in the data. Themes were devised based on the patterns of shared meaning underpinning concepts salient in the dataset (Braun & Clarke, 2013). Interconnections between different codes were considered. Conceptually similar codes were clustered into themes that pertained to answering the research question(s) (Joffe, 2012). This clustering was informed by reviewing the quotations related to each code in consideration of the patterns of meaning present in the data set. This process facilitated an exploration of the various facets of each theme, including the latent and symbolic aspects of the data. To visualise the different elements of the theme, including the connections between the themes and codes, thematic network charts, featuring web-like structures, were created (see Attride-Stirling, 2001; Joffe, 2012). These are presented in the relevant chapters (see Chapters 6 – 8). In keeping with the systematic thematic analysis procedure, the charts are also used to display the prevalence of each code as a percentage. Their inclusion is consistent with the aim of thematic analysis to explore the patterns of experiences and meanings constructed and shared by the group, rather than to generalise the findings to a wider population. While de-contextualised frequencies are not the central focus of the analysis, they are included to provide transparency and to allow the reader to follow the analysis process (Joffe, 2012). This also provides an indication of whether the themes describe a large portion of the data, rather than being selectively chosen to support an argument the author seeks to propose (Joffe, 2012). To further promote transparency and foster confidence in the authors interpretation of the data, quotations that represent the central aspects of each theme are selected and reported (Joffe, 2012). A summary of this analysis procedure is reported in Figure 6.

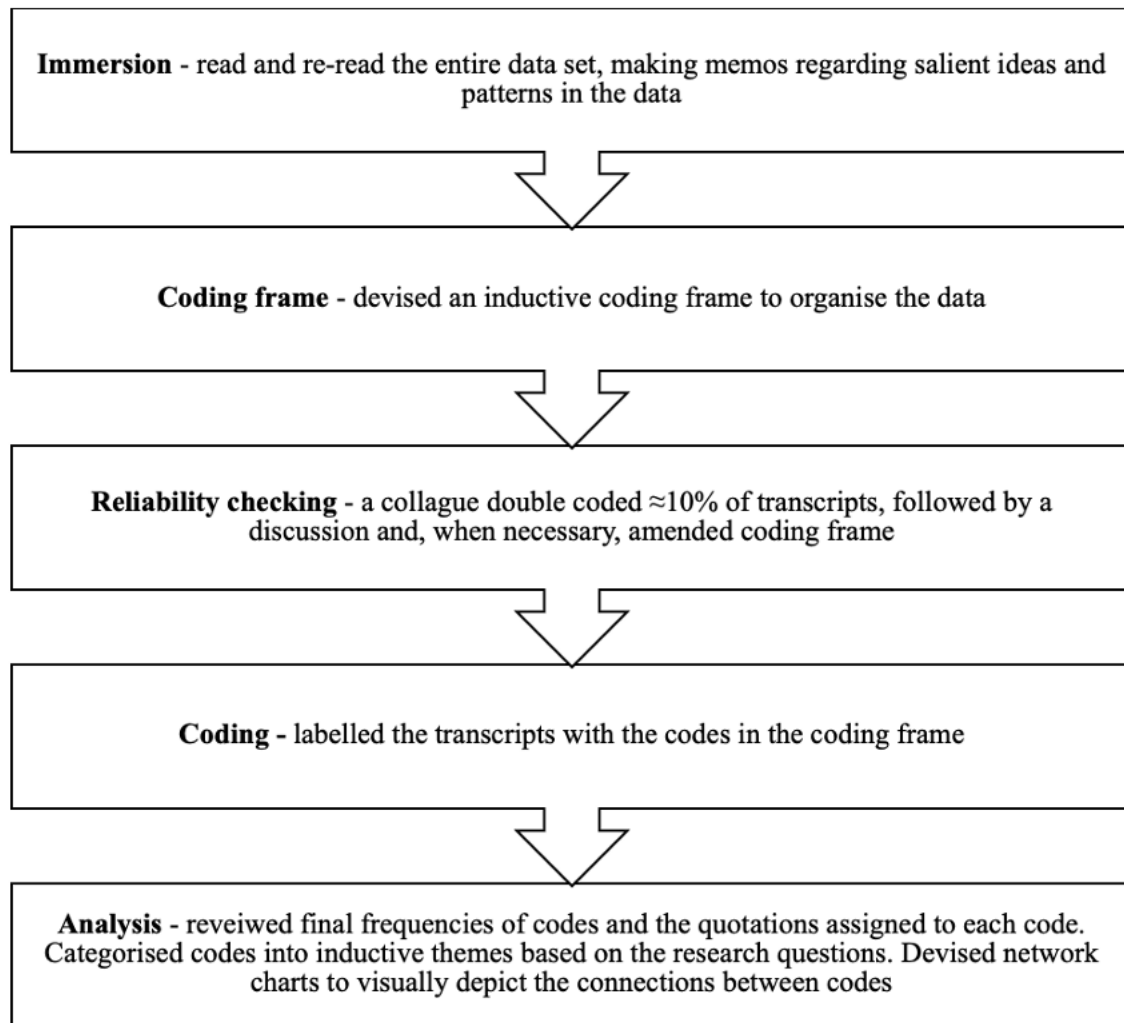


Figure 6. *Thematic analysis procedure followed based on Joffe (2012)*

4.8. Quantitative intervention evaluation

A pre-post study design was used to investigate changes in resilience-related measures. This design is useful for comparing the occurrence of an outcome before and after an intervention (Thiese, 2014). It can be either single or multiple armed and features either two or multiple time-points (Thiese, 2014). In this study, the design featured a single arm at two time-points, involving all teachers who participated in the intervention group ($n = 37$) completing a survey of resilience-related measures before and after the intervention. This design choice was based on the novelty of the intervention, the availability of participants, project funding and time constraints, which are common considerations when deciding a pre- and post- intervention

study design (Thiese, 2014). As the intervention is novel, we decided it would not be appropriate to incorporate a control group. While a waitlist control may mitigate ethical concerns by allowing delayed provision of care to research participants (Cunningham et al., 2013), uncertainties regarding the feasibility of offering the intervention to a waitlist, given project timing, funding and researcher availability, raised ethical concerns (Carlson et al., 2018). Although this means that any changes that occurred between the two-time points cannot be wholly attributed to the specific intervention, this allowed for initial novel results to be obtained that can be further investigated in the future using a waitlist control group.

The pre- and post- survey featured measures of earthquake anxiety, fatalism, subjective wellbeing, personal resilience, community resilience, perceived social support, post-traumatic stress disorder (PTSD), complex post-traumatic stress disorder (CPTSD) and coping strategies. The specific scales used to measure each construct are reported in Chapter 9. In general, the scales were selected based on their use in relevant previous literature, robust psychometric properties and their brevity, to ensure the process was not overly time intensive and demanding for participants. For example, from the numerous PTSD measures that exist, the International Trauma Questionnaire (ITQ) was selected due to its brevity, simple wording and that it is consistent with the ICD-11 (Cloitre et al., 2018). Indonesian team members, including local practitioners, were closely involved in the decision-making process regarding scale selection to ensure that the measures aligned with the local language, context and cultural values.

4.9. Data collection procedure

Data collection took place at three time points between January 2022 and April 2023 (see Figure 5). The interviews were conducted during the first wave of data collection (the assessment phase), by Indonesian researchers online using Zoom videocall software. Conducting interviews online has risen in popularity since the Covid-19 Pandemic and offers unique advantages (Keen et al., 2022). The key advantages relevant to the research reported in this thesis included the opportunity for flexible scheduling, reduced travel expenses, greater geographical access and minimised researcher presence (Keen et al., 2022).

Nevertheless, the disadvantages of conducting research online should also be noted. Most relevant to this research context includes concerns regarding technological elitism, consent challenges and distractions within the home environment (Keen et al., 2022). However, some

of these disadvantages were mitigated by the presence of an in-person research assistant (RA) to facilitate data collection. The RAs provided an electronic tablet and offered technical assistance to participants regarding its use. They also provided information about the study, ensured consent was given prior to the interview and assured participants of their anonymity and right to leave the data collection process at any time. The RA facilitated the interview taking place at a location of the participants choice, such as in their home or in the school site. As the interview setting was familiar to participants, this may have made participants feel more at ease than if the interviews were conducted in unfamiliar institutional contexts, such as university departments.

The interviews were conducted by Indonesian researchers who received training in the GEM from Professor Helene Joffe, the supervisor of this project, who devised the method (Joffe & Elsey, 2014). Each Indonesian researcher conducted at least one pilot interview that was collaboratively reviewed by Professor Helene Joffe, Dr Martha Lomeli-Rodriguez (a postdoctoral fellow experienced in the method) and I, to highlight instances of the method being followed well and if it had been diverged from. Feedback for the technique to be improved in subsequent interviews was provided in a one-to-one meeting between each researcher and Professor Helene Joffe.

Participants took part in a two-part GEM interview. Initially, the prompts were piloted with at least two members of each participant group¹¹ to ensure the prompts' coherence, alignment with literacy levels and the elicitation of relevant data. The finalised first prompt asked participants to: *'please write or draw your first thoughts and feelings regarding how you have coped since the 2018 earthquake'*. The second asked: *'please write or draw your first thoughts and feelings regarding the role of teachers and schools in responding to the 2018 earthquake'*. Examples of completed grids are shown in each chapter that reports the method (See Chapter 6 - 8). Each interview lasted approximately half an hour.

The pre-intervention assessment survey was completed by participants immediately following the interview. Teachers were given the choice of completing a paper survey or an online version hosted on the online platform Kobotoolbox (www.kobotoolbox.org), using the electronic tablet

¹¹ The prompt was piloted with four students, two teachers and two caregivers.

provided by the RAs. RAs were on hand to offer support and answer any questions. Feedback forms were completed immediately after the intervention via a paper survey. The post-intervention survey was completed by teachers in schools following the same procedure as the pre-intervention survey. All data collected on paper was inputted into Kobotoolbox by the research assistants.

Following data collection, the RA thanked each participant for their time and provided them with small gifts of appreciation. The gifts included either phone credit, food parcels or a fabric pouch. They were chosen by the local NGO with which we worked, as they were deemed appropriate tokens of appreciation for participation. Mugs and tote bags were provided to participants who took part in the intervention to act as a reminder of the content (see Parrott et al., Under Review: Chapter 9).

All interviews were manually transcribed and translated by local researchers based in the Palu area. Open-ended questions were also translated by local researchers. Although initially the use of a professional translation service based in the UK and/or Jakarta were considered, local translators were used due to nuances in the local dialect. Two interviews from each participant group (i.e., caregivers, students and teachers) were back translated and checked by UK and Indonesian team members for quality of translation. This involved a close reading of the texts to make comparisons in order to ensure that meaning was not altered or lost during the translation process.

4.10. Reflections on participants' engagement with the GEM

The GEM has been used with a range of adult samples, however, to our knowledge, its use with young people is novel. We anticipated that the option for participants to express their initial thoughts and feelings visually in the grid may appeal to a younger demographic, who may be more used to being asked to draw than adult samples. Furthermore, the use of visual methods could mitigate issues of resistance or anxiety regarding providing a response, particularly if literacy levels are low. This use of drawings in the GEM aligns with the growing popularity of visual tools in qualitative research methods (Brailas, 2020; Glegg, 2019). Using drawings as a component of the interview method can allow participants to access and express thoughts, feelings and experiences that may otherwise be difficult to communicate (Brailas,

2020). They can also support participants' memory and reflection of experiences during the interview (Ellis et al., 2012). Although there is a risk of misinterpreting drawings during data analysis (Glegg, 2019), this was not a concern in the present research as the drawings were used as a prompt for the interview, rather than individually analysed. This was important as some participants' drawings were shapes and lines, rather than clear representations of an object or scene.

It was unexpected that few participants' grids contained drawings. Only 4% of students and 13% of adults chose to draw in either of their grids. While the adults' drawings most often depicted scenes that allowed for interpretation and often accompanied words (see Figure 7), students drawings featured only shapes or lines, such as representing the tsunami wave (see Figure 8). Although participants were assured there was no right or wrong answer, concerns regarding the artistic quality of their drawings may have contributed to their choosing written responses more frequently. One interviewer reflected that perhaps other creative methods, such as singing and reciprocal oral storytelling, may resonate better with the cultural context.

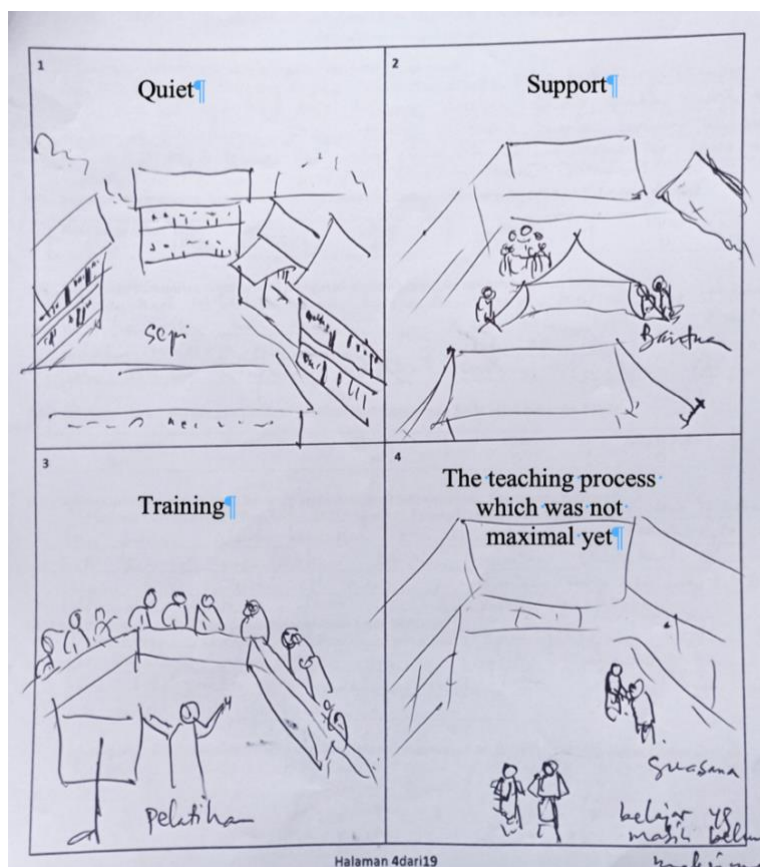


Figure 7. Grid showing a teacher's drawings

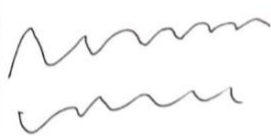
1 Panik Panic	2 Lari Tidak Berarah Run aimlessly
3 	4 Pikiran kacau Distracted mind

Figure 8. *A grid showing a student's drawing*

Participants' written responses varied in length, with some boxes featuring a paragraph of text while others contained a single word or a short phrase. Most adults completed all four boxes (75%), compared to less than a quarter of the students (24%). This reflected that in general the interview duration was shorter for students than adults, with adults' interviews lasting around 45 – 75 minutes compared to around 20 – 30 minutes for the students. No accessibility issues, such as participants' literacy levels were noted by the RAs, who were on hand to offer support, such as reading the prompt aloud to participants. The students tended to elaborate less in response to interviewers' questions than the adults and were particularly reserved initially, with some presenting as nervous, whereas most adults spoke openly from the onset, appeared comfortable and required less probing from the interviewer. Icebreaking activities supported development of a rapport between the students and the RAs and at the start of the interview the interviewers sought to create an informal atmosphere that aimed to make participants feel at ease. Nevertheless, the interviewers were unfamiliar to the students, which may have caused initial discomfort and hesitation to engage in discussion, particularly regarding sensitive topics. Furthermore, students may have been hesitant to engage with the open-ended task due to concerns regarding whether their response was 'correct', especially as the interview took place

in school. However, participants were assured that there was no right or wrong answer. In future, allowing more time for casual interactions to build rapport between the interviewer and the participant before beginning the GEM could facilitate higher levels of engagement from young people.

Due to the nature of the method, there was no interview schedule. Instead, the interviewer asked the participant to elaborate on the content of each box in turn. Questions included *“could you please tell me more about that?”* and the interview sought clarification on the meaning of responses or concepts. For example, a student answered that she coped *“by working together, doing mutual cooperation so that the earthquake does not happen again”*, to which the interviewer asked, *“alright, can you tell me what you mean by cooperation or mutual cooperation, what was it like?”*. In addition, the interviewer paraphrased participants responses, such as in the following example, the interview responded to a teacher: *“by comforting each other, you and your husband, right ma’am? Because the children hadn’t come home yet... so, you comfort each other at that time. Could you please tell me more about that, ma’am?”*. Further extracts from transcripts demonstrating this style of questioning are included in Appendix I.

4.11. Ethical considerations

This study was approved by the University College London (UCL) research ethics committee (Project ID: 0525/001). Ethical considerations are particularly important in complex and emotionally charged post-disaster settings. When working with marginalised groups, including young people, issues of power and consent, confidentiality, trust, risk to researcher and harm to participants must be carefully considered (Pittaway et al., 2010). Sensitively accessing existing networks, such as through community gatekeepers, and building relationships with the community is recommended to avoid researchers unethically imposing onto a vulnerable and potentially traumatised community (Mutch & Marlowe, 2013). In the current project, the collaboration with a local mental health NGO supported the process of building trust with participants and facilitated their recruitment. The research assistants were from the local area with first-hand experience of the disaster and strong interpersonal skills. As cultural ‘insiders’, they were able to build and sustain a strong rapport with the participants.

Ensuring participant safety and minimising distress was crucial. To reduce the potential for re-traumatisation, the research did not aim to elicit peri-disaster narratives or traumatic content. Participants were never asked directly to reflect on the event. Instead, we asked participants to reflect on how they had *coped* with the disaster and their processes of *recovery*. Regarding the survey that followed the interview, although completing measures regarding mental health can cause temporary rumination and distress, it is unlikely to cause lasting harm (Langhinrichsen-Rohling et al., 2006). As recommended (e.g., by Demkowicz et al., 2020), participants were provided with help-seeking information at the end of data collection. Additionally, the RAs who facilitated data collection and the intervention in person were employees of a local mental health NGO, so were well placed to support participants' wellbeing and could consult a local clinical psychologist for additional support if needed. Furthermore, two of the researchers who conducted the interviews were practising Indonesian clinical psychologists and therefore were skilled in assessing, and if required, supporting, concerns regarding participant wellbeing.

The minimum requirement for informed consent to safeguard participants from harm is that participants are fully informed about the purpose, method, risks and benefits of participating in the research (Mackenzie et al., 2007). This is often outlined in a written information sheet followed by signing consent forms. However, asking participants to sign consent forms should be approached with caution, as in some contexts providing signatures is inappropriate and may lead to suspicion and mistrust of the participants (Mackenzie et al., 2007). Discussions regarding consent forms with local researchers led to the conclusion that the most appropriate method of gaining consent was through use of an information sheet, a verbal dialogue and selecting a tick box option, rather than asking participants to provide their signatures. For students, consent was sought from schools, their caregivers and the young person themselves.

As participants agreement to take part in research must be completely voluntary (Mackenzie et al., 2007), all participants were clearly informed that they could leave the research process at any time. This was communicated verbally and included in the information sheet, which research assistants offered to read out loud to participants. Nevertheless, a point of reflection is whether the participants truly understood how their data would be used. To respect confidentiality, qualitative data was not made openly accessible, even when requested by journals, due to the risk of the personal nature of the narratives compromising true anonymity. We also did not ask for consent to use identifiable images, as even if consent was granted,

participants may not fully understand the repercussions of this, such as how their images are used online. This is a concern given that even when data and images are published in another country and in another language stories, personal circumstances may be revealed and photographs may be seen by the participants (Pittaway et al., 2010). For example, researchers have reported anecdotes of participants viewing results and images containing sensitive information when published in international magazines (see Mackenzie et al., 2007).

When considering the ethics of the research, we also aimed to uphold the principle of reciprocity. The principle asserts that any cost of participation (e.g., time and emotional labour), should be offset by providing something of value to the community (Mackenzie et al., 2007). We hoped that offering a local-perspective informed intervention to teachers would offset the costs of their participation. Liaison with schools ensured the intervention took place during working hours, to increase teachers' engagement and to avoid the workshop becoming burdensome to staff. The students were also provided with an interrelated intervention, which is reported elsewhere (see Joffe et al., in preparation). Although it was not possible due to time and funding constraints to offer an intervention for caregivers, we hoped they would benefit indirectly from the support offered to their children and through the development of their child's school as a hub of resilience. Participants were not told that they would be provided with a gift of appreciation until after the data collection, to ensure their participation was truly voluntary, without economic or material coercion. As some participants remained internally displaced and living in temporary accommodation as the reconstruction phase had not been completed, we were careful not to over promise on what the research would provide, particularly due to the interdisciplinary nature of the project involving engineers, as well as water, sanitation and hygiene (WASH) practitioners. Therefore, following the advice of Pittaway et al., (2010), the dialogue with participants prior to data collection and the provision of an information sheet aimed to avoid raising participants' expectations in a way that could not be met.

4.12. Chapter summary

This chapter has provided an overview of the design and methodology of the five empirical studies that form this thesis. An overview of the study design, which closely aligns with many elements of PAR, mainly regarding the desire to understand the participants' perspectives in order to foster meaningful change, has been outlined. This is followed by a brief discussion of

the overall mixed methods approach of this research. The methods used in this thesis are described: open-ended questions, depth interviewing, pre- and post- intervention surveys. As the GEM interview technique has been employed in three out of five of the empirical studies, the rationale for this has been reported in this section in greater depth than the other methods. The thematic analysis method has also been discussed, as it was used to analyse the data elicited by the interview method in the three chapters. An overview of key ethical considerations for working with disaster-exposed groups has also been considered. The next five empirical chapters report the specific aspects of each data collection technique, analysis and the relevant findings.

Chapter 5. Community resilience after disasters: exploring teacher, caregiver and student conceptualisations in Indonesia

This chapter reports the first empirical study in the thesis, which aims to explore local survivors' conceptualisations of community resilience following the disaster, including what has supported the community to cope and the teacher, caregiver and student priorities for the community's resilient recovery. Notably, this study includes the perspectives of three participant groups whose post-disaster recovery is most likely to be impacted by the role of the school after a disaster.

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<https://doi.org/10.3390/SU16010073>

5.1. Abstract

Despite the potentially catastrophic nature of disasters, survivors can be highly resilient. Resilience, the capacity to successfully adapt to adversity, is both individual and collective. Policymakers and academics have recently emphasised the importance of community resilience, but with little consideration of local survivors' perspectives, particularly young survivors within low- and middle-income countries (LMICs). Therefore, this exploratory study aims to give voice to disaster-affected caregivers, teachers and female adolescent students by examining their conceptualisations of community coping and priorities for resilient recovery following the 2018 Central Sulawesi earthquake and tsunami. A total of 127 survivors of the devastating disaster, including 47 adolescents, answered open-ended survey questions related to post-disaster resilience. A content analysis identified key constituents of community resilience. The results indicate that survivors highly value community cohesion and participation, drawing on the community's intrapersonal strengths to overcome post-disaster stressors. Student conceptualisations of and recommendations for a resilient recovery often differ from the views of important adults in their lives, for example, regarding the role played by the built environment, "trauma healing" and religiosity in the recovery process. These findings have implications for the design of disaster resilience interventions.

5.2. Introduction

A rise in the intensity and effects of disasters in recent decades has led to a surge in resilience research (Kwok et al., 2016). Individual resilience is a well-established concept in the psychological literature; it refers to the ability of an individual to return to normal functioning or thrive despite adversity (Luthar et al., 2000; Masten, 2018; Wright et al., 2013). There is growing consensus that resilience is attributed to an interaction between individual differences in characteristics (e.g., optimism, self-efficacy), relational attributes (e.g., secure attachment relationships) and the structures, services and environmental resources that facilitate positive development (e.g., neighbour safety, positive school experiences and other high quality service provision) (Masten, 2018; Ungar, 2011a). However, disasters also cause community-wide disruption, due to shared experiences of loss, damage to buildings, infrastructure systems, the economy and the availability of services (Koliou et al., 2020). Such disruption takes a toll on the physical and mental health of community members. Enhancing the collective resilience of the community is one form of mitigating the negative impacts of disasters (UNDRR, 2015). Nevertheless, existing approaches and interventions that aim to enhance community resilience have been criticised for adopting a top-down conceptualisation that lacks local perspectives (Murphy et al., 2018). In this light, this study aims to explore local survivor conceptualisations of community coping, strengths and priorities for a resilient recovery, 40 months after a devastating earthquake and tsunami in Palu, Central Sulawesi, Indonesia.

5.2.1. Conceptualising community

‘Community’ has been conceptualised in community resilience studies in various ways but is rarely critically explored. Our approach to community is based on the notion of a shared place (e.g., geographical area and institution), disaster experience, identity or culture, in line with other studies of community resilience (Bonanno et al., 2015; Norris et al., 2008; Ungar, 2011a). However, we recognise that communities are dynamic and not necessarily geographically bound (Burgess & Mathias, 2017). While a community can represent a place (i.e., a geographical location or shared institution), communities can also be systems of practice (i.e., belonging to a shared activity or profession), diagnostic identity (i.e., mental health condition) and other symbolic relationships (i.e., meanings and experiences with shared community life), such as spiritual/faith-based support (Elias et al., 2021). Therefore, disaster survivors can belong to multiple communities (see Burgess & Mathias, 2017).

5.2.2. Psychosocial impacts of disaster: what do communities need to be resilient to?

It is important to acknowledge the mental health burden of disaster-related stressors for communities. The psychological impacts of disasters occur through the direct effects of the extreme event (primary stressors) (e.g., witnessing the collapse of buildings, experiencing physical injuries) and the knock-on consequences of disaster (secondary stressors) (e.g., employment loss, loss of identity and disturbance to community roles) (see Lock et al., 2012 for a review). Secondary stressors can impact mental health and wellbeing in similar ways to the initial disaster exposure (Williams et al., 2021), influencing the long-term mental health burden of disasters. This includes the impact of collective trauma (i.e., the group-level experience of an acute fear of death or injury for oneself or others), which can harm individuals' psychological functioning and therefore the social fabric of the community (Hirschberger, 2018; Muldoon, 2020).

The extant literature has focused on the individual mental health outcomes among communities of diagnostic identity, such as post-traumatic stress disorder (PTSD) (Bonanno et al., 2010). PTSD following disaster exposure is among the most studied mental health disorders (for reviews, see Galea et al., 2005; Norris et al., 2002). However, disasters also produce an increase in experiences of grief, depression, anxiety, suicidal ideation, substance abuse and other stress related problems. Some manifestations of the psychological impacts of disasters may vary between Western and non-Western cultures. For example, after the 2004 tsunami in Sri Lanka, trauma was often expressed via somatic complaints, such as headaches and bodily pain (Ashraf, 2005).

Young people are particularly vulnerable to the negative impacts of disasters. In a seminal review of twenty years of disaster literature, Norris et al., (2002) found that the psychological impairments of young people were elevated and extreme compared to adults. More recent studies support the idea that younger age is associated with elevated PTSD symptoms (e.g., Kirkpatrick et al., 2014; McDermott et al., 2005; Schein et al., 2021; Weems et al., 2010; Yelland et al., 2010). Economically disadvantaged young people are likely to have fewer resources to cope with disaster stressors, therefore heightening their risk (Masten, 2021). They are also more likely to experience chronic or multigenerational trauma pre-disaster, which is exacerbated by the impacts of disasters (Masten, 2020). The risk factors for PTSD in children

that were identified in a review of eight studies include female gender, disaster exposure, negative coping and lack of social support (Lai et al., 2017). Many reasons have been suggested as to why girls may be more vulnerable to the impacts of disasters, which would have logical consequences for poorer emotional outcomes. For example, gender differences in cognitive appraisals of threat (Karanci et al., 1999; Pine & Cohen, 2002) or in gendered vulnerability to the consequences of disasters, such as a rise in violence, increased mortality risk, economic vulnerability and exposure to child and forced marriage (Neumayer & Plümper, 2007; Tanyag, 2018a, 2018b). Alternatively, the putative greater vulnerability of girls to the impacts of disasters may be a consequence of the gendered expectations of adults (i.e., parents and teachers), who often complete quantitative measures on behalf of their children (Masten, 2021a). Such expectations may also determine that girls carry the burden of domestic chores and caring responsibilities post-disaster, which can impede their return to schooling post-disaster (Bradshaw & Fordham, 2015). This emphasises the importance of research that directly gauges the experiences of girls, particularly from marginalised communities.

5.2.3. Resilience to disasters: from the individual to the community

Despite extensive research focused on the mental health impacts of disasters, in most circumstances, disasters do not lead to serious, long-term psychological impairment. Methodological limitations such as sampling biases have led to an historical overreporting of dysfunction in trauma research (Bonanno, 2008). More recent innovative techniques using longitudinal trajectories of disaster survivors have shown that sustained psychological challenges rarely exceed 30% (Bonanno et al., 2010). Studies such as those by Bonanno et al., (2010) and Masten and Narayan (2011) review the multiple factors that promote adaptive, resilient functioning after disasters, at the individual level. This includes individual differences, such as personality and beliefs, cognitive appraisal processes and social resources, which interact to guide the coping strategies that an individual employs when experiencing adversity (Mancini & Bonanno, 2009). However, resilience research has attracted criticism for promoting a neoliberal agenda that neglects the structural inequalities that impede the resilience of individuals (Chandler, 2014; Joseph, 2013).

An alternative approach is to explore resilience as a collective phenomenon that operates at the level of the community (Schwarz, 2018). Community resilience has been defined in several

ways, but researchers generally agree that such resilience is an ‘adaptive capacity’ that supports the community to cope with adversity (e.g., Berkes, 2007; Norris et al., 2008; Paton, 2007). Norris and colleagues’ (2008) well-cited model theorises successful community adaption as a process emerging from four adaptive capacities: economic development, social capital, community competence and information and communication. The model has been referenced in many studies exploring resilience in non-Western contexts (e.g., Alonge et al., 2019; Dewa et al., 2023; Moreno & Shaw, 2019).

Although community resilience is far less extensively researched in psychology than resilience at the individual level, there is a historical precedent in psychological research for considering the strength-oriented responses of communities to disasters. Research from high-income settings has long shown that in public emergencies communities come together to overcome adversity (e.g., Drury et al., 2019; Fritz & Williams, 1957; Oliver-Smith, 2005). Numerous terms have been used to describe the positive affinity shared between groups who experience collective adversity, including ‘brotherhood of pain’ (Oliver-Smith, 2005), ‘altruistic communities’ (Barton, 1969), and ‘therapeutic communities’ (Fritz, 1996). Social psychologists have interpreted these collective responses through the lens of the social identity approach (Ntontis et al., 2020); this explains the cohesion, solidarity and coordination that occurs in the face of adversity as the product of a shared ‘disaster survivor’ identity (Drury, 2012, 2018; Williams & Drury, 2010, 2011). However, most research in this area focuses on the immediate disaster response while the community dynamics that facilitate (or impede) long-term recovery are rarely explored. Research that exists in this area yields mixed results: Ntontis et al. (2018) reported that after flooding in the UK, secondary stressors promoted community support beyond the initial emergency, whereas Paton et al. (2013) found that after the Christchurch earthquake, community groups were transient and dissipated once survival needs had been met. However, there is a notable absence of research in this area from non-Western contexts. Research in non-Western contexts is important, as cultural belief systems and practices influence processes of coping and adaption to adversity (Theron et al., 2015; Ungar, 2015). Therefore, while some determinants of resilience may resonate cross-culturally, their presentation and impact can be context dependent and culturally nuanced (Ungar, 2008, 2015).

5.2.4. Building Back Better: According to Whom?

In tandem with the rising popularity of the concept in the psychological literature, resilience has become a policy buzzword in disaster risk management since the development of the Hyogo Framework for Action 2005-15 (UNDRR, 2005). The more recent Sendai Framework for Disaster Risk Reduction 2015-2030 (UNDRR, 2015) was developed to support building the resilience of nations and communities to disaster. Beyond early definitions of resilience connotating a ‘bouncing back’ following an external shock (Holling, 1973) the more recent disaster literature emphasises the need to bounce back better (Matyas & Pelling, 2015). The ‘Build Back Better’ agenda argues that disaster relief should be coupled with long-term development objectives to reduce vulnerabilities to future natural hazards as a ‘new normal’ is sought (Khasalamwa, 2009). This means that the discourse of resilience can bridge the gap between humanitarian crisis intervention and longer-term sustainable development goals (Joseph & Juncos, 2019). However, it is important to note that despite the compelling narrative of ‘Build Back Better’ that is promoted extensively following disasters, long-term development projects are not always delivered in practice, particularly in countries that are fragile and experience weak governance, as seen following the devastating 2010 earthquake in Haiti (Cunningham, 2012; O’Connor et al., 2014). More recently, the ‘Building Back Fairer’ agenda asserts that disaster response must prioritise social equity, to reduce the structural drivers that exacerbate inequality, making marginalised populations particularly vulnerable to the negative impacts of disasters (Marmot et al., 2020).

However, the concept of resilience in disaster management runs the risk of becoming a set of top-down attributes decided by international agencies (Shah et al., 2019). Since a hazard becomes a disaster due to an interplay of social, political, and economic factors that shape the vulnerability of the community (Massazza et al., 2019a), it is the most marginalised, poorest communities who are likely to experience the most negative impacts. Therefore, such voices should be at the forefront of interventions designed to strengthen community resilience. This must include children, who suffer the most and have been recognised for their potential to actively contribute to community recovery and resilience (e.g., Pfefferbaum et al., 2018), but whose voices are rarely included in research. Therefore, this paper aims to support the

commendation of (Hajir et al., 2021) that researchers should facilitate the global south (i.e., lower middle-income countries) in ‘speaking back’ on what resilience means to them.

5.2.5. Study Context

This study focuses on the disaster-displaced residents of Palu, in Central Sulawesi, Indonesia. Indonesia, the largest archipelagic state in the world, is classified as a lower-middle-income country (World Bank, 2021) that is geographically prone to seismic hazards. On 28 September 2018 an earthquake measuring 7.7 Mw with a depth of 10 km caused a tsunami in Central Sulawesi (UNICEF, 2018a) This triggered liquefaction and landslides that further exacerbated infrastructural damage and the loss of life (UNICEF, 2018b): 4340 people died, 211,000 people were displaced from their homes and moved to temporary shelters and 374 schools sustained major damage (Pemerintah Provinsi Sulawesi Tengah, 2019). While the recovery period is ongoing, there has been little psychological research regarding this disaster, and less that examines community resilience.

5.2.6. Summary and Aims of the Study

Southeast Asian countries are underrepresented in the current academic literature on post-disaster mental health, coping and resilience, despite being one of the most geographically disaster-prone regions globally (Hechanova & Waelde, 2017). Much existing research from Southeast Asia centres on the devastating 2004 Indian Ocean tsunami (e.g., see Kar, 2009; Pfefferbaum et al., 2013). Furthermore, in the psychological literature, studies of resilience have been dominated by an analysis at the level of the individual (e.g., Bonanno et al., 2010). This may reflect a Western tendency to interpret distress through an individualist rather than collectivist lens. Shifting the analysis of resilience to the unit of the community may form a step towards overcoming an ethnocentric bias in resilience research (Schwarz, 2018). Moreover, the existing qualitative research that examines resilience at the level of the community explores the views of ‘experts’ (i.e., researchers, emergency managers and policy makers) (Kwok et al., 2016) or takes place in high income contexts, such as New Zealand and Australia (e.g., Madsen & O’Mullan, 2016). An exception to this is the work by Murphy et al. (2018), who investigated the non-Western perspective of local survivor views on community coping, adaptation and transformation after disaster, to identify six mechanisms of survivor-

led resilience: psychosocial support, early livelihood support, community empowerment, community cohesion, government collaboration and addressing the root causes of vulnerability. This work is valuable for intervention development, as resilience building interventions should be contextually nuanced by incorporating the lived realities and desires of participants (Kilpatrick, 2004) and should aim to harness and strengthen existing community capacities (Burgess et al., 2022). Furthermore, these findings can act as a starting point for a large-scale traditionally quantitative study in the region or for a mixed methods approach to triangulate the findings. This is consistent with conducting a feasibility study to select or develop valid psychometric scales. To expand on the findings of Murphy et al. (2018), this study examines the conceptualisations of caregivers, teachers and female adolescent students, regarding community coping and priorities for resilient recovery following a devastating disaster.

Overall, this exploratory feasibility study aims to explore a community's key constituents of post-disaster resilience via three research questions (RQs):

1. How has the community coped with post-disaster challenges?
2. How does the community conceptualise a strong post-disaster community?
3. What does the community recommend for a resilient future?

5.3. Method and Materials

5.3.1. Participants

The aim of this study is to understand the post-disaster community's needs and priorities for a resilient recovery, according to three groups of key educational stakeholders: teachers, students and their caregivers. These participant groups were chosen since the aim of the project that this study forms a part of is to harness schools' capacity as hubs that can foster disaster resilience. Therefore, participants are united by the common thread of the institution of the school as a place-based community, as well as their shared experience of the disaster, which may have implications for their identities as a 'disaster survivors'. However, we recognise that the school may be the meeting place of multiple communities, such as symbolic or diagnostic communities. A non-probability quota sampling strategy was used to recruit 127 participants (40 parent-child dyads $n = 80$, 7 additional students (students $n = 47$) and 40 teachers) from

three sites in the region of Palu via schools. The three sites were chosen because they had experienced extensive damage during the 2018 earthquake and tsunami disasters; particular attention was given to accessing communities that are not always ‘heard’ in research, such as members of remote, geographically isolated fishing communities, and mothers with low levels of education. While an equal number of teachers, caregivers and students were originally recruited, due to logistical difficulties in arranging data collection for caregivers and teachers related to work and childcare commitments, a sample size of $n = 40$ per adult group was deemed sufficient. As students’ data were collected in schools, streamlining the data collection process, the final sample was larger for students ($n = 47$). These samples are relatively large for qualitative research, which is consistent with previous disaster research that analyses qualitative data for three participant groups (e.g., Joffe et al., 2013). As each group featured similar numbers of participants, this allowed for valid group comparisons.

Participant demographics and details regarding exposure to the disaster are included below (Table 1). All participants were exposed to the 2018 disaster, most felt the shaking and a small number witnessed the tsunami and liquefaction. Most participants’ homes were damaged; however, they experienced varying degrees of loss (e.g., death of family member or friend). Teachers generally reported a higher monthly income and education level than caregivers. Male teachers and caregivers were not excluded; however, due to the female dominated teacher workforce and gendered caregiving responsibilities in Indonesia the sample is predominantly female. Adolescent girls were selected as this study forms one component of a larger interdisciplinary project to foster resilient post-disaster recovery both psychosocially and by improving water sanitation and hygiene (WASH) for girls. Girls were exclusively included in this wider project due to their vulnerability to adverse psychological outcomes and inadequate post-disaster WASH facilities (see Garfias Royo et al., 2022). Therefore, this is primarily a study of female conceptualisations. Female perspectives are particularly vital considering the post-disaster risks that disproportionately impact women (see Section 5.2.2.).

Table 1

Characteristics of the sample in Chapter 5

	Teachers (N = 40)	Caregivers (N = 40)	Students (N = 47)
Age (years)	27-59 (M = 49)	25-57 (M = 43)	14-15 (M = 14)
Marital status	Married: 87% Single: 8% Widowed: 5%	Married: 98% Divorced: 2%	N/A

Gender (% female)	88%	93%	100%
Highest education completed	80% Postgraduate degree 18% None of the above	60% Senior High School 18% Junior High School 13% Postgraduate degree 8% Elementary School 3% Undergraduate degree	N/A
Religious	95% Muslim 5% Christian	90% Muslim 10% Christian	81% Muslim 13% Christian 6% Other
Household income (per month) in Indonesian Rupiah (IDR)	32% Less than 4 Million 45% 4 - 6 Million 19% 6 - 8 Million 11% 8 -10 Million	3% No Income 73% Less than 4 Million 20% 4 - 6 Million 0% 6 - 8 Million 3% 8 -10 Million	N/A
Disaster exposure			
Experienced shaking	100%	100%	96%
Home was damaged	88%	93%	N/A
Separated from household family	76%	65%	66%
Lost a close person	63%	55%	57%
Witnessed grotesque scenes (e.g., bodies)	54%	50%	40%
Injured	37%	28%	45%
Saw liquefaction	34%	15%	28%
Heard voices trapped under debris	29%	20%	30%
Saw tsunami	12%	15%	23%
Trapped under the debris	17%	10%	11%

5.3.2. Procedure

Three schools were recruited via contact with principals. Once permission for the research had been given by the school principals, teachers and caregiver-child dyads were randomly contacted and invited to participate. All participants in the study were provided with information sheets to read regarding the nature of the project and gave informed consent. For students, consent was sought from both them and their caregivers. All participants were asked if they wanted the content to be read to them. Prior to data collection, the survey questions were piloted with two members from each participant group (n = 6). Minor changes were made to

the student questions following piloting (see Section 5.3.3.). All questions were reviewed for clarity and coherence by local researchers before being professionally translated/back translated from English to Bahasa Indonesian to ensure the correct meaning was maintained. A bilingual English-Indonesian researcher rectified any differences.

Data for this study was collected by local research assistants who delivered the survey through a face-to-face data collection technique. Data collection took place in schools for teachers and students, and in a location of the caregiver's choice, which was sometimes their child's school, but usually their home. To complete the survey, research assistants offered participants the use of an electronic tablet or a paper version of the survey, as they were aware that some participants may not be comfortable with the use of technology. Most participants completed the surveys on paper; research assistants subsequently entered the data into the 'KoboToolBox' (www.kobotoolbox.org) open access data collection software, for data to be shared with the international research team. Each participant's data was given a unique, anonymous identifier, to ensure confidentiality and anonymity. Following data collection, each participant was thanked for their time and provided with an age-appropriate gift in appreciation for taking part in the study.

Alongside the survey, participants completed a series of psychometric scales and in-depth interviews on how they had coped and the role of the school in supporting post-disaster coping. The interviews used a free association method, exploring participants chains of stored associations (i.e., their most immediate thoughts) regarding coping, with minimal researcher input, therefore the interviews did not aim to elicit visions or recommendations for a resilient community, which is the focus of the present study. As psychometric scales to measure resilience rely on pre-determined categories, derived from Western conceptualisations of resilience, these quantitative measures did not allow us to capture the socially and culturally specific dimensions of community resilience (Ungar, 2019), as is the aim of the paper. Therefore, the results of these complementary measures are beyond the scope of the present study and are reported elsewhere. A systematic analysis of open-ended questions from the survey is presented here, as it is most relevant to the aim of this paper. Open-ended survey questions were selected as they allow for qualitative data to be collected from a reasonably large sample, in a way that is less burdensome to participants than interview methods, which is especially important in a resource-poor, post-disaster context. Additionally, while most

surveys contain open-ended questions, as observed in published research, the results are rarely systematically analysed or reported.

Ethical principles were followed, including confidentiality, anonymity and causing no harm to participants. Participants were told they could withdraw themselves or their data at any time. Research assistants were residents of the same region as the participants and therefore understood local cultures and values. As employees of a local mental health non-governmental organisation (NGO), the research assistants were also adept in noticing signs of possible discomfort and could offer and/or signpost to appropriate, culturally sensitive support, if necessary. The UCL Research Ethics Committee approved this research (Project ID: 0525/001).

5.3.3. Measures

Participants were asked to complete a series of open-ended questions influenced by the ‘coping-adaptation-transformation’ interview schedule developed by Murphy et al. (2018). The questions were asked as part of a larger survey. Teachers and caregivers were asked the same questions and students were asked a modified version involving a creative element to increase engagement. For example, young people were asked to imagine that they were giving advice on how to cope with the disaster, and that they were the mayor tasked with improving their local area. During piloting, the term ‘community’ was found to be confusing for the students in certain contexts (i.e., when asking about community coping), so students were instead asked about ‘you and people you know’. By asking students to imagine being the mayor and to give advice to another student on how to cope, the questions aimed to elicit students’ conceptualisations of their community’s resilience, rather than to reflect exclusively on their own individual, personal experiences. This also aimed to minimise the potential distress that reflecting on their own disaster experiences could cause, as the questions maintain a distance from personal vulnerabilities while still engaging with their conceptualisations of community resilience. The questions were also designed to be less abstract for students; for example, students were asked about what the community had done well since the disaster, whereas adults were asked what a strong community *would look like*. While these questions may elicit slightly different content from each participant group, they were designed to centre around the same overarching themes (see Table 2). The questions asked participants to reflect on ‘since’ and

‘after’ the disaster, as the post-disaster recovery period is ongoing and we did not want participants to feel limited to memory by only retrospectively recalling their initial disaster experiences. Furthermore, the questions focused on eliciting participants’ conceptualisations rather than the accurate details regarding their disaster experiences.

Table 2

Open-ended survey questions analysed in Chapter 5¹²

Question Domain	Respondent	Question
Coping	Adults	How has your own community coped since the disaster?
	Students	Imagine a student your age is asking you for advice about how to feel better after a disaster. Based on how you and people you know dealt with problems after the 2018 disaster, what advice would you give?
Visions of a strong community	Adults	What would a strong community here in Palu look like after disaster?
	Students	As Mayor, what do you think your community has done well since the disaster?
Recommendations	Adults	What would you recommend to make your community stronger for the future?
	Students	Imagine you are the mayor of Palu and are in charge of improving Palu after the 2018 disaster. What would you change to make life better for the people who live here?

5.3.4. Data Analysis

¹² Two further questions were asked regarding participants’ subjective perspective of the changes and challenges experienced by their community, however since they are beyond the scope of this study they are not reported.

A content analysis was conducted. This method involves the categorisation, counting and evaluation of key symbols or themes that occur (Wester & Krippendorff, 2005). This method was chosen because it provides a useful, systematic method to analyse a large dataset (Joffe & Yardley, 2004). This is particularly pertinent as the sample ($n = 127$) is considered large for qualitative research (Vasileiou et al., 2018).

Immersion in the data is the widely agreed first stage of content analysis (Neuendorf, 2017), which the first coder achieved through a process of reading and re-reading the data. The data was interpreted via an inductive approach to allow for novel content and patterns in the data to be explored. Although we considered coding responses in accordance with the four adaptive capacities of community resilience presented by Norris et al. (2008), we found that many of the responses did not fit this categorisation neatly. Furthermore, using an inductive approach allowed the coding frame to be driven by the data, which was consistent with our aim of listening closely to the voices and experiences of ‘hard-to-reach’ groups. The same coding frame was applied to all three question domains since, together, they covered how the community conceptualised post-disaster resilience (see Appendix E). Responses were assigned to more than one category when they clearly belonged to both (e.g., the response *“doing activities to open a business and also while helping each other”* was coded as ‘economic and livelihood’ and ‘community participation and cohesion’). Excel was used to apply the coding frame to each participant’s response, due to the short length of the written responses and the emphasis placed on frequency counting in content analysis.

A second coder with no knowledge of the project at the time of coding, independently coded approximately 10% of the data. The dataset was exported into SPSS and a Cohen’s Kappa analysis was performed. We achieved an average Cohen’s Kappa of .81 (Range = .71 - .91), indicating substantial reliability (Altman, 1999). The identified discrepancies were resolved and based on dialogue between the researchers, the coding frame was amended for clarity.

5.4. Findings

We describe our findings by presenting the content analysis results that are relevant to each research question in turn.

RQ1. How has the community coped with post-disaster challenges?

In this section, we report the findings regarding how participants stated they coped with the disaster (see Figure 9).

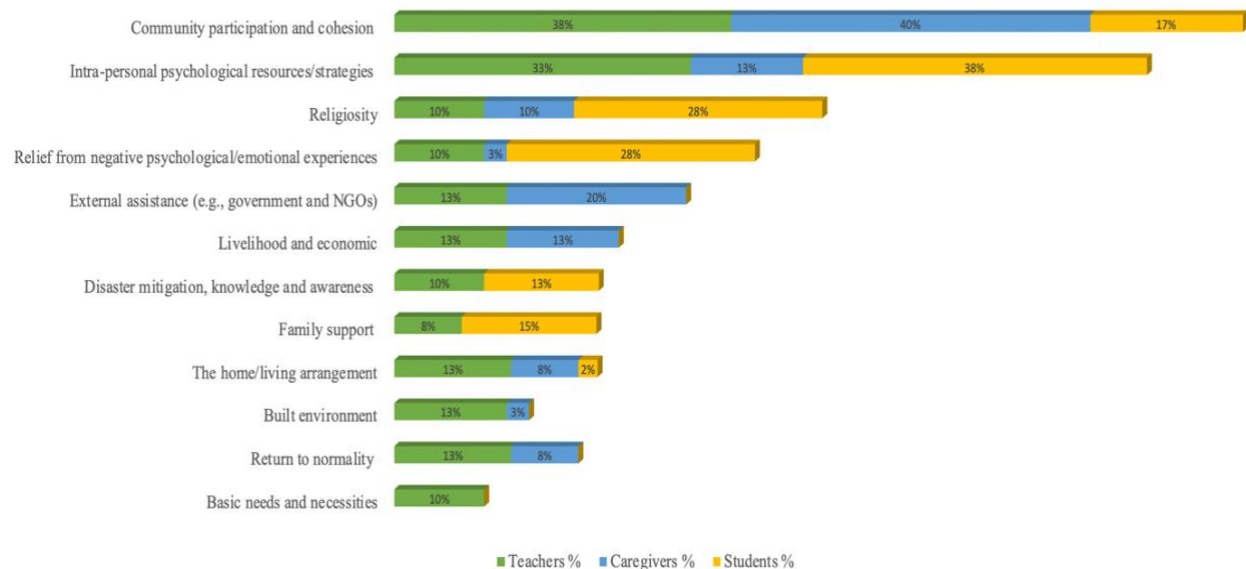


Figure 9. *Coping with the disaster*

For both adult groups, the most frequently reported coping strategy was related to community participation and cohesion, mentioned by over a third of the teachers and caregivers. Provisions of mutual assistance (locally termed “*gotong royong*”) was frequently mentioned as an aspect of this. Mutual assistance was often discussed regarding reciprocally provided instrumental support and practical actions to reduce the community’s disaster stressors, such as “*gotong royong to find necessities such as food, drink and evacuation equipment...*”. Mutual assistance occurred naturally but was also fostered by a government-run institution (“*Rukun Tetangga (RT)*”), which aimed to promote the smooth running of social and developmental initiatives. For example, “*RT helps the community to participate in the environment*”. Mutual social and emotional support and encouragement were also salient in the adults’ responses. For example, one response was, “*give each other support and encouragement so as not to linger in the earthquake incident*”. Another participant mentioned that this form of support “*... strengthens one another...*”.

The category was mentioned less frequently by students. When students referred to community participation and cohesion, they often mentioned members of their support network, including

friends and teachers, rather than the wider community. For example, a student stated, “...we must be open both with family, close friends and teachers at school with what we feel...”.

Intrapersonal psychological resources and strategies were often referred to by participants as supporting them with coping. This was the most frequent coping strategy referred to by students, mentioned by over a third of them. It was also prevalent among teachers, but less salient in the caregivers’ responses. Qualitatively, the responses within this category of content differed between adults and students. The adults’ responses focused on their ability to face challenges and maintain a positive mental outlook, such as demonstrating strength, enthusiasm and rising to overcome adversity, whereas the students were more likely to discuss strategies to regulate their emotions. For example, demonstrating coping via a positive outlook towards engagement in post-disaster recovery, a teacher wrote: “*strive to rise and be sincere. Enthusiasm and strength to repair the rubble*”. The students’ intrapersonal psychological strategies included exercising emotional control by keeping calm to avoid panic, such as “*first I will invite him to stay calm because if we are calm we will feel better*”, and avoiding rumination, such as “*don’t think too much about the earthquake because it can stress us*”. Often, intrapersonal psychological resources/strategies were referred to as collective phenomena rather than an individual phenomenon by both students and adults. For example, a student advised coping by “*keep getting better and rise together*”. Similarly, a teacher wrote the following: “*my community is trying to get up and be strong*”.

Religious coping was also salient for students, featuring in over a quarter of the students’ responses. The responses mainly referenced religious diligence, such as “*pray five times a day*”. Other comments included “...*asking God for help*” and “...*forgiveness*...”. Religious beliefs also supported students to stay calm, due to “*trust in God*...” and a belief that there is “*no need to panic because Allah SWT [Subhanahu wa ta’ala, a form of respect to God] will protect his servants*”. In the adults’ responses, religious coping often involved collective activities; for example, a caregiver wrote “...*dhikr [prayer] together on Talise beach every Friday*”. Religious institutions also provided instrumental support. For example, a caregiver wrote that “*the church provides assistance in the form of groceries and money*”.

Strategies to relieve and support negative psychological and emotional experiences were the most prevalent in the students’ responses, mentioned by over a quarter of the students. These

mentions were less prevalent among the teachers and even more scant in the caregivers' responses. This included students' mentions of a general desire to "*reduce trauma*" as well as coping with trauma reactions via professional psychological support, such as " *...trauma healing*". Students also mentioned the psychological benefits of social support, for example, that one should "*play with your friends and family so that the trauma after the 2018 earthquake will disappear*". The responses also featured techniques to self-regulate trauma reactions, such as cognitive avoidance, for example, "*...don't think about the trauma*" to avoid the disaster becoming "*...a burden on your mind*". Often, strategies to regulate emotions co-occurred with religiosity. For example, one response mentioned "*don't panic, keep praying for protection and health, and keep [away] the thoughts that make you afraid and anxious*".

The less frequently mentioned coping strategies included support from external assistance (e.g., government and NGO support), particularly in the immediate aftermath of the disaster. This area was mentioned nearly exclusively by the adults, particularly the caregivers. The adults often referred to dependence on aid in the "*...early days after the incident...*", including receiving supplies to meet basic needs, such as "*...food, drink and clothing assistance...*" and support from the government for "*... damage repairs...*". Similarly, coping through actions to improve livelihood opportunities and economic improvement was mentioned equally by teachers and caregivers, but this was absent from the students' responses. Economic coping strategies included "*...trying to find work to make ends meet*" and diversifying employment through novel business opportunities, such as "*doing activities like making chips for business*".

Enhancing disaster mitigation knowledge and awareness was mainly referred to by the students (e.g., "*carry out activities that can overcome the impact of the disaster. Like preparing equipment that can be used when a disaster occurs*") and by slightly fewer teachers. The students' responses also differed from those of the adults as students mentioned family support more often, including avoiding family separation and spending time together (e.g., "*get together more often with family*").

RQ2. How does the community conceptualise a strong post-disaster community?

The results of the participants' conceptualisations of a strong post-disaster community are reported in Figure 10.

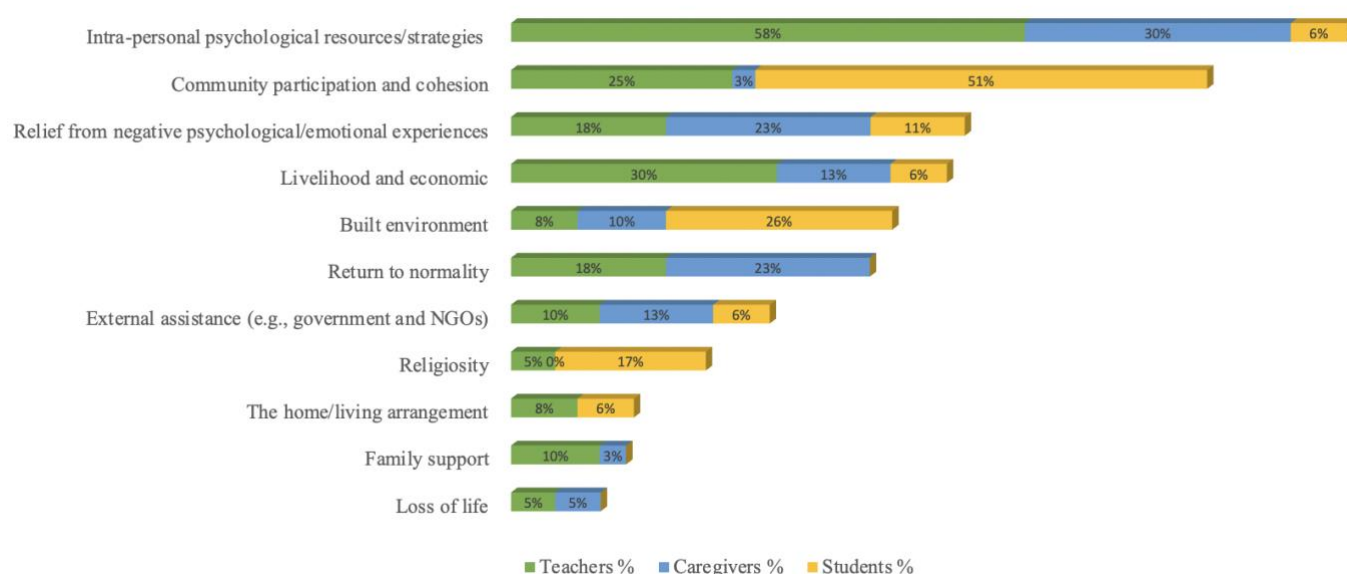


Figure 10. *Conceptualisations of a strong post-disaster community*

When the participants were asked about their conceptualisation of a strong post-disaster community, the most prevalent response among the adults referred to intrapersonal psychological resources and strategies. This strength was mentioned by nearly twice as many teachers than caregivers and only occasionally by students. This included the belief that the people of Palu are internally strong. For example, one adult said, “*the people of Palu are generally quite strong in dealing with this disaster or the 2018 earthquake. They don’t fall for long and can get up quickly*”. The term “*rising*” was used often, with participants expressing that being “*...mentally strong...*” enabled Palu residents to “*...rise up and move forward for the better*”. Often, the adults’ responses were characterised by an orientation towards the future. For example, a caregiver expressed that the post-disaster community’s strength will enable Palu to be “*...even better in the future*”.

Community participation and cohesion was valued by all groups, but particularly by students, for whom this was the most prevalent response, as mentioned by over half of the sample. Within this category of content, the students discussed altruism (e.g., “*by helping others...*”), friendships (e.g., “*...strengthening friendships*”) and mutual assistance, known as “*gotong royong*” (e.g., “*gotong royong...*”, “*by working together...*” and “*let’s support each other*”). While this was less prevalent in the participants’ *recommendations* for a strong community

(see Figure 11), this is likely to be because participants already feel that this is a strength of the community (see Figure 10). Mutual assistance was often referenced in tandem with the need to repair the damaged material environment, including the infrastructure, mosques and homes. For example, some students wrote “*repairing houses, working together to clean houses that have been destroyed, strengthening friendships*” and “*after the disaster was over, the community worked together to clean the roads and mosques that were covered with mud and stones*”. The capacity of the community to collectively rebuild and repair the physical built environment was central to students’ conceptualisation of a strong post-disaster community, but it was featured comparatively rarely in the adults’ responses. The students were mainly concerned with the removal and “*...clean up...*” of the disaster debris. They also mentioned the general repair of damaged places, infrastructure and public facilities, including mosques.

The third most salient aspect of the conceptualisation for a strong community referred to a desired reduction in negative psychological/emotional experiences, which was mentioned more often by caregivers and teachers than by students. These responses referred mainly to experiences of “*trauma...*” and “*...fear...*”. The caregivers’ responses indicated that negative psychological and emotional experiences continued to be pervasive in the community, as “*...there are still many fears*”. Another caregiver expressed that distressing emotions can underlie survivors’ external presentations of strength: “*The people of Palu look strong, but behind the strength felt by the people of Palu, they are also sad to be left by their families who were hit by the tsunami*”. Other caregivers considered adverse psychological reactions, such as trauma, to disproportionately affect specific vulnerable groups, including the elderly and residents of regions with high death tolls. However, other participants referred to the relief of trauma with the passage of time, as a caregiver wrote: “*The old trauma just disappeared and [we] can return to activities*”.

Students were more likely to mention religiosity when conceptualising a strong post-disaster community than either adult group. Their responses mainly referred to increased diligence to acts of worship, for example, to “*pray more often*” and “*...pray with orphanage children*”. Other students mentioned behaving in accordance with desired religious standards (e.g., “*Pray five times, don’t gamble*” and “*strengthening religious knowledge*”).

RQ3. What does the community recommend for a resilient future?

The participants' recommendations to build Palu's post-disaster resilience are reported in Figure 11.

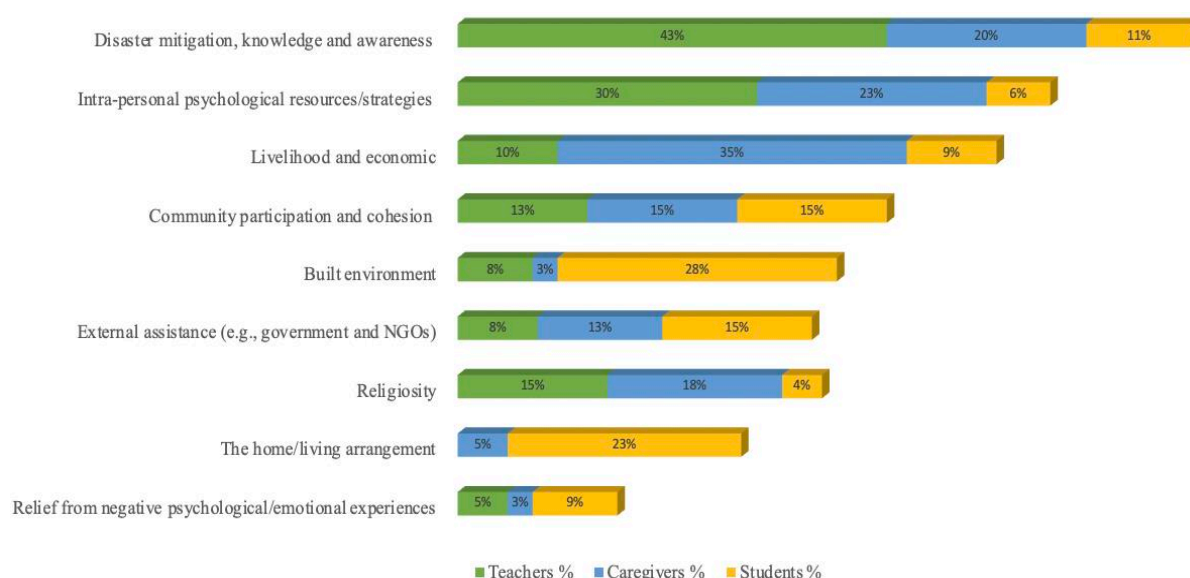


Figure 11. Recommendations for improving Palu's resilience

All groups recommended improving disaster mitigation, knowledge and awareness to create a strong community. This was mentioned most often by teachers compared to caregivers, and it was mentioned less frequently by students. The teachers and caregivers often gave broad responses related to the need for disaster preparedness, such as for the community to “*be prepared...*”, “*always be aware...*” and “*always be alert...*”. Some teachers gave more specific recommendations, such as the need to implement community training due to the ongoing seismic vulnerability of the area. For example, “*there needs to be assistance and training for disaster preparedness because our area is on the Palu Koro fault*”. At times, the participants wrote about ‘intrapersonal psychological resources’ and ‘disaster mitigation’ simultaneously; for example, a participant recommended to “*build a stronger mentality that is ready to face any disaster (with disaster mitigation)*”. The students provided suggestions to reduce vulnerability to future disasters, including implementing “*...new regulations make the community more advanced*” and a soft-engineering strategy to mitigate flood risk, such as “*planting mangrove trees*”.

Recommendations for the community to demonstrate intrapersonal psychological resources were prevalent in both adult groups' responses, but they were rarely mentioned as

recommendations by the students. The adults' responses included the need to "*stay strong...*", demonstrate "*enthusiasm for life ahead...*" and "*...keep the spirit for the future*". This was often mentioned alongside actions to promote community cohesion, such as the need to "*...strengthen each other...*". However, the students were slightly more likely to recommend professional psychological support to relieve negative emotional and psychological experiences, such as "*...trauma healing...*". Often, this was cited in conjunction with other practical recovery activities, such as "*maybe first do trauma healing, then invite the community to fix the city again*". Some responses referred to the need for trauma support for specific groups. For example, a student suggested that children required trauma counselling and recommended "*helping the community to repair completely damaged houses, providing business funds, providing a place for trauma counselling, especially for children.*" A teacher highlighted the need for support to reach the less accessible regions by recommending that the local government provide "*...healing institutions and socialisation activities for disaster management to remote areas of Palu.*"

Recommendations to support livelihood and economic sufficiency were mentioned by over a third of the caregivers, but this was not prevalent in the students' responses. Most saliently, this related to actions that would increase employment. Often, this included the desire for financial support to "*...open a business*". Both the caregivers and teachers recommended training to increase community members' employability and therefore reduce their dependency on assistance, including an emphasis on "*entrepreneurship training...*" and more general calls to "*provide skills and tutoring...*" and "*...to increase skills in all fields for the community*".

Often, the students' recommendations differed substantially from those of the adults. The students most often recommended the repair and rebuilding of damaged infrastructure and improving the community's housing and living situations, whereas similar recommendations to improve the built environment were rare among both adult groups. For example, a student recommended "*repairing roads, repairing houses of people affected by disasters*". As well as roads, students mentioned a range of infrastructure that would benefit from repair, including a central bridge to improve travel, public facilities and tourist sites. Vulnerable groups were specifically mentioned as requiring assistance, including the "*underprivileged communities*", the "*homeless*" and those impacted by specific elements of the disaster, such as "*... people whose houses were swept away by mud*".

5.5. Discussion

To our knowledge, this is the first study to explore both adult and adolescent disaster survivors' conceptualisations of community resilience. Therefore, these findings contribute novel perspectives on a disaster-affected community's achievement of and desire for a resilient recovery.

As the current study extends the work of Murphy et al. (2018), we draw attention to the similarities in our results (see Figure 12). In common, we found livelihood and economic sufficiency, community participation and cohesion and the desire for relief from negative emotional/psychological experiences (e.g., through psychosocial support) were considered to foster community resilience. However, themes found by Murphy et al. (2018) that were not apparent in the current study are: confront root causes, NGOs working with local government and communication between community and NGOs.

Although participants referred to NGO support in the present study, these responses lacked the specificity of the themes found by Murphy et al. (2018). For example, in the present study, most references to government and NGO assistance featured the support received or the recommendation of additional or more timely assistance. Such discrepancies could be the consequence of features unique to the Palu location (e.g., respect for authorities), temporal differences (i.e., time elapsed since disaster) or sampling differences, as Murphy et al. (2018) purposively sampled adult local actors and disaster survivors who had taken part in humanitarian interventions, whereas this present study focused on three groups of educational stakeholders, including girls. This emphasises the importance of collecting data from a range of participant groups at multiple time points following disaster to ascertain conceptualisations of resilience.

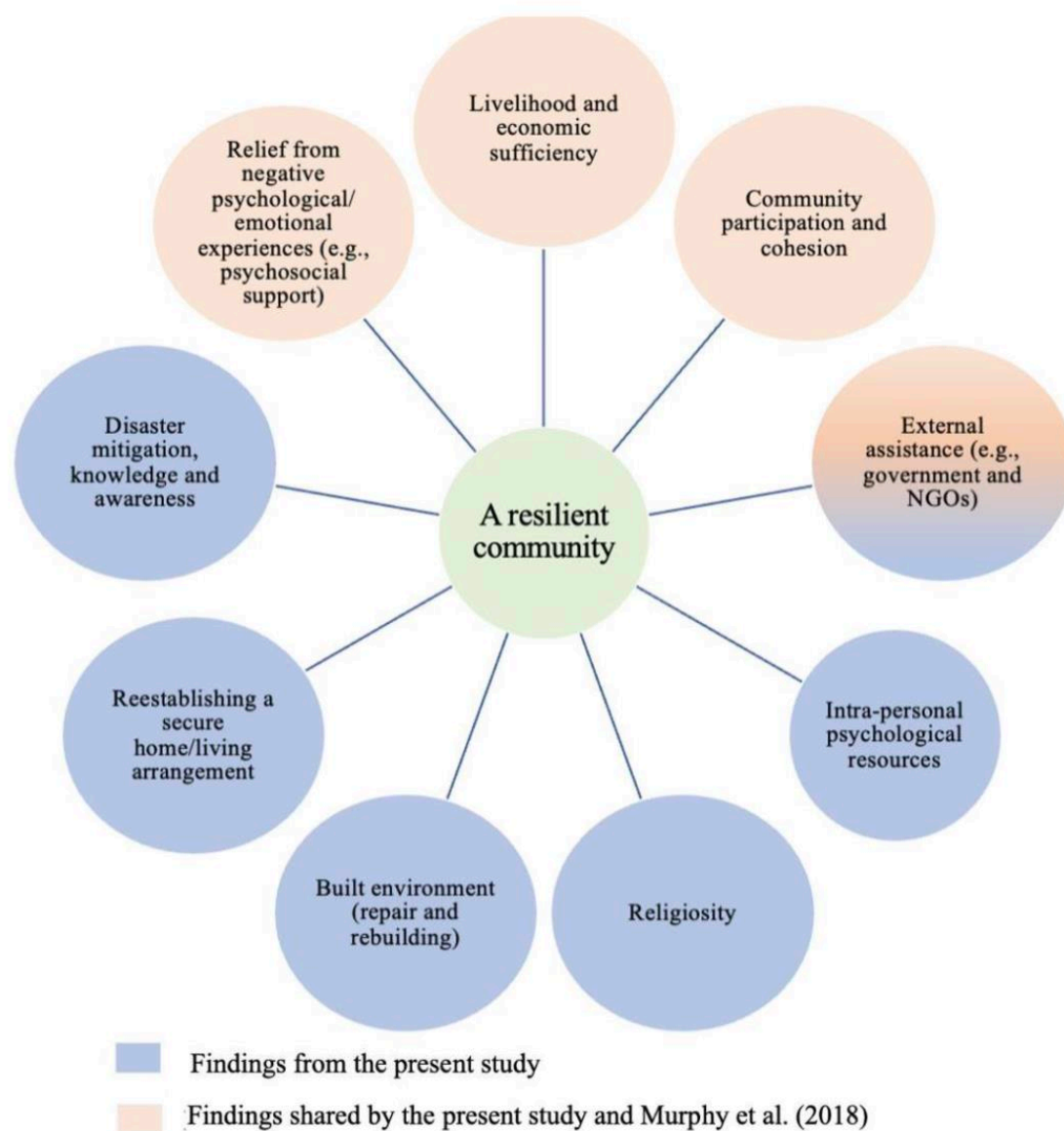


Figure 12. *Overlap between our findings and the findings of Murphy et al. (2018)*

In particular, this study brings to the fore the importance of listening to the views of young disaster survivors. In our study, young survivors emphasised the value of community participation and cohesion and a desire to repair and rebuild the physical environment and foster their psychological recovery. This included the need to have intrapersonal psychological resources and strategies (e.g., the need to have a positive mental outlook) and a collective recovery from negative psychological and emotional experiences, including psychological distress and trauma. We found that student conceptualisations of and recommendations for a resilient recovery often differed from the views of important adults in their lives, for example

regarding their emphasis on the built environment and prevalent mentions of ‘trauma healing’. The vulnerability of children exposed to natural hazards is well recognised, yet their role in disaster mitigation and recovery has often been overlooked (Mitchell et al., 2008). Increasingly, research and policy experts argue for a child-centred approach to disaster risk reduction and resilience programmes (see Ronan et al., 2016). The students offered sophisticated suggestions for building a strong community, such as advocating for simultaneously supporting psychological, infrastructural and economic recovery and referring to specific disaster mitigation techniques. This testifies to the importance of consulting students directly to incorporate their unique needs and priorities when designing post-disaster psychosocial interventions.

In terms of how the survivors coped, their conceptualisations of their community’s strengths and their recommendations for a resilient recovery, the following elements must be thought through: the meaning of home for survivors, collective coping strategies, and the role played by religion in coping. Regarding recommendations to strengthen community resilience, students were more likely to mention the material environment than adults, such as the local infrastructure and their homes. Beyond the material value of the home as an essential resource, the *symbolic* loss of meaningful places may cause survivors emotional distress (see Scannell et al., 2016). Homes are often symbolised as places of safety (Mallett, 2004); when unexpected damage to a home occurs, this can violate feelings of security, routine and trust (Harries, 2013). While the adults, particularly caregivers, expressed a more general desire to return to pre-disaster normality, the students emphasised their desire for the physical repair of buildings and infrastructure. This is consistent with research that shows that throughout the reconstruction period, environmental damage can leave residents feeling disorientated (Silver & Grek-Martin, 2015). Furthermore, unrepaired buildings may serve as everyday reminders of the disaster and can trigger PTSD symptoms (Hackmann et al., 2004), which children may be more vulnerable to (Galea et al., 2005). This finding implies that the physical reconstruction, rapid removal of debris and repair of homes after a disaster should be prioritised by governments during the recovery period. As students were particularly impacted, priority should be given to the repair and debris removal from familiar spaces for young people, such as schools.

Regarding the participants' reflections on how they had coped with post-disaster stressors, all three groups referred to collective coping strategies, in the main. This is consistent with research a range of research that found that East Asian countries oriented to cultures of collectivism, including Korea (Kashima et al., 2005) and Indonesia (Zaumseil et al., 2014), tend to ascribe agency to groups more than to individuals. This finding further reinforces our claim, in the introduction, that individualistic resilience paradigms may not be relevant in non-individualistic cultures. Often, the participants' collective coping style involved actively confronting the stressor, which is considered a mechanism for facilitating resilience (Bachrach & Zautra, 1985). For example, the community came together to promote practical action, such as supporting one another to access necessities including food and drink. Financial coping was also considered a collective activity, as the community worked together to collect donations. Both the adults and students often referred to intrapersonal psychological resources/strategies (e.g., the need to be 'strong') as a collective phenomenon, including the notions of their city rising and getting up *together*. Such optimistic outlooks that include an orientation towards the future have been suggested in the existing literature to foster proactive action to future disasters (Seginer, 2010). In the community we studied, collective support is sustained in the post-disaster years; the community is viewed by its members as cohesive 40 months after the disaster. This is consistent with the 'community competence' and 'social capital' elements of Norris et al.'s (2008) model of community resilience.

Furthermore, the emphasis placed on community participation and cohesion by all three groups is consistent with social psychological research that explains altruistic behaviour after disasters through the lens of social identity theory (e.g., Ntontis et al., 2018). This sense of identification occurs when survivors view themselves as sharing a common fate (Paton & Irons, 2016), which is consistent with our findings that participants reflected on solutions to cope with their shared post-disaster challenges. Our findings suggest that such increases in community altruism and coordination are sustained three and a half years post-disaster.

Relatedly, when reflecting on how the survivors coped and their conceptualisations of a strong community, the participants often referred to mutual assistance, *gotong royong*, which is a traditional Javanese practice that encourages social cohesion and a strong sense of community after a disaster (Paton & Sagala, 2018; Taylor & Peace, 2015). Similar findings regarding *gotong royong* are in evidence elsewhere in Indonesian post-disaster contexts. For example,

after the 2002 earthquake in Java, survivors worked collectively to participate in the rescue and rebuilding efforts, including retrieving people from the rubble, cleaning debris and distributing necessities (Zaumseil et al., 2014). Our findings suggest that the concept is pervasive in Central Sulawesi, and therefore has extended beyond its Javanese roots to elsewhere in Indonesia. Consequently, the cultural concept of *gotong royong* may have promoted post-disaster collective action, cohesion and solidarity, rather than a shared disaster identity (e.g., Drury, 2012; Williams & Drury, 2010). This also illuminates the importance of being specific in how we approach community in the landscape of promoting resilience. Efforts to promote solidarity and collective action involve action-oriented principles, that efforts to promote a shared identity would not automatically trigger, with important implications for support programmes developed in this setting. It would be beneficial to explore, cross-culturally, the interaction between the cultural concept of *gotong royong* and survivors' shared post-disaster identity.

Given that religion is considered a central feature of life in Indonesia (Rochmawati et al., 2018), it is surprising that religiosity was not at the forefront of the participants' responses, particularly for the two adult groups. It is possible that religiosity was not explicitly reflected upon as it is taken for granted as a central feature of daily life. Religious responses occurred most often when participants were asked directly about how they had coped, which is consistent with literature that suggests religion is an important dimension of the coping process, allowing individuals to find meaning in times of stress (Pargament, 1997, 2011). Generally, the participants' responses portrayed God positively: students referred to trust and sought protection from God, while adults often referred to collective devotional activities, such as communal prayer. Coping through religion is expected to lead to positive outcomes when God is viewed as supportive and benevolent, whereas a representation of God as punitive is more likely to be associated with negative psychological outcomes (Pargament, 2011). For this sample, religion seemed to enhance social support and community cohesion. This is consistent with the findings from disaster contexts elsewhere in Indonesia, where religious practices enhance psychological coping post-disaster and motivate altruism (Taylor & Peace, 2015).

A key implication of this study is that participants' recommendations can be used to inform community resilience building interventions. A clear priority for the community is to build livelihood and economic resilience, most notably amongst caregivers. While this may seem beyond the capacity of psychosocial interventions, there is growing evidence of the

effectiveness of interventions that target social determinants to produce positive mental health outcomes (Burgess et al., 2022). For example, interventions can empower those who have experienced social adversity to tackle poverty through improved budgeting and identifying income generating opportunities (Selohilwe et al., 2019). As community members are facilitated to address the problems that are the most salient for them, this can enhance their wellbeing. Furthermore, this resonates with supporting the ‘economic development’ capacity featured in Norris et al.’s (2008) model of community resilience.

As these above studies show, maintaining a focus on the social determinants of mental health is important, but it may still benefit from being combined with localised trauma-focused psychological support. Although students were more likely to mention coping via strategies and support to relieve negative emotional experiences than adults, emotions such as trauma and fear were particularly salient in the caregivers’ conceptualisations of a *strong community*, indicating that trauma symptoms are ongoing over three years post-disaster. Similarly, some teachers’ responses implied that there remains a need for psychological support for the community. This is consistent with the literature that demonstrates elevated PTSD symptoms up to between five years (Galea et al., 2005; Meewisse et al., 2011) and ten years post-disaster (Fong et al., 2022; Lu et al., 2021).

For psychological healing, community members tended to reflect on the benefit of social support. However, students were more likely than adults, particularly caregivers, to mention professional forms of psychological support received. This may be due to students being more familiar with the support provided by NGO initiatives (see Empatika, 2018), which may expose students to Western psychological terms, such as ‘trauma healing’. Supporting this, occasional references to ‘trauma healing’ were also made by teachers. Outside of the school environment, however, there is likely to be low exposure and access to professional psychological support for caregivers (Saxena et al., 2006; Seyle et al., 2013). Alternatively, it is possible that psychological support was more frequently sought by young people as they face a greater burden of mental health concerns (e.g., Galea et al., 2005). Other potential explanations include generational differences regarding issues of stigma among adults (e.g., see Hartini et al., 2018), or that adults view social determinants (e.g., unemployment) as the causes of mental health concerns.

Psychological support does, however, remain highly valued. Murphy et al. (2018) found that when psychological support was received, survivors found this to be the most highly appreciated component of the disaster response in the Banda Aceh region of Indonesia. Furthermore, adults were likely to recommend that the community demonstrate intrapersonal psychological resources and strategies, such as the need to rise up, adopt a positive mentality and be strong. Strategies to do so may be developed via psychosocial interventions. Therefore, resilience building interventions would benefit from offering a combination of support that aims to address both the social determinants of mental health and forms of professional psychological support.

A further intervention implication is that survivors, especially teachers, desire to improve disaster mitigation knowledge and practice. Increasing disaster preparedness is one way to reduce human vulnerability to future seismic hazards (e.g., by securing heavy items, having insurance and an evacuation plan, and storing emergency supplies). As well as physically safeguarding the community, enhancing disaster risk reduction knowledge may benefit collective efficacy, which is a key component of psychosocial post-disaster recovery (Hobfoll et al., 2007b). However, the literature testifies to a cross-cultural lack of preparedness, even amongst communities that have a high awareness of disaster risk (Joffe et al., 2013). Therefore, increasing residents' knowledge of mitigation techniques is insufficient to lead to sustained disaster-related behaviour (Joffe, 2003; Joffe et al., 2019).

In the design of an appropriate intervention, non-individualistic factors (e.g., collective efficacy, a sense of community and trust) should be considered, as these have been posited to be particularly important for promoting preparedness in collectivistic cultures (Paton et al., 2010). Forming disaster mitigation groups, as suggested by participants in this study, may also provide a mechanism to enhance the processes of both 'community competence' and 'information and communication' aspects of Norris et al.'s (2008) model of community resilience.

The present study also has methodological implications, as we adapted the interview method used by Murphy et al. (2018) to open-ended survey questions. This method enables a vast amount of rich data to be generated on the different facets of community resilience, without

being overly burdensome for participants and researchers (i.e., compared to the time taken for interview methods).

5.6. Limitations

The findings of this study must be considered in the context of some limitations. The different questions asked of adults and students may account for some of the differences between the two groups' responses. For example, to gain an insight into the participants' conceptualisations of a resilient community, the adults were asked 'what would a strong community here in Palu look like after disaster?', whereas the students were asked a creative but less abstract question that is grounded in their lived experiences: 'As Mayor, what do you think your community has done well since the disaster?' However, there were evident similarities between the groups, which may reflect that some adults' responses referred to their experience of current community strengths rather than what a hypothetical strong community *would* look like. For example, some adults said that the community is becoming stronger by working together.

Furthermore, the data may be influenced by order effects, as participants may be unlikely to mention the same category of content in response to multiple questions. The participants' desire to avoid repetition may explain some of the discrepancies in the prevalence of codes among the same groups depending on the question domain. For example, the students mentioned intrapersonal psychological resources often in response to the first question regarding how the community has coped, but mentioned it infrequently in the response to the second question regarding what their community had done well since the disaster.

The systematic emphasis on frequency counting in the content analysis method may result in the exclusion of responses that are salient to participants but difficult to articulate. For example, one participant stated the recommendation of "*no more Nomoni Palu Festivals*". This refers to an event that took place on Palu beach the day of the disaster. Although this response did not fit into any of the coding categories devised, anecdotal discussions with Indonesian researchers suggested that myths around the festival are pervasive. However, based on the current data, it is difficult to know whether rare mentions are idiosyncratic or are an important, but hard to articulate, feature of participants' coping methods. Furthermore, facets of the community's recovery that are taken for granted may have been infrequently mentioned, such as family support and religiosity. Additionally, some responses, particularly from the students, contained

only a few words that were ambiguous to interpret and could not be probed further. Therefore, while the open-ended survey questions enable a large amount of rich data to be generated and analysed, the breadth of the data may compromise on depth when compared to the content elicited by interview methods. However, the method is also useful for feasibility studies, as it can act as a starting point for a quantitative or mixed methods study, by facilitating the selection and/or development of valid psychometric scales.

5.7. Conclusion

In conclusion, the current exploratory study sought to explore local survivors' conceptualisations of community resilience after a major disaster. In doing so, this work generated novel insights regarding survivors' subjective views of what constitutes community resilience: intrapersonal psychological resources and strategies, community participation and cohesion, livelihood and economic sufficiency, relief from and support for negative psychological/emotional experiences, disaster mitigation knowledge and awareness, religiosity, reconstruction of the built environment and external assistance (e.g., governmental and NGOs). By enhancing our understanding of how a community has coped with the disaster, how they conceptualise a strong community and their recommendations for a resilient recovery, this study forms the first step in designing a local-perspective-informed intervention to empower communities who are often excluded from discussions of their own resilient recovery and marginalised from disaster-related decision making. Overall, these findings shed new light on the processes of adaptation and the differing priorities of young people and adults after disasters, with important implications for future psychosocial intervention design.

Chapter 6. Pathways of psychological distress and resilience among disaster-affected teachers in a low resource setting

This chapter aims to build on the findings of Chapter 5 to further elucidate how the educational community conceptualises resilience. While Chapter 5 advanced an understanding of how teachers, students and caregivers conceptualised the community's resilience, this chapter explicitly focuses on the personal disaster experiences of teachers, to understand their sources of psychological distress and how they manage and cope with these stressors after the disaster. The disadvantages of the open-ended question method used in Chapter 5 included the brevity of responses and the inability to probe participants to elaborate and clarify, whereas this chapter reports on rich and in-depth data elicited by a free association interview method.

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6.1. Abstract

The adverse psychosocial effects of large-scale disasters are well documented. However, few analyses focus on the subjective sources of psychological distress and the coping responses of disaster survivors, particularly in low- and middle-income countries (LMICs). The voices of teachers, who constitute a vulnerable group due their disaster exposure and responsibility for student support, remain largely unexplored in this context. Therefore, this qualitative study aims to gain a nuanced understanding of teachers' conceptualisations of their sources of distress and the subjective factors influencing their resilience post-disaster.

Using a free association method, interviews were conducted with 40 teachers, from three schools exposed to the 2018 seismic disaster in Central Sulawesi. A thematic analysis showed that survivors associated their psychological distress with: 1) ongoing material stressors, 2) intrapersonal stressors, and 3) social stressors. Intrapersonal coping strategies, including cultivating mental 'strength', supported teachers' recovery. These strategies were also intertwined with religiosity, as teachers felt that prayer constituted a source of emotional regulation by facilitating calmness and promoting hope, as well as supporting teachers to make positive meaning from the disaster. Cultural idioms of social coping are also explored, including collective story telling *tutura* and mutual support *gotong royong*.

The findings emphasise that interventions to support teachers' psychological recovery after disaster are needed to harness and promote the adaptive coping strategies valued by teachers, including recognising intrapersonal strengths and fostering social support through colleagues. However, psychosocial interventions should be paired with policy strategies to reduce the social determinants of poor post-disaster mental health and promote social and economic development, such as re-housing schemes.

6.2. Introduction

Disasters expose survivors to an elevated risk of experiencing adverse psychological outcomes, including post-traumatic stress disorder (PTSD), grief, depression, anxiety, stress, substance abuse and suicidal ideation (Bonanno et al., 2010). However, only a minority of survivors are affected by these. For example, the rates of PTSD rarely exceed 30% after a disaster (Bonanno et al., 2010). The varied psychological responses observed among disaster-survivors depends on a range of risk and resilience factors (Bonanno et al., 2010; Masten, 2021; Paton et al., 2000). There is a growing consensus that resilience-promoting factors include both intrapersonal, dispositional traits and the resources available to individuals and communities in their social ecological environments (Ungar et al., 2019; Ungar & Theron, 2020). This forms the key premise of the multisystem perspective of resilience, which asserts that an individual's capacity to cope with and adapt to adversity is a result of the interactions between dynamic systems (Masten, 2021). These systems range from as small scale as an individual's neurological stress response, to proximal systems, such as the family, and to larger, distal societal levels, such as the political systems that govern access to formal welfare, health and education services (Masten, 2019; Masten, 2021; Ungar, 2019a; Ungar et al., 2023; Ungar & Theron, 2020). Due to these interconnections, an individual's resilience is closely tied to the functioning and assets of their community (Ungar, 2011a, 2011b; Obrist et al., 2010).

In line with this approach, resilience is conceptualised as a social construct (Ungar, 2008); consequently, resilience-enhancing resources and processes can manifest and be valued differently depending on the social and cultural context (Ungar, 2011c). Therefore, it is important that research identifies the potentially unique coping strategies and local wisdom that fosters resilience in specific cultural settings (Masten et al., 2021). However, there is a paucity of research on post-disaster coping and resilience that features samples of non-Western survivors (Lomeli-Rodriguez et al., 2024; Theron & Liebenberg, 2015; Zaumseil & Schwarz, 2014). Furthermore, previous research has advocated for the use of qualitative methods in under-researched contexts and cultures to elucidate possibly undocumented resilience determinants, which existing quantitative scales may be unable to capture (Kuru & Ungar, 2022; Ungar et al., 2023; O'Dougherty et al., 2015). This can contribute to decolonising resilience research (Atallah, 2016), by giving people from low-and-middle income countries (LMICs) the chance to '*speak back*' on what resilience means to them (Hajir et al., 2022). These findings can inform intervention design; it is essential that locally valued sources of

strength are recognised and harnessed to ensure interventions are not created within universalised, Western frameworks of mental health (Summerfield, 2004).

However, caution must be taken not to romanticise resilience and downplay the persistent psychological distress experienced by survivors of large-scale disasters (Beaglehole et al., 2018; Hobfoll, 2011). While disaster losses occur immediately, survivors also grapple with impacts into the years post-disaster, often comprising psychological, social and economic hardship (Makwana, 2019). The loss of valued resources incurred by a disaster, including tangible objects (e.g., houses and cars) and non-tangible resources, such as personal characteristics (e.g., self-efficacy) and conditions (e.g., employment), is a major factor in determining psychological distress, according to the ‘conservation of resources’ (COR) theory (Hobfoll, 1989, 2011); the value of resources is dependent on the cultural context (Zaumseil & Schwarz, 2014). Furthermore, disasters can trigger negative cascades (Masten & Motti-Stefanidi, 2020), also known as ‘*loss spirals*’ (Hobfoll et al., 2016). For example, a disaster may damage a school, reducing school attendance, leading to the loss of peer support and reduced educational attainment, which could impact future earning potential. Psychological symptoms that may occur after trauma exposure can exacerbate loss spirals, such as depression or PTSD (Heath et al., 2012). For example, depression symptoms may lead to social isolation, impairing social skills and eventually negatively impacting social support (Hobfoll et al., 2011; Ortigo et al., 2020).

To support disaster survivors to cope with such losses and associated challenges, interventions must align with the evolving needs most salient to the disaster-affected population at the time it is implemented (Holder et al., 2017; Murphy et al., 2018; Watson et al., 2011), to restore the resources that are valued by disaster survivors. Therefore, it is important for research to consider the dynamics of both the nature of the stressors encountered by disaster-survivors (i.e., their subjective sources of distress) and their coping mechanisms in response to these stressors.

This study focuses specifically on the experiences of disaster-exposed teachers. It is well-established that children are vulnerable to experiencing poor post-disaster mental health (Peek, 2008). In recognition of this, there has been burgeoning research on risk and protective factors for children and young people exposed to disasters (e.g., see Masten, 2021 for a review), while considerably less attention has been devoted to the disaster experience of groups crucial in

nurturing the resilience of young people, such as teachers. Teachers play a vital role in scaffolding the recovery of young people after disasters, through fostering close relationships, trust, belonging and providing psychosocial support (Mooney et al., 2021; Mutch, 2015a; Mutch & Peung, 2021; Parrott et al., 2023b: Chapter 7). However, as teachers tend to reside in the same region as their school, they are likely to have been exposed to the same disaster (Seyle et al., 2013). Therefore, it is important to explore the unique experiences of teachers, who may require psychosocial support themselves while they simultaneously care for their students. It is especially valuable to examine the experiences of teachers in low resource settings as their role in providing mental health support may be particularly vital in regions with a lack of access to professional psychological services (Berger & Gelkopf, 2009; Seyle et al., 2013).

6.2.1. The present study

Drawing on aspects of resilience theory, this study was undertaken as a starting point for developing a resilience building intervention for teachers impacted by an earthquake and tsunami that occurred in 2018 in Central Sulawesi, Indonesia (Parrott et al., Under Review: Chapter 9). We sought to elucidate teachers' subjectively experienced sources of distress and the coping strategies they conceptualise as fostering resilience. This builds on our earlier research comparing teacher, caregiver and student conceptualisations of community resilience (Parrott et al., 2023a: Chapter 5), however the current study aims to glean a deeper insight into teachers' personal lived experiences.

In the current study, we draw on elements of phenomenology to understand teachers' subjective experiences of disaster-related stressors and the coping strategies used to navigate these challenges. Congruent with our approach, phenomenology is concerned with exploring the essence of a phenomenon from the perspective of those who have experienced it (Teherani et al., 2015). This lens foregrounds participants' subjectivity in creating meaning about their experiences and considers the individual's lived experience to be the foundation of knowledge (Moran & Mooney, 2002). In doing so, phenomenology aims to uncover rich descriptions of phenomena as they are '*concretely lived*', which enhances an understanding of participants' life worlds in novel and in-depth ways (Finlay, 2013). This epistemological approach is well suited to the aim of the present study to elucidate local, context-specific knowledge from the experiences of an under-researched community.

Therefore, the present study asks:

What are the subjective sources of disaster-related distress experienced by teachers and how do teachers experience coping with this distress?

6.3. Method

6.3.1. Research context

A devastating disaster impacted the Central Sulawesi region on 28 September 2018. An initial earthquake triggered a tsunami and liquefaction followed by a series of aftershocks. This resulted in catastrophic social and economic impacts, including 4340 deaths, 211,000 people displaced from their homes and 374 schools sustaining major damage (Pemerintah Provinsi Sulawesi Tengah, 2019).

6.3.2. Participants

Three school sites in the Central Sulawesi region that sustained disaster-related damage were chosen based on their exposure to different elements of the disaster: School A is located close to a liquefaction zone, School B in an earthquake zone and School C in a tsunami affected region. All schools are public junior high schools, catering for students aged 13 to 16. Forty teachers (17 from School A, 12 from School B and 11 from School C) were selected at random by school principals, contacted and recruited through their schools. Participant demographics and details regarding exposure to the disaster are included below (Table 3). All participants were exposed to the 2018 disaster, most felt the shaking and a small number witnessed the tsunami and liquefaction. Most participants' homes were damaged; however, they experienced varying degrees of loss (e.g., death of family member or friend).

Table 3

Characteristics of the sample in Chapter 6

Age (years)	27–59 (M = 49)

Marital status	Married: 87%
	Single: 8%
	Widowed: 5%
Gender (% female)	88%
Highest education completed	80% Postgraduate degree
	18% None of the above
Religious	95% Muslim
	5% Christian
Household income (per month) in Indonesian Rupiah	32% Less than IDR 4 Million
	45% IDR 4–6 Million
	19% IDR 6–8 Million
	11% IDR 8–10 Million
Disaster exposure (%)	
Experienced shaking	100%
Home was damaged	88%
Separated from household family	76%
Lost a close person	63%
Witnessed grotesque scenes (e.g., bodies)	54%
Injured	37%
Saw liquefaction	34%
Heard voices trapped under debris	29%
Saw tsunami	12%
Trapped under the debris	17%

6.3.3. Procedure

Interviews were conducted online via Zoom by three Indonesian researchers who received training led by Helene Joffe in the interview method. Interviews took place in teachers' schools accompanied by a local research assistant (RA) between January-April 2022. The RA provided an electronic tablet for the interviews and was able to offer technical and emotional assistance if required. After the interview, participants completed psychometric scales (reported elsewhere, including Parrott et al., Under Review: Chapter 9) and demographic information. Prior to the interviews commencing, participants were provided with an information sheet and

consent forms. The UCL Research Ethics Committee approved this research (Project ID: 0525/001).

6.3.4. Data collection

The interviews used a free association method termed the ‘Grid Elaboration Method’ (GEM), to explore participants chains of stored associations regarding coping. Participants were provided an A4 sheet of paper featuring a grid of four boxes, above which a prompt stated: *‘Please write or draw your first thoughts and feelings regarding how you have coped since the 2018 earthquake’*. The prompt was translated to Bahasa Indonesia, checked for coherence by local researchers and piloted with four teachers from the same region. Figure 13 shows a completed grid (with English translation). After completing the grid, an interview took place, which involved the participant being asked to elaborate on the content of each box sequentially.

AGIAN 2

22.1 Silakan Anda TULISKAN atau GAMBARKAN pikiran dan perasaan pertama Anda tentang bagaimana Anda mengatasi dampak setelah gempa bumi 2018. Anda dapat berikan satu pemikiran/gambar per kotak. Terkadang gambar atau kata yang sangat sederhana bisa menjadi cara yang baik untuk menunjukkan pikiran dan perasaan Anda. Tidak ada jawaban yang benar atau salah. Setiap orang dapat memiliki jawaban yang berbeda.

1 Trauma ada Feeling trauma	2 Tibawa lebih ke mendekatkan diri pada Allah. Tried to get closer to God
3 Mencoba bangkit lagi Tried to keep up	4 Belajar banyak dari kejadian, bahwa segala sesuatu bisa saja terjadi yang dibutuhkan adalah tetap tenang dan berusaha menenangkan semua kepada Allah. Took a lesson from what happened that everything is possible, we just need to keep calm and surrender to God

Figure 13. A GEM grid example

6.3.5. Data analysis

Interview audio recordings were transcribed verbatim and translated into English. Thematic analysis was conducted using the software Atlas ti. TA involves identifying patterns and meanings salient in the data (Braun & Clarke, 2006; Joffe, 2012; Joffe & Yardley, 2004). The analysis began with a thorough reading of all transcripts, which led to an inductively devised coding frame (see Appendix F). Before coding all transcripts, the first and second author double coded three interviews to test the reliability of the coding frame. The agreement was 68%, classified as a satisfactory agreement (O'Connor & Joffe, 2020). A dialogue between the researchers followed to promote reflexivity and resolve ambiguities in the coding frame. Once

the coding frame was amended, all transcripts were coded. The process of coding showed salient patterns in the data that were clustered into inductive themes. To visualise the connections between the codes, thematic networks were created (see Attride-Stirling, 2001; Joffe, 2012).

6.4. Results

The following section describes two overarching themes derived from an analysis of the interview data: teachers' 1) sources of distress and 2) sources of strength, since the disaster. Each primary theme is divided into sub-themes that encompass a combination of tangible and intangible sources of distress, as well as the resources and coping mechanisms harnessed by teachers to navigate these stressors.

6.4.1. Theme 1. Sources of distress

Nearly all participants (95%) described their most salient sources of post-disaster distress as related to: 1) the loss of material resources (78%), 2) experiences of trauma and distressing disaster memories (75%) and 3) disruptions to social connections (70%).

Sub-theme 1a. Loss of material resources

The loss of material resources since the disaster was conceptualised as a salient source of distress by over three-quarters of participants (see Figure 14).

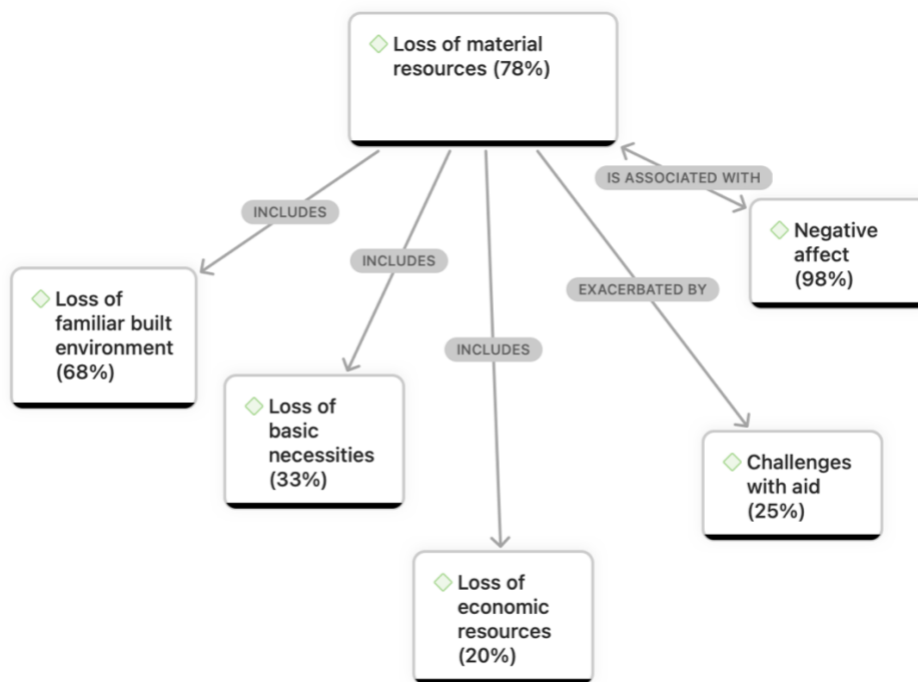


Figure 14. *Loss of material resources network chart*

Participants’ narratives frequently described the loss of material resources in the immediate aftermath of the disaster when it was challenging to access essential resources. Several participants highlighted the impact of this for vulnerable groups, including mothers with babies “...*who still needed milk and diapers*” (Teacher 22, School B). While initially the shortage of essential items was mitigated by support from friends, eventually some supplies ran out, causing psychological distress.

“After the help from our friends ran out... the milk... we were a bit overwhelmed.”
(Teacher 8, School A)

Often the scarcity of resources was attributed to an inadequate and inefficient aid response, which included administrative barriers to distribution. For many, the dearth of aid was related to not meeting the “*requirements*” necessary to qualify for assistance rather than a lack of perceived supply.

“We didn't have any help from the government. Though I thought there was a lot of help. At that time, there were a lot of requirements to bring. It seemed like they wanted to make it hard for us on purpose...” (Teacher 12, School A)

Some teachers expressed confusion regarding the processes that defined aid distribution. Difficulty accessing governmental support exacerbated the challenges associated with material losses for some participants and increased their reliance on social networks.

“According to information we received from friends that the quake fault line doesn't pass through our area. So, the impact like damage or death was not as much and as big as in other places. Hence, we didn't receive any aid in the village ... They were some donations from friends who were actually raising humanitarian funds independently.” (Teacher 8, School B)

The economic impact remained an ongoing stressor for several participants, particularly as governmental policies that initially provided economic support ended. This impacted the financial plans of some teachers, including due to debt related issues.

“Debt - It's been on my mind. At the time of the tsunami, the government gave a policy for suspension. There was a suspension of bank loans for 6 months, and then thankfully, I only had 5 months left at the bank. If so, after retirement, I would still have debt. Actually, that's what bothered me a bit.” (Teacher 19, School B)

In addition to financial resources, another salient material loss that caused distress was damage to and displacement from homes. The distress of losing one's home was particularly striking given the sudden nature of the loss.

“We lost everything at once. Built for years in just a few minutes, everything vanished. I used to think that I was wandering and I would come back again, the house would still be there.” (Teacher 18, School B)

Some participants reflected on witnessing their damaged residences. This was associated with negative affect, for instance, some participants expressed a reluctance or fear to re-enter their homes.

“He [son] saw that the house had a lot of cracks and collapsed, so he didn't dare to enter either. Only when his father accompanied him did he dare to enter the house. Even then, it only took a few minutes and then ran out again.” (Teacher 14, School A)

Conversely, repairing damaged infrastructure or being allocated a new home through government rehousing schemes was conceptualised as facilitating recovery, by symbolising a return to normality and removing ongoing reminders of the disaster.

“If you look at the current situation, especially in Biromaru, where the broken houses have been repaired, the fear of the last earthquake is getting better now.” (Teacher 4, School A)

A small number of teachers were also negatively impacted by the loss of their familiar school buildings. Some teachers expressed their sense that political decisions regarding reconstruction had been inequitable and confusing, which intensified their ongoing distress.

“... my school is on the side of the beach, there is also the shipping vocational school. Both were damaged, because they were both hit by the tsunami, because they were both on the coast, for the vocational school, they are under the authority of the provincial government, while we are under the city government. Our school was worse but I'm confused as to why there has been no progress to rehabilitate our school.” (Teacher 34, School C)

Overall, disaster-affected teachers conceptualised the loss of material resources as causing significant distress, deriving from the scarcity of essential resources in the immediate aftermath of the disaster, as well as due to the ongoing damage to infrastructure, including to homes and school buildings. The loss of material resources also heightened concerns about teachers' economic sufficiency. These challenges were exacerbated by the perceived lack of government support regarding aid distribution.

Sub-theme 1b. Experiences of trauma and distressing disaster memories

Three quarters of participants attributed post-disaster psychological distress and negative affect to their experiences of trauma and distressing disaster memories (see Figure 15)

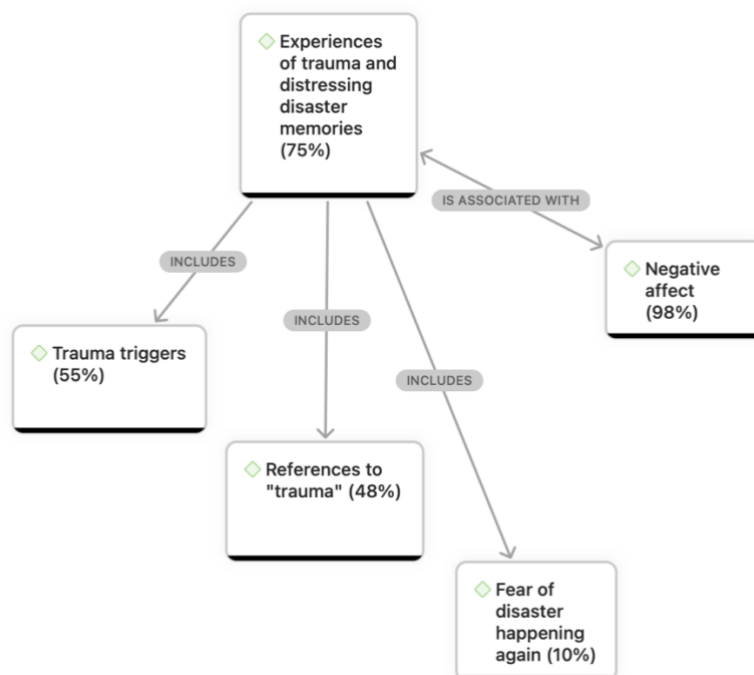


Figure 15. *Experiences of trauma and distressing disaster memories network chart*

Many teachers explicitly referred to the term “*trauma*” when describing their distress that began soon after the disaster and continued “*until now*”.

“Crying when remembering what happened. ... Until now, the fearful feeling of being together with my relatives still haunts me ... Fear comes again and again ... I think it's a feeling of trauma.” (Teacher 32, School C)

Distress related to experiences of “*trauma*” influenced teachers’ post-disaster responses. For example, teachers attributed evacuating the area and a prolonged desire to stay away from the region to trauma.

“... he [husband] went home although he was in severe trauma, he still went due to receiving the aid ... Because I was still traumatised, still shaking, while my husband went back with an uneasy feeling.” (Teacher 24, School B).

Teachers described their persistent avoidance of localised disaster-affected areas, as these places triggered “*a sense of trauma*”, particularly the areas that experienced liquefaction.

“There must be a sense of trauma when going to the Petobo and Balaroa [liquefaction] areas.” (Teacher 13, School A)

Aside from the most highly devastated regions, the beach was also represented as a place associated with trauma.

“... Trauma, especially we have not dared to go to Talise beach until now. I never dared to take my children there. Mum, dad let’s go for a refreshing walk there. But I said I didn’t want to go, I was traumatised, maybe only to the side of the beach. If another beach, I still dare to go there, I don’t dare because the sea has already gotten deeper, ma’am. Who knows, maybe it’s God’s warning.” (Teacher 26, School B)

Some teachers explained that since the disaster they avoided beach-related activities in the Palu region, including swimming. One teacher expressed that this avoidance was due to an association of the water with corpses.

“... But for swimming in the sea, I am still scared because there were a lot of corpses there before. The fear still hasn’t faded for me to swim, except on the west coast outside of Palu, I think I am brave. In Palu, I can’t swim. I can sit around enjoying the beauty of Palu city from the sea. For swimming, I can go to other districts because I am still traumatised recalling the many corpses found in the sea, on the side of the beach.” (Teacher 34, School C)

Besides swimming, symptoms of traumatic stress occurred during other routine activities, including taking a lift and a train journey.

“... I stayed last night looking for a relative for lodging, but there happened to be an elevator. I couldn’t sleep until dawn. I was so scared to get in the lift. I was also still

afraid every time I took a train, I just could not forget it.” (Teacher 37, School B)

Another source of trauma-related anxiety for participants concerned their children. For some, this manifested as increased anxiety regarding their children’s broader welfare, such as during ill-health.

“After the earthquake, I lost my child, so I became anxious and afraid to lose him if my child was sick.” (Teacher 13, School A)

Several teachers described noises associated with sounds heard on the night of the disaster that triggered distressing disaster memories and induced “*panic*”, causing “*shaking*”. These sensory triggers frequently involved vehicles moving past buildings, due to a “*loud noise*”, including the “*rumble*” of cars. Some teachers noted that their reaction eased with the passage of time (see Teacher 13 quotation), whereas for others, the panic remained ongoing (see Teacher 1 quotation).

“Now, it's been several years. When I hear the sound of a car like that, it doesn't make me panic anymore. In the first year, when a car sounded like that, we spontaneously ran to the field” (Teacher 13, School A)

“... you see, our school has several floors... if I'm upstairs and there's a truck passing by, I still got surprised too. I'm trying to ease the trauma, but the thing is still there.” (Teacher 1, School A)

Teachers described disruptions to their daily routines and examples of functional impairment due to trauma-related distress. For example, some teachers described “... *sleeping in the living room ...*”, leaving their bathroom unlocked and shower doors open, which they attributed to a pervasive sense of fear.

“... I recently had the chance to tell the children that if you're alone at home when you take a shower, you don't have to close the bathroom door ... Likewise, if you sleep when you're alone in the house ... Try not to lock the door and just open it so that if

something goes wrong we can get out quickly to save ourselves.” (Teacher 38, School C)

While many teachers described adapting back to previous behaviours and routines, lingering negative affect remained for many. For example, one teacher discussed that despite moving back to a concrete house, they continue to “*brace*” themselves due to the association of concrete buildings with disaster casualties.

“My parent has a wooden house and I prefer to stay there. And also, most of the people died in concrete houses. At that time I was afraid to live at the house like that, but I brace myself now.” (Teacher 3, School A)

Several participants described experiencing panic induced by minor tremors since the disaster, including bodily sensations of trembling. Although this was heightened in the immediate aftermath of the disaster, some teachers expressed that their anxiety regarding future disasters continues “*until now*”. Several teachers articulated that “*the trauma has gone*” until they are reminded of the disaster through the occurrence of minor earthquakes, which are frequent in the highly seismic region.

“ ... Even now when there's a slight earthquake... we ran outside “Run fast! There's an earthquake!” Even though, it might only be a small earthquake.” (Teacher 9, School A)

For a small number of teachers, anxiety regarding seismic activity manifested as a persistent “*worry that [disaster] will happen again*” (Teacher 40, School C). However, heightened vigilance was also evident when faced with other extreme weather events, such as “*strong wind*”, and incidents such as a “*fire at the Inpres market*”.

“When talking about trauma ... until now, it is still the same, sometimes when there was a strong wind, since the school is on the beach side, stay alert. If the wind is strong.” (Teacher 36, School B)

In summary, most teachers explicitly referred to their experiences of “*trauma*”. While teachers often described this easing with the passage of time, many reflected on persistent traumatic distress, characterised by their avoidance of disaster-associated areas and experiencing trauma triggers, such as loud noises and minor tremors.

Sub-theme 1c. Disruption to social connections

A large proportion of teachers articulated instances of psychological distress related to disrupted social connections (see Figure 16), featuring separation from family members, concerns for others wellbeing, loss of life and associated grief.

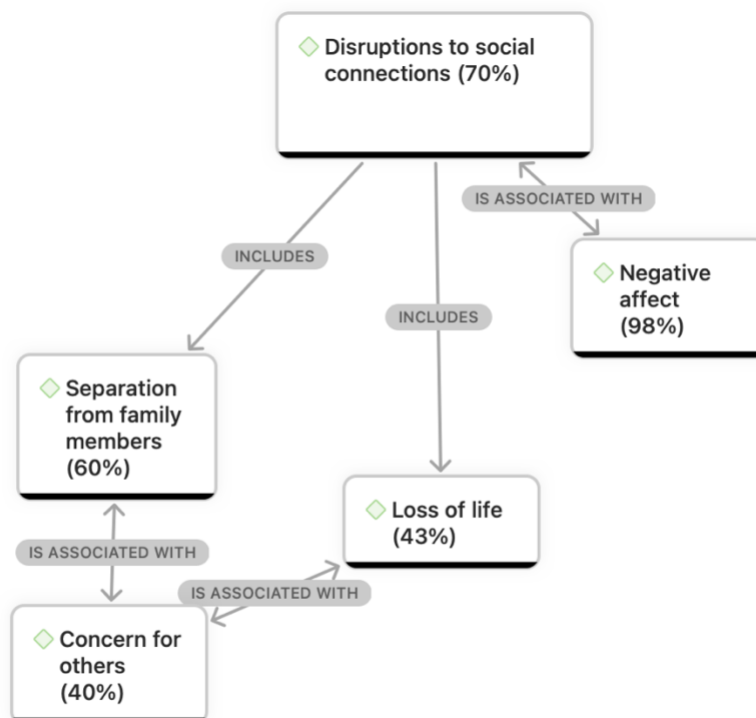


Figure 16. *Disruption to social connections*

Often teachers’ accounts of separation from family members featured in their peri-disaster narratives. This induced a significant amount of distress, particularly for teachers who were parents, as many of them were not with their children when the disaster occurred and were unable to contact them as there was “*no telephone network*”. Teachers described feeling, “*scared*”, “*afraid*”, “*sad*” and experienced “*trauma*” due to a fear they may die without their family and concerns regarding family members’ safety.

“... that was all about the trauma because I was separated from the children.”

(Teacher 17, School B)

While family separation caused distress mainly in the peri-disaster and immediate disaster aftermath, some teachers elaborated on their ongoing anxieties regarding separation from family members.

“... So, every time my husband went to work, I was afraid, and felt uncomfortable. So, what is it... So, I usually tell my husband, I have to come along with him, do not leave me alone, because by being alone would trigger my trauma.” (Teacher 7, School A)

This also impacted the teachers' children, as they experienced distress when spending time away from family members, including when sleeping alone. As a result, some teachers expressed concerned for the wellbeing of their children.

“For instance, when I was at home with the children and their father was late coming home, they cried, saying that something should not happen to their father.” (Teacher 13, School A)

Another source of interpersonal distress stemmed from teachers' experiences with loss of life, including personal losses and concern for grieving community members. In teachers' peri-disaster accounts, death was often associated with regions that experienced liquefaction. Narratives of searching for bodies included sensory descriptions of the “*smell of corpses*” as relatives looked among “*thousands of corpses in the hospital yard*”, “*some were naked*” and some had “*started to swell and rot*”. For many, the process of searching for lost relatives was extremely distressing.

*"This is the location of your missing child. Can we go there the mud is still wet?"
We can't go there. Even then, he [a relative] cried and did not want to leave the place. He was desperate to go into the mud looking for his grandchildren and children. If he doesn't comply with his request to be brought there [liquefaction*

area] he will continue screaming and crying.” (Teacher 14, School A)

For many, distress was heightened by being unable to recover or identify the bodies of deceased relatives due to extensive disaster debris and sediment deposition, as well as burials taking place in “*a public grave*”. Other teachers expressed gratitude for retrieving relatives’ bodies, as they felt that grief was exacerbated for family members who were unable to.

”... I was grateful that we found their bodies, while others couldn't.” (Teacher 29, School B)

Some teachers lamented the loss of pre-disaster Palu, as they reflected that the city’s material and social fabric are intertwined and that both had been irreversibly altered by the disaster.

“Honestly really miss Palu before the tsunami happened because there were so many memories of Palu, in areas where liquefaction happened, it was a place where I played when I was little. The mosques in Balaroa and Petobo, there were also my colleagues and my family whom he and his child have not been found until now. When you think back, it is very sad. Until now, my cousin and his son have not been found because he was carried away by the liquefaction in Petobo ...” (Teacher 34, School B)

Certain teachers expressed that the grieving process caused the most distress in the immediate aftermath of the disaster, followed by a gradual alleviation in survivors’ sense of loss with the passage of time. For example, Teacher 22 (School B) expressed that for their relative, “*the mourn lasted for about a year, mourning and crying continuously due to the death of her oldest child.*”

However, others conveyed a pervasive sense of loss, particularly as their experiences of grief have been intensified by the ongoing retrieval of corpses from regions impacted by liquefaction.

“Because of the impact, we have lost our families as well as the village, and nothing is left because it has washed away with the ground. Houses were destroyed and

collapsed and many people died. Many people have not been found till this moment. And recently the body was found again in the Petobo area. Even though it happened a long time ago, there's still a lot of bodies buried there, so pity.” (Teacher 2, School A)

In summary, disruption to the social fabric of Palu caused teachers’ psychological distress. Teachers’ narratives detailed accounts of loss and grief, both personally and through witnessing the distress of others processing bereavement. This included vivid descriptions of searching disaster debris for bodies. Expressions of gratitude for locating lost relatives contrasted with distressing accounts of those unable to find family members. More broadly, several teachers mourned the irreversible transformation of the social fabric of their pre-disaster community. Some teachers expressed that the intensity of their feelings of loss eased with the passage of time. However, ongoing distress is also attributed to concerns regarding their family members, as some teachers reporting lingering anxieties related to their wellbeing and separation from them.

6.4.2. Theme 2. Sources of strength

The first theme elucidated the teachers’ most salient sources of disaster-related distress, whereas the second sheds light on how teachers experienced coping with these post-disaster stressors to foster resilience. To cope with disaster-related stressors, all teachers (100%) reported drawing on numerous sources of strength: intrapersonal strategies (93%), religiosity (88%) and psychosocial and mutual support (83%). Although the themes are reported separately due to being comprised of distinct codes, the interconnections between aspects of the themes are highlighted in the network charts (indicated by the ‘*associated with*’ nodes) and discussed in-text.

Sub-theme 2a. Intrapersonal strategies

To cope with disaster-related stressors, nearly all teachers drew on their intrapersonal strategies, including cultivating mental strength, self-regulating and keeping calm, distracting oneself from distressing disaster memories and maintaining a sense of hope for the future (see Figure 17). Although this theme reports the non-religious aspects of teachers’ narratives,

teachers' discussions of their intrapersonal resources are often closely related to religiosity, as discussed in sub-theme 2b. Similarly, some teachers' discussions of collectively experienced intrapersonal resources are associated with coping through social and mutual support, which is elaborated on in sub-theme 2c.

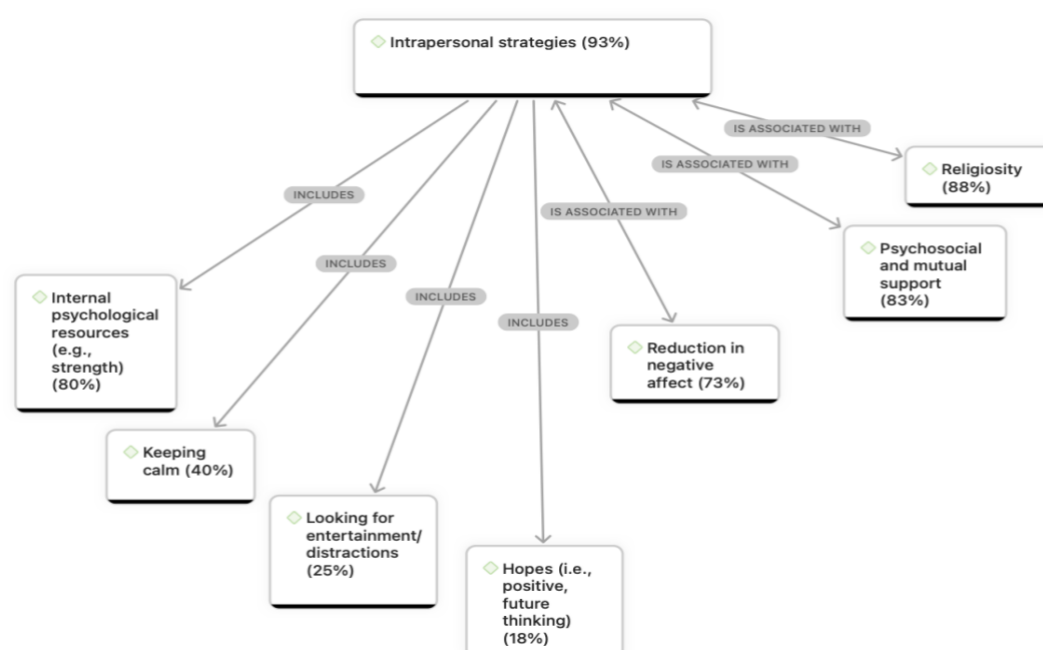


Figure 17. *Intrapersonal strategies network chart*

Nearly all teachers drew on their internal psychological resources when faced with adversity, which often related to cultivating “*strength*”, such as the need to “*have a strong mentality*” and to self-sufficiently “*rise up*” to overcome the disaster impacts.

For some teachers, their efforts to cope by harnessing intrapersonal strategies was necessitated by a lack of material support from NGOs or the government.

“From all of that, we were the ones who have to rise up ourselves. Not getting any help or support from other people or government.” (Teacher 8, School A)

Avoiding dwelling on the disaster featured as a common coping mechanism that was considered crucial for facilitating psychological recovery, to have a “*happy mind*”.

Conversely, ruminating about the disaster was conceptualised as a cause of poor psychological health.

“... don't think it too much and get us sick.” (Teacher 10, School A)

To avoid rumination, teachers often discussed keeping busy to “*distract our mind*” from the disaster situation through activities such as reading.

“... So, my mind would be... what is it called... not focused on what has happened. So, I looked for a light reading, or just entertained myself, and did some works that can distract my mind. So, I won't focus on what already happened. Just made myself busy.”
(Teacher 7, School A)

Besides participating in distracting activities, some teachers engaged in cognitive avoidance by trying to “*forget*” the disaster and by “*pretending that disaster never existed*”. Some felt that this ensured they did not reminisce on the incident, which allowed them to navigate away from negative affect to move forward.

“... we'll go through it, we'll open a new page. Don't have to remember the past. Even if a slight thing happened, I would definitely remember it, but I will try to forget it.”
(Teacher 28, School B)

Besides using intrapersonal strategies to self-sufficiently manage disaster stressors, teachers often referred to these as collective acts. For example, the aspiration to “*move forward*” and cultivate a “*fighting spirit*” was considered achievable by encouraging one another to collectively overcome stressors.

*“Reminded each other that **we** must move forward with **together** and have a fighting spirit in this life”* (Teacher 4, School A)

To further foster collective recovery, teachers used their own intrapersonal strategies to support and motivate their students. United by the shared disaster experience, both teachers and students mutually “*strengthen each other*”. Therefore, there were some associations

between discussions of intrapersonal coping and the role of social support in teachers' narratives.

"... Even psychologically, I haven't recovered yet... but I tried to strengthen them [their students] by giving a hug, words to strengthen and motivate them. Something like that... Personally, I was still in that feeling... So, in the class atmosphere, especially the atmosphere studying in tent, we can share and strengthen each other."
(Teacher 7, School A)

Teachers frequently expressed the need to exhibit intrapersonal strength for others, particularly to support family members, including relatives impacted by bereavement and their own children. They expressed a determination to "*be strong*" and "*bounce back*" as a prerequisite for supporting others' recovery.

"Almost 90% of the family in Petobo died ... I am determined to keep getting up, the spirit to help my family." (Teacher 5, School A)

"... his [son's] fear disappeared little by little, it started with us first, to bounce back, showing that we could, then the rest of the family" (Teacher 17, School B)

Furthermore, teachers frequently engaged in downward social comparison of disaster losses, which fostered a sense of gratitude that their adversities were not as severe as those experienced by some others. This comparative reflection motivated teachers "*to be strong*" to provide support for individuals with more direct or severe losses, such as grieving relatives coping with the loss of their children.

"We strengthened each other ... even though I panicked, I had to balance my cousin because she was a bit out of control; sometimes, she screams either at night or in the early morning because she remembers her only child. ... I tried to be strong because we weren't the only victims. Many other people around us are also victims, and their situation is worse than ours." (Teacher 14, School A)

Despite ongoing adversity, many teachers maintained an optimistic outlook towards the

future, as they expressed a hope that their city can “*rise like before*”. Relatedly, some teachers maintained a sense of hope that future disasters could be avoided.

“What I mean is, after this earthquake, I have to keep moving on, and hopefully in the future, there will be no more incidents like what happened in Palu, Sigi and Donggala. Hopefully it won’t happen again, and could be safer.” (Teacher 2, School A)

Others acknowledged the highly seismic nature of the region but felt that being “*mentally strong*” and demonstrating “*courage*” would enable them to better cope with future disasters.

“... we must have courage to live and live in a disaster-prone place like this ...”
(Teacher 39, School C)

Teacher’s elaborations of their intrapersonal strategies often overlapped with coping mechanisms anchored to religious beliefs, particularly related to feelings of gratitude and strength from God (see Theme 2b). However, some teachers conveyed gratitude for their survival without invoking religious references. This often related to a sense of appreciation for family members safety, despite recounting extensive losses and witnessing potentially traumatic situations.

“My son, who witnessed that our house was gone ... As long as we were safe. Their father ... helped our neighbour who passed away and was brought by the hospital’s car. The car couldn’t go through because every road had broken off. They were forced to carry the corpse. That time, I was deeply grateful inside my heart that I was given an extraordinary opportunity.” (Teacher 15, School B)

Some teachers expressed that their feelings of gratitude acted as a catalyst for fostering personal growth and motivating self-improvement.

“Grateful for being given life, grateful for being given the opportunity to improve myself.” (Teacher 11, School A)

Overall, teachers employed various intrapersonal coping strategies, including cultivating a strong mentality, expressing gratitude and harnessing a sense of inner strength. To avoid rumination, teachers disengaged from rumination about disaster by participating in distracting activities. A few teachers eliminated disaster-related thoughts through cognitive avoidance. These intrapersonal strategies were often collectively experienced as survivors mutually strengthened one another. Despite ongoing adversity, teachers maintained a sense of optimism for the future by expressing hope that their city will recover and a sense of gratitude for their survival. Some teachers fostered gratitude and strength through their religious beliefs, such as by framing the disaster as God’s will and/or a test from Allah, as will be elaborated in the following sub-theme.

Sub-theme 2b. Religiosity

For the large majority of teachers, religious faith, mainly Islam, was considered to be a source of post-disaster strength (see Figure 18).

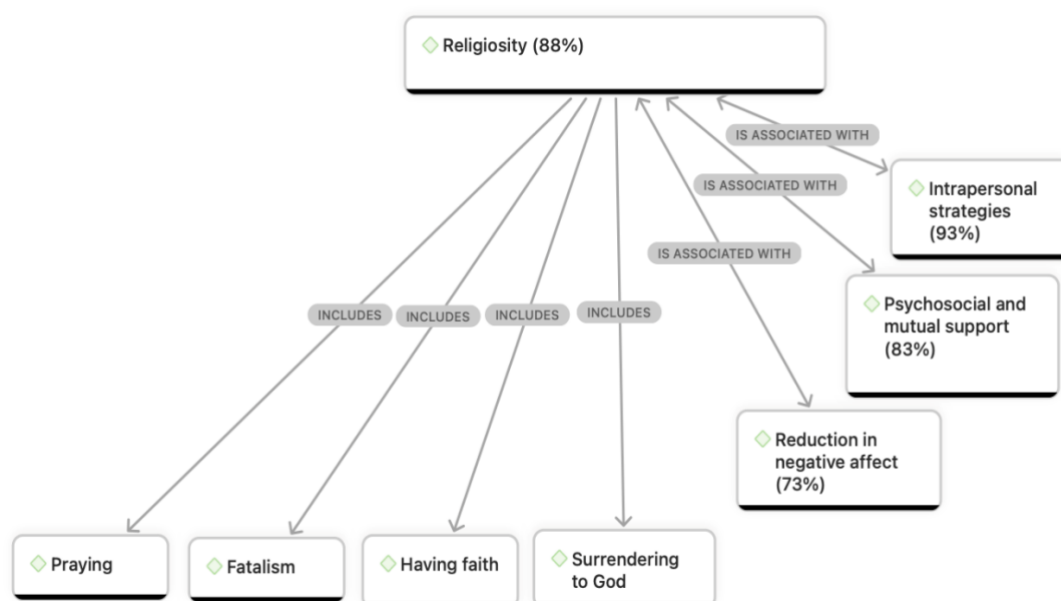


Figure 18. *Religiosity network chart*

Interlinked with the discussions of interpersonal resources reported in Theme 2, teachers’ belief that the disaster was “*destiny from Allah*” caused many participants to cognitively reframe their distressing disaster experiences into a sense of “*gratitude*” for being “*given a*

life” by God. This led some participants to describe increased enthusiasm for life, alleviating the negative emotional consequences of loss.

“Thus, my children and I are trying to be more enthusiastic to live life in the future, because God has given us the opportunity to live once more ... Yet, because we have been given the opportunity to live, we should try and think about how to move forward. How could we colour this life with joy?” (Teacher 4, School A)

Relatedly, as the disaster was considered by many teachers to be “a test from Allah”, teachers felt they needed to exhibit intrapersonal strength to “*get through all the trials*”.

“ ... it was sad but I felt that I was strong, I was given the strength by God ...” (Teacher 21, School B)

Such beliefs provided most teachers with a framework for understanding and deriving meaning from their disaster experiences. Numerous teachers found comfort in their fatalistic beliefs (i.e., that the disaster was pre-determined by God), including that the disaster and its outcomes were “*God’s will*”. Fatalistic beliefs offered a sense of hope for a positive future, as they felt the disaster constituted one component of a larger, divine plan.

“I strengthened myself that in fact it was all destiny from God.” (Teacher 5, School A)

For others, the belief that the disaster was a “*warning*” from God led to increased religious diligence, such as remembering to pray during work. For some, this was to pass “*his [Gods] test*”.

“But this was the will of God. That we were currently in His test...” (Teacher 10, School A)

For others, increased religious diligence was considered a means of self-improvement and growth by fostering a closer relationship with God to “*improve yourself*” and to feel “*enlightened spiritually*”. This was considered particularly important as God had given the survivors “*the opportunity to live*”.

“I sit on a lot of Qur’an study class, recitations, in the mosque or in the Taklim Assembly.” (Teacher 1, School A)

At an individual level, engaging in religious practices provided comfort and support, as some teachers expressed overcoming negative affect and feeling strengthened by their “*main obligation*” to pray.

“... I keep praying to God to give me strength in my heart and soul.... what is it called... a spirit to recover from the disaster, psychologically, it was like that.” (Teacher 7, School A)

Notably, prayer and surrendering oneself to God supported teachers’ emotional regulation, resulting in feelings of calm and a reduction of panic.

“Even though the sea water was already up, I still calmed myself down. You see, we have Allah, dhikr [prayer] couldn't be stopped from my mouth. Continuous dhikr was what calmed me down; I surrendered myself completely at that moment.” (Teacher 35, School C)

However, some teachers recognised that while praying was beneficial, they felt it was not able to eliminate their fears entirely.

“So we asked for suggestions, which prayers are better to make us feel safer and comfortable after praying and that's what we are doing till this moment, sir. But the feeling is still same every time the earthquake happened, I am still afraid, if I take a shower, I won't close the door.” (Teacher 3, School A)

Prayer was often described as a communal activity, which brought disaster survivors with shared beliefs together, nurturing a sense of solidarity, comfort, belonging and support. In this way, coping through religiosity was associated with coping through drawing on social support, as discussed in sub-theme 2c.

“With the recitations and prayers that we did, we feel more comfortable and we had the meetings for every week and able to meet some friends as well.” (Teacher 3, School A)

The mosque was used as an evacuation location, where some teachers resided in the weeks following the disaster. This contributed to the positive representation of the mosque as a focal point for community cohesion and emotional support, alongside other community institutions, including the school.

“Even though it took a long time to restore or recover from the fear, anxiety, but I tried to surrender myself to Allah and gather with my family... gather with friends at the mosque, gather with friends at school. We support each other... give encouragement to each other.” (Teacher 9, School A)

Overall, religion, particularly Islamic faith, played a vital role in supporting teachers to cope with and derive meaning from their disaster experiences. Fatalistic beliefs provided teachers with comfort and hope for the future, as they put their faith in a divine plan. Some considered the disaster to be a test from God, which prompted increased religious diligence. Collective engagement in prayer united the teachers, fostering a sense of solidarity and belonging. This communal practice often occurred in the mosque, which was represented as a hub of both practical and emotional support. Nevertheless, while engaging in religious acts provided individuals with comfort, some teachers recognised it did not entirely eliminate their pervasive fears.

Sub-theme 2c. Psychosocial and mutual support

The large majority of teachers discussed the role of social and professional networks for supporting their coping by providing instrumental and psychosocial assistance (see Figure 19). This support was generally characterised by reciprocity, as teachers articulated providing and receiving assistance to collectively cope with post-disaster stressors. Besides the psychosocial support teachers valued from informal social networks (e.g., from friends and family), professional psychological support was discussed by just under a third of the sample.

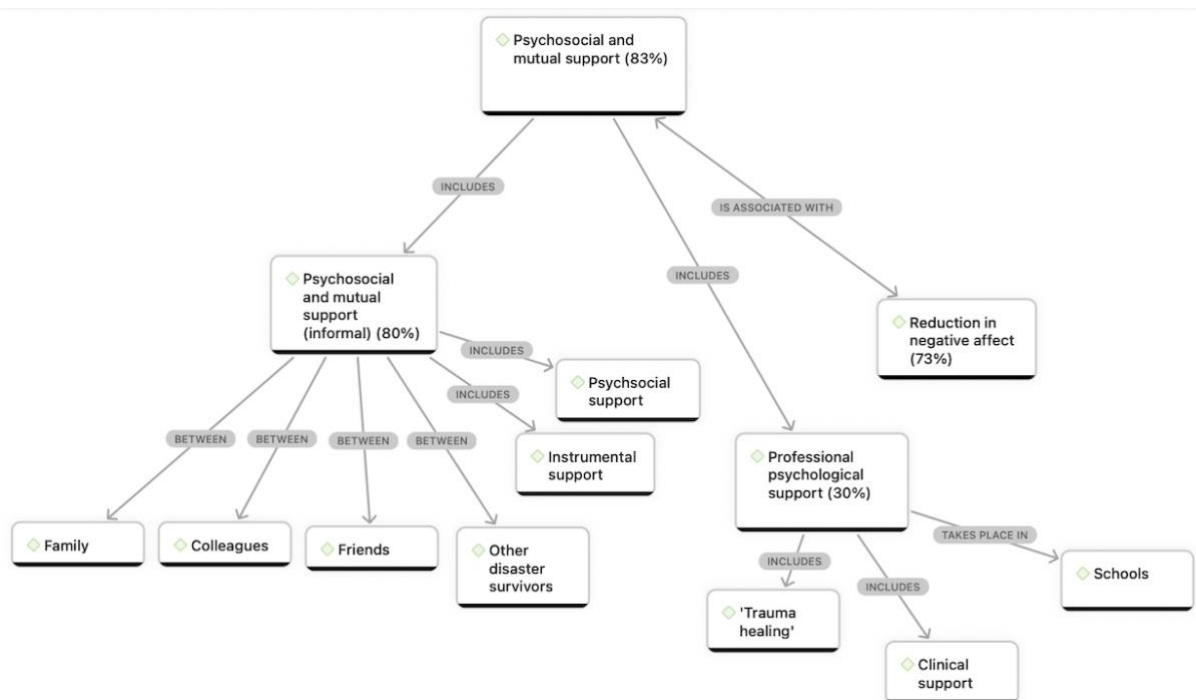


Figure 19. *Psychosocial and mutual support network chart*

Many teachers described the central role of their family members for providing both informal psychosocial and tangible forms of support.

“For me, personally, the most essential thing is the family support ... to still keep in touch even though we are miles away, if we have a willing to survive, and fight.”
(Teacher 7, School A)

Family members residing outside the region often provided basic necessities in the immediate disaster aftermath.

“At first, the help had not arrived. We only heard that there was help. But at that time, there was no[ne]. In fact, I only received shipments from my family, from Gorontalo. We didn’t have any help from the government.” (Teacher 12, School A)

While most post-disaster support occurred in the context of pre-existing relationships (e.g., family, friends and neighbours), assistance in the disaster’s aftermath was also provided by those who did not know each other but were united by the disaster experience. For example,

teachers described altruism among those they shared an evacuation space with, who shared tangible resources, such as food.

“After that, we mingled with the residents who took refuge there. At that time we didn't bring food. So me and my friends were given food by the people who were there.”
(Teacher 27, School B)

Some teachers felt that the reciprocal support among neighbours and friends after the disaster developed closer relationships and an enhanced appreciation for their social bonds.

“We can't deny that we are closer to the friends we hang out with. Sometimes [before the disaster] neighbours were neglected because we were busy ... After the earthquake, we made tents together, cooked together, even the people around the house.” (Teacher 16, School A)

Often teachers recalled providing support to others even when they lacked their own tangible resources. For example, a teacher described an incident during which she “*felt reluctant*” to lend a motorbike to someone but allowed it to be borrowed by reasoning that “*he needed it as well*”. Another teacher recounted sharing petrol with their friends who sought to evacuate the region, despite this being detrimental to their own evacuation plans.

“... on the fourth night, it was about half past three when we left the refugee camp with a motorbike, with about 30 people, we grouped together to get out of Palu ... I still remember my vehicle was full of fuel, so I tried to take fuel at home using a hose and I shared it with my friends. Arriving at the command post as well as arriving in Poso, we rested there. We had run out of fuel, sir.” (Teacher 19, School B).

Many teachers described forms of instrumental and psychosocial support from colleagues. A teacher residing in an area that experienced liquefaction described how her colleagues initially believed she had died as she lost her phone in the disaster. When colleagues heard of her survival, they visited her home and rallied together to donate material resources, such as clothes, to her and other severely affected teachers.

“ ... we were the victims of the disaster, there were four teachers. Everyone donated a little of what they had to the four of us. Thank God, my friends really wanted to help based on their capability. Others gave me clothes, because they knew my clothes weren't there, they gave me all the plates I used.” (Teacher 18, School B)

Returning to work following the disaster facilitated the reunion of colleagues, providing a welcome distraction from the post-disaster distress and offering a form of social support. This also provided a distraction from rumination, by enabling teachers to stay occupied and engage in social interactions

“Maybe, how we were together at school, instead of staying at home. If you went to school, you would have a lot of friends.” (Teacher 18, School B)

Psychological recovery was facilitated by “*sharing stories*” (*tutura*) with friends, colleagues and family members. Teachers felt that this gradually reduced their psychological distress by easing their disaster-related anxiety and rumination, resulting in “*the sadness and sorrow started disappearing*”. Feelings of solidarity based on collective experiences and emotions increased teachers’ willingness to open up to others, “*because they also felt the same*”.

“I shared stories to those closest to me about the worries and fears that arose, because after this incident, if there was a slight shock, I started to remember again, I started to worry again and I was afraid that it might happen again. So sharing stories with other people reduced the anxiety I felt a little.” (Teacher 27, School B)

Cathartic story sharing sometimes took place in refugee camps, bringing survivors without pre-existing social bonds together through sharing their collective disaster experiences.

“Those who didn't know each other before, slept together in the place where they evacuated, all listening to each other's stories, also heard a lot of information from others.” (Teacher 20, School B).

Providing support was conceptualised as mutually beneficial, as helping others was considered to reduce one’s own trauma and enhance personal strength.

“Means to awaken myself first, from the trauma, slowly with positive activities to help others who have experienced a disaster, then after I myself was strong, then I could try to overcome the trauma of my children.” (Teacher 16, School A)

The value teachers placed on mutual support may be particularly salient due to the sense that as survivors they were *“in this together”*, which encouraged teachers to support each other to collectively overcome the challenges of material resource scarcity.

“At that time I had a baby, and I was starting to run out of milk. So, my friends came and gave me encouragement ... It's not just us who were in a slump. Everyone was in the same position. So, we were in this together ... That's what they told us. The encouragement that we received... made us believe this too shall pass.” (Teacher 8, School A)

Some teachers mentioned that formal psychological support was accessible to teachers and students in the months following disaster. Nearly always, the support was provided in-school by external agencies such as non-governmental organisations (NGOs) or individual volunteers from another region of Indonesia (e.g., *“friends from Aceh”*). This was mentioned more often by teachers at School A (44%) compared to School B (23%) and C (18%).

“... we returned to school after a few months. Back to recovering the children's feelings with trauma healing and later from the government, central and regional governments as well as Aceh. Many have come to us sir. Helped recover the feelings of children and teachers.” (Teacher 12, School A)

In general, the emphasis of professional psychological support was to *“heal the trauma of the students”*, rather than the teachers. Teachers generally valued these supports, particularly as some teachers were trained in the methods, which they felt enhanced students' psychosocial recovery.

“Actually we had a learning method that was not learning about the material but how to control the student's trauma. How to get children to receive lessons. Just a lot of

singing, playing. Many also came here to motivate the students to get rid of the trauma.” (Teacher 18, School B)

Nevertheless, some teachers mentioned that in-school psychological support was accessible to both teachers and students in the months following disaster.

“... we returned to school after a few months. Back to recovering the children’s feelings with trauma healing and later from the government, central and regional governments as well as Aceh. Many have come to us sir. Helped recover the feelings of children and teachers.” (Teacher 12, School A)

In general, when ‘trauma healing’ was available to teachers, it well-accepted and considered beneficial for supporting their psychological recovery.

“Thank God, we healed little by little because we took part in trauma healing ... ”
(Teacher, 17, School B)

Some teachers felt that although they had benefitted from psychological support through their schools, they expressed concern that this was not accessible for other vulnerable groups, such as the elderly.

“After the first earthquake, after entering school, we had trauma healing. That was very impactful on me. My trauma was somewhat reduced. But for parents, such as my mother, who has retired from typing, she works at home, she didn't have any assistance at all. To relieve their trauma from the past earthquake.” (Teacher 28, School B)

Besides universal (i.e., available regardless of clinical diagnosis) psychological support offered in schools, mentions of targeted clinical psychological support were rare. Only occasional elaborations referred to individual experiences of reaching out or gaining support from medical professionals.

“Thank God the medicine that the doctor gave was more stable. He turned out to have depression medication there too. He gave. Maybe I got thinner due to thinking.”
(Teacher 18, School B)

In summary, teachers stressed the vital role of social and mutual support for providing instrumental and psychosocial assistance. Family members played a significant role in providing necessities in the absence of government aid. Reciprocal support occurred among neighbours, friends and those without pre-existing relationships who were bonded by the disaster, despite their own lack of resources. Colleagues also provided a valuable source of support, including rallying aid for the worst affected. Sharing stories affirmed collective experiences and alleviated distress. Providing support was conceptualised as mutually beneficial and strengthened the collective belief that the community can be overcome disaster challenges. Less often, professional psychological support, mainly trauma healing, was mentioned. In general, this took the form of a universal in-school support. Mentions of receiving individual clinical support were rare.

6.5. Discussion

This is the first qualitative study to elucidate disaster-affected teachers’ subjectively experienced sources of psychological distress and the coping strategies they employ to foster post-disaster resilience. These findings cast light on the various stressors that teachers grapple with after a disaster, encompassing damage to the material environment, experiences of trauma and social-related stressors, such as loss of life and separation from family members. Notably, teachers reported coping by harnessing intrapersonal strategies, psychosocial and mutual support and religiously.

Sources of distress

The findings revealed that 40 months post-disaster, most participants experienced simultaneous and multifaceted losses, causing psychological distress, particularly due to the suddenness and scale of the disaster. These losses included the primary impacts of the event and secondary stressors during the aftermath, featuring the loss of material resources, grief for relatives and an altered sense of community. Such losses are characteristic of disasters (Many et al., 2012). The resource loss spirals evidenced in the current findings are consistent with

COR theory (see Hobfoll, 2011). For instance, participants who lost their homes discussed cumulative losses, including to a sense of safety, psychological distress and economic resources, resulting in financial strain.

In addition to teachers struggling to meet basic needs due to a lack of available material resources, exacerbated by an insufficient and confusing aid distribution process, the findings suggest that the *symbolic* loss of material resources also induced distress. This includes the symbolic loss of the home, which pre-disaster tends to be emblematic of safety, security and comfort (e.g., Mallet, 2004; Sawyer et al., 2022). However, disasters can reconfigure the damaged home into a symbol of danger and fear (Harries, 2013). While discussed less frequently by teachers than damage to the home, the present study's findings tentatively suggest an equivalent reshaping of the symbolic role of schools. This is consistent with the perspective of students from the same region (Parrott et al., 2023b: Chapter 7). Further contributing to teachers' prevailing sense of loss and psychological distress, their descriptions of disruption to the physical environment were intertwined with experiences of loss of life. Both elements can rupture teachers' sense of place and contribute to grief for their pre-disaster life. This corroborates a growing body of literature using place theory to understand the devastating psychosocial impacts of the loss of the built environment post-disaster, including accompanying feelings of grief and distress (see Pacheco et al., 2022: Chapter 3, for a conceptual review).

Our previous work in the same region, which focused on understanding student, caregiver and teacher conceptualisations of community resilience, found that young people are more likely than adults to prioritise the reconstruction of the community's physical infrastructure, while adults desired a more general return to a sense of pre-disaster normality (Parrott et al., 2023a: Chapter 5). However, in this study, we identified that teachers were distressed by delays, perceived inequities and lack of communication regarding governmental reconstruction decisions. Teachers emphasised that rebuilding and restoring the built environment contributes to a symbolic community recovery and a sense of returning to normality, consistent with research from other post-disaster contexts (e.g., Cox & Perry, 2011; Silver & Grek-Martin, 2015). Furthermore, these findings support recommendations for the timely removal of disaster debris to support recovery by eradicating visible trauma triggers (e.g., Massazza et al., 2022).

A novel finding revealed by this analysis is that unprompted references to the term ‘trauma’ were salient in teachers’ responses. In many instances, teachers conceptualised themselves as being ‘traumatised’ or experiencing ‘trauma’. A potential explanation for this phenomenon is that NGOs delivery of ‘trauma healing’ in schools may have popularised the term, resulting in clinical concepts permeating teacher’s everyday dialogue. While the experience of a disaster is undoubtedly a potentially traumatic event, only a minority of those exposed to disaster develop clinical trauma diagnosed as PTSD (Bonanno, 2008; Bonanno et al., 2010; Kessler et al., 2017; Lai et al., 2017). While around a third of teachers from the sample met the criteria for probable PTSD or complex post-traumatic stress disorder (CPTSD) according to the ICD-11 (see Parrott et al., Under Review: Chapter 9), many who did not meet the clinical threshold self-identified as experiencing ‘trauma’ or feeling ‘traumatised’. This may have negative consequences, as the self-identification of mental health disorder can exacerbate psychological difficulties (Foulkes & Andrews, 2023). For example, a teacher who believes they are experiencing trauma may avoid trauma triggers (e.g., the beach), which can aggravate dysfunction, as avoidance is a PTSS and may prevent a return to pre-disaster routines (Many et al., 2012; Trickey, 2013). Therefore, instances of teachers identifying as ‘traumatised’ may amplify and prolong their psychological distress.

Nevertheless, among teachers, the concept of ‘trauma’ generally lacked diagnostic specificity and instead communicated a socially acceptable means of articulating their experiences of post-disaster distress. Future research would benefit from exploring how teachers in this context conceptualise ‘trauma’, as the teachers’ intended meaning of the term was often insufficiently elaborated on or unclear from the context of their responses. This research avenue is consistent with the growing interest in cultural articulations of distress (e.g., Atal & Foster, 2021; Jain & Orr, 2016), while the present study focused on teachers’ subjective *sources* of distress. This is important for assessing how teachers’ representations of trauma may influence their cognitive and behavioural responses. This finding also has implications for psychosocial interventions, which may benefit from avoiding diagnostic labels and clinical terms to prevent medicalising social problems.

Many teachers encountered psychological distress related to interpersonal relationships. This often featured during narratives detailing their peri-disaster situations, including distressing

sensory accounts of assisting loved ones searching for lost relatives in the debris and supporting their grief, including visiting hospitals and morgues. This finding is consistent with previous research from disaster settings that observes community members often contribute to retrieving corpses (Ghaffari-Nejad et al., 2007; Yamada et al., 2006). This process can be highly traumatic for disaster survivors (see Suwalowska et al., 2021 for a review); partaking in the recovery efforts of victims and identifying the deceased has been identified as a risk factor for PTSD (Tahernejad et al., 2023; Ursano et al., 1999). Being unable to locate relative's bodies can also prevent survivors from engaging in culturally valued rituals and burials, which for Muslims should occur within a 24-hour timeframe (Suwalowska et al., 2021). Failing to retrieve a body can delay certainty of death, which is necessary for processing grief (Hodgkinson, 1995). Some teachers mentioned that corpses continued to be recovered years after the disaster, therefore providing a visible reminder of the event, potentially acting as a trauma trigger and preventing a return to normality.

Sources of strength

Despite grappling with multiple stressors, these findings simultaneously indicate that teachers resourcefully and collectively drew on personally and culturally valued resources to support their recovery after the disaster. This supports the assertion that disasters do not always result in the full breakdown of societal functioning (Rajkumar et al., 2008). Some teachers' responses indicated that they experienced positive changes in several life domains post-disaster, including increased religiosity, appreciation for one's life and quality of social relationships, consistent with the phenomenon of 'post traumatic growth' (Calhoun & Tedeschi, 2006). The following coping strategies and their influence on teachers' resilient recovery will be discussed in turn: 1) intrapersonal strategies, 2) religiosity, 3) psychosocial and mutual support.

Intrapersonal strategies

Intrapersonal coping was salient in survivors' narratives, which involved teachers drawing on their personal psychological resources and dispositions to cope using cognitive and affective processing. The teachers' approach was generally 'forward focused', featuring distraction, optimism and actively moving beyond the event, rather than 'trauma focused', which involves

engaging in meaning-making, such as by reflecting on the meaning of the event and recalling event details (Bonanno, 2013). For example, teachers described coping through distraction by engaging in adaptive activities, including hobbies (e.g., reading) and socialising. Teachers valued these activities for avoiding reactivating negative affect and rumination, as ‘thinking too much’ was considered to result in psychological distress. This finding supports arguments that searching for meaning following a potentially traumatic event can hinder positive adjustment in some contexts, as it may result in maladaptive rumination and reinforce negative emotions (Bonanno, 2013; Park, 2010). Instead, the current study expands on existing arguments that suggest when a stressor is outside of one’s control, such as a disaster, engaging in forward focused coping, such as distraction, may be an adaptive coping strategy to regulate emotions (Van Zomeren et al., 2019).

However, although teachers felt their intrapersonal strategies supported them to manage overwhelming emotions, at times they described engaging in avoidant coping strategies, such as not visiting the beach. This is likely to impede long-term recovery as avoidant coping has been associated with poor psychological recovery (Cherry et al., 2017; Krause et al., 2008). Therefore, while interventions should not require participants to recall narratives of the event, as this may be retraumatising, it is likely to be beneficial to support teachers to restore a sense of normality through, when appropriate and possible, actively confronting disaster stressors.

Furthermore, a noteworthy finding is that even teachers’ inward and private strategies (e.g., cultivating inner strength) were often underpinned by social factors. Teachers collectively drew on the goals of the *community* when orienting themselves towards future thinking that fostered hope, such as rising from the adversity *together* and strengthening *one another* to overcome adversity. That future thinking is oriented towards community goals is characteristic of some collectivistic societies (Seginer, 2010). Consistent with resilience research in Sri Lanka (Fernando, 2012; Gunaratne & Kremer, 2021), we found that teachers exhibited intrapersonal strength and resilience *for* significant people in their lives, particularly their children. To care for their children, teachers aimed to minimise their personal psychological impacts, such as by regulating negative affect. This supports Gunaratne and Kremer’s (2021) assertion that such a highly social aspect of resilience may be a distinct feature of some collectivistic cultures, such as Indonesia, due to the emphasis on prioritising the wellbeing of others over oneself (Triandis et al., 1988).

As many teachers have a dual role as caregivers of their own children and providing support for students in school, this may explain why the need to ‘*be strong*’ is more salient for teachers than other groups, such as caregivers and students (see Parrott et al., 2023a: Chapter 5). Corroborating this, our earlier work found that students’ conceptualised teachers as ‘*reinforcing*’ and ‘*strengthening*’ them to cope with the disaster (Parrott et al., 2023b: Chapter 7). An implication of this finding is that teachers who are also parents may struggle to negotiate balancing supporting their own children’s recovery with returning to school soon after the disaster to support their students. Notably, teachers’ separation from their own children was a salient source of distress during and after the disaster. Therefore, the emotional impact of a return to school and teachers’ separation from their own children should be acknowledged and supported, such as through flexible working arrangements.

Psychosocial and mutual support

Our findings demonstrate that teachers’ descriptions of coping through social support were often characterised by reciprocity. This communal coping practice refers to an originally Javanese cultural idiom, *gotong royong*, which translates closely to mutual help. *Gotong royong* is central to building resilience after adversity in Indonesia by fostering social cohesion and sense of community, through both practical and psychosocial reciprocal support (Paton & Sagala, 2018; Taylor & Peace, 2015). Our findings regarding the instrumental forms of support teachers shared is consistent with research in post-disaster Java that found earthquake survivors demonstrated collective efficacy through working together to clean debris, restore infrastructure, bury the dead and distribute supplies (Schwarz, 2014).

These findings suggest *gotong royong* differs from coping through social support, which tends to be measured as individual strategies applied with the help of others (Little et al., 2012). Instead, the data suggests *gotong royong* is more closely aligned with the concept of *communal coping*, which denotes a *collective* problem-solving approach to cooperatively confront stressors with a sense of shared responsibility based on a shared appraisal that the stressor is *our problem* (Lyons et al., 1998; Włodarczyk et al., 2016). This fosters collaborative action to jointly address the situation (Lyons et al., 1998). This resonates with our finding that despite extensive personal material losses, teachers did not consider offering

support to others to be onerous, as *gotong royong* benefitted the community's collective recovery and welfare, which is highly valued in collectivist and majority Muslim cultures (Fischer et al., 2010; Schwarz, 2014). Engaging in gotong royong also enhanced teachers' resilience-determining personal resources, such as self and collective efficacy, consistent with the COR perspective (Bistricky et al., 2019). These findings also align with our previous research in the same region (Lomeli-Rodriguez et al., 2024; Parrott et al., 2023a: Chapter 5), which indicates that gotong royong is sustained beyond the immediate post-disaster period. This differs from findings in many other, predominantly Western, contexts that social support deteriorates rapidly with time elapsed since the disaster (Kaniasty & Norris, 2008).

In this sociocultural context, we found teachers valued sharing stories about their experiences. This finding aligns with research from disaster-affected Java in Indonesian (Schwarz, 2014), and our previous research conducted in the same disaster region (Lomeli-Rodriguez et al., 2024; Parrott et al., 2024: Chapter 8), in which we expressed that this culturally valued practice is likely to yield benefits for both individual and collective post-disaster resilience. Sharing stories benefits individuals by allowing survivors to feel heard, release emotions and learn from others' experiences (D'Cruz et al., 2020; Rimé, 2009), as well as providing informational and appraisal support to make meaning from adverse experiences (Kellas & Trees, 2006; Park, 2010). Collectively, sharing stories can build a sense of community (Mankowski & Rappaport, 2000), a shared identity (Aho, 2014; Van de Ven, 2020) and validate a shared trauma (Ainslie, 2013).

Expanding on this, our findings demonstrate that colleagues were generally considered as part of the teachers' in-group, with whom there was a desire to share their experiences and engage in reciprocal support with. Teachers' willingness to engage in this practice may be specific to the majority Islamic context, as, in general, Muslims tend to express their feelings openly with those they identify with compared to Christian populations in the West, who are more likely to repress emotions (Fischer et al., 2010). This builds on existing arguments that returning to work after a disaster can facilitate psychosocial recovery (e.g., due to increasing a sense of perceived control; Hobfoll et al., 2007b), as reunions with supportive colleagues is likely to be an interpersonal '*resource investment*' (Hobfoll, 2011) by facilitating access to social support and providing a distraction from rumination. This implies that teachers should be

afforded time and space to gather post-disaster, as sharing their experiences was conceptualised as assisting recovery.

However, stories shared among teachers should not all be negatively valenced. Literature on the ‘social sharing of emotions’ indicates that talking about one’s negative affect may sustain the emotional arousal associated with a traumatic memory and increase rumination, therefore in the long term, this may not be an adaptive coping strategy (see Rimé, 1998, 2009 for reviews). There is also a risk that retelling a story could be retraumatising (Diebold et al., 2020; Morrissey & Higgins, 2022). However, this perspective is not consistent with our findings, as teachers indicated positive affective experiences regarding storytelling. This may be because teachers also shared positive post-disaster responses, including accounts of prosocial helping behaviours and communal coping; the sharing of these experiences has been associated with benefiting positive collective affect including solidarity, hope and trust (De Rivera & Páez, 2007; Rimé, 2010).

Furthermore, while story sharing may reactivate an individual’s negative affect, it may be beneficial for the recovery of the *community* by reinforcing social integration and increasing collective hope and solidarity (De Rivera & Páez, 2007). This may be particularly valued given that most of the teachers are Muslim: Muslims have been found to place importance on interpersonal obligations and loyalties with the in-group, as their sense of fulfilment is tied to identification and solidarity within this community more so than for Christians of the West (Fischer et al., 2010). Transcending religion, this is also a characteristic feature of many collectivistic cultures, including Indonesia (Hofstede et al., 2010). The implication of this for psychosocial interventions is noteworthy, as story sharing must not automatically be assumed to consistently facilitate recovery. The content should be carefully moderated by intervention facilitators to prevent exclusively reflecting on negative and potentially traumatic experiences. This can be promoted by encouraging the sharing of narratives focused on coping and support to foster optimism and unity.

Notwithstanding the general belief that intrapersonal and interpersonal community-based coping strategies were valued most for dealing with post-disaster distress, the minority of teachers who mentioned professional psychological support conceptualised this as beneficial to their recovery. This is consistent with Murphy et al.’s (2018) finding that disaster survivors

valued post-disaster psychosocial support in the Indonesian region of Banda Aceh. This also corroborates our previous findings in the same region that ‘trauma healing’ and aid workers were represented positively by students, as their in-school support contributed to a representation of the school as a place of disaster recovery (Parrott et al., 2023b: Chapter 7). This contrasts with arguments that in some non-Western contexts formal psychological support is misaligned with the local community’s needs and lacks demand as it fails to tackle the root causes of distress (e.g., the social determinants of poor post-disaster mental health) (Roberts et al., 2020; Rose-Clarke et al., 2020). Our findings suggest that survivors desire professional psychological support (*trauma healing*), perhaps due to its psychosocial rather than clinical or biomedical approach.

Nevertheless, psychosocial support was desired by teachers in tandem with coping through intrapersonal and interpersonal support, as well as a demand for practical assistance to rebuild infrastructure and regain material resources. Therefore, it is crucial that interventions designed to support psychosocial coping do not overemphasise the individual in the recovery process or adopt a biomedical approach. Instead, as many teachers reflected on the enduring underlying material and economic causes of distress, psychosocial interventions must occur in tandem with policy and governmental programmes to reduce the social determinants of poor post-disaster mental health and improve socio-political conditions, such as community employability programmes as well as rehousing and rebuilding schemes.

Religiosity

Furthermore, we found that most teachers drew strength and gained meaning from their religious beliefs. For example, many teachers expressed a sense of gratitude for their survival as decided by God. Though this indicated that teachers tended to have a high external locus of control, which has been associated with higher levels of PTSD following disasters (see Güzel et al., 2024 for a review), our findings indicate that this belief facilitated teachers to come to terms with their losses. Religion supported teachers to maintain an optimistic sense of hope for the future, based on their belief that the disaster was a part of a larger divine plan. Among teachers who conceptualised the disaster as a test from God, they felt that this ‘strengthened’ their recovery and inspired their drive for self-improvement. While meaning making processes are not consistently associated with psychological adjustment post-trauma

(Park, 2010), in this study, the congruence between teachers' situational appraisals (e.g., of the disaster) and their global beliefs about the self and the world, resulted in teachers expressing that religiosity reduced their psychological distress and bolstered intrapersonal resources (e.g., gratitude, strength and calmness).

Furthermore, rather than expressing a putative representation of God that could potentially destabilise pre-disaster religious world views, which has been associated with higher rates of post-disaster psychopathology (Massazza et al., 2019b), we found that teachers expressed predominantly positive representations of God. Mentions of the disaster as a punishment, which can be detrimental to psychological wellbeing (Pargament, 2011), were rare. This is consistent with research from after the 2004 South Asian tsunami, which found religious beliefs support disaster positive affect and acceptance of the disaster (Agustini & Matsuo, 2012). Furthermore, the finding that collective devotional acts were valued (e.g., group prayer) aligns with research from post-disaster Chile, which found religious rituals to be positively associated with survivors' post-traumatic growth and social wellbeing, through the strengthening of in-group socialising (Wlodarczyk et al., 2016). Therefore, in this context, religiosity was conceptualised as bolstering survivors' psychosocial resources, thereby supporting teachers' recovery.

6.6. Strengths and limitations

Participants may have reported socially acceptable responses and omitted less desirable coping strategies, as commonly occurs in interview methods (Bergen & Labonté, 2020; Latkin et al., 2017). For example, if participants had engaged in substance abuse as a coping strategy, they may have felt unable to disclose this. Relatedly, as the interviews were conducted by Indonesian researchers of the majority faith (Islam), this may have influenced participants responses to be consistent with Islamic values and practices (Lomeli-Rodriguez et al., 2024). As the interviewers were also psychologists, this may have minimised the likelihood of the teacher's expressing any potential dissatisfaction with professional psychological support, particularly due to a tendency in some areas of Indonesia to avoid expressing strong negative feelings or complaining (Schwarz, 2014).

Use of the novel free-association GEM enabled a rich analysis of teachers' subjective experiences of the cognitive, behavioural and affective processes they employed to foster

resilience by tapping into their naturalistic thoughts and feelings (Joffe et al., 2014). This facilitated reflection and enabled an in-depth analysis to reveal complex and context-specific dynamics in teachers' conceptualisations. Compared to self-report questionnaires or open-ended questions, the method yielded rich and ecologically valid data. This was particularly appropriate for the intention of the research to be sensitive to culture and context (e.g., as advised by Atallah, 2016; Kirmayer et al., 2011; Ungar, 2008).

While the GEM is not limited to a specific theoretical or epistemological perspective, it has often been applied in conjunction with social representations theory (e.g., regarding representations of risk including earthquakes and global warming; Joffe et al., 2013 and Smith & Joffe, 2013). However, this study supports emerging arguments that the method, combined with a thematic analysis, is useful for advancing a phenomenological approach (e.g., Fardghassemi & Joffe, 2022). As the technique minimises researcher interference compared to other interview methods, this allows participants to naturalistically represent their lived experiences and the subjective meanings they give to phenomenon, which aligns with a phenomenological epistemology (Teherani et al., 2015). However, as the interview is participant led, the length and depth of GEM transcripts can vary between participants depending on their willingness to elaborate on their four initial associations. If a participant is unwilling to elaborate, this may limit the applicability of the method to a phenomenological framework, which requires rich qualitative data. Nevertheless, as the interviewer can probe the participant to elaborate further without injecting content to the greatest degree possible, in general, the method produces the nuanced and in-depth data required for a phenomenological approach.

6.7. Conclusion

This qualitative study explored teachers' subjective experiences of disaster-related stressors and the coping strategies they employed to navigate these challenges. In doing so, novel, context-specific dynamics in the pathways between post-disaster risk and resilience have been elucidated. These findings contribute to the evidence base regarding the disaster experiences of teachers in an LMIC, who constitute an under-researched and vulnerable occupational group. Furthermore, the findings of this study inform the development of a resilience building intervention to harness and promote the adaptive coping strategies that teachers valued for fostering their post-disaster recovery (Parrott et al., Under Review: Chapter 9).

Chapter 7. Adolescent girls’ representations of the role of schools and teachers post-disaster: “second parents, second homes”

Chapter 5 and 6 focused on understanding how the educational community conceptualised resilience following the disaster. This featured an analysis of the perspectives of teachers, students and their caregivers, as well as an exploration of teachers’ subjective experiences of post-disaster stressors and their sources of strength used to navigate these challenges. The focus in the subsequent two chapters shifts to consider the role of teachers and schools for supporting processes of resilience after disaster. Using the same interview method as Chapter 6, this chapter examines how students represent the role of schools and teachers after the disaster, with consideration of how these roles may foster or impede post-disaster resilience. While Chapter 5 drew on elements of a phenomenological framework to understand teachers’ personal lived experiences, this chapter seeks to investigate how students *represent* their school and teachers. Therefore, these findings are interpreted through the theoretical lens presented in Chapter 3: social representations theory and place attachment theory.

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7.1. Abstract

Disasters can result in poor psychosocial outcomes for adolescents. One pathway to mitigate these risks and foster resilience is via schools, where teachers can offer students support. However, existing research lacks consideration of the role schools and teachers play from the perspective of students, particularly those from marginalised populations. Therefore, this study examines adolescents' representations of the role of schools and teachers after a major disaster in Indonesia using a free association interview technique. Thematic analysis of adolescents' interviews ($N=46$) yielded two salient themes: 'the school as a place of recovery' and 'the school as a place of risk'. While the school and teachers were conceptualised positively in that they promoted students' recovery, students also identified aspects of the post-disaster school environment that produced uncertainty, loss and discomfort thereby heightening their sense of risk. The paper concludes with recommendations for resilience building, such as ensuring teachers receive relevant training.

7.2. Introduction

Adolescents are one of the most vulnerable groups after disasters (Norris et al., 2002; Peek, 2008). They have an increased risk of experiencing psychological challenges associated with trauma, grief and loss, including post-traumatic stress disorder (PTSD) and depression (Bonanno et al., 2010; Norris et al., 2002). These vulnerabilities are exacerbated for teenage girls (Green et al., 1991; McKinzie & Clay-Warner, 2021; Seddighi & Salmani, 2019). Nevertheless, a wealth of empirical research has demonstrated that, over time, most young people make a remarkable recovery considering the adversity encountered (Bonanno et al., 2010; Hechanova & Waelde, 2017; La Greca et al., 2013b). This finding has led to an increased focus on strengths-based research to investigate factors that contribute to young peoples' resilience, a research area that has risen in tandem with the increasing intensity of disasters (Masten, 2021; Masten et al., 2015; Paton & Johnston, 2017). We define resilience as the capacity to adapt positively to adversity, which depends on the functioning of dynamic systems at different levels (e.g., family, school and wider community) (Masten, 2001, 2019). Therefore, resilience is not an intrinsic characteristic of certain invulnerable adolescents (Roisman et al., 2002). Instead, a range of risk and protective factors, such as close relationships, increase or buffer the negative mental health effects of exposure to a stressor.

7.2.1. The role of the school post-disaster

The school system plays a crucial role in the resilience of adolescents (Masten, 2013). Immediately after a disaster, the school may be repurposed as a hub of community recovery, to provide relief such as food, medicine and psychological resources; it can operate as an evacuation location (Lai et al., 2016a; Matsuura & Shaw, 2015; Mutch, 2015a; Robinson et al., 2014). Upon reopening, besides providing educational continuity, schools are often used as sites of psychological support for students' mental health, coping and wellbeing (Lai et al., 2019; Masten & Narayan, 2012; Masten et al., 2015; Robinson et al., 2014). This change in the function of the school may alter how it is conceptualised in the minds of the community. For example, schools may become symbols of community recovery (Pacheco et al., 2022: Chapter 3), survival and a return to normality after major disruption (Masten & Obradovic, 2008). In a literature review, Mutch (2014) concludes that schools can operate as the 'glue' that holds the community together. For example, after the Christchurch earthquake, schools provided a stable

environment where teacher and peer support were central to enabling students to cope (Mooney et al., 2021; Mutch, 2015c). Taken together, these studies demonstrate the capacity of schools to bolster students' resilience post-disaster.

However, while there is a vast interdisciplinary literature on the role of schools for disaster preparedness and risk reduction, fewer works have focused on the role of the school in supporting students' psychosocial needs post-disaster, particularly in the long-term recovery phase (Mutch, 2014, 2018). Empirical work in this area often clusters around major disasters in high-income countries (e.g., Christchurch earthquake in New Zealand, Hurricane Katrina in the US). As a result, there is a paucity of research investigating the significance of schools for students' resilience after disasters in low-and-middle income countries (LMICs). Schools in LMICs may struggle to maintain systems after disasters, as they may be less equipped with psychosocial and economic resources. Despite this, schools may be an even greater asset for students' recovery in LMICs, which have fewer state-provided mental health resources and a lack of finance to access private resources (Seyle et al., 2013).

7.2.2. The role of teachers post-disaster

As one of the most trusted non-familial adults in young people's lives (de Berry et al., 2003), teachers play a multifaceted role in supporting students through adversity. Teachers are in a unique position to offer psychosocial support to students (Le Brocque et al., 2017) across contexts, including in Indonesia (Seyle et al., 2013). As teachers know students personally, they can provide a holistic assessment of students' needs, recognise deviations from normal behaviour and identify students who require additional support (Widyatmoko et al., 2011; Wolmer et al., 2011). Teachers can also assist coping, by listening to students' concerns and offering advice (Mooney et al., 2021; Prinstein et al., 1996). However, due to a lack of sufficient training and/or fear of exacerbating students' distress, teachers may struggle to support students emotionally (Johnson & Ronan, 2014). The perspectives of students regarding the role teachers play after disasters and the impact this has on their resilience remains underexplored in the current literature and will form the focus of this paper.

7.2.3 Theoretical framework

We draw on two complimentary theories to underpin the present study: social representations theory (SRT) and place attachment theory (see Pacheco et al., 2022: Chapter 3 for a synthesised framework).

SRT focuses on the widely held ideas or beliefs about novel phenomena that are shaped by interactions between individuals, groups and the socio-cultural context (Howarth, 2006; Marková, 2003; Moscovici, 1973). As disasters can substantially alter schools, the post-disaster school is a new entity for the students who return to it. When presented with a new phenomenon, the processes of anchoring and objectification enable its incorporation into existing meaning systems (Joffe, 2003) and common-sense thinking (Höijer, 2011). Anchoring involves the assimilation of the phenomenon into familiar, pre-existing social representations of similar known issues and objectification involves the concretization of abstract phenomena into tangible symbols, metaphors and images that are already familiar to the group (Moscovici, 1984). Thus, the concept of a social representation enables examination of how the post-disaster school is conceptualised by its students. In keeping with Hajir et al.'s (2022) recommendation to elevate less heard perspectives and lived experiences of what resilience means, SRT is a relevant framework for this study, as it has been applied to 'give voice' to socially disenfranchised groups (Zadeh, 2017), by allowing people to express their own subjectivity.

Social representations are structured by 'themata'; themata are the implicit 'dialogical antimonies' (Marková, 2003) that shape common-sense thinking (Smith & Joffe, 2013). Themata are dyadic, interdependent opposites, based on the tendency of humans to think in oppositions or antinomies (Marková, 2003). Since cultural values shape social representations (Duveen, 2007; Moscovici & Marková, 1998), examining themata elucidates how a given cultural group makes sense of social phenomena (Duveen, 2007). Therefore, in the present study, SRT offers a useful approach to reveal the deep-laid ways in which the role of schools and teachers are conceptualised in disaster settings; they enable exploration of the culture-specific, implicit logic of students' conceptualisations of their schools and teachers post-disaster.

Place attachment theory is also drawn on as schools are meaningful psychophysical spaces. Place attachment has been defined in a plethora of ways, reflecting the growing interest in the

concept and its theoretical development (Scannell & Gifford, 2010). Definitions generally converge on the construct involving bonding with a meaningful place, in a way that encompasses an interplay of thoughts, feelings and behaviours (Low & Altman, 1992; Scannell & Gifford, 2010). Seminal work on the phenomenology of place emphasises the emotive component of place attachment, arguing that the affective tie one has with a place fulfils fundamental human needs (Relph, 1976). Sub-concepts of place attachment (e.g., place identity and place dependence) also encompass emotional bonds, belonging, affiliation, commitment and satisfaction in relation to a place (Pretty et al., 2003). Students are expected to have fostered significant place bonds with their schools since they have spent a lot of time over a crucial developmental period in school (Pacheco et al., 2022: Chapter 3).

Theories of place are relevant to understanding psychological processes in disaster settings. For example, place attachment theory can shed light on why some individuals or groups may wish to stay in a dangerous place (Hay, 1998) and on how representations of one's environment can foster feelings of safety despite threat, such as in war zones (Billig, 2006). Place attachment theory also allows researchers to make sense of the feelings of distress and grief felt by displaced populations (e.g., Fried, 2000; Fullilove, 1996). Therefore, place theory is well suited to exploring the role played by the school in supporting or hindering students' resilience post-disaster.

7.2.4. Summary and current study

There is a growing body of literature on the role schools play in alleviating trauma and fostering resilience after disasters (Mutch, 2014; Pacheco et al., 2022: Chapter 3). Our recent conceptual analysis (Pacheco et al., 2022: Chapter 3) elucidates how and why schools may exist as meaningful places for children and their communities in disaster settings. However, we highlighted a dearth of empirical research that considers the role played by schools and teachers in supporting or hindering a resilient recovery post-disaster from the perspective of students, an absence that is particularly notable in LMICs.

To our knowledge, research in this area has not investigated the role played by teachers and schools post-disaster using place attachment or SRT. This novel approach will provide a complimentary lens to consider how features of the school's socio-physical environment may

foster or hinder post-disaster resilience from the perspective of young people. By capturing students' subjective perspectives three years after an initial disaster, we aim to provide deeper insight into students' long-term recovery processes in a region chronically vulnerable to seismic hazards.

The present study aims to address gaps in the current literature concerning the role of schools and teachers in post-disaster contexts. It asks:

1. How do adolescents represent the role of schools and teachers after the 2018 Indonesian earthquake/tsunami/landslide disaster?
2. In what ways do these representations foster or hinder students' resilience post-disaster?

7.3. Method

7.3.1. Research context

The Central Sulawesi region of Indonesia was impacted by a disaster on 28th September 2018 and a range of aftershocks. The disaster began with a powerful earthquake measuring 7.7 Mw that caused a tsunami and triggered liquefaction and landslides. It was devastating: 4340 people died, 211,000 people were displaced from their homes, 374 schools sustained major damage (Pemerintah Provinsi Sulawesi Tengah, 2019). Exacerbated by the COVID-19 pandemic, the reconstruction phase is ongoing.

7.3.2. Participants

Three mixed gender school sites were selected due to their exposure to different aspects of the disaster: School A to liquefaction, School B earthquake and School C tsunami. School A and B experienced structural damage, while School C incurred severe damage from flooding and sediment deposition. Each school was closed for several weeks before reopening in relief

tents.¹³ Due to the well-documented risk factors that make girls particularly vulnerable in disaster settings (Garfias Royo et al., 2022; Tearne et al., 2021), 46 female students aged 14 - 16 were randomly selected, contacted by their school and invited to participate.¹⁴ The majority of the sample can be described as low income; 95% of the sample reported a monthly household income of less than Indonesia's average wage (Wage Centre, 2023).¹⁵

7.3.3. Procedure

Informed consent was sought from the schools, participating students and their parents. Interviews were conducted at the school sites between January-February 2022¹⁶ by three Indonesian researchers online via Zoom. A research assistant was present in person to provide use of an iPad and to offer technical and emotional support. This allowed for the benefits of online interviewing, such as flexible schedules for the researchers, while mitigating some of the disadvantages, such as technological elitism (see Keen et al., 2022). Prior to conducting the interviews, all researchers participated in training led by the Principal Investigator (PI), who devised the method (Joffe & Elsey, 2014). Additionally, each researcher received feedback on at least one pilot interview from the PI, regarding their adherence to the method. This study was approved by the University College London research ethics committee (Project ID 0525/001).

¹³ School A experienced severe structural damage, with around 50% of buildings collapsed. School B incurred less devastating structural damage, including cracked and partially collapsed buildings. School C was inundated by tsunami, resulting in severe internal damage from flooding and sediment deposition. Relief tents reopened on site for School A and B and elsewhere in the region for School C, due to the extent of the damage and vulnerable coastal location. School A has ongoing concerns about the structural integrity of their buildings, School B remains functional, despite noticeable cracks and although School C was initially structurally sound, the school has been exposed to by monthly seawater flooding and structural corrosion over time.

¹⁴ This study is part of a larger interdisciplinary project that aims to foster resilient post-disaster recovery psychosocially and by improving water sanitation and hygiene (WASH) for girls. Girls are particularly vulnerable to the psychological impacts of disasters and are uniquely affected by inadequate WASH facilities due to biological and social factors (see Garfias Royo et al., 2022). Notably, this age group (14–16-year-old girls) are at risk of not returning to school post-disaster due to helping at home, stress of handling menarche and lack of toilet facilities.

¹⁵ The average monthly salary in Indonesia is reported as 8–9 million Indonesian Rupiah (Wage Centre, 2023). 74% of the sample reported their household income to be below 4 million Indonesian Rupiah. Only 5% reported their household income to be above 8 million Indonesian Rupiah.

¹⁶ Students' interviews were completed in this period. Data collection for teachers and caregivers continued until April 2022.

7.3.4. Data collection

The Grid Elaboration Method (GEM) was used to explore the perspectives and experiences of young people in-depth. The GEM is a free association technique that aims to reveal people's subjective thoughts and feelings regarding a given social issue. An initial free association task is followed by an interview that aims to minimise researcher interference to elicit stored, naturalistic responses (Joffe & Elsey, 2014).

For the free association task, participants were given a sheet of A4 paper containing a grid of four boxes and a prompt that asked: *'please write or draw your first thoughts and feelings regarding the role of teachers and schools in responding to the 2018 earthquake.'* Materials were translated into Bahasa Indonesian and interviews were conducted by Indonesian researchers. The prompt was reviewed for clarity and coherence in translation by local researchers, before being piloted with four students from the same community. Participants were instructed to give one idea per box and were reassured that there was no right or wrong answer. Figure 20 shows a completed grid. Next, in an interview, students were asked to elaborate on each box in turn and probed by researchers. Finally, a survey of demographic items and psychometric scales (reported elsewhere, including Parrott et al., Under Review: Chapter 9) were completed.

Q2.2 Silakan TULISKAN atau GAMBARKAN dalam bentuk kata-kata (kalimat) atau gambar yang berbeda yang terlintas dalam pikiran ketika Anda berpikir tentang pengalaman Anda akan peran guru dan sekolah setelah kejadian bencana 2018. Anda dapat memberikan satu pemikiran/gambar per kotak. Terkadang gambar atau kata yang sangat sederhana bisa menjadi cara yang baik untuk menunjukkan pikiran dan perasaan Anda. Tidak ada jawaban yang benar atau salah. Setiap orang dapat memiliki jawaban yang berbeda.

1 Pikiran reva Setelah kejadian bencana 2018. disitu reva pikir Sekolah reva hancur karena tsunami dan gempa. My thoughts after the 2018 disaster, I thought my school was destroyed because of the earthquake and tsunami	2 dan pada saat itu juga reva berpikir guru reva selamat atau tidak. At that time I also thought whether my teacher was safe or not
3 Peran guru menghilangkan trauma dan bisa membant kita sebagai siswa The teacher's role was to help us as students relieve trauma	4 Pengalaman saya . bisa berkumpul dengan teman dan guru . dan juga bisa bermain lagi bersama teman My experience was being able to gather with friends and teachers, and also able to play again with friends

Figure 20. A completed GEM grid

7.3.5. Data analysis

Interview audio files were transcribed verbatim and translated into English. A thematic analysis (TA) was conducted on the interview data (Joffe, 2012; Joffe & Yardley, 2004) using the qualitative analytic software Atlas ti. TA is a method for identifying and analysing patterns of meaning (themes) prevalent in the dataset (Joffe & Yardley, 2004) To conduct the analysis, we read the data set thoroughly before inductively devising a coding frame (see Appendix G). An inductive approach was considered appropriate to prioritise students' voices and to explore unanticipated findings. We followed the recommendation of Barker and Pistrang (2005) to test the reliability of the coding frame. The first and second author independently double coded

three interviews finding 83% agreement, which is sufficient reliability (O'Connor & Joffe, 2020). Discrepancies were discussed and the coding frame was finalised before the full data set was coded; the coding process involved assigning labels (codes) from the coding frame to the data. Patterns in the data were then reviewed and the codes were clustered into themes relevant to answering the research questions. Thematic networks were created to visually present the connections between codes and how they constitute a theme.

7.4. Results

Two major antithetical, themes were evident in the data: the school as a place of recovery and the school as a place of risk (see Table 4). Most students represented their school simultaneously as a place of recovery and a place of risk (85%), while the content of a minority of students' elaborations clustered around the school as solely a place of recovery (11%) and even fewer discussed the school only as a place of risk (4%). Generally, students' elaborations were similar across the three sites, but notable differences are discussed.

Table 4

Themes reported in Chapter 7

The school as a place of recovery (96%)	The school as a place of risk (89%)
Consists of:	Consists of:
The school as a social place (91%): • Role of friends • Teachers supporting students • Volunteers and NGOs • Donations and Aid	The school as a place of physical risk (59%): • Physical environmental damage • Temporary school
The school as a site for recovery activities (54%): • Disaster recovery activities • Trauma healing	The school as a place of social disruption (43%): • Loss of life and community members • Inactive teacher
	The school as a place of routine disruption (39%): • School challenges • Change in rules and routine

Above are associated with **positive**
emotional experiences (63%)

Above are associated with **negative**
emotional experiences (70%)

Theme 1. The school as a place of recovery

Nearly all students represented the school as a place of recovery, which was associated with positive emotional experiences. For most students this was due to in-school access to social support and, for just over half of students, attributed to school-based recovery activities.

Theme 1.1. The school as a social place

The school was represented as a hub of beneficial relationships by nearly all students (see Figure 21 for a thematic network). The most salient relationships embedded in the school were friendships. Secondly, over half of students mentioned the role of teachers in providing social-emotional support, distributing aid and imparting disaster risk reduction advice. Around a quarter of students mentioned volunteers, who mainly provided instrumental support (e.g., delivering aid) and facilitated recovery activities. These relationships were associated with positive emotional experiences.

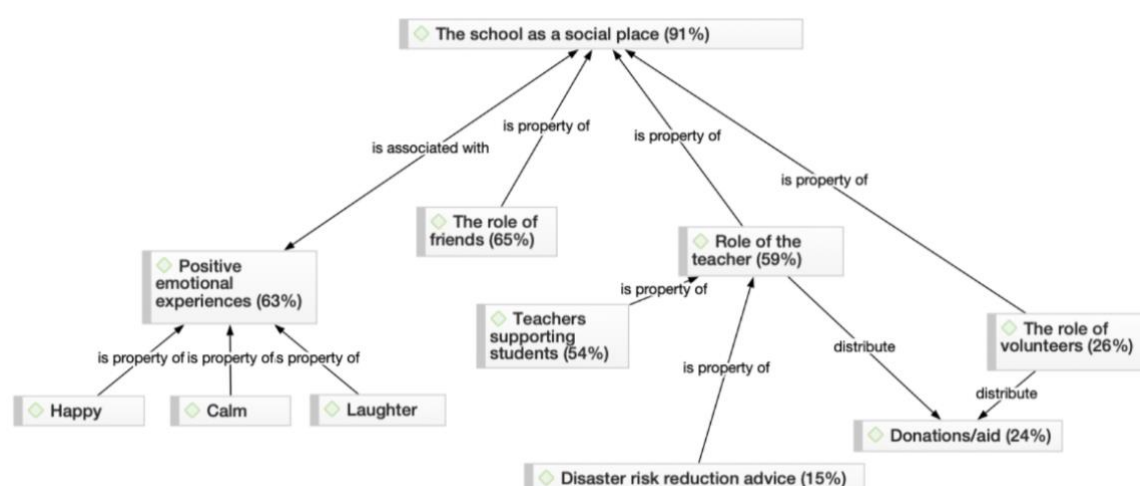


Figure 21. *The school as a social place network chart*

The school environment was conceptualised by students as resilience-promoting due to facilitating reunions with friends. Interactions often centred around engagement in enjoyable

activities to distract students from rumination. Students spoke about play enabling them “*to avoid the trauma*” and time with friends fostered positive emotional experiences, such as joy and laughter.

“We played with friends and laughed, so we didn’t remember the disaster.”

(Student 14, School A)

Play supported students’ emotional regulation and was often mentioned alongside other calming activities, such as prayer.

“A bit calmer because we played with friends or prayed, so it was a little calmer, was not too afraid anymore.” (Student 40, School A)

Some students discussed the role of friends in supporting coping with disaster-related stressors, as they provided relief from post-disaster challenges, including displacement. In contrast to their unexpected and unfamiliar living situation, the school provided a well-known environment for students to reunite with friends, supporting a resumed sense of normality.

“So it was important, because when I was at home, I was only in temporary shelter. Because of the earthquake. So it’s good to go to school, met all friends, played together, went home together.” (Student 3, School B)

For many students, friendships provided an opportunity for young people to reciprocally share stories of their disaster experience. Often this supported their processing of the situation, which they associated with a reduction in negative affect, such as happiness replacing fear. Sharing stories was facilitated by the disaster being a community wide event; as the experience was collective, students benefitted from reciprocally exchanging stories that promoted feelings of solidarity.

“Happy, just happy ... Everything was fine, when I was with friends ... It’s [the impact of the earthquake] gone, because I was sharing the story with friends who experienced it too.” (Student 6, School B)

However, for some students, the positive emotional experiences elicited by spending time with friends was accompanied by feelings of sadness related to the aftermath of the disaster.

“There was sadness and joy. Sad about what happened. Happy to meet the teachers, meet friends, and ask about their situation.” (Student 7, School B)

Contrasting with the mutuality of exchanging stories among friends who had a shared disaster experience, a minority of students who had been displaced by the disaster and relocated to new schools mentioned feeling disconnected from peers who had not experienced the disaster. Therefore, while the familiar school is represented as a place of recovery, this representation may be a feature of one’s own school rather than all schools. This was exemplified by a participant who described returning to their original school as returning to old, familiar friendships, which contrasted with the unfamiliar, uncomfortable environment of their new school.

“Nice, but I didn’t feel comfortable [in the new school], I was not used to their environment.... [When they returned] Went straight to school, immediately met old friends.” (Student 39, School A)

Teachers were represented as a reliable, trusted source of support by most students. Only occasional reference was made to teachers’ academic role, implying that their primary responsibility was to prioritise students’ social and emotional needs. To illustrate this, some students spoke about the role of the teacher supporting emotional regulation in the classroom.

“The teacher calmed them down first, then when they calmed down, they came to learn with us.” (Student 19, School B)

The student-teacher relationship was represented as resilience promoting; students equated their relationship with teachers to those with family members.

“... because they were at school as a substitute for parents.” (Student 42, School C)

The student-teacher relationship helped students to feel comfortable to share their disaster experiences, which students considered to be imperative for resilience building. Some students expressed that story sharing was reciprocal as they “*told stories to strengthen each other*” while “*mutually reinforcing each other*”. Specific significance was attributed to homeroom and religious teachers.

“Very meaningful. Teachers are like second parents, second homes. With my homeroom teacher, I could talk about my situation at home, what I felt during the earthquake. I was happy because I could share experiences with my teacher.” (Student 21, School B)

After listening to students’ “*stories*”, teachers provided advice that re-directed students to activities that could distract them from the disaster, such as play or prayer. Students appreciated this advice as they reported that they “*remembered their kindness*”, felt “*calmer*” and “*not too afraid anymore*”.

Other students articulated that although teachers did not actively facilitate activities to support their recovery, the grounding presence of teachers checking on them was sufficient for them to feel safe at school. Awareness of the trusted teachers gaze replaced worries and fears with feelings of increased safety in the post-disaster environment.

“When it comes to worries and fear, it didn’t seem like it was too much because there were a lot of teachers who checked on the students playing.” (Student 31, School A)

Students also represented teachers as trusted sources of disaster risk reduction advice. Some students mentioned examples of specific recommendations to: “*avoid trees*”, “*go under the table*”, “*don’t get too close to a standing wall*”, “*stay in the shelters*”, “*run and find the door to exit*” and “*avoid tall buildings*”. Students also spoke of vague advice given to “*be more careful*” and “*always be alert*”.

Some students represented teachers as a source of instrumental social support due to their role in distributing aid. The items distributed were valued by students materially, but were also presented as imbued with symbolic significance, as they were anchored to the representation of a ‘normal’, functioning school. For example, one student explained that the school gifted

“pen, book, pencil eraser” and replaced *“the broken books package, chairs and table”*, which led them to feel *“happy”* (Student 1, School B).

Contrasting with the familiarity of friends and teachers, volunteers were described as *“from abroad”*. They were spoken about in a more impersonal manner. For example, some teachers were referred to by name, whereas volunteers were referred to as *“volunteers”* or *“people”*. Despite volunteers coming from outside the students’ community, stories were exchanged with volunteers to foster connection and trust. Rather than centring around their shared disaster experience, as with other students and teachers, the stories related to life experiences and the role of the volunteers. Students associated positive emotional experiences with the volunteers’ presence and the resources they provided. Most often this was due to the psychosocial activities they facilitated, which enabled students to connect with their friends, such as playing games.

“There was nothing, but indeed there were volunteers who came to give assistance. We got a box with stationeries and played games. One of the volunteers, I forgot where they came from, they brought games, we were happier in the field, getting rid of the trauma.” (Student 20, School B)

Theme 1.2. The school as a site of recovery activities

After the disaster the school’s usual function as an institution of learning was suspended as the school was repurposed as a site of recovery activities. The main facilitators of the activities were teachers and non-governmental organisations (NGOs). Most students spoke about psychosocial activities such as playing and singing and over quarter of participants referred explicitly to psychological support (‘trauma healing’) (see Figure 22).

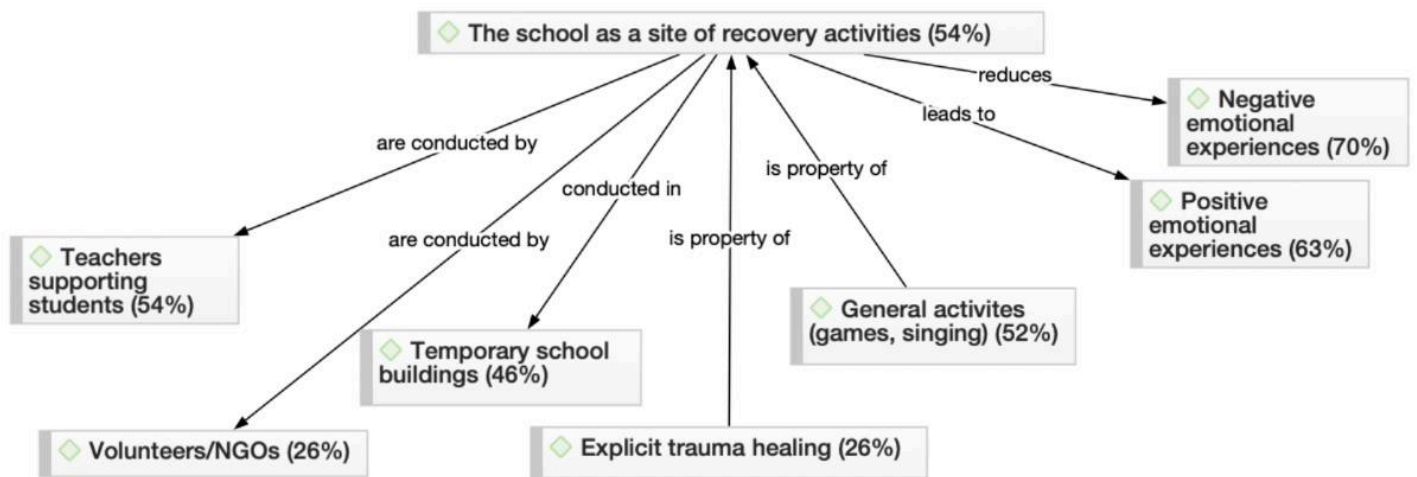


Figure 22. *The school as a site of recovery activities network chart*

Students described the activities as promoting feelings of, “*calm*”, “*happy*” and “*lighter*”. Activities termed ‘trauma healing’, were described as: “*where we learned about getting rid of that trauma*”. However, students’ elaborations on the content of ‘trauma healing’ did not differ from other psychosocial activities and, at times, included mentions of disaster preparedness training. Students spoke positively about their engagement in trauma healing, as they reported positive emotional experiences and reduced trauma.

“I also felt calm at school, because there was a trauma healing programme.” (Student 2, School B)

“Being happy, it felt like the trauma has gone ... the thought about such a thing [trauma] was all gone. Like more relaxed. Lighter.” (Student 3, School B)

Trauma healing may have improved school attendance as students reported reduced anxiety. For example, following trauma healing a student reported feeling, “*not afraid to go to school*” (Student 4, School B).

Theme 2. The school as a place of risk

Alongside representing the school as a place of recovery, most participants simultaneously spoke about challenging elements of the post-disaster school; negatively valenced elaborations indicated aspects of the school environment that operated as barriers to students’ recovery. This interview content clustered around the theme ‘the school as a place of risk’, which consists of three sub-themes that capture the risks both embedded in and associated with the school

environment: the school as a place of physical risk, social disruption and routine disruption.

Theme 2.1. The school as a place of physical risk

The altered physical environment was salient in the minds of over half the students. Most students considered the damage and the resulting temporary school buildings as a source of negative emotional experiences, such as fear, unhappiness and discomfort (See Figure 23).

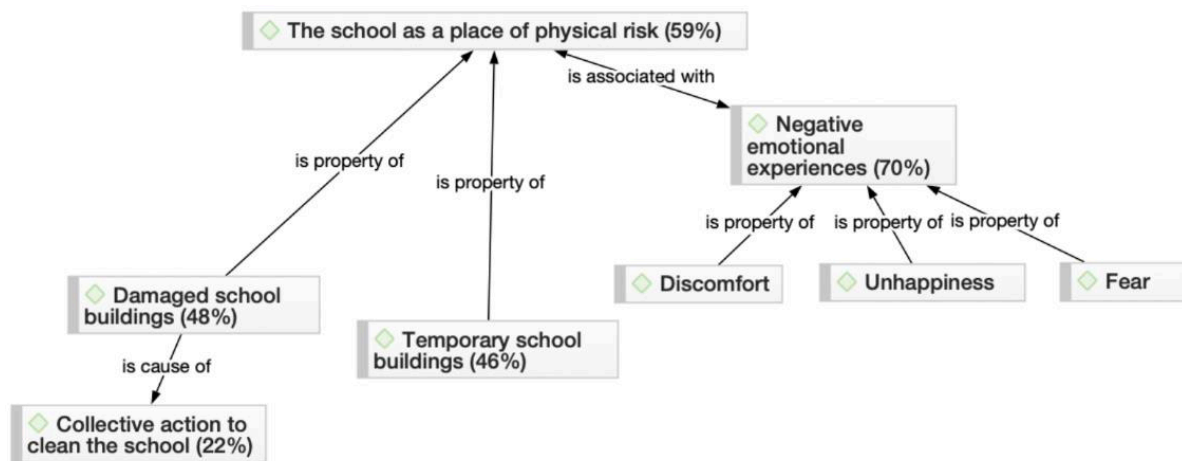


Figure 23. *The school as a place of physical risk network chart*

Students expressed negative emotions, such as sadness, at the physical damage to familiar school buildings. Words such as “*cracked*”, “*broken*”, “*changed*” and “*damaged*” described the post-disaster school. The school was considered unfamiliar and “*unlike before*”, which negatively impacted the school atmosphere.

“I was so sad because my school was hit by the disaster. Going back to school was gloomy. Previously, schools were not like that. Only later, after the disaster.” (Student 24, School C)

Damage to School C was associated with engaging in collective action to clean the disaster debris; many students described the post-disaster school as “*dirty*” with “*trash scattered around*”. This may have been due to the nature of the hazard; while earthquake and liquefaction caused structural damage, the tsunami’s main damage was internal flooding of the school.

While a small number of students found “community service” to be “fun” as it was done “with friends”, for others it was a laborious activity. A small number of students expressed a lack of agency, as they felt obliged to engage in cleaning, despite its physical and emotional demands.

“What we did at that time was cleaning, the garbage that was scattered at that time, we collected and threw it in its place. And we also helped the teachers to clean the rooms that were affected by smears and water. ... Very Sad. Yes, even if I wanted to say I was tired, I couldn’t because it was for our own good too ... I was sad because yes because many people died, many have been separated from their families ... Sad because many of our school buildings were cracked. But couldn’t say that we were tired because it was for our own school as well as for us to learn.” (Student 32, School C)

Several students expressed discontent regarding temporary classrooms, by describing them as hot, uncomfortable and symbolic of post-disaster uncertainty. This led some students to feel that the tent’s atmosphere was incongruent with that of their “happy” pre-disaster school. A small number of students spoke about the loss of microelements of their damaged school with nostalgia. As the canteen was previously a site for unstructured time with friends, this place retained symbolic significance to students, as an objectification of social ties.

“The school destroyed. So if we saw the former school canteen, we went to the old school, which has been destroyed, if we went to the school canteen, we missed the canteen, in class ... we used to play with friends here.” (Student 38, School A)

Other students expressed a more nuanced conceptualisation of temporary school buildings, as while tents constituted a reminder of risk and source of physical discomfort, they simultaneously cultivated feelings of safety. This was often contrasted with students’ fear of school buildings, that were objectified as places of risk.

“The school is multi-story building. So I was afraid of the high-rise school building. Beside the school, there is a tall building as well, so I feel scared.” (Student 2, School B)

Theme 2.2. The school as a place of social disruption

A large minority of students represented the school as a place of social disruption, due to loss of life and the inactive role of their teachers (See Figure 24).

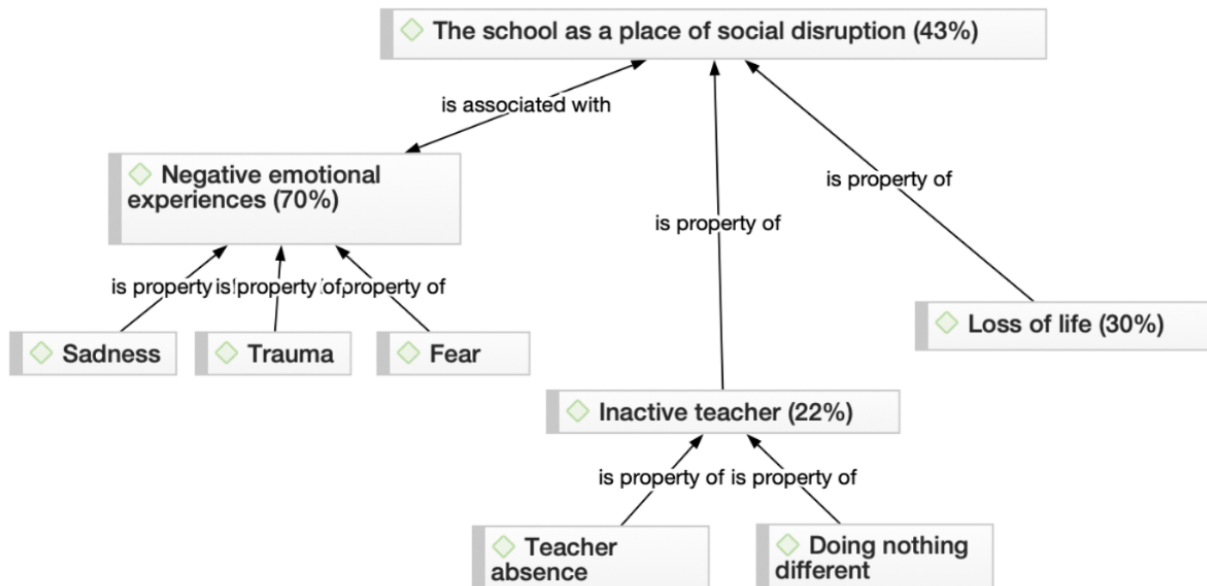


Figure 24. *The school as a place of social disruption network chart*

Juxtaposed with the positive emotions elicited by reunions with friends was a sense that the social fabric of the school had been irreversibly altered by the disaster. This was especially the case in the tsunami affected School C, as demonstrated by loss of life mentioned by double as many participants, compared to the other two schools. Loss of life was entwined with the physical school environment, as students' knowledge that corpses had been discovered at School C caused familiar places, such as toilets and certain classrooms, to be associated with death. Some students reflected on the negative emotions this elicited when they returned to school.

“Because there was a body found at the school. After the disaster. In the class section, it was also in class 9. And it was also found in the toilet. That’s why the toilet was never used. So scared.” (Student 24, School C)

The school's role as a hub of disaster information reinforced the prevailing sense of social disruption within the community. For some students, it was upon returning to school that they

first became aware of the loss of friends or other community members, as informed by their teachers. Unsurprisingly, this news elicited negative emotions, such as sadness and fear.

“My teacher told me that a friend of mine passed away ... Also my friend’s parents who passed away.” (Student 17, School B)

Some students expressed that the relief they felt upon discovering their teacher’s safety was overshadowed by a pervasive sadness as they learnt of the death of other community members, including their teacher’s children. A few students recounted intimate details of their teacher’s disaster experiences and losses, indicating that stories had been shared between teachers and students or had become known within the school community. Some of these accounts included potentially traumatic and emotive content.

“As for [teachers name], her house was near here. Which was subject to liquefaction. So, that was how the land was lifted, liquefied, rotated. The child was not saved, the child was still in the house. It’s just [teacher’s name] and the rest of the family and the other children who were out. But this one boy was inside and wasn’t saved.” (Student 12, School B)

A minority of students represented teachers as inactive after the disaster. At times, this was attributed to evacuation from the region or to unknown reasons for teachers being “*busy*”. A small minority of students mentioned that teachers were present but felt they did “*nothing different*” to support them. When students discussed activities, some students contrasted the active role volunteers played in running the recovery curriculum with the inactive role of the teachers, as one student said: “*most teachers just watched.*”

A small minority of students felt that the time they spent away from school had led to a loss of their meaningful teacher-student relationship. One student described that when they met the teacher, they “*felt foreign*” and “*turned into strangers*”.

“The teacher just forgot who all the students were.” (Student 38, School A)

Theme 2.3. The school as a reflection of routine disruption

The sub-theme of ‘the school as a reflection of routine disruption’ captures the changes to rules and routines and institutional challenges, such as a loss of school supplies, that prevented students from regaining a sense of normality (see Figure 25).

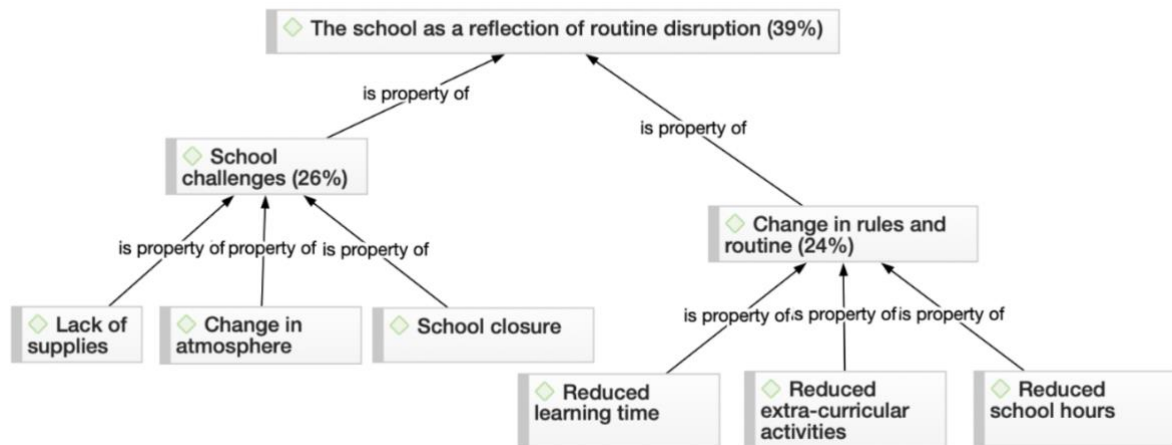


Figure 25. *The school as a reflection of routine disruption network chart*

Students’ elaborations implied that the school’s abnormal functioning and atmosphere reminded students of the wider community disruption caused by the disaster. Some students reflected that post-disaster challenges, such as reduced teaching hours and damaged school supplies, led to a loss of educational continuity, as “*learning was never done*”. Some students expressed discontent at the novel post-disaster routine, as valued extra-curricular activities were either cancelled or limited and the restructured day reduced social opportunities. For example, a 10 - 15-minute lunchbreak and prohibited socialising before or after school. While these changes were made to support student safety, some expressed that this may have hindered their recovery.

“Not good, less exciting. Because previously the playing time was longer and after the earthquake the time was limited. I felt that my relationship with my friends was strained because I didn't have enough time to play with my friends, so it felt really different.”
(Student 20, School B)

Some students elaborated on the challenges caused by a loss of school supplies that had both material and symbolic significance, as familiar items such as “books”, “stationery” and “uniform” symbolised the functioning, familiar and safe school. Students also reported increased flexibility in school rules, such as optional school uniform. While the change in policy enabled students to resume education, this provided a visual reminder that school was “not like it used to be”, which reminded students of the disasters’ impact and prohibited resumption of a sense of normality.

“Yes, casual clothes. Because some students’ uniforms were swept by the tsunami.”
(Student 16, School C).

7.5. Discussion

The results of this qualitative analysis provides novel insight into how adolescents represent the role of schools and teachers after a major disaster. Via thematic analysis, two salient themes that constitute a dialogical antinomy developed: the school as a place of recovery and the school as a place of risk. While the former representation highlights the overall positive role of the school for its potential to support students’ resilience and wellbeing after the disaster, the latter captures elements of the post-disaster school that may hinder students’ resilience and exacerbate mental health adversity. Nearly all participants represented the school as both a place of recovery and risk; on one hand, schools were portrayed as a source of social support and recovery activities that generated feelings of safety, happiness and a reduction in trauma. On the other hand, schools were simultaneously represented as places of risk, due to the physical damage to familiar school buildings, uncomfortable temporary accommodation, disrupted social fabric and disruption to pre-disaster routines. The power of a social representations approach is that it does not attempt to impose consistency on such representations. Indeed, the concept of ‘cognitive polyphasia’ (Moscovici, 1961) highlights that people can hold complex, seemingly contradictory representations simultaneously.

The school as a place of recovery

The most salient theme revealed that nearly all students represented the school as a place of recovery, due to access to social support and recovery activities. This finding is consistent with previous empirical work highlighting the role of the school in providing social support in high-

income countries (e.g., Mooney et al., 2021) and the theoretical work of Scannell and Gifford (2010), who argue that relationships are a central component of the attachments people form with meaningful places. The benefit of in-school relationships is supported by earlier research on social support after disasters, which consistently demonstrates that the deterioration of social networks and expectations of support are risk factors for poor mental health, while social support from multiple sources is beneficial for coping and bolstering resilience (Banks & Weems, 2014; Kaniasty & Norris, 2009; Pfefferbaum et al., 2017). Our findings extend prior evidence by making salient the students' perspectives; existing research on social support after disasters has been criticised for being 'adult-centric' (Cox et al., 2017), due to a tendency to explore how adults and service providers support young people, with a lack of consideration for peer support for recovery.

A prominent finding regards the significance of the school environment for facilitating peer-to-peer support. While it is well-accepted that friendships are important for fostering resilience (Masten & Obradovic, 2008), we contribute a novel understanding of the importance of the shared disaster experience. Evidence elsewhere has demonstrated that students benefit from telling stories through art (e.g., Cox et al., 2017; Mutch, 2016; Mutch & Letai, 2019) and peer support (e.g., Mooney et al., 2021; Prinstein et al., 1996). However, there has been little examination of the importance of reciprocal storytelling to support processing of potentially traumatic events. Ntontis et al. (2020) argue that experiencing the common stressor of a disaster can foster an emergent social identity that can act as the social glue to sustain social capital. This finding also corroborates Fothergill and Peek's (2006) suggestion that displaced students should be assigned new schools with existing peers.

Our novel insight regarding the value of peer-to-peer storytelling for building resilience extends to the wider school community, as students reported sharing stories with teachers. This substantiates existing research that sharing stories can help students to accept an event and normalise negative emotions, through fostering a sense of collective experience (Brown, 2011). This can also improve knowledge of the event, as disasters are often disorientating and confusing. Talking to someone trusted can refine details about what happened while providing controlled exposure to disaster content to support emotional processing (Bateman et al., 2013). While much of this research comes from younger samples, our findings suggest similar conclusions apply to adolescents.

A prominent finding pertains to the representation of teachers as a source of social and emotional support. They listened to students, offered trusted advice, and knew students well, which corroborates existing research that claims teachers are uniquely positioned to offer post-disaster support (e.g., Mooney et al., 2021; Seyle et al., 2013). The emphasis on teacher support may have been heightened by the community's reluctance to seek help from mental health professionals, due to stigma (Hechanova & Waelde, 2017), limited availability of other forms of support and/or because advice is more readily accepted from trusted adults (Koenig & Sabbagh, 2013). Students' descriptions of the type of support received from teachers differed from the forms of support received from external professionals, often due to the pre-existing student-teacher relationship. As the region is disaster prone, representations of volunteers may have been anchored to previous disaster experiences. Therefore, it is important to consider how volunteers can complement, rather than replace, psychosocial support from trusted teachers.

Our finding that multiple relationships were embedded in the school environment is consistent with research that has found young people value different forms of support, including instrumental, social and emotional support, from various actors in their community (Cox et al., 2017). In turn, this may facilitate positive attachments to schools, as people become attached to places that nurture social relationships and group identity (Scannell & Gifford, 2010). This could bolster students' resilience, due to the cascading psychological benefits of place attachment (e.g., for positive affect, comfort-security and belonging; Scannell & Gifford, 2017). Future research would benefit from exploring why a minority of students did not represent the school as a hub of social support. This may be a continuation of these students' relationships with school and peers dating from before the disaster. Alternatively, these students may be experiencing PTSD symptoms, which can undermine social support by interfering with their ability to engage with others (La Greca et al., 2010; Lai et al., 2018; Pfefferbaum et al., 2015); if so, these students may benefit from targeted interventions.

The positively valenced elaborations from students regarding disaster activities supports prior research that finds psychosocial activities provide a safe, structured and sociable environment to foster adolescents' recovery (e.g., Betancourt, 2005; Kunz, 2009). While the loss of meaningful places can disrupt a sense of continuity through the loss of spatial and group identity (Fried, 1963; Giuliani, 2003), we found that recovery activities facilitated a

reconstruction of these elements by bringing the school community together, as positive interactions between peers and supportive adults increased positive affect and fostered resilience. Furthermore, recovery activities reinforced collective beliefs among students that the school is a supportive institution, which is consistent with how schools are often regarded pre-disaster (Pacheco et al., 2022: Chapter 3).

The school as a place of risk

Many students portrayed the damaged school environment as dangerous and uncomfortable, which they associated with negative affect, such as fear. Although there has been little research on place loss concerning schools after disasters, research on social representations of the home documents that disaster-related damage can destabilize positive representations of the home (e.g., of safety and comfort; Mallett, 2004; Sawyer et al., 2022), resulting in emotional distress and poor mental health (Harries, 2013; Hawkins & Maurer, 2011). Similarly, our findings suggest that the collective knowledge of the school as a symbol of familiarity, safety and security was undermined by loss of life (e.g., corpses in school) and ongoing physical reminders of disaster risk (e.g., cracked walls); this led to a reconfiguration of the social representation of the damaged school as an object of danger and source of grief. This substantiates theory of place attachment, that argues unhappy and traumatic experiences in a place can drive negative feelings and aversion towards a place (Scannell & Gifford, 2010).

Our findings suggest that the school's physical disruption may have ruptured students' school attachments. This may have influenced school attendance, as people seek proximity to places that foster cognitions of protection, security and an absence of risk, but avoid those that do not facilitate these psychological needs (Chatterjee, 2005; Fried, 2000). Positive attachments to meaningful places have a plethora of psychological benefits, such as providing a sense of security like the interpersonal attachment's infants form with caregivers (Bowlby, 1979; Prior & Glaser, 2006), a sense of belonging and positive emotional experiences (Scannell & Gifford, 2017). Furthermore, ongoing exposure to damaged buildings may trigger students' trauma memories (Ehlers & Clark, 2000). Therefore, our findings support existing calls for prioritising the reconstruction of schools and the swift removal of disaster-related debris (UN Environment Programme, 2013), to restore feelings of safety and positive, resilience-promoting school attachments.

Students highlighted that micro-places within the school held unique symbolic importance that may not be salient to adults. Notably, students expressed concern over losing places that facilitated unstructured interactions with friends: the school canteen was anchored by students as a site of social interaction. This is consistent with evidence that people become attached to important places due to the symbolic meaning of their features (Stedman, 2003), such as social bonds (Lalli, 1992). This finding highlights the importance of consulting students when redesigning schools after substantial damage; school reconstruction should cultivate spaces for students that mitigate the psychological impact of the loss of symbolic places.

Our finding regarding students' narratives of cleaning up disaster debris ('community service'), challenges the notion that youth engagement in the recovery operation is always empowering. Recent research advocates for the involvement of adolescents in community recovery activities (Bokszczanin, 2011; Cox et al., 2017; Fothergill & Peek, 2006), as their engagement can contribute to collective efficacy, a sense of community and aid survivors' mental health (see Kaniasty & Norris, 2009). However, often students found this emotionally and physically demanding as it served as a reminder of the disaster's impact; the work was grounded in symbols related to dirt, lack of cleanliness and a spoilt environment. It is possible that students' obligation to participate can be attributed to Indonesia endorsing 'vertical collectivism' (Hofstede et al., 2010; Singelis et al., 1995). As social status differences within in-groups are pronounced, students may not have felt able to challenge the teacher's instruction. The Indonesian indigenous value of *gotong royong* that translates as *mutual help* is another salient cultural construct (Slikkerveer, 2019), that may have underpinned students' obligation to participate. However, our findings suggest that participation in the recovery efforts should be made optional, as engagement may be detrimental to some students' recovery. To further support students' recovery, our findings emphasise the importance of resuming usual routines (e.g., extra-curricular activities), to symbolise a return to normality and community recovery (e.g., Masten & Obradovic, 2008; Pacheco et al., 2022: Chapter 3).

Students' references to loss of life highlights the role of schools in supporting grief reactions. Students who discussed losing friends may be in greater need of psychological support, as bereaved adolescents are at greater risk of developing PTSD than those without a close loss (Dell'Osso et al., 2011). Teachers can support grieving students by modelling appropriate grief responses and leading memorial activities (Saltzman et al., 2006).

Students' portrayal of teachers as unsupportive and inactive was not prevalent in our findings; however, infrequently mentioned ideas can retain empirical and conceptual relevance in a thematic analysis (Joffe & Yardley, 2004). Idiosyncratic mentions may express something taken for granted or a less socially acceptable response (Joffe, 2012). Even if only a minority of students did not receive the expected support, this may have impaired their recovery; reaching out for support but not receiving the anticipated care can re-traumatise students (Wolpow et al., 2009). It is possible that some teachers did not provide the expected support as they were not confident to do so or because school policies directed them to follow usual academic content (Buchanan et al., 2010). Alternatively, teachers may not have had the capacity to support students while coping with their own psychological challenges (O'Toole, 2017). It is also possible that teachers were engaged in less visible tasks, including administrative duties. As most students' conceptualised teachers as supportive, teachers may have focused their limited time and resources on students they felt required support while neglecting the needs of others. Future research would benefit from exploring the views of teachers regarding their perception of possible barriers to engaging with and supporting students.

7.6. Limitations and directions for future research

While our research aimed to gain insight into the views of an under-researched and marginalised population, caution must be taken in applying the findings to culturally different settings. As each disaster is influenced by a unique interplay of contextual variables that shape community vulnerability, aspects of our findings may be specific to the 2018 disaster. Even within Indonesia, care must be taken not to overgeneralise findings across regions, as local concepts influence disaster preparedness (Rahman et al., 2018; Sutton et al., 2020). Future work would benefit from considering the applicability of these findings by using the same method in other disaster-impacted Indonesian regions.

As the interviews took place over three years post-disaster, students' representations will have been influenced by the passage of time. To ensure consistency, students were interviewed within the same time period. Furthermore, we asked participants broadly about their experience 'since' the disaster, as the post-disaster recovery period is ongoing and we sought to hear about anything salient for them concerning the role of teachers and schools in the post-disaster period.

We aimed to give voice to disaster-affected girls, however, we acknowledge that we have played an active role in making sense of, selecting and reporting narratives from the students' experiences. We do not subscribe to a naive view that we have been passive researchers 'discovering' themes that have 'emerged' from the data (as cautioned against by Braun & Clarke, 2006). Therefore, we consider that our own positionality as Western researchers will have influenced how we interpreted the participants voices. To mitigate this, we collaborated with local researchers and, due to COVID-19 restrictions, the British researchers did not visit the area. Certainly, in the phase of data generation this kept the Western perspective at bay. However, in future, ongoing contact with students could involve member checks, to ensure our interpretation of the themes and selected quotations resonate with participants (Thomas, 2016).

7.7. Practical implications

These findings inform the design of student-centric interventions and post-disaster educational policy and practice. Since students valued peer support through activities such as playing and story sharing, and disruptions to routines can strain their relationships, it is important to prioritise structured and unstructured peer interactions during the post-disaster school day. As students lamented the loss of micro-spaces within the school that fostered social connections, temporary schools would benefit from designated areas for young people to interact with friends. This is particularly notable as some temporary school buildings remained in place years after the disaster.

As teachers were represented as a source of psychosocial support and, less often, of disaster risk reduction advice, it is essential that teachers receive adequate training to effectively support students to cope and to safeguard students' physical needs. To mitigate any feelings of unease among students due to the absence of their usual teachers, it is important to communicate information about available members of staff who can offer support.

7.8. Conclusion

As schools have become progressively more responsible for addressing social problems, their role and the responsibilities of teachers have expanded beyond educational provision, to include offering psychosocial support to students (Skovdal & Campbell, 2015). To our knowledge, our study is the first to qualitatively examine the expanded role of schools and

teachers after a disaster through the lens of SRT and place attachment theory. We have responded to the notable absence of the perspective of young people in the existing disaster literature (Gibbs et al., 2013; La Greca & Silverman, 2006) by ensuring that students' voices have been central to our analysis. Our findings suggest that a *thema* of recovery/risk underpinned students' representations of the school and teachers. Three years after a major disaster, the role of the school was portrayed positively by most students, as a place that represents community recovery from disaster, by providing emotional and psychological support through access to resilience-promoting social relationships and the provision of recovery activities, that stimulated feelings of happiness, connectedness and safety. However, some aspects of the post-disaster school environment were negatively valenced and detrimental to students' resilience, including the disrupted social fabric, material damage and routine disruptions, that reminded students of the wider devastation and prevented a return to normality. Therefore, while our findings demonstrate that schools have the potential to foster students' resilience after disasters, overall, we found student representations of the school to be nuanced and contradictory, reflecting the complex, protracted and uncertain nature of post-disaster recovery.

Chapter 8. The role of teachers in fostering resilience after a disaster in Indonesia

Chapter 7 explored students' representations of the school and teachers after the disaster. For the most part, teachers were conceptualised by students positively, as their reassuring presence and supportive actions were considered by students to scaffold their resilient recovery. However, a small minority of students reported that they felt their recovery was hindered by some teachers being either inactive in the recovery process or absent. The findings reported in Chapter 6 suggest that, in part, this may be due to teachers' grappling with their own post-disaster stressors. Nevertheless, it is possible that teachers consider providing psychosocial support to be outside of their predominantly academic role and responsibilities. Building on these findings, this chapter seeks to further understand, from teachers' perspectives, how they conceptualise their role after the disaster. This chapter also considers the implications of teachers' role for the resilience of students and the wider educational community.

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8.1. Abstract

Disasters are distressing and disorientating. They often result in enduring community-wide devastation. Consequently, young people may seek support from trusted adults to scaffold their emotional responses and to support their psychosocial recovery. An important non-familial adult in a student's life is their teacher. However, few studies have examined teachers' perspectives on the support they provide to students after exposure to disasters, such as earthquakes and tsunamis, particularly in low-and middle-income countries (LMIC) with collectivistic cultural orientations. Given the potential for teachers to foster students' resilience, the goal of this study was to examine how teachers conceptualise their role following a major disaster. Forty teachers were interviewed from three schools in Central Sulawesi, Indonesia, after a major earthquake and tsunami in September 2018. Thematic analysis shows that teachers act as agents of community resilience after a disaster. The two themes presented converge on support-based aspects. Teachers provided: 1) psychoeducational support (i.e., supporting students' wellbeing and educational continuity, including encouraging their return to school) and 2) practical support (i.e., assisting administrative roles, aid distribution and disaster risk reduction). Within these themes, socioculturally specific practices are elucidated, including the Indonesian value of mutual assistance (*gotong royong*), storytelling (*tutura*) and the role of religiosity as a form of psychosocial support. Overall, our results highlight the capacity and willingness of teachers to play a central role in the psychosocial recovery of students and their families, contributing to community resilience. We identify implications such as the importance of providing accessible psychological training and support for teachers.

8.2. Introduction

Young people are vulnerable to the negative psychological and behavioural manifestations of disaster-related trauma (Kar, 2009; Peek, 2008). The adverse psychological impacts of disasters for young people can range from transient psychological distress and poor mental health to chronic psychopathology (Norris et al., 2002). This includes post-traumatic stress disorder (PTSD), depression, anxiety and externalising behavioural problems, including substance abuse (Pfefferbaum et al., 2015). The mental health of young people can be impacted by the initial disaster exposure, as well as the cumulative stressors that disasters trigger (Chen et al., 2023), which can persist for many years post-disaster (Brown et al., 2017). Disaster stressors include threat to life, bereavement, loss of the home, and widespread community social and economic disruption (Chen et al., 2023).

While trauma reactions can cause severe and long-term impairment for some, a large proportion of disaster-exposed youth initially experience elevated trauma symptoms, which diminish over time, without the need for clinical intervention (Bonanno et al., 2010; Hechanova & Waelde, 2017; La Greca et al., 2010). For example, research indicates that chronic symptom elevations are rarely found in more than 30% of young people (Bonanno et al., 2010). While a range of risk and protective factors influence the mental health of young people following disaster exposure (see Masten & Motti-Sefanidi, 2020; Masten, 2021), the social resources within a young person's support network can effectively buffer some of the negative psychological impacts of a disaster (Silove, 2005). Particularly, in low-and middle-income countries (LMICs), resource constraints can limit the specialist mental health support available (Patel et al., 2013), causing young people to rely on friends, caregivers and teachers (Masten & Narayan, 2012). It is therefore essential to examine the factors within a young person's environment that facilitate recovery after a disaster.

8.2.1. The role of schools and teachers in supporting resilience after disaster

Schools are an important source of support for trauma-exposed young people. In disaster settings, schools support students across the disaster preparedness, response and recovery phases (Mutch, 2014). Teachers are expected to communicate disaster preparedness and risk reduction information and implement disaster drills (Ronan et al., 2015). During the response phase, which occurs immediately following the disaster in the emergency period, teachers are

responsible for making potentially lifesaving decisions if the disaster strikes during school hours (Ema, 2013). Teachers often coordinate the repurposing of schools as evacuation shelters and/or centres for disaster relief (Ema, 2013; Oktari et al., 2015). During the recovery stage, when the focus is on restoring pre-crisis conditions, the ongoing social support from peers and teachers in schools can act as a protective buffer against negative disaster impacts (Bikar et al., 2021; Masten, 2021; Masten et al., 2021; Parrott et al., 2023b: Chapter 7). Furthermore, since 2000 school enrolment rates have increased drastically in LMICs (Fasih et al., 2018). For example, in Indonesia, junior secondary school enrolment has risen from 60% in 2000 to 78% in 2015 and senior secondary school enrolment has increased even more drastically from 39% in 2000 to 60% in 2015 (Fasih et al., 2018). Therefore, schools provide the social infrastructure to access a large number of children, making them a convenient site for post-disaster mental health interventions (Fazel et al., 2014).

While the role of the teacher may vary depending on the context, in general, initial teacher training does not include specialist mental health support (Shelemy et al., 2019; Shepherd et al., 2013). Nevertheless, following a disaster, teachers may receive training to deliver universal (i.e., not targeted based on the diagnostic screening of a specific clinical group) classroom-based interventions, which offers a cost-effective solution to address the substantial demand for mental health support (e.g., Coombe et al., 2015; Lai et al., 2016a; Seyle et al., 2013).

A comprehensive account of the role of schools after the 2011 Canterbury earthquakes in New Zealand (Mutch, 2013, 2015a, 2015b, 2015c, 2018; Mutch & Gawith, 2014) involved schools recording their earthquake stories in-depth between 2012 and 2014. Mutch (2015a) argues that teachers' pivotal role in supporting students after disasters is under-recognised as teachers become "*quiet heroes*" (pg. 77), putting personal needs aside to demonstrate calmness, courage and empathy; many teachers prioritised the needs of their students before their home situations while navigating a chaotic post-disaster school environment. Building on this, Mooney et al., (2021) examined how the school context and in-school relationships supported students' affective coping after the Canterbury disaster and found that teachers were trusted providers of student support. Similarly, in a comparative case study of school responses in the immediate aftermath of the 2011 disasters in Christchurch and Japan, O'Connor and Takahashi (2014) found that "*communities of care*" (pg. 52) were fostered in schools, as teachers prioritised the

recovery needs of students, students' families and the school, which strengthened school-community relations.

Together, these studies outline the critical role that schools and teachers play in supporting the psychosocial recovery of students after they have experienced collective trauma. This role may be particularly central in LMICs due to a scarcity of accessible professional mental health support (Saxena et al., 2006; Seyle et al., 2013). Despite this, little attention has been given to how teachers conceptualise their role and whether they consider providing psychological support for students to be within their domain of responsibility, particularly during longer-term disaster recovery (e.g., during the years post-disaster). Few studies have been conducted in LMICs, despite the greater burden of mental health needs and disaster impacts occurring in these settings (Kar, 2009a, 2009b).

Furthermore, much of the existing research has taken place in cultures with norms of individualism (e.g., New Zealand) rather than collectivism (e.g., Indonesia); individualism characterises societies where ties between individuals are loose, whereas ties in collectivistic societies are tight (Hofstede et al., 2010). Notwithstanding other cultural differences that may exist between such societies, collectivistic societies tend to value cooperation, social equity and acting to meet the needs of their in-group (Hofstede et al., 2010; Steel et al., 2018). These values may influence how teachers conceptualise their role in supporting students during and after a disaster. Therefore, while elements of the findings from New Zealand may apply to other highly seismic regions, including Indonesia, there are likely to be elements of teachers' roles that are culturally specific ('emic') and cross-culturally applicable ('etic') (Triandis, 2000). O'Connor and Takahashi (2014) provide valuable insights into the care-based role of the schools in Japan, a country characterised by a collectivistic cultural orientation. However, it is crucial to recognise that these findings may not generalise to LMICs. The focus of this paper is on how teachers in Indonesia, a LMIC with norms of collectivism, view their roles and responsibilities following a devastating earthquake, tsunami and landslide.

8.2.2. Resilience after disaster

Aspects of the theory of resilience are used in this paper to guide an understanding of the role teachers play in the post-disaster recovery of their students' and the wider school community.

According to the multisystem resilience framework, an individual's capacity to function positively and adaptively following adversity (i.e., to demonstrate resilience) is the product of reciprocal interactions between overlapping systems (Masten et al., 2021; Ungar & Theron, 2020). These range in scale from the micro-level of an individual's biological and neurological processes to macro-level social, cultural and political systems (Masten, 2019). In post-disaster contexts, this comprehensive lens is useful for understanding the multifaceted and heterogenous resources that can influence an individual's resilience (see Lomeli-Rodriguez et al., 2024; Masten, 2021).

From this perspective, a crucial wider system that influences the resilience of young people is their community. Although definitions often vary, 'community' is most commonly conceptualised as the grouping of individuals and the social structures within a geographically defined region (Rasanen et al., 2020). However, communities can be dynamic and not exclusively tied to geographical boundaries (Burgess & Mathias, 2017). For instance, disaster survivors may also belong to faith-based and/or diagnostic communities (Burgess & Mathias, 2017; Parrott et al., 2023a: Chapter 5, 2023b: Chapter 7). This study focuses primarily on the school community, encompassing the school environment and associated groups, including teachers, students and their caregivers.

Thus, alongside the multisystem perspective, we consider resilience at the level of the community. Community resilience is most often defined as an 'adaptive capacity' that supports the community to cope with adversity (Berkes & Ross, 2013; Norris et al., 2008). An influential model (Norris et al., 2008) theorises successful community resilience as a process emerging from four adaptive capacities: social capital (e.g., received and perceived social support and sense of community), economic development (e.g., equity of resource distribution), information and communication (e.g., trusted sources of information) and community competence (e.g., community efficacy and empowerment). The theory recognises community strengths and their ability to manage the demands associated with the stressor of a disaster (Gil-Rivas & Kilmer, 2016). Nevertheless, it has been argued that community and individual resilience are interlinked, particularly in disaster settings, as the availability of community resources (e.g., continuity of care providers, security of attachments) can predict an individual community member's ability to 'bounce back' more than intra-individual level traits (Ungar, 2011a).

In past research, scant attention has been paid to resilience at the community level compared to the vast psychological literature on individual level resilience (Berkes & Ross, 2013). Nevertheless, community resilience is increasingly garnering academic and policy attention (Patel et al., 2017). This lens addresses some of the criticisms of focusing on individual resilience, including neglecting contextual factors and adopting a Western, neoliberal approach that may be unsuitable for use in LMICs (Schwarz, 2018). Furthermore, examining resilience at the level of the community is valuable in disaster settings, due to the community-wide impacts of disasters and the collective responses mass disasters provoke (see Parrott et al., 2023a: Chapter 5, 2023b, Chapter 7). Therefore, it offers an important lens for understanding how community strengths can support young people to cope with adversity in LMICs and beyond.

8.2.3. The present study

To address the gaps identified in the literature, this study sets out to understand the lived experiences and perspectives of teachers regarding their role in supporting students after a major disaster that occurred in Central Sulawesi, Indonesia. Conducting research in Indonesia offers an opportunity to explore the country's intricate sociocultural and educational landscape. Given Indonesia's strong collectivistic culture, tight-knit societal connections and highly religious orientation (majority Islam in Central Sulawesi), the findings are likely to reveal nuanced insights specific to the region, facilitating the generation of contextually relevant knowledge and providing an understanding of how teachers navigate these contexts to provide effective support.

This focus is particularly pertinent due to the region's geographical vulnerability to seismic events, which increases inhabitants' likelihood of exposure to multiple natural hazards throughout their lifetime (Seyle et al., 2013). Specifically, Central Sulawesi is prone to a range of disasters triggered by earthquakes, tsunamis, landslides, flash floods and wildfires (Astuti et al., 2021). By gaining a deep understanding of the lived experiences of educators in this disaster-prone region, this study can bolster resilience efforts by informing the design of interventions tailored to the context. The findings may pertain to similar contexts too: collectivistic, highly religious, hazard prone LMICs.

Beyond teachers' academic role, enshrined in Indonesian Law (20/2003), teachers are implored to act as role models to promote students' positive *character* to shape them into good citizens based on five core values: integrity, religiosity, nationality, independence, and mutual cooperation (Nurhayati, 2020). Furthermore, teachers in Indonesia play a pivotal function in fostering close communication and collaboration with students' families and the broader community (Oktari et al., 2018). Following a disaster, schools in Indonesia, like those in other LMICs, are likely to be supported by NGOs (Empatika, 2018). These specific dynamics of Indonesian school practices may influence how teachers conceptualise their role after a mass disaster.

The focus of this study is a major disaster that occurred in Central Sulawesi on September 28th, 2018. The disaster involved an initial earthquake that triggered tsunami and liquefaction. It was devastating: 4340 died, over 211,000 were displaced from their homes and 1,299 schools were affected (Pemerintah Provinsi Sulawesi Tengah, 2019). The widespread impact of the cascading disaster makes it an important context in which to study the role of teachers after a disaster.

While our previous work has examined the perspective of students regarding the role of their school and teachers after the same disaster (see Parrott et al., 2023b: Chapter 7), this study focuses on the teachers' perspectives of their own role. To our knowledge, no previous study has used interview data from disaster-affected teachers to qualitatively examine their post-disaster role in an LMIC with a strongly collectivistic culture. In doing so, we aim to elucidate the impact of the teacher's role on students' resilience after a disaster. Through this approach, we seek to explore teachers' *subjective* experiences of their role, including the aspects most salient to them, rather than focusing on the factual accuracies of their post-disaster narratives. This will be explored through the research question: How do teachers conceptualise their role following an earthquake/tsunami/liquefaction disaster?

8.3. Method

8.3.1. Participants

Three school sites in the Palu region of Central Sulawesi were selected to participate in the

research. All three are public junior secondary schools (known as *Sekolah Menengah Pertama* or *SMP*), typically accommodating students aged 13 to 16. Variability in the ages of enrolled students between individual schools can be attributed to delayed entry into formal schooling due to familial responsibilities and economic activities. These schools are secular institutions, operating under the authority of the Ministry of National Education, as opposed to Islamic schools, which are supervised by the Ministry of Religious Affairs in Indonesia.

Each school was impacted by a different element of the disaster. School A is situated in a rural area in the Sigi District, which is prone to liquefaction, located relatively close to the liquefied area of Petobo. The school experienced structural damage, resulting in around 50% of the buildings either collapsing or being severely damaged. Concerns regarding the school's structural integrity are ongoing. School B is located in the urban area of the capital city, Palu, approximately 2 km from the coastline of Palu Bay. The area was impacted by the earthquake, resulting in moderate damage, including the fence collapsing, as well as cracking and partial collapse of buildings. However, the buildings have remained functional. School C is located in an area prone to tsunamis, situated on the coastline of Palu Bay. Although the single-story buildings were not structurally damaged, the tsunami led to a loss of items including desks and chairs and large-scale mud deposition. Over time, sea water has caused corrosion of the buildings. As the school is situated in the region considered to be disaster-vulnerable (the 'red zone') it is at risk of relocation.

From these three sites, 40 disaster-affected teachers were selected at random by the school principal, contacted by their school and invited to participate. Demographic details related to the sample are shown in Table 5.

Table 5

Characteristics of the sample in Chapter 8

Sample characteristics		
Age	Years	27-59 (M = 49, SD = 8.70)
Gender	Female	87.5%
	Male	12.5%
Religion	Muslim	95%
	Christian	5%

Highest education completed	Postgraduate degree	80%
	None of the above	18%
School Site	Site A	42.5% (n = 17)
	Site B	30% (n = 12)
	Site C	27.5% (n = 11)

8.3.2. Procedure

Interviews were conducted between January - April 2022 in the teacher's school with a local research assistant (RA) present. The RAs provided an iPad to conduct the interviews online via Zoom with three Indonesian researchers. This approach offered numerous benefits, as it eliminated the need for the researchers to travel, which enabled data collection to be flexible according to the teachers' schedules. The presence of a RA in person mitigated some of the disadvantages of online interviews, such as a lack of emotional support post-interview, consent challenges and technological elitism (Keen et al., 2023). All interviews were video and audio recorded to ensure a comprehensive documentation of the interview process, including capturing both verbal and non-verbal cues, resulting in accurate transcripts. Each interviewer received training on the interview technique and feedback on at least one pilot interview from the Principal Investigator (PI), who devised the now widely-used method (Joffe & Elsey, 2014). Prior to the interview, participants read an information sheet outlining the nature of the study and a consent form was signed. Lastly, participants completed demographic data and a series of psychometric scales (reported elsewhere, including Parrott et al., Under Review: Chapter 9). This study was approved by the UCL research ethics committee (Project ID 0525/001).

8.3.3. Data collection

A free association task termed the 'Grid Elaboration Method' (GEM) was used (see Joffe & Elsey, 2014). Participants were given an A4 sheet of paper featuring a grid of four boxes, above which a prompt stated: '*Please write or draw your first thoughts and feelings regarding the role of teachers and schools in responding to the 2018 earthquake.*' Participants were asked to give one idea or image per box and told that there was no right or wrong answer. Figure 26

shows a completed grid (with the English translations in the text boxes). Materials were translated into Bahasa Indonesian and interviews were conducted by Indonesian researchers. The prompt was checked for clarity by local researchers and piloted with four teachers from the same schools. The grid formed a naturalistic guide for the interview as the interviewer asked the participants to elaborate on the contents of each box in turn. Thus, the technique aims to reduce researcher interference to elicit ecologically valid material (Joffe & Elsey, 2014).

Anda akan Anda TULISKAN atau GAMBARKAN dalam bentuk kata-kata atau gambar yang berbeda yang terlintas dalam pikiran ketika Anda berpikir tentang pengalaman Anda tentang guru dan sekolah setelah kejadian bencana 2018. Anda dapat memberikan satu pemikiran/gambar per kotak. Terkadang gambar atau kata yang sangat sederhana bisa menjadi cara yang baik untuk menunjukkan pikiran dan perasaan Anda. Tidak ada jawaban yang benar atau salah. Setiap orang dapat memiliki jawaban yang berbeda.

1 The teachers didn't teach about the school lessons, but about how to recover from trauma Guru mengajar bukan dengan materi tetapi juga bagaimana mengatasi trauma	2 The school was off after the earthquake Sekolah libur Paska bencana
3 Sekolah kami memberi bantuan kepada teman guru yang kena dampak Our school gave support to our teachers who affected	4 Guru dan Siswa sama-sama mengatasi trauma Both teachers and students tried to overcome the trauma

Halaman 4 dari 19

Figure 26. A completed GEM grid

8.3.4. Data analysis

Interview audio files were transcribed verbatim and translated into English. Manual

transcription was used to ensure quality and to allow for careful consideration of nuances related to the local context and dialect. The translations were reviewed by the bilingual Indonesian researchers who conducted the interviews to ensure that the translation captured the essence of the responses. Backtranslations of two interviews were reviewed to ensure consistency and fidelity to participants' perspectives.

Thematic analysis, a method for analysing meaning-based patterns in a qualitative data set (Braun & Clarke, 2006), was conducted on the data. The specific approach to thematic analysis undertaken is in keeping with Joffe's (e.g., Joffe & Yardley, 2004; Joffe 2012) systematic thematic analysis technique used extensively in over two decades of her work (e.g., Joffe & Bettega, 2003; Joffe et al., 2012; Yun et al., 2023). To begin, the first and second author read the entire data set before inductively devising a coding frame. This approach enabled novel findings to develop naturalistically; teachers' perspectives were foregrounded in the analysis, without reference to pre-existing theories. Themes were decided based on prevalent patterns found in the data relevant to answering the research question. Thematic networks charts were created to visually present the results of the analysis, as recommended for systematic thematic analysis (see Attride-Stirling, 2001; Joffe, 2012). The figures feature the percentage of participants who mentioned the theme and/or code, indicate the codes that constitute each theme (demonstrated by the 'is a property of' label on the figures) and illustrate the interconnections between the codes. All coding was conducted using the qualitative data analysis software Atlas ti. Although coding was conducted by the British authors, the Indonesian authors who conducted the interviews reviewed the themes.

Transparency in the systematic thematic analysis was achieved by creating a clearly defined coding frame, conducting a reliability test and reporting the prevalence of themes (Joffe, 2012). The first and second author performed the reliability test of the coding frame by independently double coding 10% of interviews: the inter-rater agreement was 71%, classified as substantial agreement (O'Connor & Joffe, 2020). This process promoted reflexivity as discrepancies regarding the multiple interpretations of codes were discussed by the researchers; based on this dialogue the coding frame was finalised before the entire data set was coded. While these steps provide transparency regarding how the results were determined, we acknowledge that all qualitative analysis necessarily involves interpretation and is influenced by the positionality of the researcher (Joffe, 2012). In consideration of the credibility of the results, during a

subsequent intervention with the same teachers, teachers were presented with a summary of the research findings and informal collaborative discussions indicated that these resonated with their experiences. This opportunity for participants to engage with the results was influenced by ‘member checking’ procedures (e.g., see Birt et al., 2016; Kornbluh, 2015; Lincoln and Guba, 1985).

8.4. Results

The thematic analysis led to the development of two themes that converged in terms of conceptualising the teacher’s role as an agent of resilience after the disaster. Both included a support-based aspect. According to the two themes, teachers supported students’ resilience by providing 1) psychoeducational support and 2) practical support (See Figure 27). In elucidating each theme, its dimensions are discussed according to which were most prevalent in their interviews. Generally, teachers’ elaborations were similar across the three schools, but where differences are observed, they are highlighted.

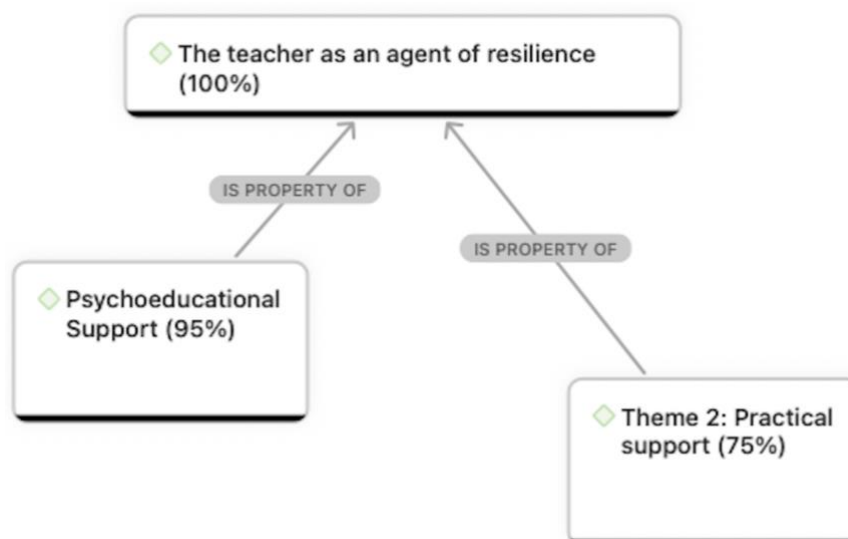


Figure 27. *The teacher as an agent of resilience network chart*

Theme 1. Teachers as a source of psychoeducational support

The most prevalent form of teacher support after the disaster was psychoeducational (see Figure 28). Teachers most often mentioned their role in providing psychological support to students, including one-to-one emotional support, such as listening to students’ concerns and

supporting students' emotional regulation during distress, as well as engaging students in classroom-based recovery activities. Some teachers also expressed an obligation to provide students with educational continuity despite the emergency context. Bridging these facets of the theme, teachers reported encouraging students to return to school to access both psychological support and academic support, to bolster their post-disaster recovery.

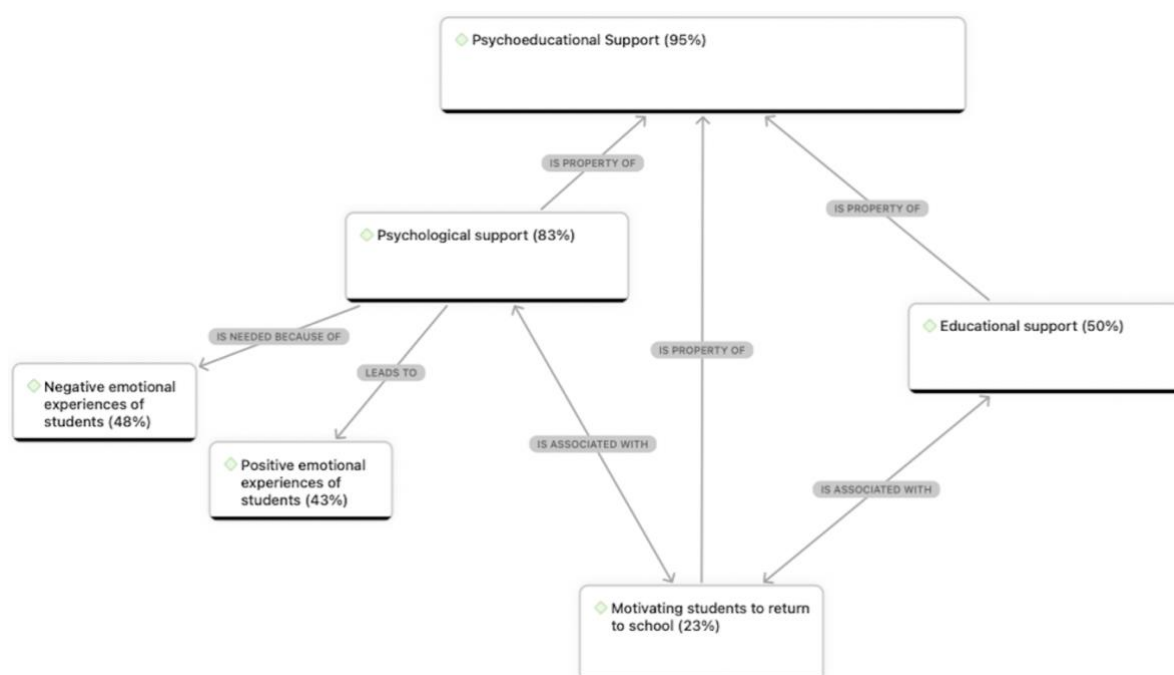


Figure 28. *Psychoeducational Support network chart*

Many teachers supported their students' recovery by deviating from curriculum content to provide emotional support, as they chose to suspend their usual academic role in the aftermath of the disaster. This response was driven by their concerns regarding students' negative emotions and the adverse impact of the disaster on students' wellbeing. Often the psychosocial activities offered to provide this support were arts-based, including singing, drawing, dancing and games. For example, a teacher recalled encouraging students to sing as they felt this fostered a positive classroom atmosphere and increased students' positive affect. Emphasising this, Teacher 19 (School B, male) stated: *"Might not focus on the subject matter but focus on building an atmosphere so that the children could calm down, have fun, and slowly forget about the past they experienced."*

Some teachers felt these activities specifically supported students who had experienced “trauma”. For example, Teacher 18 (School B, female) stated: *“So the ways to overcome trauma were usually by drawing, being asked to dance, sing, then playing games. Made the children even more excited to live.”*

As teachers felt responsible for supporting potentially traumatised students, some expressed a desire for further psychoeducational training, such as in “trauma healing”, to enhance their supportive capacity. While many teachers conveyed an appreciation for the psychological support provided by non-governmental organisations (NGOs), some teachers felt that training teachers could reduce their dependence on external support. Teacher 34 (School C, male) strongly conveyed this message:

“Schools must have teachers who are skilled in trauma healing, psychologically and can implement the disaster preparedness curriculum ... If an earthquake happens in the future, they can do trauma healing activities to relieve their trauma from the earthquake and tsunami. So we don’t need to look for experts, we just need to train the teachers ... ”

Furthermore, unlike NGO employees or volunteers, most teachers resided locally, in the same disaster-affected regions as their students. This facilitated the exchange of reciprocal “stories” (locally termed “tutura”), between teachers and students regarding their disaster experiences, which teachers felt was beneficial for students’ adaptive coping. This occurred both in the context of one-to-one conversations and as a classroom activity. For example, Teacher 7 (School A, female) described: *“So we look for spacious area, we studied there, we sat down... not studying but sitting, telling stories, sharing. Something like that.”*

Furthermore, teachers modelled coping strategies they believed to be beneficial, with the intention of setting an “example” for their students and to scaffold students’ emotional reactions. This included demonstrating emotional and behavioural regulation, as well as positive attitudes, such as being “strong” and “enthusiastic”. Some teachers felt this cultivated a positive atmosphere at school, mitigating some of the distress caused by the post-disaster situation and consequently encouraging students’ return to school. Illustrating this, Teacher 39

(School C, female) described how she aimed: *“to set an example for students that we must remain strong and enthusiastic for school.”*

Teachers also explicitly conveyed messages to students regarding the importance of their own intrapersonal psychological resources, such as *“hope”* and *“survival”*. For example, one teacher compared their own survival to those who lost their lives in the disaster, with the aim of promoting students’ hope and gratitude. Teacher 7 (School A, female) expressed: *“We are still here even [though] some of our families died, we cannot lose hope. We have to survive no matter what...”*

Relatedly, some teachers conveyed to their students that the disaster was an opportunity for personal growth, which they encouraged by modelling and promoting adherence to desired moral standards, including religious diligence. For example, Teacher 12 (School A, female) described how the disaster provided an opportunity for students’ post-traumatic growth by *“doing good”*: *“When we taught the students, we conveyed that, in the world, we could disappear in an instant. So let's do good, don't commit immorality, don't sin, something like that happens to us suddenly. We came back alone with no one to help. So we have to do good deeds.”*

For many teachers, emotional support was intertwined with encouraging religiosity, as they felt that promoting religious messages, beliefs and practices supported students’ wellbeing. Occasionally, the messages endorsed the belief that the disaster was the inevitable result of *“God’s will”*, which they considered to generate *“hope”* that everything *“happened for a reason”*. Collective prayer was considered comparable to other group-based psychosocial activities, such as singing and play, as teachers felt that religious activities supported students to manage their trauma. Teacher 7 (School A, female) explained:

“So, in a tent, we were together with the students to do praying together and then play afterwards. We asked the students to sing along to heal their trauma. We asked them to play, and we joined them as well.”

Despite teachers’ desire to model adaptive coping to their students, some acknowledged that while comforting their students, at times, they struggled to regulate their own emotions. This

often stemmed from teachers' reluctance and anxiety about being separated from their own families following the disaster. Crucially, teachers prioritised students' needs above their own and aimed to conceal their own negative affect, such as fear and worry. Teacher 37 (School B, female) explained: *"So I rather eliminate their [students] fears and worries even though we felt scared too. It is the same for teachers and students, both experience fear."*

Teachers' prioritisation of their students' needs was underpinned by a sense of duty. For some teachers, this included a commitment to students' academic development despite the challenging emergency context. This was conveyed in their enthusiasm to *"keep the spirit of teaching"*, as they were *"... still eager to teach"* in the face of disaster challenges and personal losses. Some teachers felt passionately that students' quality of education should not be compromised due to the disaster; they believed it was their central *"obligation"* as teachers to facilitate learning. Teacher 39 (School C, female) articulated:

"It means that even though we were hit by a disaster, it does not mean that we as teachers provide a minimum education ... Whatever happens, we as teachers as servants of the state still want to have the spirit to keep our students educated."

However, some teachers acknowledged that to best facilitate learning, they would need to adapt their pedagogy to meet the needs of the potentially traumatised students. For example, Teacher 1 (School A, female) expressed her belief that *"learning must be done in any condition"*. However, she also stressed that teachers altered their methods and expectations to be sensitive to the emotional needs of their students:

"There were many who were traumatised. Some even suffered minor injuries to their bodies. There were those whose ears were deaf at that time. So, we... I thought about how we as teachers... what methods should we use so that this child can learn and be able to get rid of the trauma immediately."

Due to teachers' belief in the importance of ensuring educational continuity and the trauma-protective factors embedded in the school environment, many teachers discussed their role in supporting students to return to school. This was often mentioned alongside other ways of supporting students psychosocially, such as by facilitating positive emotional experiences to

motivate the student to return to school. For example, a teacher said they “... *visited their houses, encouraging them ...*”. To motivate a return to school, teachers reminded students of the collective emotional impact of the disaster. For example, Teacher 13 (School A, female) recalled telling a student: “*I said, never mind, dear, not only us who feel it but many people too. No need to mourn too much fate, no need to be sad for too long, come on, let's go to school, like that.*”

A small number of teachers expressed that some students' caregivers were reluctant to send their children to school due to feeling anxious about family separation. However, teachers believed that these students would benefit from engaging in the psychosocial activities provided by the school, including the psychological support (“*trauma healing*”) provided by NGOs and that educational continuity was an important way to resume a sense of normality for both their students and the wider community. Some teachers felt that it was often the students who had experienced the most traumatic incidents and severe disaster losses who did not attend school. As a result, teachers targeted supporting the students they felt might be most at risk of poor post-disaster mental health by visiting their homes or displacement camps to motivate and persuade them to return to school. This is articulated by Teacher 26 (School B, female): “*Yes, only for students who were severely traumatised were visited in their houses. Given understandings, explanations to muster up their courage to go to school.*”

The imperative for students to attend school to treat their trauma before resuming learning featured as the dominant narrative in teachers' responses. While teachers valued education, supporting students' emotional wellbeing was considered a pre-requisite for students re-engaging in academic content. Illustrating this, Teacher 14 (School A, female) stated: “*We tried to dispel their panic so they could generally think again.*” Teachers communicated with parents to persuade them of the psychosocial benefits of their children returning to school. Teacher 21 (School B, female) expressed:

“*We cooperated with parents and students here, there was no coercion, but we always gave motivation hoping that wherever we were, education is very important, send your children to school, no matter where you lived, if that was the case, it would stay like that, we facilitated communication for parents so that they want to get trauma healing. That was the first reason; we treated our children so they didn't get traumatised.*”

Overall, this theme captures that most teachers conceptualised providing post-disaster psychoeducational support to students as central to their role. Teachers deviated from the curriculum to provide resilience building activities, including sharing stories and arts-based activities, such as singing. Some teachers also encouraged religious practices, as they were considered wellbeing enhancing. Despite grappling with their own post-disaster mental health and personal losses, teachers prioritised students' needs. They aimed to act as positive role models by regulating their own emotions and behaviours and demonstrating adaptive coping strategies. This enabled teachers to motivate students to return to school, to fulfil what they considered their 'duty' to teach despite the emergency context, while remaining sensitive to students' psychological needs.

Theme 2. Teachers as a source of practical support

A large majority of teachers described their involvement in various practical disaster-recovery tasks that aimed to foster students' resilience. The thematic network shown in Figure 29 highlights that these tasks were comprised of collecting data and keeping records, which often involved contacting students and their families to facilitate aid distribution, mobilising collective action and promoting knowledge and action related to disaster risk reduction and preparedness.

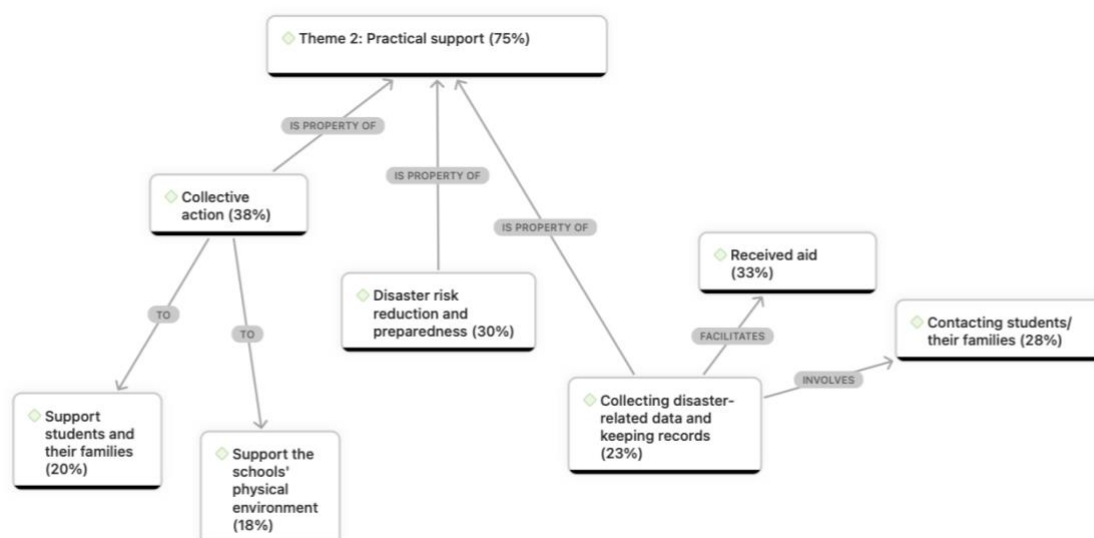


Figure 29. *Practical Support network chart*

A salient facet of the teachers' practical role involved conducting administrative duties, such as collecting data on the disaster's impact on students and their families. This was particularly prevalent at School A (38%) and infrequently mentioned at School B (8%). Initially, teachers attempted to contact parents by phone, but if they did not answer, they visited their homes or displacement camps. The data included keeping records of residential damage, injuries and loss of life: *"We have started to record the data at that time. So we could know how many students died, how many houses of students got washed away, lost, collapsed and slightly damaged at that time."* (Teacher 4, School A, female). This role may have been emotionally demanding for teachers as they discovered and recorded the names of students who had died.

Teachers expressed that administrative duties were an obligation necessitated by government officials. This occurred in the immediate post-disaster response phase, as they were required to *"move quickly"* so that the government could effectively distribute aid to those in need. Although teachers fulfilled this duty, some implied that they felt a lack of agency:

"We were actually forced to attend the school because we had to list the damaged items ... looked the condition of the classroom building, then list our students, anyone who lives in the affected area and then find out if they were safe or not. That's what we did initially. We finished it within a week or two after the earthquake." (Teacher 8, School A, female)

Despite feeling *"forced"* to gather disaster data, some teachers explained how collecting data inspired them to mobilise collective action, as it was through collecting data that teachers became aware of the school community's hardships and disaster losses. Several teachers considered themselves responsible for mobilising collective action to assist the most severely impacted students and their families. This encompassed rallying support from other staff members and students who had experienced fewer disaster-related losses. Teacher 7 (School, A, female) reflected on mobilising support from less severely impacted students:

"So, asked those who still have some clothes, what can we donate to their friends, let's give them something whatever it is. So, they won't feel alone just like that."

Whatever they bring me, I would share it. So, they also feel cared for.”

Many teachers voluntarily went beyond their in-school professional requirements by visiting students in their homes and displacement camps to offer further support, distribute resources and fundraise for financial assistance. Rather than individual teachers taking responsibility for gathering support, the actions were described as a collective activity, as teachers “*came together*” to support the community and distributed donations “*from the teachers*”. At times the teachers collected the donations themselves, while at other times they organised and coordinated students to gather instrumental assistance: “*Yes, we, the teachers, came together to come to them ... So all this time, if there is grief, our students collect funds which we then deliver to their homes*” (Teacher 14, School A, female).

Providing instrumental support was largely motivated by a desire to reduce the emotional distress of students and their families. In response to learning about hardships that had affected the school community, such as bereavement, teachers provided tangible donations. For instance, when a teacher learnt of deaths in the community, their reaction was: “*we collected clothes, household appliances*” and another teacher took “*clothes and rice*” to bereaved parents. This aid was perceived to offer a practical advantage because of the loss of possessions during the disaster, but also symbolised community care, enabling recipients experiencing adversity to “*feel cared for*” and “*so they won’t feel alone*”. Instrumental support was also considered as an aspect of supporting students with trauma: “*Because they really really ended up being traumatised, so we shared and listened to their stories, giving clothes and other needs*” (Teacher 20, School B, female).

Teachers at School C and School A participated in collective action to restore the physical school environment. This was especially prevalent at School C (mentioned by 45% of teachers at School C and 15% at School A), which experienced widespread deposition of sediment and other tsunami debris. Teachers and students engaged in “*cleaning up places where there was a lot of ruins*” (Teacher 15, School A, female). Some teachers expressed that cleaning was motivated by a desire to return to their original school buildings due to the uncomfortable conditions in the temporary tents. Teacher 30 (School C, female) explained that teachers collectively engaged in cleaning: “*... because it was impossible for us to continue in the tent, we slowly entered the school and cleaned it up.*”

Teachers also took responsibility for students' safety by communicating practical disaster risk reduction advice and promoting action-oriented preparedness after the disaster, particularly during the frequent aftershocks that occurred when schools reopened. Teachers also reminded their students that the area was hazard-prone, due to the “*very active fault, Palu Koro fault*” so they should “*stay aware*”, “*alert*” and “*vigilant*” to ongoing hazards. Some teachers taught students practical advice regarding what to do in the event of a disaster, including lying under tables during an earthquake. This is illustrated by Teacher 18 (School B, female):

“ ... if there was an earthquake in class, our first step to save ourselves is to lie down under the table, later when the earthquake stops and then try to run and even then we have to be calm and be careful not to have a collision with other students. I gave these general instructions to students.”

Teachers reported that they incorporated disaster-related information into the post-disaster curriculum, as they were given agency to deviate from standard curriculum content to cover material related to the recent disaster, including promoting practical action on what to do during the disaster. Teacher 14 (School A, female) exemplified this sense of flexibility in response to the circumstances: “*The material is not from the curriculum but material about earthquakes, adjusting to the situation.*”

Despite schools granting teachers agency to incorporate disaster-related material into the curriculum, few teachers discussed receiving relevant training. When training did occur, it was mentioned that this was irregular. For example, one teacher recounted attending training three years ago and while they felt this was useful, they did not retain enough information to effectively inform their students. There was also a sense of frustration at the current lack of implementation of practical disaster drills and disaster risk reduction advice in the curriculum, which would need to be mandated by the school's senior leadership team, as teachers lacked the authority to implement whole-school activities. Teacher 34 (School C, male) expressed that he had:

“Often communicated with the principal but no realisation yet. No curriculum for disaster, I was just expressing my aspirations because I love disaster safe school activities. I like the materials, they are very interesting, and I'm very enthusiastic to

participate in such activities ... Maybe the school, I don't know, due to school policies, maybe lack of coordination, I don't fully understand, I am just a subordinate, I don't know. I only communicated, because principal is the policy maker and the board above, because as teachers, I just do my work based on my job description."

As the disaster occurred outside of school hours, most teachers were not responsible for student safety during the disaster and most practical tasks took place during the disaster's aftermath. However, occasional references were made to practical assistance to support student safety during the peri-disaster phase, such as when teachers encountered students during the disaster. For example, Teacher 14 (School A, female) recounted the support given to a disorientated student who ran to the school during the disaster.

"Well, this student went to the school when there was an earthquake. That's where he felt panicked. He immediately ran aimlessly. If we see him like that, we immediately hug him. Because he survived the liquefaction of Jono Oge, he had drifted off. Someone rescued him and took him to the health centre."

As School B was hosting a trip, some students were separated from their parents and under the school's care. The following morning, highly concerned parents arrived at the school in search of their children. Teachers were required to navigate difficult conversations with distressed parents and help source relevant information to locate the missing students, who they later discovered had safely evacuated to higher ground. Teacher 17 (School B, female) recalled responding to parents who questioned the school's responsibility for dealing with safety who *"came angrily and cried looking for his child"*:

"One day after the incident, I went to check the school and help panicked parents find their child who had not been home all night by contacting the principal ... At that time, we just said that we were in the same situation, having a disaster. We tried our best."

In summary, this theme captured that a large majority of teachers considered their role to involve engaging in practical action to support students and their families, mainly during the immediate aftermath (e.g., in the days - weeks post-disaster). While some of these actions were government mandated, teachers also went beyond the tasks school leaders had assigned them.

Through mobilising collective action, teachers supported the most severely impacted by providing resources depleted by the disaster, for the dual purpose of their practical benefit and to symbolise community care. Some teachers also played a role in the physical recovery of the built school environment by clearing disaster debris, particularly at School C. Teachers also offered action-oriented disaster risk reduction advice to students to safeguard their physical needs during ongoing aftershocks and due to the hazard-prone nature of the region.

8.5. Discussion

This study sought to contribute to a nascent area of research by gaining insight into teachers' subjective sense of their role after a major disaster. For this purpose, 40 teachers with lived experience of a devastating disaster were interviewed using a novel free association technique. The study presented here is one of the first to hear directly from teachers in a LMIC with a culture of collectivism. In the context of ongoing seismic vulnerability and a protracted recovery, particularly given school reconstruction and reopening delays due to Covid-19, entering the perspectives of teachers three years after the disaster's initial impact allowed for examination of the unfolding dynamics of recovery in the post-disaster years. This is important as there are temporal changes in the type of resources needed to navigate a disaster's impacts (Kwok et al., 2016). The results of this study are encouraging, as the two themes shown in the thematic analysis collectively highlight teachers' commitment to supporting the resilient recovery of students.

Teachers conceptualised themselves as playing a key role in supporting the psychoeducational recovery of their students. While many teachers valued providing students with a good education, most prioritised students' post-disaster emotional wellbeing over resuming academic learning. To support students' psychoeducational recovery, teachers were committed to encouraging students' school attendance, despite the challenging post-disaster conditions. Secondly, teachers felt responsible for providing practical assistance, including support with disaster risk reduction, administrative tasks and offering instrumental support to those most adversely impacted by the disaster. Teachers' efforts in rallying and distributing aid aimed to meet families' tangible needs while symbolising community care.

Teachers' roles in supporting resilience

These findings can be interpreted in relation to resilience theory. Consistent with the multisystem perspective of resilience (e.g., Masten et al., 2021; Ungar & Theron, 2020), teachers considered their role to contribute to sustaining the school system's supportive function, potentially bolstering the resilience of individual students, such as by sharing stories and supporting students' emotional regulation. Notably, beyond the individual level, the teachers' most salient roles and responsibilities, through supporting students' and their caregivers, align with the four central adaptive capacities of community resilience proposed by Norris et al. (2008). Our data indicates that teachers contributed to the resilience of the educational community through fostering: economic development, information and communication, social capital and community competence (see Figure 30 for an adapted model). This model, and the findings in reported in this paper, are largely consistent with how the educational community (i.e., teachers, parents and students from the same school sites) conceptualised post-disaster community resilience (Parrott et al., 2023a: Chapter 5). As individual and community resilience are often interlinked (Ungar, 2011a), teachers' roles (see Figure 30) may benefit resilience at various levels (e.g., from the community to the individual).

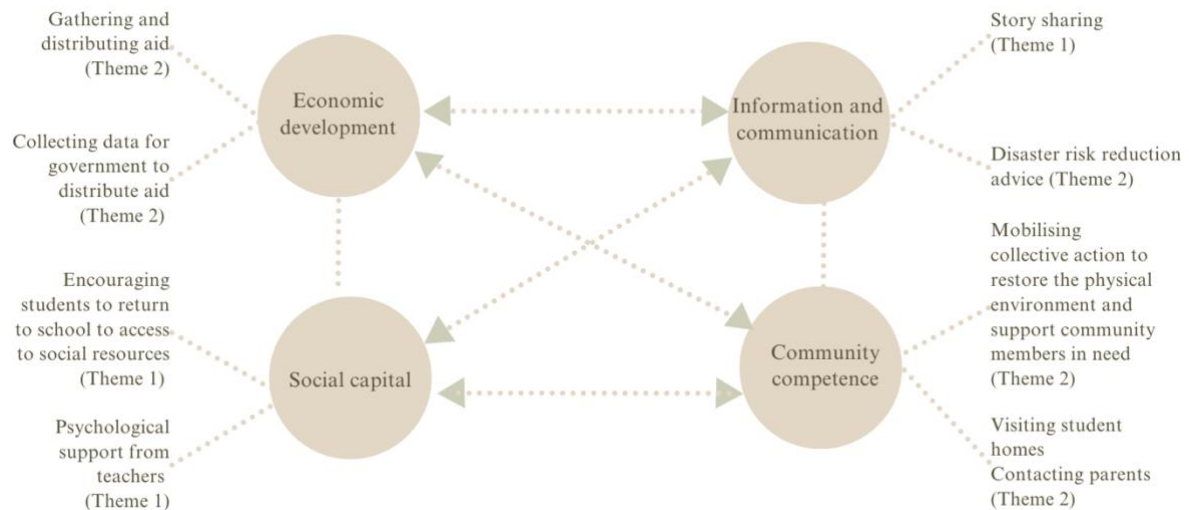


Figure 30. *How teachers support community resilience – adapted from Norris et al. (2008)*

Teachers' practical interventions aided the equitable distribution of resources in the community, as teachers collected data and delivered aid, which symbolised care for their students and was felt to contribute to restoring family and child wellbeing through reducing post-disaster stressors (Snider et al., 2010). This instrumental support is an appropriate intervention during the initial phase of the disaster (Vernberg, 2002), to alleviate disadvantages,

such as poverty, that exacerbate the mental health impacts of a disaster for the most marginalised (Hallegatte et al., 2020; Herrman, 2012). Our previous research from the same school sites found that caregivers highly valued provisions of tangible resources for building post-disaster community resilience (Parrott et al., 2023a: Chapter 5). Additionally, teachers motivated students to return to school, which can contribute to the community's economic recovery and a resumed sense of normality by facilitating caregivers to return to work (Pacheco et al., 2022: Chapter 3). This was highly desired by caregivers in the same region (Parrott et al., 2023a: Chapter 5).

Teachers acted as a trusted source of 'information and communication' by transmitting action-oriented disaster risk reduction advice and sharing stories with students about their collective experience of the disaster. Sharing stories can enhance resilience by supporting students' emotional processing and clarifying knowledge of a confusing event (Bateman & Danby, 2013). Teachers' willingness to listen and exchange disaster-related stories with students is connected to the cultural practice of *tutura*. Specific to the Central Sulawesi region, *tutura* entails sharing feelings and experiences concerning challenging life circumstances, including disasters, to alleviate stress and tension. In Indonesian culture there is a prevailing norm of openness and willingness to share personal experiences with one's in-group, as individuals seek advice and guidance from others, such as teachers, by drawing on their encounters and wisdom (Heider, 2011).

Furthermore, teachers communicating hazard awareness and preparedness can enhance students' self and the school community's collective efficacy by increasing confidence to deal with future disasters (Paton & Jackson, 2002). This is a crucial element of post-disaster psychosocial recovery (Hobfoll et al., 2007b) and is considered by teachers, students and caregivers from the same school sites as important for building post-disaster community resilience (Parrott et al., 2023a: Chapter 5). However, we found that teachers felt inadequately prepared and desired additional training. This is likely to be particularly pertinent to Indonesia, which despite being one of the most disaster-prone world regions, does not implement mandatory disaster education in schools (Desilia et al., 2023). To ensure that consistent and current disaster advice is enacted and transmitted by teachers, a mandatory disaster preparedness curriculum should be developed and implemented. As advice tends to be well-accepted when disseminated by students to their parents (Izadkhah & Hosseini, 2005), this has the potential to further enhance the wider community's resilience.

A shift in teachers' roles from academic to social and emotional support

Our finding that the teacher's role shifted from prioritising teaching academic skills towards scaffolding students' social and emotional recovery after trauma exposure is consistent with previous research that has found an expansion of teachers' roles and responsibilities to include supporting students with trauma (Alisic, 2012; Alisic et al., 2012). This finding also resonates with the expanding discourse of a 'trauma informed' approach to education (see SAMHSA, 2014), which advocates for an in-school awareness of the impacts of trauma for child development and interventions to support students who have experienced trauma, including trauma sensitive classroom practice and positive, restorative behavioural policy (Chafouleas et al., 2016; Thomas et al., 2019). Echoing this, teachers in our sample considered the impact of trauma on students' behaviour and learning and adapted their classroom practice accordingly. This also aligns with previous research from disaster settings that finds that teachers are effective in supporting students' psychological recovery (Mutch & Gawith, 2014), and our research from the same disaster context, which found students' considered teachers to be a valuable source of post-disaster social and emotional support (Parrott et al., 2023b: Chapter 7). Furthermore, the same students reflected on the importance of receiving psychological support to foster their community's resilience (Parrott et al., 2023a: Chapter 5).

However, we found no indication that teachers are dissatisfied with their psychoeducational support-based role, which differs from the findings of Alisic (2012) and Shelemy et al., (2019), who found that some teachers desired professionals to stick to their subject expertise (e.g., designated roles of a teacher vs a psychologist/therapist). This inconsistency may be due to the differing contexts, as the qualitative research by Alisic (2012) and Shelemy et al. (2019) took place in high-income countries with individualistic cultural orientations, where there is likely to be greater availability, accessibility and awareness of psychological professionals (Saxena et al., 2006; Seyle et al., 2013). The settings were also normative (i.e., not after a community-wide trauma), meaning that a stressor was not shared between students and teachers. In high income, mainly Western contexts, teachers tend to adopt roles based on their expertise, therefore many teachers consider students' psychosocial wellbeing to be the responsibility of other professionals, such as school psychologists (Reinke et al., 2011) and social workers (Henderson Smith et al., 2023). In low resource contexts that lack a multidisciplinary team of supportive professionals, teachers may adopt a greater responsibility for supporting students' psychosocial wellbeing.

Nevertheless, when in-school professional psychological support was available, such as from NGOs, we found teachers considered this beneficial. This differs from findings in other LMICs, such as a qualitative study on survivor responses to a flood in Sri Lanka, which found a low demand for psychological services such as counsellors and psychologists, as participants preferred traditional healers (Ekanayake et al., 2013). Instead, teachers in Palu considered themselves as one component of a multi-tiered system of psychological support, which is consistent with the conceptualisation of a teacher's role in a 'trauma informed' school (Chafouleas et al., 2016). Teachers mentions of "*trauma healing*" suggests that more 'Western' clinical psychology concepts related to trauma have been incorporated into the teachers' local knowledge systems.

The influence of the sociocultural context on teachers' roles

Our findings concerning the care and pastoral support teachers exhibited towards students and their families are consistent with some previous research from disaster contexts in high-income countries with individualistic orientations (e.g., Mooney et al., 2021; Mutch, 2015a; O'Connor & Takahashi, 2014) and other collectivistic post-disaster contexts, including elsewhere in Indonesia (Seyle et al., 2013) and in Malaysia (Bikar et al., 2021).

However, facets of how teachers conceptualise their role are likely to have been shaped by Indonesian cultural values and context-specific social norms, as has been observed in the way individuals cope following disasters (Ekanayake et al., 2013). In collectivistic cultures, such as Indonesia, teachers may be more willing to go beyond their professional duty, as group-oriented tasks that involve cooperating with others for a collective outcome are often wellbeing enhancing (Rego & Cunha, 2009; Triandis, 2000; Triandis et al., 1988). This resonates with our finding that teachers voluntarily engaged in activities that allowed for collective agency, such as rallying donations and travelling into the community to offer practical support to in-need families and to encourage students to return to school. This demonstrates values that are strong in collectivistic cultures, such as closeness and loyalty to members of one's ingroup (Hofstede, 1980, 2011; Hofstede et al., 2010) and those specific to Indonesia, including the ancient indigenous value of mutual assistance (*gotong royong*). This practice, reciprocally supporting one another with practical and emotional needs (Slikkerveer, 2019), is deeply rooted in the local fabric of Central Sulawesi and was highly valued by teachers, caregivers and

students for fostering community resilience after the same disaster (Parrott et al., 2023a: Chapter 5). These culturally embedded approaches to navigating life circumstances, including the aftermath of disasters, represent invaluable assets that could inform broader implementation strategies and dissemination efforts across Indonesia, particularly in regions grappling with similar adversities.

Despite this relational orientation, some teachers expressed dissatisfaction arising from their obligation to partake in government-mandated duties to collect data during the aftermath of the disaster. These administrative obligations, particularly at School A, located in a highly devastated region, required teachers to be away from their families in moments of fear and uncertainty. Arguably, the respect for hierarchies and social duties competed with the high value for kin-based obligations and the family unit to support coping characteristic in collectivistic cultures (Schwartz et al., 2010), to create a tension that negatively impacted teachers' sense of agency and capacity to fulfil their various social roles. This demonstrates the importance of conducting culturally sensitive research specific to disaster settings in LMICs; future cross-cultural research would benefit from elucidating whether facets of teachers' resilience-promoting actions, such as the forms of agency and self-efficacy enacted, are unique to countries with a culture of collectivism.

Overall, we expand on the growing body of research on empowering teachers to support student mental health (e.g., see Franklin et al., 2012; Shelemy et al., 2019) by revealing that teachers in low resource contexts may be well-prepared to undertake a support-based role post-disaster. Teachers' willingness to support their students suggests that they hold the potential for reducing the care gap for mental health disorders, which is substantial in LMICs such as Indonesia (Setiyawati et al., 2014). Teachers may be particularly suited to this role as they are trusted, familiar adults and the school is a non-stigmatising site for mental health intervention (e.g., in comparison to mental health services).

Task-shifting, such as by training teachers to support students' psychosocial needs, can address the shortage of mental health providers in marginalised communities (Purgato et al., 2020). As teachers are from the students' community, their support will likely align with local community values and build on existing community strengths, which Westernised, top-down solutions to improving global mental health have been criticised for ignoring (Summerfield, 2012). For

example, teachers in our sample encouraged engagement in religious rituals, such as prayer to support students' emotional recovery, comfort and a sense of community cohesion. This is likely to be influenced by the highly religious nature of Indonesian society, as emphasised by the incorporation of 'religiosity' into the principles of character education that schools are mandated to promote (Nurhayati, 2020). Reflecting this, in our previous study, teachers, students and their caregivers from the same school sites conceptualised religiosity, including maintaining trust in God and collective devotional acts, as fostering community resilience (Parrott et al., 2023a: Chapter 5). While these findings may be influenced by the Indonesian educational and sociocultural context, they may generalise to other highly religious contexts. As teachers' knowledge and coping strategies have developed from a combination of professional training and personal experience, they should be empowered to provide support that is both evidence-based and resonates with students' worldviews, local support systems and indigenous strengths.

The power of teachers to influence students' mental health and recovery could be particularly strong within the Indonesian cultures, however ensuring teachers receive evidence-based training that aligns with salient cultural constructs and values is essential. For instance, Indonesia scores highly on 'power distance' (Hofstede, 1980, 2011; Hofstede et al., 2010), meaning that authority figures are respected and often go unquestioned. Consequently, students may indisputably absorb advice from their teachers that could be detrimental to recovery. For example, some teachers promoted culturally driven narratives of fatalism: the belief that the disaster's effects are beyond their control, being 'Gods will'. Fatalism may support disaster-affected individuals to cope with unpredictable and uncontrollable situations (e.g., after flooding; see Ekanayake et al., 2013), but can also diminish more empowering coping strategies and reduce preparedness for future disasters (Paton et al., 2010; Solberg et al., 2010). Consequently, when teachers lack relevant training, their well-intentioned efforts may not always encourage students to engage in the most effective coping mechanisms. Therefore, teachers must be knowledgeable about appropriate, evidence-based psychosocial support and feel empowered to confidently distribute this knowledge to their community.

The emotional demands of teachers' roles

While it is likely to be advantageous that teachers are willing to support students experiencing traumatic stress, this finding must be underpinned by the recognition that teachers face a

potential emotional “*cost to caring*” (Figley, 2013, pg. 1). In disaster settings teachers are at high risk of emotional exhaustion and burnout (O’Toole, 2017). Our finding that teachers attempted to conceal their own negative emotions to model positive coping could be beneficial for teachers’ coping, as keeping busy by engaging in work and supporting others practically has been found to provide psychological and emotional distraction post-disaster (Ekanayake et al., 2013). However, previous research also demonstrates that when teachers are required to balance personal disaster impacts with returning to work, they often experience poor emotional wellbeing and depression (DeVaney, 2009; O’Toole & Friesen, 2016). As the stressor is shared between students and their teachers, hearing students’ disaster stories could also trigger trauma memories (Ehlers et al., 2004). Therefore, teachers would benefit from psychological support and tools to manage their own mental health needs while simultaneously supporting their students.

8.6. Implications and directions for future research

These findings have implications for school disaster preparation and response. As teachers are willing to offer psychosocial support, the development of a national training package for psychosocially informed resilient recovery enhancement would be beneficial, to provide post-disaster support for teachers while also building their capacity to effectively support their students. It is important for teachers to feel competent in supporting students’ post-disaster mental health, particularly as quantitative research has demonstrated that competence can mediate teacher’s attitudes towards providing psychosocial support (Kos et al., 2006). While numerous toolkits exist to provide teachers with relevant information regarding supporting students who have experienced trauma (e.g., Traumatic Stress Toolkit for Educators by the American National Child Traumatic Stress Network, 2008; Toolkit Child and Trauma, Alisic, 2010 in the Netherlands; Critical Incidents in Educational Communities Guidance, UK Trauma Council, 2023), these most often refer to supporting students with interpersonal trauma, rather than following a community-wide disaster. Furthermore, these toolkits should be adapted to the specific cultural context to ensure their acceptability and relevance (Gil-Rivas & Kilmer, 2016).

In addition, while toolkits exist, teachers may be unaware of these (Alisic, 2012). Therefore, future work should consider how to best tailor existing trauma-informed resources to support schools in particular contexts following disasters and increase teachers’ awareness and use of

these resources. Furthermore, building the capacity of teachers through training may increase teacher's efficacy and reduce their dependence on external supports, such as NGOs, which our results indicate teachers desired. This is consistent with the numerous recommendations in the literature to build resilience through harnessing local knowledge to empower communities to foster their own recovery (Gil-Rivas & Kilmer, 2016; Snider et al., 2010).

8.7. Limitations

Our results must be considered in the context of some limitations. Teachers' retrospective reporting (40-44 months post-disaster) may have led to recall bias. Furthermore, although a strength of the GEM is the minimisation of content inserted by the interviewer, we recognise that certain aspects of teachers' roles may not have been articulated by the teachers as they are taken for granted. This may explain why fewer teachers discussed mentioning their academic responsibilities compared to psychosocial support.

Although teachers were selected at random and invited to participate, it is possible the sample is skewed as the teachers who agreed to participate may have been more interested in providing psychosocial support and therefore be more likely to go beyond academic responsibilities than those who declined to participate. Similar potential sampling bias has been found to lead to an over-reporting of trauma symptoms post-disaster, as those experiencing a greater psychological impact are more likely to be interested in participating in relevant research (Bonanno et al., 2010). In the present study, although numbers of teachers who declined participation were not recorded, the reasons provided were multifaceted, including personal commitments and scheduling conflicts. For instance, during the recruitment phase, several teachers expressed interest in participating but later faced challenges in aligning their schedules. Moreover, unforeseen circumstances, such as the recent passing of relatives, caused some teachers to be unable to attend. Future research should ensure a record is kept of the teachers who decline to participate and their reasons for declining to assess potential sampling bias.

Furthermore, as women and older teachers were overrepresented in our sample, we may not have captured the male and young teacher's experience sufficiently; future research may consider using a gender and age balanced sample to explore potentially gendered/age-based teaching roles. Additionally, this study focused solely on teachers' perspectives. To further elucidate teachers' roles in fostering community resilience, future research should compare the

results of this study with the perspectives of other community members, such as religious leaders, students' families and school principals.

8.8. Conclusion

It is widely recognised that a young person's resilience following trauma exposure depends on the functioning of dynamic systems, including their school (Masten et al., 2021; Ungar, 2011b). This study provides a novel and important contribution to the understanding of teachers' conceptualisations of the role they play in supporting students' recovery after a major disaster in a LMIC, collectivist culture. In doing so, this work builds on existing literature that finds schools to be resilience-promoting environments, particularly for the most disadvantaged (Ungar et al., 2019). They can foster a sense of post-disaster normality and recovery (Pacheco et al., 2022: Chapter 3; Parrott et al., 2023b: Chapter 7). This study emphasises the centrality of teachers for community resilience building; they are committed, willing and resourceful and put their own needs aside to provide key emotional, social and tangible resources to promote students' and the community's resilience post-disaster. It is often not acknowledged that teachers go beyond their role in times of crisis (Mutch, 2015c; Mutch & Peung, 2021). Therefore, this paper advocates for a recognition of the emotionally demanding dual role of teachers in providing support for others while navigating their personal disaster-stressors, affirming the need for teachers to receive post-disaster psychological support and training.

Chapter 9. Fostering resilient recovery: an intervention for disaster-affected teachers in Indonesia

To create schools as hubs of resilience, a key objective of the wider interdisciplinary project, of which this thesis forms a part, was to develop an intervention to support students' psychosocial recovery (Joffe et al., In Preparation). Nevertheless, an analysis of the assessment phase data indicated that teachers would also benefit from participation in a workshop to facilitate their own recovery and to enhance their capacity to support their students. Furthermore, as teachers are a key component of students' social ecological systems, their own recovery is likely to have cascading benefits for students. The need to intervene was also informed by the findings reported in Chapter 7, that indicated most students' represented teachers as a valued source of psychosocial support, however some experienced distress when teachers were inactive or absent. Additionally, the findings reported in Chapter 8 suggested that teachers would be receptive to training, as they considered providing psychosocial support to be a central element of their role. The activities included in the intervention were also underpinned by the findings of Chapter 5 and 6, regarding teachers', students' and their caregivers' conceptualisations of community resilience, as well as teachers' subjective experiences of distress and sources of strengths. This ensured the intervention responded to teachers' salient challenges by harnessing and strengthening existing, valued sources of strengths, such as storytelling and mutual support.

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9.1. Abstract

Disasters leave survivors at heightened risk of negative psychological consequences. Teachers require post-disaster psychosocial support, given their added responsibility for supporting their students' recovery. However, alongside coping with their own mental health, teachers often lack training to support students psychologically. This study addresses this gap by detailing an intervention designed to foster resilient recovery among secondary school teachers in Central Sulawesi, Indonesia, to enhance their ability to support both themselves and their students after a devastating earthquake/tsunami.

Teachers ($n = 37$) from three disaster-affected schools participated in a one-day workshop exploring collective strengths and strategies to develop their own and their students' post-disaster resilience, featuring the Tree of Life activity. Impact was evaluated using a pre-post intervention design. Findings from a three month follow up demonstrated significant improvements across various resilience-related measures, including *personal resilience, social support, adaptive coping strategies, psychological help seeking and post-traumatic stress*. Open-ended survey responses indicated that most teachers reporting subjective improvements in their own recovery and their capacity to support students psychologically. This study emphasises the importance of creating teacher interventions underpinned by disaster recovery theory, which offer practical skills to foster post-disaster psychosocial recovery. While the intervention exhibits promising initial results, future research would benefit from an evaluation using a randomised control group.

9.2. Introduction

The risk of exposure to natural hazards is increasing globally (Guha-Sapir et al., 2017), with a heightened vulnerability to their impacts in low-and middle-income countries (LMICs) (Hallegatte et al., 2020). Notably, the impacts of disasters are highly concentrated in the Asia and Pacific region, since this area is the most affected by natural hazard-based disasters globally (UNESCAP, 2017). The area is also underrepresented in existing disaster research (Hechanova & Waelde, 2017).

Survivors need to be supported for disasters' negative psychosocial impacts. However, there is a persistent gap between need and access to evidence-based, culturally appropriate mental health care in LMICs (Patel et al., 2011). This need is exacerbated after a collective traumatic event, such as a tsunami or earthquake, which has a profound impact on the community's mental health (Makwana, 2019), particularly impacting young people (Norris et al., 2002; Peek, 2008).

Teachers play a crucial role in addressing the psychosocial needs of young people (Le Brocque et al., 2017; Parrott, et al., 2023b: Chapter 7; Parrott et al., 2024: Chapter 8; Seyle et al., 2013). Teachers' knowledge of students and their extensive time together makes teachers adept at identifying students who may require additional support (Widyatmoko et al., 2011; Wolmer et al., 2011). Support delivered by teachers is also cost-effective (Wolmer et al., 2011). Numerous studies among populations exposed to collective trauma find that students' recovery can be supported by interventions that involve training teachers to deliver psychosocial support (e.g., see Coombe et al., 2015 for a review). In the absence of mental health services, the teachers' role may be particularly vital in LMICs. This fits with task-shifting approaches, involving the redistribution of care to less specialised workers, that aim to increase access to mental health care in LMICs (Purgato et al., 2020). Teachers' disaster-related knowledge and skills may also permeate the wider community through the intergenerational transfer of knowledge from students to their caregivers (Edmeade & Buzinde, 2021). Therefore, teachers play a vital role in fostering both young people's and the wider community's resilience following disaster (Buzinde et al., 2019; Edmeade & Buzinde, 2021; Pacheco et al., 2022: Chapter 3).

However, teachers may not be well-prepared for this role: alongside the burden of managing their own post-disaster stressors, they may feel ill-equipped to support students (Johnson & Ronan, 2014). Teacher's stress is likely to be heightened by additional post-disaster responsibilities, including supporting students with trauma-related distress (Alisic, 2012), which can contribute to emotional exhaustion and burnout (Kuntz et al., 2013; O'Toole, 2017; O'Toole & Friesen, 2016).

A seminal example of an intervention that responded to this dual role of teachers as both survivors and agents of student resilience involved a teacher-based intervention after Hurricane Katrina (Baum et al., 2014). The intervention focused on self-empathy, self-regulation and self-awareness through breathing and clay moulding activities that teachers could use for themselves and their students. Teachers reported post-intervention improvements in confidence to support students, as well as to discuss difficult issues and empathise with students. In Indonesia, Seyle et al. (2013) devised an intervention that reduced teachers' depression and post-traumatic stress symptoms (PTSS) through a three-day workshop featuring psychoeducation, relaxation and coping exercises. Developing appropriate and efficacious interventions to support teachers' psychological recovery and increasing their confidence to support their students' following disasters is crucial for the resilience of the community, which is tied to the interplay between individuals' capacity and the strength of key social institutions, including schools (Pacheco et al., 2022: Chapter 3; Sadri et al., 2018). This paper reports the development and evaluation of an intervention for teachers in Indonesia following a devastating earthquake, tsunami and landslide.

9.2.1. Theoretical foundations: A strengths-based approach

Aspects of resilience theory guide the development of the intervention reported in this paper. While a large volume of psychological research has focused on the capacity of individuals to adapt via intrapersonal factors, such as personality and individual coping strategies (e.g., see Luthar, 2006 for a review), the discursive bias towards individual-level traits ignores the influence of dynamic, interconnected, social and cultural systems on resilience (Masten et al., 2021). There is a growing consensus that resilience is best defined as a systems concept, which recognises that the resilience of an individual depends on the adaptive pathways within and between interconnected systems (e.g., the individual, family and society) (Masten, 2019;

Masten & Motti-Stefanidi, 2020). As the school is an important system in which young people are embedded, the multisystem perspective of resilience positions schools and teachers as important to fostering their resilience (Masten, 2021; Ungar et al., 2019).

Since determinants of resilience can vary depending on the cultural context (Ungar, 2015), this intervention aimed to harness the socioculturally-specific determinants of resilience through adopting a ‘strengths-based’ intervention approach, which recognises survivors’ capacity for strength and resilience, assumes competency and empowers them to overcome disaster-related challenges (Snider et al., 2010). To foster resilience in a locally grounded way, the intervention sought to create safe social spaces and dialogue, promote knowledge of locally valued strengths and coping mechanisms and to identify and strengthen existing capacities (Burgess & Mathias, 2017; Campbell & Burgess, 2012).

To promote positive coping and effective functioning in populations affected by mass trauma, a seminal paper by Hobfoll et al. (2007b) proposed five post-disaster evidence-based intervention elements: 1) a sense of safety, 2) calming, 3) self and community efficacy, 4) connectedness and 5) hope (see Figure 31). These theoretical tenets underpin existing intervention models, including the widely deployed ‘psychological first aid’ (PFA), which was designed with the aim of stabilising and managing acute stress, analogous to physical first aid (Dieljtens et al., 2014; Everly & Lating, 2021). The elements have been successfully applied in non-Western cultural contexts such as Haiti (Cornelli Sanderson et al., 2016) and can be fostered in schools (Mooney et al., 2021).



Figure 31. *Hobfoll et al. (2007) intervention elements*

9.2.2. Current study

While many published interventions focus on training teachers to implement clinically informed strategies and materials for building student resilience (Coombe et al., 2015; Wolmer et al., 2011), this can inadvertently neglect the psychological impacts of the disaster on the teachers themselves (Baum et al., 2014; Seyle et al., 2013). Therefore, the present study reports the development and evaluation of a culturally-grounded intervention designed with a dual aim: enhancing both teacher and student resilience. This involves empowering teachers in a low resource context to manage their distress, while also equipping them to support their students' psychological recovery more effectively. As the intervention content is novel and context-specific, this study aims to test the feasibility and initial efficacy of the intervention.

9.3. Method

9.3.1. Research Context

On the 28th September 2018 a powerful earthquake measuring 7.7 Mw caused a tsunami, triggering liquefaction and landslides in the Central Sulawesi region of Indonesia. The impact was catastrophic: 4340 people died, 211,000 people were displaced from their homes, 374 schools sustained major damage (Pemerintah Provinsi Sulawesi Tengah, 2019).

9.3.2. Site selection and participants

Three schools were chosen in the disaster area, based on their exposure to different elements. School A was impacted by earthquake and liquefaction, School B by earthquake and School C by tsunami. School A and B were structurally damaged while School C encountered extensive flooding and sediment deposition. Participants were recruited from a non-clinical sample of disaster-exposed teachers from these schools. Once principals had given permission for the research, teachers were randomly selected and invited to participate. For the intervention, teachers from three schools gathered at an accessible site, not affiliated with any school. Although forty teachers were recruited at baseline, thirty-seven participated in the intervention (87% female, M age = 49.50). Reasons for non-participation included prior family commitments and a bereavement. The final samples characteristics, including exposure indicators, are displayed in Table 6.

Table 6

Characteristics of the sample in Chapter 9

Characteristic	Percentage of sample
Site	School A: 41%
	School B: 32%
	School C: 27%
Age	51 – 60 years: 62%
	41-50 years: 19%
	31 – 40 years: 14%
	25 – 30 years: 5%

Gender	Female: 87%
	Male: 14%
Religion	Muslim: 92%
	Christian: 8%
Time worked at current school (years)	Up to 5: 16%
	6 – 10: 16%
	11 – 20: 32%
	21 – 30: 24%
	More than 30: 11%
Disaster exposure	
Experienced shaking	100%
Separated from members of household family	76%
Injured during the disaster	68%
Participated in rescue efforts	51%
Witnessed grotesque scenes (e.g., body parts)	49%
Witnessed death of somebody	41%
Witnessed liquefaction	35%
Heard voices trapped under debris	27%
Trapped under debris	16%
Witnessed tsunami water rise	11%

9.3.3. Study Design

A pre- post- intervention design was used to investigate changes in teachers' recovery. A questionnaire was administered: 1) prior to the intervention between January - April 2022 and 2) approximately one year after the initial questionnaire, between March – April 2023, three months post-intervention. The time elapsed between the pre- intervention data collection and the intervention allowed for analysis of the data on both student and teacher resilience needs and informed by the design of the intervention. In addition, to assess the feasibility and acceptability of the intervention, a feedback form featuring open and closed questions on teachers' subjective experience of the intervention was completed on the intervention day and three months post-intervention.

9.3.4. Procedure

At the first data collection time point, 40 months post-disaster, participants were informed about the study and provided informed consent. An individual, anonymous identification code was used to match pre-and-post data for each teacher. Both pre- and post-intervention, self-administered survey items were completed by teachers in their place of work using either an electronic tablet or a paper version, which was then entered into the survey collection software KoboToolbox (www.kobotoolbox.org). A local research assistant was present in-person to offer technical and emotional support. Alongside completion of the surveys, participants were interviewed regarding coping with the disaster and the school's role (reported elsewhere, see Lomeli-Rodriguez et al., 2024; Parrott et al., 2023b: Chapter 7; Parrott et al., 2024: Chapter 8; Parrott et al., In Preparation: Chapter 6). Following completion of the surveys, teachers were thanked and provided a gift of appreciation. They were also informed they would be re-contacted, subject to granting permission.

The day-long intervention took place in-person in December 2022. Prior to the intervention, a team of British and Indonesian researchers collaboratively devised the content via online meetings. This process was guided by local perspectives to ensure the intervention aligned with cultural norms and values and addressed bottom-up priorities. To achieve this, the activities were informed by an analysis of the teachers' assessment phase data, that elicited nuanced cultural concepts central to facilitating recovery efforts. This included *gotong royong*, translating closely to *mutual help*, and *tutura*, a concept specific to the Central Sulawesi region denoting a form of oral storytelling involving a cathartic expression of emotion when sharing difficult life circumstances in a supportive environment. Through incorporating local idioms of coping and strength into the intervention content, the intervention aimed to recognise, harness and develop teachers' existing strengths and capacities, to ensure the intervention was well-accepted and empowering for teachers.

To devise the intervention, additional intervention facilitators were also invited to meetings to discuss the intervention's content, key principles and practicalities (approximately 10 hours of meetings). These meetings culminated in the creation of an in-depth intervention strategy handbook containing the schedule, activity instructions, examples of responses/scripts to common scenarios as well as key 'do's' and 'don'ts'. Facilitators (all Indonesian) comprised:

an academic researcher, a clinical psychologist, the founder of a local mental health NGO and an employee of the organisation. In addition to the facilitator leading each session, a facilitator was assigned to each of the three school-based groups, ensuring the availability of individualised support and guidance for each task. Facilitators were instructed to refer any concerns regarding participant wellbeing to the clinical psychologist. Indicators of concern included expression of emotional distress, social withdrawal, low motivation and somatic complaints.

Feedback forms were completed at the end of the intervention day. Intervention assessment data was collected by research assistants approximately three months post-intervention.

9.3.5. Intervention design and delivery

The authors developed a non-clinical, group-based intervention incorporating narrative techniques, psychoeducational material, mindful breathing and our findings (Lomeli-Rodriguez et al., 2024; Parrott et al., 2023a: Chapter 5; Parrott et al., 2023b: Chapter 7; Parrott et al., 2024: Chapter 8; Parrott et al., In Preparation: Chapter 6) to form vignettes. The design combined psychological theory with practical guidance for promoting adaptive coping strategies for the teachers, so they could also provide effective psychological support for students.

This intervention aligned with many of the features of PFA, which aims to stabilise survivors' acute distress and promote adaptive coping (Allen et al., 2010). The features relevant to the present intervention, from those outlined by Everly and Lating (2021), included an emphasis on the development of an empathetic, compassionate relationship with a trauma-exposed group, being culturally and developmentally informed, allowing the voices of trauma-affected individuals to be heard, determining survivors' needs and providing guidance and coping skills.

PFA is underpinned by Hobfoll et al.'s, (2007) five intervention principles (see Figure 31), which the intervention aimed to promote. However, we did not follow a specific PFA model (e.g., The National Child Traumatic Stress Network Psychological First Aid Field Operations Guide model; Brymer et al., 2006 or the Johns Hopkins RAPID-PFA model; Everly & Lating, 2022). Rather, we aimed to ensure that the intervention was adapted to the specific cultural

context. While PFA typically functions as an early psychological triage and crisis intervention (Everly & Lating, 2021), the current intervention was designed to be beneficial over a more extended time scale. This approach aimed to confront lingering feelings, given that it was implemented over three years post-disaster. Its objective was also to foster sustainable psychosocial recovery within school systems.

The intervention was delivered over the course of one day (7 hours). An outline of the activities and their aims are presented in Table 7.

Table 7

Overview of the intervention activities

Session	Activity	Aim
One	Introduction and icebreakers	To build rapport and foster a positive atmosphere
Two	Tree of Life (personal reflection)	To reflect on lingering emotions regarding the disaster and to recognise sources of strength to overcome adversity
Three	Presentation of resilience themes and theory to support post-disaster resilience and coping	To feedback findings from teachers' interviews regarding collective strengths and a psychoeducational component to enhance teachers' psychosocial competence and confidence
Four	Mindful breathing to stay calm: Grounding	To develop teachers' emotional regulation and stress management techniques (for themselves and to teach students)
Five	Tree of Life (group)	To build on the second session to identify and share collective experiences of the disaster and sources of collective strength to

		develop collective efficacy and empowerment
Six	Mindful breathing to stay calm: Square Breathing	See ‘Session Four’
Seven	Presenting themes from their students’ interview data and refresher of the theoretical framework	To feedback findings from students’ interview data to support an understanding of their post-disaster experiences and valued coping mechanisms
Eight	Co-create school guidance on how to support themselves and their students psychologically after disaster and apply these to vignettes	To increase teacher knowledge and confidence to support themselves and students by promoting adaptive actions and developing teachers’ competency, efficacy and empowerment

The intervention began with an introduction from the facilitators, followed by icebreaking activities to foster a positive communal atmosphere. This featured an interactive game and listening to music, as advised by local practitioners during the interventions design. While most research featuring icebreaker activities centres on young people, research with adult learners suggests benefits include social bonding, rapport building, initiating conversations, relieving tensions and fostering a safe, supportive learning atmosphere (Chlup & Collins, 2010).

A collective narrative technique was used in the second session, through the ‘The Tree of Life’. The activity supports groups and communities to overcome life challenges by promoting identity, hope, connectedness and empowering individuals to re-author their stories (Denborough, 2012). Although originally designed to support vulnerable children in Zimbabwe (Ncube, 2006), when used with adults it has been found to elicit rich discussions (e.g., in post-conflict settings; Burgess & Fonseca, 2020). To our knowledge, no published research exists that reports using the technique in Indonesia. However, our decision to implement the activity was guided by the advice of a local clinical psychologist who supported facilitating the intervention. The clinical psychologist was experienced in delivering the technique in the

region and considered it to be contextually relevant and impactful. Supporting this assertion, the activity aligned well with participants valuing reciprocal storytelling (*tutura*) for supporting coping, as the activity facilitated an exchange of experiences of strength and coping within a supportive space.

Using the metaphor of the tree, participants depict their personal disaster experiences as the roots, the present as the ground, and gifts/resources as fruit. Metaphorical ‘clouds’ and ‘storms’ shake the tree, but participants are reminded of their resources and sources of strength to weather difficulties and foster growth. A worksheet (see Figure 32) is provided to explain the activity. Completed individual trees are shared with the wider group to discuss similarities and differences in experiences of coping. Similarities are highlighted and amalgamated into a group Tree of Life after the psychoeducational session.

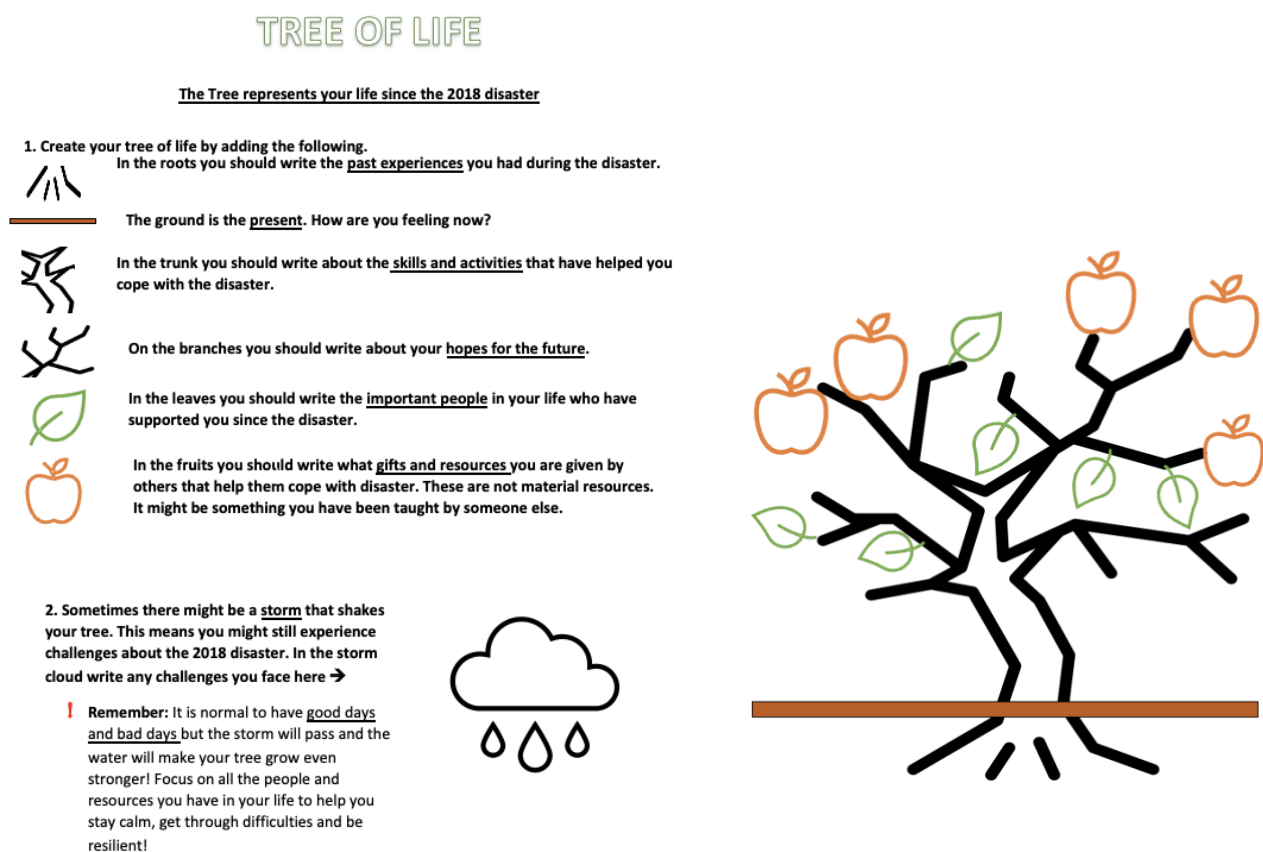


Figure 32. *Tree of Life worksheet*

Following the individual Tree of Life activity, session three endeavoured to give the teachers a sense of the adaptive forms of coping that they had highlighted in earlier interviews as well

as how they saw their role and that of schools for supporting coping. This culminated in a presentation of five key principles for a resilient recovery (see Figure 33), based on salient themes extracted from the participants' interview data, which aligns with the evidence base on effective coping. These principles were used to ensure that the coping strategies promoted in the intervention aligned with participants' cultural norms and values. They also recognised existing coping strategies and the inherent resilience of the trauma-exposed population, as recommended by Snider et al. (2010). This also constituted a form of 'member checking' (Thomas, 2016) as the teachers' responses to the principles validated that our interpretation of their data collected during the assessment phase resonated with their experiences, norms and value systems.



Figure 33. *Presentation slide of teachers' principles of a resilient recovery*

The third session incorporated psychoeducation as an early component within the broader intervention, in line with common practice in trauma interventions (Pfefferbaum et al., 2014a). Hobfoll et al.'s, (2007) five essential elements of recovery were introduced to guide the day's

activities. Teachers received this theoretical framework through presentation slides featuring definitions of each element (see Figure 34), accompanied by examples of actions to promote them (see Figure 3 for one example). These slides were included in a handout of materials provided to teachers.

Five **essential elements of care** that promote resilience and wellbeing after traumatic events, according to other research (Hobfoll et al., 2007):



Figure 34. *Presentation slide from psychoeducational component*

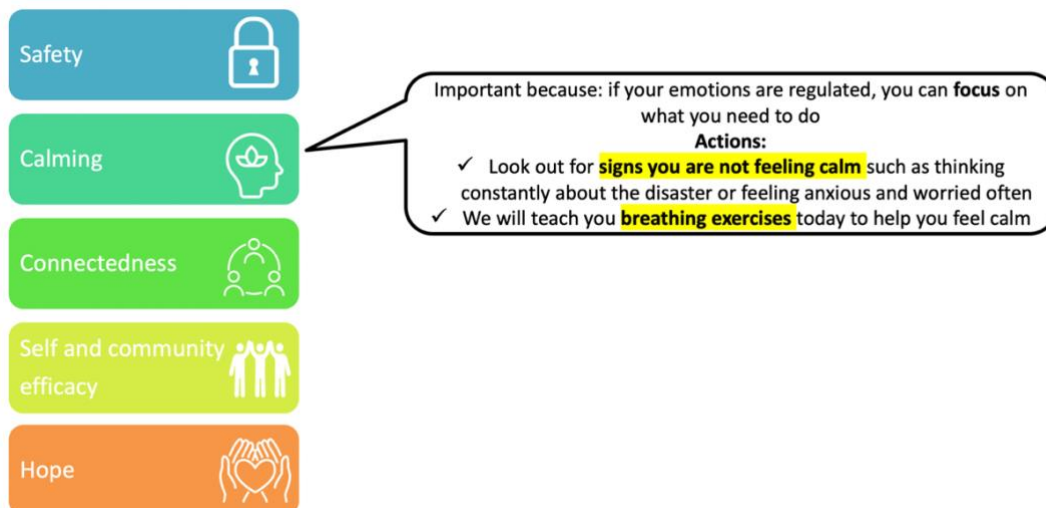


Figure 35. *Presentation slide from psychoeducational component*

Two mindful breathing exercises featured as components of the intervention (sessions four and six). The brief exercises were designed to support teachers to regulate their emotions and for use with students. Consistent with stress management training, these techniques draw on cognitive and behavioural techniques without focusing on the traumatic event (Bisson & Andrew, 2007; World Health Organisation [WHO], 2013). Body-oriented emotional regulation

strategies are frequently incorporated into psychosocial interventions in southeast Asia, including in post-disaster contexts (see Panting et al., 2020 for a review). Mindful breathing is proposed as a culturally relevant, inclusive and accessible response to disaster survivors' needs as the practices do not require previous skills or resources and are not associated with a specific religion. Mindful breathing can promote the non-judgemental acceptance of emotions and address survivors' potential feelings of shame without requiring explicit emotional expression (Panting et al., 2020). These techniques show promising results for stabilising and reducing stress, anxiety and PTSS (e.g., see Jerath et al., 2015; Panting et al., 2020; Taylor et al., 2020).

To transition from the psychoeducational session to the mindful breathing component (session four), the facilitator explained that the following exercises aimed to promote the 'calm' and 'safety' components of the Hobfoll et al. (2007) model. Teachers were reassured about the normality of their experiences but encouraged to manage their distress using the techniques.

The first technique featured an exercise designed to engage the five senses to anchor the participant in the present moment. The grounding technique, the '5, 4, 3, 2, 1' method, was taught and practiced focusing on the five bodily senses, identifying: 5) things you can see, 4) things you can touch, 3) sounds, 2) smells and 1) taste (Adams & Branscome, 2020; Davis, 2022; WHO, 2020). The method aids in managing experiences of anxiety, flashbacks and intrusive thoughts to re-establish a sense of safety and calm. The second session, held later in the day, involved a 'square breathing' (or 'box breathing') exercise. This session featured deep inhalation, breath retention, exhalation and a final breath hold, while visualising a square shape (Ahmed et al., 2021; Lauria et al., 2017; Wei, 2023).

Following the initial exercise, teachers were grouped by school. During session five, each school-based group created a large 'Tree of Life' by amalgamating their individual trees to represent their collective strengths and communal coping resources (see Figure 36). The activity aimed to foster post-disaster resilience by promoting positive coping strategies to increase sense of control, reduce anxiety and improve wellbeing. Teachers were told the group's tree would be transformed into a poster to be displayed in a communal school area as a visual narrative of post-disaster recovery, to memorialise the disaster and remind teachers of the collective strengths of their school community.



Figure 36. Group Tree of Life by each school

The group-based element of the activity was inspired by local perspectives and wider evidence suggesting group work among trauma-exposed populations provides feelings of comfort, combats isolation and stigma, and fosters reciprocal support (Baird & Alaggia, 2021; Steinberg, 2014; Yalom, 1998). During assessment phase interviews, participants highlighted the cultural value of oral storytelling (locally termed *tutura*) to cope with adversity. Storytelling can have collective benefits, as narrating experiences can validate shared trauma by authenticating collective memory (Ainslie, 2013), building a sense of community (Mankowski & Rappaport, 2000) and supporting the co-construction of identity (van de Ven, 2020), including a shared cultural identity (Aho, 2014). Therefore, the group ‘Tree of Life’ incorporated elements of oral storytelling, fostering a safe space for dialogue therefore allowing participants to share their narratives of post-disaster coping.

This group-based technique aligns with the growing evidence-base supporting collective approaches to trauma recovery. They aim to engage and empower affected communities (Pearlman, 2013), by recognising and enhancing their collective resilience (see Saul, 2022). Notably, group work with members of one’s in-group (e.g., colleagues) may be highly valued in Indonesia, where the self is conceptualised as interdependent with others and a preference is shown for closeness, social harmony and achieving collective goals (Hofstede et al., 2010; Sagala et al., 2009). In this context, group-work can be empowering and alleviate shame,

isolation and helplessness (Engelbrecht & Jobson, 2016), particularly given the high value placed on mutual support/collaboration (Hechanova et al., 2015).

Afternoon sessions transitioned from the focus on the teacher's resilience to addressing how teachers could support their students. During session seven, coping strategies valued by their students, derived from student interviews in the wider research project, were presented to teachers as six principles (see Figure 37). Based on these principles, the students had created songs during an interrelated student intervention (see Joffe et al., In reparation). The songs were played to teachers, who were guided to reflect on: 1) How the songs make you feel? 2) What messages do you get from the songs? 3) Does anything about the song surprise you?



Figure 37. Six principles for the resilient recovery of students as presented to teachers.

For session eight, teachers collaboratively developed guidelines to support the resilience of themselves and their students, scaffolded by Hobfoll et al.'s (2007) theoretical framework (see Figure 38). Considering the promotion of each element of the model, teachers integrated

insights from the morning activities, resilience principles derived from their interviews and their professional experiences. This strategy sought to affirm the responsibility of teachers for supporting their own psychological recovery and that of students; reaffirming group roles (e.g., of teachers) can be beneficial during interventions (Dueck & Byron, 2012). This also aimed to foster community empowerment, collective efficacy and outcome expectancy through promoting concrete actions, which can enhance their motivation, a central component of sustaining behaviour change (Michie et al., 2011). The discussion-based activity resulted in each school recording and presenting their principles to the other school groups, ultimately forming a ‘coping toolbox’ of resilience resources for teachers, originally designed in interventions for teaching coping techniques to children (see Brown et al., 2006).

How can you support your own psychological recovery post-disaster?

Safety	Calm	Connectedness	Self and collective efficacy	Hope
I will protect my physical and emotional safety by...	I will promote calmness by...	I will stay connected to students, colleagues, family by...	I know my community can cope well with challenges by...	I will support students to have hope by...

How can you support student recovery post-disaster?

Safety	Calm	Connectedness	Self and collective efficacy	Hope
I will encourage students to feel physical and emotional safety by...	I will encourage students to feel calm by...	I will encourage students to feel connected to friends, teachers and family by...	I will help students to believe they can cope with challenges by...	I will support students to have hope by...

Figure 38. Template used to create school guidelines

Lastly, teachers applied the principles they had devised to school-based vignettes, created by the authors based on the teacher and student interview content. The vignettes aimed to resonate with participants' experiences for practical utility. For example: *"During teaching a class, a large truck drives past outside. The movement of the truck causes the building to shake. Before the 2018 disaster, this would have felt normal so no one would have noticed. However, the shaking reminds the teacher of the disaster so startles them and they can feel themselves panicking. Some students exchange worried looks. The teacher feels their hands shaking, even though the truck has now gone by."* In groups, teachers discussed handling each scenario and practiced deciding which principles to apply, fostering collective problem-solving skills and increasing confidence to navigate challenging situations.

Participants were also invited to join a WhatsApp group after the intervention, with the purpose of sustaining a sense of group cohesion, fostering social interaction, sharing learning and facilitating feedback. For example, teachers exchanged images of the posters created during the intervention displayed in their schools. The WhatsApp group was managed by a Palu-based research assistant who built a strong rapport with the teachers during data collection and the intervention. This is similar to the use of Facebook groups to sustain intervention behaviour change (Joffe et al., 2016, 2019).

Each school's 'Tree of Life' and guidelines were transformed into a poster by a local artist to be displayed in schools (see Figure 39). The designs were shared with the WhatsApp group to invite feedback from the teachers before printing. Teachers were also gifted mug and tote bag reminders of teachers' resilience principles (see Figure 40).

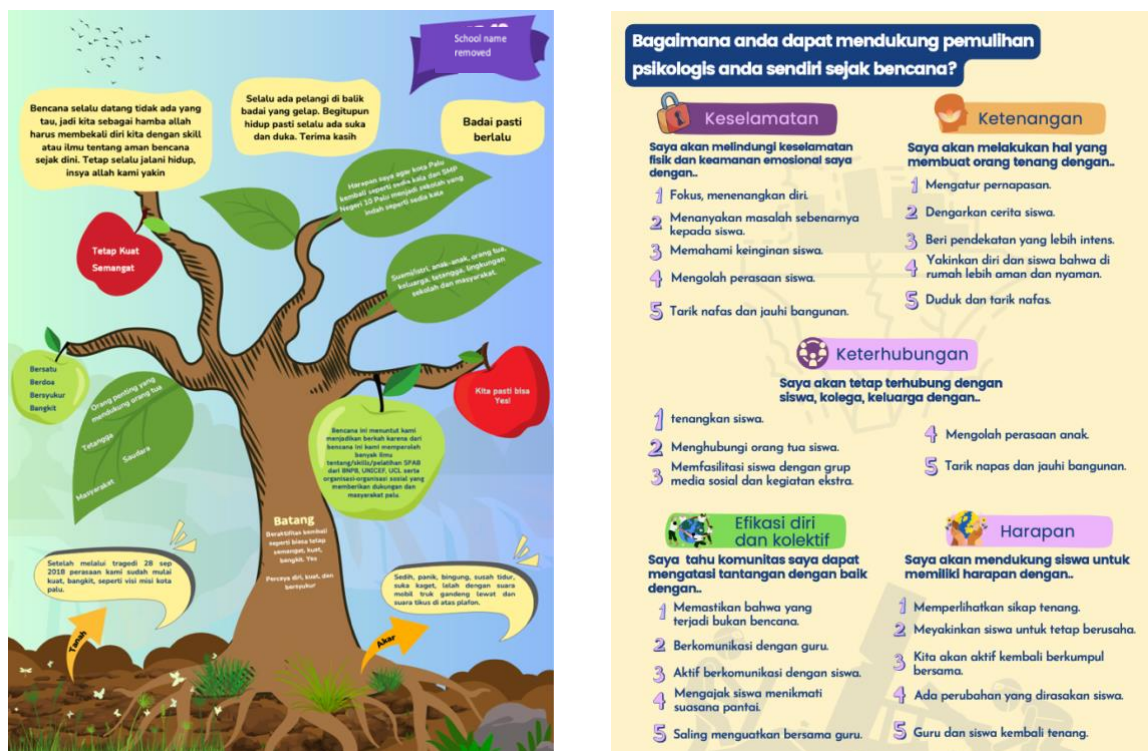


Figure 39. Examples of Tree of Life and guidelines posters created by local artists based on the teachers' output, for one of the schools



Figure 40. Reminders gifted to participating teachers featuring the teachers' resilience principles

9.3.6. Measuring the impact of the intervention

To capture whether the intervention enhanced resilient recovery, the following variables were measured pre-intervention and three months post-intervention: personal resilience, community resilience, PTSD and CPTSD, personal subjective wellbeing, fatalism, social support, coping strategies and attitudes towards psychological help seeking. This battery of measures was devised to feature a range of determinants and expressions of resilience, as resilience depends on a complex array of factors (e.g., see Masten, 2019; Masten & Motti-Stefanidi, 2020; Ungar, 2015). Collectively, these measures indicate a capacity for successful adaption following a disaster. This measurement approach is consistent with recommendations to adopt a broader view of the resilience concept and avoid a narrow focus on a single dimension or aspect (Mayunga, 2007). Demographic and disaster exposure information was collected as part of the pre-intervention survey (see Appendix B).

Instruments were selected based on their relevance in measuring elements considered important for indicating teachers' adaptive capacity to recover following a disaster. Generally, standardised measures were used due to their established validity and reliability. These standardised scales were not adapted to retain their robust psychometric properties, thus contributing to the study's rigour and credibility. In addition, using standardised scales allows our work to build on previous research and facilitates potential comparison of these findings with other research.

However, to complement the standardised measures, additional exploratory items were incorporated into the survey, which were particularly relevant to resilience in the Indonesian context. This included the ability of the *community* to bounce back from adversity and the role played by God's support and monetary satisfaction for supporting wellbeing. This method, featuring translated instruments alongside context-specific items, is consistent with the 'emic plus etic' approach recommended for conducting mental health research in the global South (Bhui et al., 2003). Furthermore, all scales were selected in collaboration with Indonesian researchers who ensured the conceptual relevance of all measures. Face and content validity of standardised scales were also assessed by bi-lingual researchers during the translation process.

Personal subjective wellbeing was assessed using the Personal Wellbeing Office for National Statistics Scale (ONS4) (Tinkler & Hicks, 2011). The four-item measure consists of four independent themes that are scored separately: life satisfaction, life worthwhile, happiness, and anxiety. This scale is recommended for measuring wellbeing when prioritising brevity (VanderWeele et al., 2020). Two additional items were added and scored separately: God support and monetary satisfaction. The inclusion of these two items was based on research regarding sociocultural features of wellbeing in Indonesia (Maulana et al., 2019).

Personal resilience was measured using the Connor-Davidson Resilience Scale (CD-RISC) two-item version (Connor & Davidson, 2003), designed to capture the essential elements of personal resilience: adapting to change and bouncing back from adversity. The items are on a Likert scale ranging from 0 ('not true at all') to 4 ('true nearly all the time').

To measure community resilience, participants rated their *community's* adaptability and bounce back from challenges using two items inspired by the CD-RISC. The Likert scale mirrored that of the personal resilience measure.

PTSD and CPTSD were measured using the International Trauma Questionnaire (ITQ) (Cloitre et al., 2018). The self-report measure comprises 18 items representing three PTSD symptom clusters: re-experiencing, avoidance and sense of current threat. It also encompasses three CPTSD symptom clusters related to disturbances in self-organisation (DSO): affective dysregulation, negative self-concept and disturbances in relationships. Additional items gauge functional impairment associated with PTSD and CPTSD (occupational, social/relational and other important areas of life/activities). As well as measuring symptoms, diagnostic scoring is based on symptom presence in each cluster and a related functional impairment, allowing for probable PTSD **or** CPTSD diagnosis.

Perceived social support was measured using The Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988), comprising three subscales for family, friends and a significant other. Each sub-scale contains four items, rated on a 7-point scale from 1 ('very strongly disagree') to 7 ('very strongly agree'). Higher scores indicate greater perceived social support.

Fatalism was measured by a set of eight items developed by Joffe et al. (2013) and used in Joffe et al. (2016, 2019). Each item is rated from 1 ('strongly disagree') to 4 ('strongly agree'). A higher score indicates higher fatalism.

Earthquake anxiety was measured using a set of seven items devised by Paton et al. (2003), which has been employed in several disaster studies, including Joffe et al. (2016, 2019). Responses are rated on a 4-point Likert scale from 1 ('not at all') to 4 ('a great deal'). Higher scores indicate greater earthquake anxiety.

The frequency of coping strategies was assessed using a series of items developed from the coping literature and discussion with the Indonesian authors. Identified strategies featured: 1) sports and/or exercise, 2) hobbies/interests, 3) letting time pass, 4) mental health/psychological services, 5) family support, 6) colleague support, 7) peer support, 8) alcohol, cigarettes and/or drugs, 9) prescription medication and 10) prayer and/or meditation. Attitudes towards psychological services were gauged with two questions regarding likelihood of seeking professional psychological support for oneself and likelihood of recommending support for others.

To assess teachers' experiences of the intervention, teachers responded to open-ended questions at the time of the intervention in a feedback form and in a three month follow up survey. Questions were designed to elicit their preference of activities, recommendations to improve the intervention, how they experienced the intervention and the impact they felt it had on their students.

9.3.7. Data analysis

Statistical analyses were conducted with SPSS (Mac Version 29). Paired samples t-tests examined differences in pre and post intervention outcome measures. All data was normally distributed and met the assumptions for a t-test, therefore non-parametric tests were not required. However, for the dichotomous variable (probable diagnosis of PTSD and/or CPTSD), a McNemar test was used.

Due to the large number of t-tests conducted, a Bonferroni correction was applied as a robust method to control for the probability of a Type 1 error (Field, 2018). The standard significance

threshold ($\alpha = 0.05$) was divided by the number of comparisons ($\alpha = 0.05/34$) to provide an adjusted significance level ($\alpha = 0.001$). Therefore, statistical tests were two-tailed with a p-value of 0.01 or less are considered statistically significant. Effect sizes were also examined and reported.

Open-ended survey questions were entered into excel and analysed using content analysis. A content analysis involves categorising and counting key themes that occur (Wester & Krippendorff, 2005). The method is useful for analysing open-ended survey questions due to the brevity of responses, which renders the data unsuitable for a more in-depth thematic analysis.

9.4. Results

9.4.1. Pre- and post-intervention quantitative measures

37 participants completed the pre- and post- intervention resilience related measures. Results of paired sample t-tests are presented in Table 8.

Table 8

Pre- and post- intervention paired sample t-test results

Measure	Pre intervention		Post intervention		95% confidence interval of the difference		t	Effect size Cohen's d	Sig (2-tailed)
	M	SD	M	SD	Lower	Upper			
Earthquake anxiety	2.75	0.64	2.44	0.55	0.04	0.57	2.38	0.39	0.023*
Fatalism	2.90	0.44	2.75	0.47	0.18	0.29	2.29	0.38	0.028*
PTSD/CPTSD (ITQ)									
PTSS	12.78	5.83	8.57	4.64	2.32	6.11	4.52	0.74	<0.001***

Re-experiencing in the here and now	3.54	2.02	2.59	1.95	0.09	1.80	2.24	0.37	0.031*
Avoidance	4.38	2.52	2.92	2.34	0.61	2.30	3.50	0.58	0.001***
Sense of current threat	4.86	2.16	3.05	2.32	0.90	2.72	4.04	0.66	<0.001***
DSO symptoms	6.54	6.11	3.41	3.83	0.82	5.45	2.74	0.45	0.009**
Affective dysregulation	2.76	1.88	1.38	1.42	0.60	2.16	3.57	0.59	0.001**
Negative self- concept	2.05	2.57	1.22	1.95	-0.21	1.88	1.63	0.27	0.112
Disturbances in relationships	1.73	2.31	0.81	1.58	0.10	1.74	2.28	0.37	0.029*
Perceived social support (MSPSS)									
Significant others	5.51	1.15	6.11	0.53	-0.99	-0.21	-3.15	-0.52	0.003**
Family	5.61	1.02	6.09	0.57	-0.87	-0.09	-2.49	-0.41	0.017*
Friends	5.24	1.27	5.70	0.67	-0.92	-0.01	-2.07	-0.34	0.046*
Personal resilience (CD- RISC)	3.12	0.58	3.50	0.55	-0.59	-0.17	-3.60	-0.59	<0.001***
Community resilience	2.99	0.55	3.33	0.50	-0.58	-0.12	-3.12	-0.51	0.004**
Wellbeing (ONS)									
Life satisfaction	8.30	1.43	8.57	0.90	-0.75	0.21	-1.15	-0.19	0.257
Life worthwhile	8.62	1.11	8.49	0.90	-0.331	0.60	0.59	0.10	0.560
Happiness	8.46	1.66	8.59	1.30	-0.774	0.50	-0.43	-0.07	0.671
Anxiety	6.65	2.80	5.89	2.54	-0.47	1.98	1.25	0.21	0.218

Wellbeing additional items									
Monetary satisfaction	7.54	2.41	8.03	1.17	-1.32	0.34	-1.19	-0.20	0.242
God support	9.59	0.69	9.49	0.61	-0.16	0.38	0.81	0.13	0.422
Coping strategies									
Sports and/or exercise	1.35	0.59	1.24	0.80	-0.16	0.38	0.81	0.13	0.422
Meditation and/or prayer	2.76	0.44	2.92	0.28	-0.31	-0.02	-2.23	-0.37	0.032*
Alcohol, cigarettes and/or drugs	0.11	0.39	0.03	0.16	-0.06	0.23	1.14	0.19	0.262
Prescription medication	0.32	0.78	0.14	0.42	-0.02	0.40	1.87	0.31	0.070
Hobbies or interests	1.89	0.81	2.08	0.92	-0.65	0.28	-0.83	-0.14	0.414
Colleague support	1.38	0.83	2.38	0.72	-1.34	-0.66	-5.92	-0.97	0.000***
Peer support	1.73	0.90	2.51	0.65	-1.13	-0.44	-4.62	-0.76	0.000***
Family support	2.11	0.88	2.73	0.45	-0.95	-0.29	-3.85	-0.63	0.000***
Mental health/Psychosocial provider/services	0.35	0.72	0.16	0.50	-0.06	0.44	1.56	0.26	0.128
Passage of time	1.76	0.98	1.81	1.10	-0.53	0.42	-0.23	-0.04	0.817
Controlling own emotions (e.g., rationalisations)	1.92	0.72	2.62	0.55	-0.99	-0.42	-5.06	-0.83	0.000***
Psychological help seeking									
Likelihood of seeking	1.30	0.74	2.00	0.75	-1.04	-0.37	-4.29	-0.71	0.000***

professional psychological support									
Likelihood of recommending professional psychological support to others	1.22	0.71	1.62	0.59	-0.67	-0.14	-3.09	-0.51	0.004**
*p ≤ .05, ** p ≤ .01, *** p ≤ .001 (***Bonferroni adjusted significance level)									

T-tests with a Bonferroni correction revealed that teachers reported significantly lower levels of PTSD symptoms (overall PTSS and on the avoidance and sense of current threat subscales) and significantly higher personal resilience ($p < .001$) following the intervention. In addition, teachers reported using the following coping strategies significantly more frequently post-intervention: colleague support, peer support, family support and controlling one's emotions ($p < .001$). Teachers also reported a significant increase in their likelihood to seek professional help ($p < .001$). Reductions in teachers' reported re-experiencing (a PTSD symptom cluster), DSO symptoms, earthquake anxiety and fatalism were significant at the standard significant threshold ($p < .05$), but were no longer significant following the correction. Similarly, the reported increases post-intervention in coping using meditation and/or prayer, likelihood of recommending professional psychological support to others and higher perceived social support were significant at the standard significant threshold ($p < .05$), but not after applying the correction. Although the Bonferroni correction may be overly conservative, resulting in a chance of Type II error (Field, 2018), these results are consistent with the small to medium effect sizes of the changes found to be significant at the less stringent alpha criteria ($d = -.34 - .51$), compared to the medium to large effect sizes of the measures that were significant following the correction ($d = .58 - .83$) (Cohen, 1988, 1992).

Furthermore, an exact McNemar test determined that there was a statistically significant difference in the proportion of diagnostic criteria reached for PTSD and CPTSD pre- versus post-intervention, $p = .002$. Twelve participants (32%) met criteria for either probable PTSD or CPTSD pre-intervention. After the intervention, two participants met the criteria for PTSD (5%) and none for CPTSD.

9.4.2. Feedback forms

Thirty-six teachers responded to open-ended questions in feedback forms immediately after the intervention (see Appendix C). This section reports teachers' feedback obtained via the forms regarding their subjective experiences of the intervention's: 1) purpose and content, 2) impact on psychosocial recovery and 3) the impact on their capacity to support students.

The main purpose of the intervention was reported to be teachers' recovery from disaster (22%). For example, *"how to overcome and recover from disaster."* Within this category, some referred to harnessing intrapersonal psychological resources, such as building the *"psychological strength of teachers"* and the ability to *"stay spirited and grateful when we were tested."* An equal number of teachers felt the focus had been specifically on feeling calm (22%), often associated with mindful breathing. For example, *"breathing exercises to feel calm and happy in order to feel calm and not panic in facing disaster."* Others felt the day aimed to promote social cohesion (19%), such as *"togetherness in teamwork"*, *"cooperation"* and *"able to meet and gather with friends."*

The breathing exercises were liked most (33%) followed by the Tree of Life (31%), working together with others (8%), the icebreaking activities (dancing and singing) (8%), and *"everything"* (8%). Regarding their least favourite aspect, most participants (75%) stated *"nothing"*.

Regarding intervention improvements, nearly half the participants requested a longer intervention duration and follow-up sessions. Some suggested logistical improvements, including providing electronic copies of the materials, a detailed itinerary and alignment with their school schedule. A question-and-answer component was also suggested.

Regarding teachers' subjectively experienced improvements to psychosocial recovery, all participants found the intervention to be calming. Specifically, half mentioned breathing exercises, while around a third cited the Tree of Life and dancing, bodily movements and singing (i.e., ice breaking activities) as calming. A small number (14%) found calmness in the

materials disseminated by the speaker, completing tasks collaboratively (14%) and through social interactions with facilitators and other teachers (11%).

When asked which activities helped the teachers to cope with their post-disaster psychological recovery, a quarter mentioned religious practices. For example, *“always praying ... bringing myself closer to the Almighty”*. A quarter mentioned the development of intrapersonal psychological skills, including emotional regulation. For example, *“able to manage my feelings well and always motivate myself”* and *“have a good confidence”*.

Nearly all teachers (94%) reported feeling an improved ability to support their students psychologically. In open-ended responses, 17% felt that the Tree of Life and responding to the vignettes enhanced their support capabilities. Teachers also mentioned the guidelines and principles (including learning resilience theory) (14%). For example, by using the *“5 steps that support the student’s recovery in overcoming the disaster (willingness, calmness, connectedness, self-efficacy, and hope)”*. 14% percent mentioned feeling better able to motivate and strengthen their students. For example, *“motivate students not to be down due to the situation after the earthquake”*. Eleven percent mentioned implementing the activities with their students. A small number (9%) felt their improved psychological recovery would contribute to better supporting students and that *“trauma”* could be solved collectively.

Teachers overwhelmingly expressed a likelihood of recommending the intervention, with 83% ‘very likely’ and 14% ‘quite likely’. None answered that they were ‘not likely’ or ‘not at all likely’, although one teacher did not respond. Reasons included the workshops benefits for teachers’ psychological recovery knowledge (e.g., *“Because it was very good in enhancing knowledge on overcoming mental problems post-disaster”*), the ability to disseminate insights to colleagues (e.g., *“I am going to share what I got today with my colleagues at school”*), the feasibility of implementing knowledge in school (e.g., *“The knowledge learned was very easy to be implemented at school and to colleagues”*) and the personal benefits for their psychological recovery (e.g., *“Because it was very useful for myself psychologically and mentally”*).

9.4.3. Survey responses: three months post-intervention

The vast majority of teachers (33/37) completed open-ended questions three months post-intervention (see Appendix D). Teachers reported on their lasting impressions of the workshop and their subjective perspective of the workshop's impact for themselves and their students.

All teachers felt the workshop had an impact on them. When asked to elaborate on what the impact was, just under half spontaneously reported a reduction in negative affect and psychological distress. For example, feeling *“calmer, not as panicked as before ...”* and *“... stronger when remembering the earthquake...”*. Recovery was attributed to the Tree of Life, guidelines and psychoeducation, including self-awareness and understanding of anxiety. Just under a quarter of teachers (24%) expressed the impact of their improved ability to support students. For example, as the content teachers learnt *“can be used as a learning example in class”* and to *“teach students not to panic during an earthquake ...”*. This included an *“increase [in the teachers] the sense of responsibility towards students”*. A small number of teachers (18%) reported that they had learnt about themselves, including developing self-understanding and self-awareness of their challenges (18%). For example, *“My tree of life can recognise ourselves and see problems and think about solutions ...”* and *“... some lessons that we learned, such as knowing ourselves and being able to be enthusiastic about seeing life in the future...”*. No negative impacts were mentioned.

The vast majority of teachers reported that the intervention positively impacted their teaching practice (85%). This was often due to implementing the techniques learned, as well that their improved psychosocial knowledge meant that: *“when we teach, we understand the student's mental state or condition. If someone is experiencing a problem, we can recognize it and know how to find a solution for that student”*. Nearly half mentioned that the intervention improved their teaching practice through keeping calm, which could influence student-wellbeing: *“students will feel happy if the teachers also feel calm”*. Teachers also mentioned intrapersonal resources, including motivating, encouraging and strengthening students. For example, *“because we also have to be strong and became models for students”*. All teachers (15%) who felt the intervention hadn't had a pedagogical impact mentioned not yet implementing activities. This was for a variety of reasons: lack of time, planning to begin next term, retirement and forgetting the interventions content.

Similarly, regarding teachers' perception of the intervention's impact on students, 79% believed it had an effect. When invited to elaborate, teachers wrote that positive perceived effects for students included reduced post-disaster distress and improved emotional regulation, particularly during an earthquake that had occurred shortly before data collection (e.g., "*My students in class were calmer when the earthquake occurred ...*"). Teachers also reported improved knowledge and awareness of how to act during disasters.

Regarding teachers' lasting impressions of the workshop, in written responses, 38% mentioned the Tree of Life activity, describing it as "... *useful*", "... *interesting*" and supporting positive affect. Relatedly, nearly a third (31%), highlighted a reduction in negative affect and trauma with an increase in positive emotional experiences, including, "... *forgetting the trauma and enjoy more ...*" and "... *overcome post-disaster fears*". Comments regarding positive affect included feeling motivated and happy. A quarter focused on their lasting impressions of knowledge and learning regarding disaster preparation and emotional control. For example, "*a lot of knowledge was gained, such as how to anticipate disasters, control the panic and emotions when a disaster occurs*". A quarter mentioned social opportunities, such as feeling "... *happy to gather with fellow teachers*", as well as the opportunity to "... *meet new friends*" from different schools. Additionally, 19% expressed general positive impressions, finding the activities "... *fun ...*" and feeling "... *entertained...*".

9.5. Discussion

This community, strengths-based intervention aimed to foster the resilient recovery of schoolteachers by supporting their psychosocial recovery and by increasing their confidence and knowledge to support their students. Three months after the intervention, teachers reported significant improvements in various aspects of psychosocial recovery: *individual resilience, post-traumatic stress and adaptive coping strategies*. Furthermore, in open-ended responses, teachers expressed that the intervention was beneficial for themselves and their students.

Despite the overwhelmingly positive changes observed in teachers' adaptive coping strategies following the intervention, there were no significant changes found in coping strategies related to 'alcohol, cigarettes and/or drugs', 'prescription medication', 'sports and/or exercise', 'meditation and/or prayer', 'hobbies or interests' or 'mental health/psychosocial provider/services'. These items were included in the assessment phase survey to gain insight

into how teachers coped and are reported here for transparency. However, the lack of changes in reported use of these strategies was expected, considering that these areas were not directly targeted in the intervention. This was because teachers' use of maladaptive coping strategies (e.g., substance use) was already extremely minimal at baseline. The lack of significant change to 'medication and/or prayer' may have been due to the community highly valuing prayer as a coping strategy pre-intervention (see Lomeli-Rodriguez et al., 2024). As the measurement item does not distinguish between prayer and meditation, it cannot be established whether meditation, such as through using mindful breathing, increased post-intervention. The finding that coping through 'mental health/psychosocial provider/services' did not increase while there was an increase in 'likelihood to seek psychological support' suggests that teachers may not have felt the need to seek professional support in the three months following the intervention. Alternatively, this finding could imply that mental health support was desired but inaccessible, which aligns with reported concerns about the disparities between the need for and access to professional psychological services in Indonesia (Setiyawati et al., 2014).

Overall, the results highlight the feasibility and potential efficacy of combining narrative practice with psychoeducation, mindful breathing and skills-based scenarios. Since the outcome of each component was not examined separately, disentangling their specific influence on the outcome measures is challenging. This complicates evaluating the effectiveness of commonly used intervention components, such as psychoeducation, which typically feature as one aspect of a larger intervention (Pfefferbaum et al., 2014a, 2014b). However, given the success of the intervention, we recommend that future interventions retain the multiple components, and with larger sample sizes explore the specific mechanisms that contribute to the impact seen in different areas of resilience.

Based on existing literature it is likely that mindful breathing and grounding exercises may have eased PTSD symptoms (e.g., Thompson et al., 2011). Our results corroborate a small number of previous post-disaster intervention studies from Southeast Asia that find mindful breathing to facilitate self-regulation of physiological stress reactions (see Panting et al., 2020, for a review). The sessions may also have influenced teachers' coping behaviours, as indicated by their reported increase in 'controlling own emotions' following the intervention. This suggests that the mindful breathing exercises may have provided the teachers with a tool to support emotional control, facilitating psychological adjustment.

A large component of the intervention brought teachers together to orally share their experiences of post-disaster coping and sources of strength. By fostering an accepting space, the Tree of Life activity facilitated teachers to collectively reclaim adaptive narratives. This collective storytelling (*tutura*) may have influenced teachers' reported increases in coping by drawing on peer, family and colleague support. This aligns with the notion that sharing lived experience narratives among a sub-set of the community, such as teachers, can foster community resilience (Edmeade & Buzinde, 2021). Furthermore, storytelling may have contributed to improving less directly relevant outcome measures, including individual resilience and reduced PTSS. This is because storytelling can support the release of emotions (D'Cruz et al., 2020), support making sense of traumatic experiences (Kellas & Trees, 2006; Park, 2010), authenticate collective memory (Ainslie, 2013), and rebuild shared, cultural identity (Aho, 2014; van de Ven, 2020). It is possible that the benefit of the narrative component of the intervention may be heightened in cultures oriented towards collectivism, where the self is perceived as an interdependent unit (Hofstede, 1980; Markus & Kitayama, 2010); this may foster cooperation and supportive networks (Triandis, 2000). Teachers from individualistic cultures, where the self is perceived as independent and autonomous, may, in contrast, be more reluctant to disclose personal stories to avoid exposing their vulnerabilities (Nurser et al., 2018). This corroborates previous findings that group therapies are well suited to collectivistic cultures (Engelbrecht & Jobson, 2016) such as the Indonesian one.

While the reported increase in coping by drawing on social support post-intervention may be associated with the easing of Covid-19 containment measures that limited social contact, feedback forms suggest the intervention played a role in uniting teachers and fostering social connections. This may have been particularly valued as the teachers shared identities as disaster survivors, residents of the same region and teachers. Given previous research demonstrating a decline in social support over time post-disaster (Guilaran et al., 2018; Kaniasty & Norris, 1995, 2008), it is likely that the teachers' heightened social support is attributable to the intervention. A practical implication of this finding is that schools should allow teachers time and space to reconnect post-disaster; this time would best be used for orally sharing stories of coping and communal strengths.

Despite the potential psychosocial benefits of oral storytelling, intervention facilitators must be mindful of the risk of re-traumatisation. In the current intervention, storytelling focused on survivors' coping strategies and sources of strength rather than on traumatic content. However,

participants' memories of traumatic experiences may be triggered by others' descriptions (Ford & Courtois, 2013). Therefore, it is crucial to have a psychologist or mental health specialist present to moderate the story-sharing content and provide support in case participants experience psychological distress.

Alongside storytelling, the intervention incorporated skill-based components, to foster adaptive coping skills and normalise negative emotional experiences, which may have contributed to reducing teachers' PTSS and increasing adaptive coping strategies, such as coping by self-reassurance and rationalisation. Intervention activities encouraged emotional regulation strategies linked to PTSS reduction. For instance, the Tree of Life and mindful breathing activities promoted acceptance and cognitive reappraisal, associated with lower PTSD (Boden et al., 2013; Tull et al., 2007). Furthermore, creating school psychosocial guidelines and applying them to school-based vignettes may have contributed to teachers' psychosocial improvements through engagement in collective problem-solving (Gil, 2005) and fostering collective empowerment through engagement in meaningful actions (Drury & Reicher, 2005; Dudgeon et al., 2017).

It is possible that the Covid-19 pandemic and associated public health measures may have impacted the results, due to the psychological and social repercussions related to loss of life, unemployment, limits on movement and restricted social interactions (Brooks et al., 2020). For disaster survivors, existing evidence suggests that the pandemic exacerbated PTSS and impeded functional recovery (First & Houston, 2022; Marko et al., 2020). However, we found teachers experienced reduced PTSS following the intervention, despite the potentially aggravating influence of Covid-19.

Our study revealed a decrease in symptom of PTSD and probable diagnosis of PTSD/CPTSD among teachers approximately four years post-disaster, emphasising the importance of intervening beyond the immediate aftermath of a disaster. While this improvement could be attributed to the passage of time and gradual recovery from the Covid-19 pandemic between the two data collection timepoints, previous literature suggests that PTSD prevalence often remains elevated even 8-10 years post-disaster (Fong et al., 2022; Lu et al., 2021). Given the highly traumatic nature of the largescale disaster and the ongoing disruption hindering a return to normality, a natural recovery between the data collection timepoints is unlikely.

Contextual factors related to teachers' roles and environments are also likely contributors to persistent PTSS without intervention. Akin to emergency workers and crisis psychologists, who often suffer PTSD due to frontline support roles (Tahernejad et al., 2023), teachers also provide comfort and guidance to trauma-exposed students (Mooney et al., 2020; Mutch, 2015c, 2018; Parrott et al., 2023b: Chapter 7; Parrott et al., 2024: Chapter 8). Caring for students who experienced trauma can trigger trauma memories, secondary traumatic stress and burnout for teachers (O'Toole, 2017; O'Toole & Friesen, 2016). The varying, ongoing damage of the schools may regularly expose teachers to trauma triggers (Hackmann et al., 2004). Therefore, considering teachers' exposure to these risk factors, the significant reduction in teachers' PTSS is likely due to the intervention's efficacy rather than solely the passage of time.

Despite an overall decrease in teachers' PTSS following the intervention, no significant changes were found in the symptom clusters of negative self-concept and reexperiencing or DSO symptoms. This highlights that while the intervention may benefit survivors experiencing PTSS, it should not be considered a substitute for clinical, trauma-focused treatments. This is because the intervention was not focused on alleviating specific trauma symptoms or complex trauma, but on fostering broader psychosocial recovery in a non-clinical sample. To address specific clinical symptom domains, disaster survivors experiencing debilitating functional impairment due to PTSD should be offered trauma-focused cognitive behavioural (TF-CBT) or eye movement desensitisation and reprocessing (EMDR) (World Health Organisation [WHO], 2013).

The rapport between intervention facilitators and teachers likely contributed to the intervention's impact. Teachers had previous interactions with facilitators during data collection, featuring personal, in-depth 1:1 interviews (see Lomeli-Rodriguez, 2024; Parrott et al., 2024: Chapter 8; Parrott et al., In Preparation: Chapter 6). This familiarity may have developed a relationship that enhanced teachers' willingness to share emotional content. The facilitators noted a warm atmosphere during the sessions, as teachers engaged in openly sharing post-disaster coping stories. All intervention facilitators were Indonesian, possessing knowledge of local faith, customs and norms, mitigating a potential power imbalance that may have existed with Western facilitators.

Previous disaster intervention literature, such as after Typhoon Yolanda (Field, 2017), indicates

a potential disconnect between survivors' needs and desires and the interventions provided. To bridge this gap, our study design integrated an extensive assessment phase to understand participants' desires for recovery and to identify existing community strengths that could be harnessed. For instance, culturally valued coping systems, including oral storytelling (*tutura*) and mutual assistance (*gotong royong*), were recognised and incorporated into activities. To prevent pathologising responses, we avoided Western diagnostic labels during coping discussions (Gelkopf et al., 2008; Summerfield, 1999). This culturally sensitive design likely contributed to positive feedback in follow-up surveys, with participants suggesting improvements only in the timing and frequency of sessions. Notably, the intervention was well-accepted as teachers showed no desire to alter intervention content. Gauging the subjective experience of participants is an important but often neglected feature of school-based intervention research (Zakszeski et al., 2017). However, social desirability biases should be considered, due to cultural tendencies in Indonesia to avoid expressing strong negative feelings or complaining (Schwarz, 2014).

While the intervention likely contributed to resilience improvements, it should complement, rather than substitute, broader socioeconomic structural policies supporting vulnerable populations post-disaster. As teachers' post-disaster coping is embedded in the wider societal context, establishing physical and economic security is essential for promoting health outcomes amid adversity (Burgess, 2024; Summerfield, 2006). Survivors from the same community have expressed a need for economic support, humanitarian assistance and employment opportunities (Lomeli-Rodriguez et al., 2024; Parrott et al., 2023a: Chapter 5). Furthermore, economic revitalisation and improved housing can enhance Hobfoll et al.'s, (2007b) resilience building elements, including feelings of safety, hope and family connectedness (Panter-Brick & Eggerman, 2012). Therefore, alongside interventions promoting intrapersonal and social coping resources, post-disaster policies must address structural and socioeconomic determinants of risk and resilience.

Ongoing WhatsApp communications and follow-up reminders aimed to retain teachers' group-bonds and reinforce long-term learning of intervention materials. This can motivate teachers to adhere to their resilience principles (Michie et al., 2011), potentially embedding them into school policy and culture. The posters also serve as memorials of the 2018 disaster, to aid in reappraising events and promoting adaptive post-disaster conduct (Bonder, 2009). The school,

as a potential memorial location (Pacheco et al., 2022: Chapter 3), can contribute to maintaining a shared post-disaster identity, sustaining social connectedness and support (Ntontis et al., 2018).

9.6. Limitations and directions for future research

The encouraging results of this study must be considered in the context of some limitations. Teachers' reported changes in resilience-related measures may have been influenced by their participation in the research, rather than capturing the direct impact of the intervention. This includes the 'Hawthorn effect', which describes the tendency of participants to modify their behaviour due to an awareness of being studied (Bardsley, 2008; Jiménez-Buedo, 2021). For example, in an intervention targeting hazard preparedness, the control group reported a significant increase in preparedness behaviours, despite not participating in the intervention (Joffe et al., 2019). Therefore, it is possible that the participating teachers may have reported the same psychosocial changes regardless of their engagement in the intervention. Furthermore, expectation effects may have influenced the post-intervention measures. Specifically, this may have been due to the 'Pygmalion effect', which can occur when participants receive encouragement and positive suggestions, build trust and feel high expectations during the research, as this can enhance self-confidence and perceived social support (Zhang et al., 2022). Acting as a form of self-fulfilling prophecy (e.g., see Rosenthal & Jacobson, 1968), this effect may have increased the teachers' motivation to engage in adaptive behaviours to meet the researchers' perceived expectations, bolstering their psychological recovery. Therefore, the change in resilience measures pre- and post- intervention may be due to these psychosocial effects, rather than the content of the intervention.

As this study aimed to test the feasibility and initial efficacy of a novel intervention, a control group was not included. This decision was also informed by the urgent need for psychosocial support among disaster-displaced residents in this low resource context. Thus, ethical and practical considerations precluded the inclusion of a control group. Surveying teachers at two time-points without potential intervention benefits was deemed overly burdensome. While a waitlist control may mitigate ethical concerns by allowing delayed provision of care to research participants (Cunningham et al., 2013), our uncertainties regarding the feasibility of offering the intervention to a waitlist, given project timing, funding and researcher availability, raised ethical concerns (Carlson et al., 2018).

While this design means that we cannot conclusively attribute change to the intervention, positive feedback and subjectively experienced benefits from participants are promising. Furthermore, given longitudinal research on the persistence of lingering PTSS and other aspects of psychosocial functioning following disasters, particularly when left untreated (e.g., Briere & Elliott, 2000; Goenjian et al., 2005), it is reasonable to conclude that the intervention contributed to participants' psychosocial improvements. Future research should employ a non-treated, ideally randomised, control group and a larger sample size to disentangle the intervention effects from natural recovery over time. A waitlist control group is advised to alleviate ethical concerns by ensuring a delayed provision of care to all participants (Cunningham et al., 2013).

A further limitation concerns the predominantly female sample, reflecting the gendered division of the labour force at selected school sites and the disproportionate negative impacts of disasters on women (see Neumayer & Plümper, 2007; Tanyag, 2018b, 2018a). However, future studies may benefit from recruiting a gender-representative sample. As there are gender differences in post-disaster mental health and coping (e.g., Jin et al., 2014; Tamres et al., 2002), men may have a different experience of the intervention to women. Furthermore, the likelihood of men experiencing stigma related to psychological help seeking (Topkaya, 2014) underscores the importance of targeting men in future interventions.

The self-report measures used may have some limitations. Due to stigma, self-reporting can lead to an underreporting of mental health symptomatology (Bharadwaj et al., 2017; Hahm et al., 2020). Furthermore, while local researchers were included in discussions regarding selecting appropriate scales, many of the measures used were not created in the Indonesian context. This may be a limitation, as Western understandings of mental health do not always align with the cultural perspectives of Non-Western populations (Marsella, 2010; Summerfield, 2006). While acknowledging criticisms (Pupavac, 2002; Summerfield, 2004), we chose to measure PTSD due to evidence for cross-cultural trauma symptomatology (e.g., Hinton & Lewis-Fernández, 2011) and the practical utility of PTSD for identifying mental health needs and organising care in Indonesia (Good, 2015).

Relatedly, the lack of significant changes to participants' reported wellbeing may be due to the cultural bias of the wellbeing measure for favouring individualist dimensions of mental health that are less applicable to non-Western conceptualisations. The ONS scale emphasises

individual emotions and life satisfaction, whereas culturally specific collectivistic understandings of wellbeing may focus more on gratitude, self-acceptance and spirituality (Maulana et al., 2019). Although this potential Western influence was considered when selecting the scale, sociocultural determinants of wellbeing that were not captured elsewhere in the survey (including God support and monetary satisfaction) were incorporated to mitigate against Western bias. While this aided in understanding participants' wellbeing in the assessment phase, these factors were not directly targeted in the intervention, as God support was high at baseline and improving monetary satisfaction was beyond the scope of the reported intervention. Therefore, the lack of significant changes in these context-specific items was anticipated.

In contrast, the absence of significant changes in indicators of wellbeing according to the standardised wellbeing scale, such as to happiness and anxiety, was surprising, as this contradicts other significant findings that would be expected to indicate an improvement in wellbeing. For example, a reduction in post-traumatic stress symptoms, hazard anxiety and increase in perceived social support. Future research would benefit from employing a novel scale adapted to align with Indonesian conceptualisations of wellbeing (e.g., Maulana et al., 2019) and undertaking a robust process of validation in the local context.

Furthermore, some intervention changes may not have been captured by the measures used. Future research would benefit from exploring the impact of the intervention in schools and on students. This could involve an observational study of teachers responding to students' psychosocial needs, a study of student views on how their teachers' cope with their emotional distress and/or a study of the impact of the intervention on students' resilience.

Additionally, in future, a two-day intervention could be more impactful. In extending the intervention, one day could focus on teachers' resilient recovery and the second on how teachers can support their students. This suggested modification is based on feedback from the teachers, who expressed a desire for a longer intervention and additional follow-up activities. Furthermore, many teachers felt the intervention was more beneficial for their own recovery than for their students. Several teachers suggested this was because they had not yet implemented specific recovery activities with their students. However, the intervention aimed to foster a culture shift similar to trauma-informed training by enhancing teachers' capacity to respond effectively to students (Ford & Russo, 2006; Thomas et al., 2016), rather than

delivering explicit psychosocial content. Consequently, some teachers may have been unaware of the more subtle benefits to students that may become clearer over time. Nevertheless, it is also possible that the intervention overemphasised supporting teachers' recovery at the expense of developing their capacity to support their students. Therefore, in future, a two-day intervention may be a more effective and well-accepted design. Collaboration with educational psychologists could support this endeavour, as responding to sudden and distressing events within school communities is an established aspect of their practice (Hayes & Frederickson, 2008).

9.7. Conclusion

Overall, this paper reports the development and evaluation of a school-based intervention in a disaster-affected, low resource, under-researched context. The intervention aimed to support teachers to cope with distress and to support their students' psychological recovery, harnessing strategies highly valued by the community. The findings suggest that a group-based intervention for teachers combining theory, narrative practice, mindful breathing and skills-based elements is likely to contribute to the psychosocial recovery of teachers. The intervention was well-accepted, and participants reported feeling subjective benefits for themselves and their students. These findings contribute to an emerging evidence base supporting effective interventions for disaster exposed teachers that take place beyond the immediate disaster aftermath in LMICs. However, further research is needed to establish the efficacy of the intervention with a larger sample size and a non-treatment wait-list control group.

Chapter 10. Overall discussion and conclusion

This final chapter draws together the findings of the five empirical chapters to provide a summary of the answer to each research question and an overall conclusion. This includes researcher reflexivity followed by a discussion of the empirical, methodological and practical contributions of this thesis. This chapter concludes with a consideration of the limitations and directions for future research.

10.1. Summary of findings

10.1.1. How does the post-disaster educational community conceptualise community resilience?

Student, caregiver and teacher survivors value community cohesion and participation above all else, as well as coping through harnessing their collective intrapersonal strengths and by drawing on community resources. These strategies elucidate the Palu community's orientation towards collective coping. Additionally, the community discussed the role of psychosocial support, livelihood and economic sufficiency as well as external assistance from the government and NGOs as crucial for their disaster recovery. These aspects of the findings align the survivor-led recommendations to build back better reported by Murphy et al. (2018). Diverging from the results of Murphy et al. (2018), this research demonstrated that intrapersonal psychological resources, religiosity, restoring the built environment, re-establishing secure living arrangements and developing disaster mitigation, knowledge and awareness, were also highly valued by the Palu community, as constituents of community resilience.

The findings align with those of Murphy et al.'s (2018) regarding the importance of psychosocial support, livelihood and economic sufficiency, community participation and cohesion, as well the role of external assistance from the government and NGOs. Diverging from the results of Murphy et al. (2018), the study demonstrated that intrapersonal psychological resources, religiosity, restoring the built environment, re-establishing secure living arrangements and developing disaster mitigation, knowledge and awareness, were highly valued by the Palu community, as constituents of community resilience.

This study contributed to the evidence base by including the perspectives of students, a demographic whose voices are often neglected in disaster research (Ronan et al., 2015; Pfefferbaum et al., 2018). While all three participant groups discussed pervasive negative emotional experiences, including of fear and trauma, students were most likely to recommend coping through professional psychological support (e.g., *trauma healing*), perhaps reflecting the greater acceptance of such support in younger people or greater offering to students. In addition, students were especially likely to mention coping through religious individual devotional acts, such as independent prayer and trust in God, whereas adults were more likely to mention collective religious activities, such as group prayer and provision of instrumental support from religious networks. Central to students' conceptualisation of a strong post-disaster community was improving the capacity of the community to collectively rebuild and repair the built environment, including living arrangements, but it featured comparatively rarely in the adults' responses.

The findings demonstrate that the community's conceptualisations are largely consistent with Norris et al.'s. (2008) model of community resilience, featuring four key elements: economic development, social capital, community competence and information/communication. However, elements of the model were differentially emphasised by the three participant groups: caregivers valued strategies to foster the community's economic development, such as diversifying employment, while teachers most often mentioned the importance of enhancing information and communication, shown in the desire to improve the dissemination of disaster risk reduction and mitigation information. This illustrates that while there were shared conceptualisations of the key constituents of community resilience, targeted resilience building interventions may benefit from considering the specific group's unique needs and priorities. This research also emphasises the importance of listening directly to the perspectives of young people in resilience research.

10.1.2. What are the subjective sources of disaster-related distress experienced by teachers and how do teachers experience coping with this distress?

Teachers conceptualised psychological distress following the disaster as resulting from a combination of material, psychological and social stressors. The impacts of these stressors manifested in various ways, including provoking fear, sadness and anxiety. Material stressors

included the loss of essential items, damage to homes, infrastructure and school buildings. Psychological stressors included experiences of trauma and distressing memories associated with the disaster. Social stressors encompassed experiences of loss of life and separation from family members. These findings casts light on the enduring and evolving nature of the psychosocial impacts of disasters over three years after the initial event, emphasising the need for access to psychosocial and economic support for survivors beyond the emergency disaster period.

In response to these stressors, teachers reported coping by harnessing intrapersonal strategies, seeking and providing social and mutual support, religious practices and beliefs, and less often drawing on formal psychological support (*trauma healing*).

The teachers' narratives reflect and highlight cultural idioms of social support. Teachers elaborated in-depth on *gotong royong*, which refers to coping through mutual support, involving action-oriented collective coping to collaboratively confront disaster stressors. Further related to social support, this research highlights the value of *tutura*, a form of collective and cathartic oral story, for alleviating the teachers' disaster-related distress. While the term is specific to the Central Sulawesi region, the value of storytelling has been highlighted in other Indonesian post-disaster settings (Schwarz, 2014).

Emphasising the collective nature of teachers' coping, even when teachers' reported drawing on their intrapersonal resources, such as avoiding disaster rumination, cognitively reframing negative situations, and maintaining a sense of gratitude, strength and hope, these strategies were often experienced collectively. For example, teachers reflected on communal goals and a *collective* positive future orientation, such as hope for rising from the adversity *together* and strengthening one another to overcome adversity. To support a collective recovery, teachers felt they needed to be strong for others, including family members and their students. This social aspect of resilience may be a distinct feature of many collectivistic cultures (Gunaratne & Kremer, 2021), as the emphasis in these contexts is on prioritising the wellbeing of the group rather than individual wellbeing (Triandis et al., 1988). This suggests individual paradigms of resilience may be unsuitable for application in collectivistic contexts.

A small number of teachers discussed the role of professional psychological support for

fostering their recovery. This mainly involved *trauma healing*, which was conceptualised as positively influencing their resilience. This is consistent with findings from elsewhere in Indonesia that report disaster survivors value psychological support (Murphy et al., 2018). As individuals' coping strategies are influenced by their access to resources (Hobfoll, 2011; Zaumseil et al., 2014; Ungar et al., 2013), that teachers did not discuss this frequently is likely to be due to the inaccessibility of mental health support, rather than that the support is perceived to be unhelpful. Furthermore, the professional support discussed may be well-accepted due to featuring group-based, wellbeing-enhancing activities focusing on the social determinants of health, rather than specialised support for individuals meeting clinical, diagnostic criteria. Therefore, the findings suggest an openness to non-medicalised professional psychological support among teachers.

10.1.3. How do students and teachers conceptualise the role of schools and teachers after a disaster? In what ways do they foster students' resilience?

To our knowledge, this is the first study to consider students' representations of their schools and teachers in relation to disasters, by directly listening to young people's perspectives. This addresses the absence of research in disaster settings that includes the voices of children (Pfefferbaum et al., 2018; Ronan et al., 2015). For students, the school is seen in terms of a dialogical antimony: 'the school as a place of recovery' and 'the school as a place of risk'. Nearly all students represented the school as a resilience-promoting environment, linked with a sense of recovery and support, while simultaneously associating the school with risk, loss and a disrupted sense of normality. This resonates with the concept of 'cognitive polyphasia' (Moscovici, 1961/1976, 1984), which asserts that one can hold two seemingly contradictory representations. This finding emphasises the importance of employing qualitative methods to gain insight into nuanced and complex representations that would not have been revealed using quantitative methods.

Most students conceptualised schools as beneficial to their recovery by facilitating access to social connections. Reconnecting with peers allowed for engagement in play and space to reciprocally exchange stories of their disaster-related experiences, which students felt alleviated distress and led to positive emotional experiences, contributing to resilience. Students also regarded their relationship with teachers as supportive of their recovery, as familiar teachers were represented as reliable and trusted sources of psychosocial support and

practical assistance. Teachers facilitated sharing ‘stories’, supported emotional regulation, provided disaster risk-reduction knowledge and instrumental aid. This aligns with research emphasising the importance of social support for fostering resilience (e.g., Banks & Weems, 2014; Kaniasty & Norris, 2008; Pfefferbaum et al., 2015), including in-school support (e.g., Mooney et al., 2021 in New Zealand). This is also consistent with theoretical work that highlights the salience of the attachments people form with meaningful places (Scannell & Gifford, 2017).

In addition, the school was represented as a site of explicit recovery activities, often delivered by NGOs, aimed at trauma relief (*trauma healing*). Consistent with the positive representations of trauma healing reported by teachers, students endorsed these activities as beneficial for their recovery. Positive experiences of trauma healing reinforced students’ representation of the school as a supportive institution. This is consistent with findings that indicate psychosocial activities provide a safe, structured environment for facilitating students’ recovery (e.g., Betancourt, 2005; Kunz, 2009). Furthermore, students hold positive representations of the NGO workers and volunteers who conducted many of these psychosocial activities. This aligns with research that reports that young people value various forms of support from different members of their community (Cox et al., 2017).

Nevertheless, the data revealed a tension in students’ representations, as they associated their schools with disaster-related risk, identifying elements of the school environment that hindered their resilience. Disruption to routines, including usual lesson content and the loss of familiar objects symbolic of a functioning school, such as books and uniforms, inhibited a resumed sense of normality. The damaged physical environment, including cracked walls and disaster debris, as well as the fractured social environment, marked by loss of life and absent teachers, undermined the social representation of the school as a symbol of familiarity, safety and security. This is consistent with research using place theory to understand the impacts of disasters on representations of homes, which indicates that disaster-related damage can destabilise positive representations, resulting in emotional distress and poor mental health (Harries, 2013; Hawkins & Maurer, 2011).

Largely aligning with the students’ narratives, teachers conceptualised their role as primarily providing psychoeducational support. This involved supporting students’ wellbeing and maintaining educational continuity, including encouraging their return to school. Another facet

of teachers' post-disaster role involved providing practical support to students and their families. This included assisting with administrative roles, aid distribution and supporting disaster risk reduction. These findings emphasise teachers' role in fostering community resilience, as they contributed to the four elements featured in the Norris et al. (2008) model of community resilience: economic development, information and communication, social capital and community competence.

The findings concerning teachers' care and pastoral responsibility towards students and their families aligns with previous research conducted in disaster settings, both in high-income countries with individualistic orientations (e.g., Mooney et al., 2021; Mutch, 2015a; O'Connor & Takahashi, 2014) and in collectivistic post-disaster contexts, including elsewhere in Indonesia (Seyle et al., 2013) and in Malaysia (Bikar et al., 2021). Nevertheless, elements of teachers' roles were influenced by culturally valued practices. Both teachers and students expressed that teachers supported the school community's recovery by undertaking and encouraging students' involvement in mutual assistance (*gotong royong*) and storytelling (*tutura*). Religiosity was also conceptualised by teachers as a form of psychosocial support, which aligns with students explicitly mentioning the role of religious teachers. These findings emphasise the role of cultural values and context-specific social norms for coping (Ekanayake et al., 2013).

Overall, teachers and students foreground the role of resilience-promoting and trauma-protective factors embedded in their school environments. Nevertheless, the findings support arguments that the school should not automatically be assumed to foster students' resilience (Liebenberg, 2023), as most students also discussed the negatively valenced aspects of their post-disaster school environment. These findings can be used to inform post-disaster school policy and to equip teachers to support their students in a way that is valued by young people and their teachers.

10.1.4. Can a resilience building intervention for teachers enhance their post-disaster resilient recovery?

A resilience building intervention was devised for teachers based on the findings of the assessment phase (documented in chapters 5 - 8). Taken together, these findings underscore that after a major disaster, teachers are most often conceptualised as a source of psychosocial

support and would benefit from further training to best assist their students. Simultaneously, teachers' narratives elucidated that they grappled with a variety of post-disaster stressors that negatively impacted their psychosocial wellbeing. Therefore, the intervention recognised that teachers are also sufferers of disasters and addressed their own psychosocial concerns.

The intervention brought together teachers ($n = 37$) from three schools to participate in a resilience-enhancing workshop that aimed to empower them to recognise and harness collective strengths, and to develop strategies to overcome disaster-related challenges, thus supporting their own and their students' post-disaster resilience. This involved combining narrative practice, mindful breathing and skills-based elements, including creating school guidance for teachers' supporting themselves and their students, scaffolded by disaster recovery theory (Hobfoll et al., 2007b). Aligning activities with sociocultural determinants of resilience sought to increase the acceptability and efficacy of the intervention. Furthermore, following the intervention, reminders of the key principles from the intervention were gifted to teachers in the form of tote bags and mugs. Posters featuring the content teachers had devised during the intervention were created and a WhatsApp group was established to sustain the intervention's effects and provide a platform for discussion.

Three months post intervention, the participating teachers reported improvement in quantitative measures of personal resilience, adaptive coping, psychological help seeking, and post-traumatic stress. Furthermore, the intervention was found to be feasible and well-accepted. Teachers responded positively: a large majority reported subjective improvements to their own and their students' recovery. Specifically, teachers highly valued the social opportunity and the space for connection with colleagues. Therefore, taken together, the study provides promising results for the intervention building teachers' capacity and sustainably contributing to improving school-based resilience following a major disaster.

10.2. Reflexivity

Reflexivity, an important practice in qualitative research, considers the inevitable role of the researcher in influencing the knowledge produced (Finlay, 2002). While in psychology the researcher has traditionally been presented as a 'blank slate' (see Walsh, 2014 for a critical commentary), there is growing recognition of the influence of the researcher's demographic and cultural positioning in the generation and interpretation of data (Braun & Clarke, 2013).

Despite my dedication to elucidating phenomena from participants' perspective, it is crucial to reflect on how my interpretation of the data was unavoidably influenced by the context of my professional and academic background. I came to the project as a teacher with an interdisciplinary background in psychology, education and geography. After graduating with an undergraduate degree in Geography and Education, I completed the TeachFirst graduate programme, which focuses on improving the life chances of children experiencing poverty through intensively training teachers and placing them in schools located in areas of high economic disadvantage. During my two years of teaching in a London comprehensive school, on paper my role and responsibilities focused predominantly on monitoring academic progress and curriculum development. However, a large proportion of my time was dedicated to responding to pastoral concerns, including issues concerning mental health, wellbeing and safeguarding. Although I had a natural interest in pastoral duties, anecdotal discussions with other members of staff revealed that some teachers did not consider mental health provision to be within their role.

My own interest in the pastoral element of working in education and commitment to supporting student wellbeing led me to complete a Master's degree in psychology and education, alongside a British Psychological Society (BPS) accredited conversion qualification. Following this, I returned to a teaching role with an additional responsibility in coordinating special educational needs (SENCo), for which I completed the relevant training and qualification. This new role increased my awareness of the extensive waiting lists and strict criteria that enable young people to access child and adolescent mental health services (CAMHS), as well as the limited time and resources afforded to educational psychologists. My experience was that students' lack of access to professional psychological support increased the emphasis on the naturally occurring school systems to promote positive mental health, including whole school policies and individual teacher's support. The pastoral role of schools and teachers came into stark focus during the Covid-19 pandemic, during which I was tasked with calling a group of 30 caregivers for a weekly check in. These regular phone calls, rather than focusing on academic progress, often revolved around parents' own fears and anxieties, as well as practical issues, such as economic precarity and provisions of food vouchers and supplies, which the school aimed to support families with. This led me to consider the role of schools and teachers during times of crisis and the potential influence of school systems on the functioning and resilience of the wider community. I acknowledge that my own positionality may have shaped my

interpretation of the data, such as by influencing my sense of empathy for the demands placed on participants and my sense of admiration for the teachers' going beyond their duties during a crisis. However, I remained aware and reflected on this throughout the analysis process, with my supervisor overseeing my reflexivity in outlook, data analysis and interpretation.

Furthermore, having lived in the UK my whole life, I am deeply embedded in a culture orientated towards individualistic values, which differ from Indonesia's collectivistic culture. While the sample are all highly religious, I am secular. My Western and non-religious lens is likely to have influenced how I interpreted the data. Nevertheless, I have spent periods of time in schools in non-Western, highly religious cultures, including a month-long stay at a school in India for my undergraduate research and a teacher exchange trip to the West Bank. During these experiences I witnessed commonalities in school practices, including pedagogies of care for students across diverse contexts. However, I also came to appreciate that the pastoral practices within schools manifested differently depending on cultural norms and values.

Mitigating the influence of some of my personal biases, the data analysis was approached as a collaborative task. A postdoctoral researcher (Dr Martha Lomeli-Rodriguez), also read the transcripts, assisted in co-devising the coding frames and supported reliability checking. Although Dr Lomeli-Rodriguez has lived, studied and worked in the UK for a number of years, she is from Mexico and so brings a different perspective to my own through her deep understanding of a collectivistic culture, albeit one that diverges in many ways from that of Indonesia. Our co-devising and reliability checking of the coding aimed to promote transparency regarding coding and stimulated reflective dialogue regarding any varying interpretations of the data. Furthermore, the Indonesian researchers who conducted the interviews were co-authors on all papers and although they did not conduct formal data analysis, they reviewed my interpretation of the data and presentation of themes.

Nevertheless, as a research team, our analyses are likely to be shaped by our lens as psychologists. For example, we may be more attuned to notice intrapersonal resources in participants' narratives than researchers from other academic fields. This may contribute to our findings diverging from disaster research conducted by different disciplines, such as by geographers (e.g., Murphy et al., 2018).

Although my perspective may have influenced the analysis stage, the interviewers' positionality, including demographic and cultural characteristics, may have guided the data generation phase. The interviewers consisted of three Indonesian researchers: one male anthropologist and one female clinical psychologist, both from Banda Aceh, and a male clinical psychologist from the local Palu region. All interviewers followed the majority religion (Islam), which was identifiable by the female interviewer wearing a headscarf. This shared cultural identity may have supported participants to feel comfortable and at ease, however, participants may have been more likely to provide responses consistent with Islamic values and conceal thoughts or actions that suggest religious deviations. Furthermore, it is possible that some sociocultural and religious knowledge may have been taken for granted and not explained in as much depth as it may have been to a non-Indonesian 'outsider'. Nevertheless, concerns that the researcher's beliefs and interests have been imposed on all stages of the research process is mitigated by my lack of involvement in the interviewing (Birt et al., 2016; Mason, 2002). This approach contributed to ensuring that the researcher's voice was minimised compared to the participants' perspectives (Birt et al., 2016; Mason, 2002).

10.3. Empirical contributions

This thesis makes several novel empirical contributions regarding resilience and adaptive coping following a major disaster and illuminates the role of schools and teachers in supporting these processes.

Despite the potentially traumatic nature of disaster exposure, the educational Palu community harnessed their collective sources of strength to cope with and demonstrate resilience. To show this is to contribute to the existing literature, as non-Western survivors' coping and resilience narratives are scarce (Liebenberg & Theron, 2015; Zaumseil & Schwarz, 2014).

The consensus in previous literature (e.g., Mayordomo et al., 2016; Penley et al., 2002) has been that coping mechanisms involving managing one's emotional responses are, in general, less effective for relieving stress, improving mental health and fostering resilience than coping by actively confronting the environmental circumstances underpinning the stressor (Penley et al., 2002). However, the reported analyses revealed that disaster survivors often lacked agency over various elements of their recovery, including the rebuilding of schools and homes, due to their reliance on external aid and governmental response. Given survivors' constrained agency,

their focus on harnessing intrapersonal resources, such as maintaining a sense of gratitude and hope, is likely to constitute an adaptive post-disaster response in this context. This is a noteworthy contribution as this finding is likely to resonate with the coping mechanisms valued by survivors in other post-disaster settings where the stressor is outside of their control. This adds to evidence that the efficacy of a coping strategy depends on various subjective elements, including the nature of the stressors, available resources and the sociocultural context (Ungar et al., 2013).

The findings show that as teachers conceptualised their intrapersonal resources as contributing to the community's *collective* recovery, they mobilised intrapersonal resources to boost the collective morale of their students. For example, by emphasising the capacity of the educational community to be strong *together*. This led to positive cumulative effects, as enhancing a sense of agency and collective efficacy facilitated the action-orientated efforts of the school community to support the most vulnerable, such as by gathering donations and teachers collaboratively cleaning the school site. This supports nascent arguments that coping strategies that involve managing one's emotional responses may stimulate adaptive behavioural responses to confront the stressor (Cohen-Chen & Van Zomeren, 2018). This approach is likely to contribute to resilience following a potentially traumatic experience (Ungar et al., 2013).

Furthermore, teachers' group-orientated actions to alleviate the school community's material and emotional stressors symbolised care for their community. This is consistent with research that demonstrates teachers' depth and quality of care for their community after a disaster often exceeds their legal duties and responsibilities (O'Connor & Takahashi, 2014). When caring for students, previous research indicates that after a disaster teachers often link students and their families to specialist supportive services and organisations (Mutch, 2023). However, the data reported in this thesis suggests that in low resource contexts, where schools may have limited access to supportive organisations, teachers are likely to contribute more directly to the community's disaster recovery by providing emotional and instrumental support themselves, beyond their educational role.

The present research contributes to a deeper understanding of the sociocultural constituents of resilience. Across all reported empirical chapters, the data revealed that mutual support (*gotong royong*) was a salient feature of the educational community's adaptive post-disaster response. Teachers, caregivers and students discussed the reciprocal support that contributed to fostering

community participation and cohesion, including instrumental assistance and emotional support. Despite teachers own material losses and scarcity of resources, the sharing of tangible resources to support others was considered mutually beneficial. Interpreted through the lens of conservation of resources theory (Hobfoll, 1989, 2011), while helping others may cause teachers to lose material resources (*'objects'*) and their time (*'energy resources'*), this constitutes a resource *investment* by benefitting the *community's* recovery. Through offering support to community members, this contributed to fostering a sense of collective efficacy for overcoming disaster stressors, which teachers valued more highly than retaining personal, individual resources. This aligns with the orientation and values of many collectivist and majority Muslim cultures (Fischer et al., 2010; Hofstede, 1980, 2011; Hofstede et al., 2010; Schwarz, 2014).

Another novel finding related to the sociocultural facets of resilience pertains to teachers reports of increased reciprocal support amongst colleagues, including supporting another's practical and emotional needs. Alongside discussions of support offered to one another, teachers expressed a strong sense of collective identity in their interviews, often referring to their action-oriented efforts to support students' and the wider community as group-based. For example, "*we the teachers*" rather than attributing individual responsibility (e.g., "*I*") when describing their engagement in aid distribution and school repair. It is possible this group-based identification is due to the collectivist norms of Indonesia (Hofstede et al., 2010; Steel et al., 2018), as there is not pre-disaster data available on this, we do not know whether this sense of identification between colleagues existed before the disaster. Nevertheless, this finding is consistent with research that argues disasters can provoke a cognitive and relational shift from a focus on self to collective interest, from '*me*' to '*we*' (Drury, 2012, 2018; Drury & Reicher, 2010). Such a shift can strengthen and activate pre-existing social bonds, leading community members to support one another's post-disaster recovery, which can result in positive impacts such as resource mobilisation and reduced trauma (Ntontis et al., 2018).

The findings suggest that this support, which has been reported cross-culturally as heightened in the initial disaster phase (Kaniasty & Norris 2004; Kaniasty, 2020), endured beyond the emergency post-disaster period. This finding contrasts with studies from predominantly Western contexts that document a shift from enhanced community cooperation and group solidarity to a decline following the emergency disaster period. In these contexts, while a

shared sense of danger and loss fosters close connections and practical and emotional support shortly after the disaster, this usually dissipates with time (e.g., Kaniasty & Norris, 2008; Zaumseil et al., 2014). In the post-disaster years, bureaucratic delays, legal barriers and the uneven distribution of disaster relief often creates disillusionment and conflict, reducing the willingness of survivors to help one another (Oliver-Smith, 2005; Rao, 2006; Raphael, 1986). However, the findings reported in this thesis capture the ongoing unity between community members and an absence of conflict over resources. In instances where participants mentioned concerns over inequitable recovery prioritisation or confusion regarding decision making processes, the blame was attributed to governing authorities rather than to groups within the community. This highlights the importance of sensitivity to sociocultural and contextual dynamics when considering the time-dependent relationship between post-disaster solidarity and conflict.

Overall, teachers coped flexibly and resourcefully, by harnessing intrapersonal capacities and drawing on community strengths, to remain committed to their role as teachers despite the challenging circumstances. This finding makes an important contribution considering the high levels of post-traumatic stress symptoms among the teachers in the sample, as illustrated by nearly a third of the teachers who participated in the intervention meeting the ICD-11 criteria (Cloitre et al., 2018) for either probable post-traumatic stress disorder (PTSD) or complex post-traumatic stress disorder (CPTSD) (see Chapter 9). In line with nascent arguments that PTSD is not necessarily accompanied by complete dysfunction (Schwarz, 2018), these findings support the notion that, *“people may experience distress and disease and yet remain committed and absorbed in their life tasks as parents, partners, workers, citizens and friends”* (Hobfoll, 2011, pg.128). Therefore, the findings of this thesis contribute to understanding how disaster survivors, even those likely to reach the threshold for a clinical diagnosis, adopt a varied coping repertoire to adapt resourcefully to the challenging situation.

The findings regarding disaster survivors’ capacity to collectively cope to foster resilience offers a counter perspective to deficit narratives associated with trauma survivors. This highlights the importance of research with samples exposed to potentially traumatic events that does not focus exclusively on pathology, as this can overlook individual and collective sources of strength and resilience. Instead, this emphasises that attention should be given to disaster survivors’ articulations of experiences in their own terms, regardless of whether participants

met diagnostic criteria (as recommended by Harvey, 2007; Tummala-Narra, 2007; Watters, 2001).

10.4. Theoretical contributions

This thesis contributes to social representations theory (SRT) through its application to students' representations of the post-disaster school. Although SRT has been applied to the study of numerous social phenomena, including post-disaster coping (Lomeli-Rodriguez et al., 2024) and the home in a disaster context (e.g., Harries, 2013), to our knowledge, the theory has not previously been used to understand the role of schools in a post-disaster context. In this research, SRT enabled an exploration of socioculturally-specific, implicit conceptualisations of social phenomena, since the theory acknowledges that cultural values shape social representations (Duveen, 2007; Moscovici & Marková, 1998). Furthermore, as SRT is concerned with understanding lay, rather than expert scientific, knowledge (Abreu-Lopes & Gaskell, 2015), the theory provides insight into how a specific cultural group makes sense of a social phenomenon (Duveen, 2007). This also contributes to the amplification of marginalised voices (Zadeh, 2017). Therefore, the use of SRT in this thesis is well-aligned with calls for resilience research to give prominence to underrepresented perspectives (e.g., Hajir et al., 2022), such as young people in the global South.

The findings presented in this thesis support that social representations are structured by *themata* (Marková, 2003). Specifically, a *thema* of risk/recovery organised students' representations of their post-disaster school. This implies that their conceptualisation of the post-disaster school was structured by the tension between risk and recovery. This data supports the argument that people can hold contrasting representations at once, otherwise termed 'cognitive polyphasia' (Moscovici, 1961/1976, 1984): contradictory understandings of phenomena coexist and structure how people conceptualise their experience (Moloney et al., 2012). SRT promotes acceptance of such inconsistencies (Moloney et al., 2012) as the theory recognises that contradiction is central to social thinking (Billig, 1988). As a result, social representations can be fragmented and incoherent (Höijer, 2011). As social representations are dynamic "*thoughts in movement*" (Marková, 2003, pg. 121), heterogenous elements of a representation can be differentially activated depending on the social context to which they are bound (Wagner, 1999). For example, when students witnessed infrastructure damage, they

tended to represent the school as a place of risk. In contrast, when reunited with peers and supportive teachers, the school was anchored to symbols of pre-disaster normality, representing a place of safety and recovery. Accessing students' nuanced representations facilitated a rich understanding of how they navigate their social world following a disaster. This provided insight into the resilience-promoting aspects of the post-disaster school that support students' recovery and wellbeing, and the elements that may hinder this.

Furthermore, the findings illustrate the importance of an affective component in SRT. Although the role of emotions has often been neglected in writing on SRT, emotions can motivate the formation of social representations (Joffe, 2002). Students' representation of the post-disaster school as a place of risk was associated with negative affect, including fear and discomfort. In contrast, students' representations of the post-disaster school as a place of recovery were motivated by familiar feelings of safety and happiness in their school environment. This anchoring of elements of the post-disaster school, a novel entity as it has been altered by the disaster, to familiar and well-established emotions, is indicative of 'emotional anchoring' (Höijer, 2010); emotional anchoring refers to the process whereby novel phenomena are associated with familiar emotions (Höijer, 2010; Norton et al., 2021). Furthermore, the data demonstrated that when students come together after a disaster, they valued sharing stories regarding their disaster experiences, including expressions of emotions. This 'social sharing' of emotions (Rimé, 2007, 2009, 2010) might lead students' to experience and absorb one another's emotions. In doing so, affective processes become collective phenomena, as the student's individual emotions become aligned with those of the group. While this could risk a heightening of negative affect, students and teachers experienced this as cathartic. As emotional experiences play a role in the collective interpretation and judgement of social phenomena (Bless & Fiedler, 2004), this indicates that students' affective experiences are likely to have shaped the representations they developed.

Furthermore, alongside SRT, we drew on place attachment theory as a novel yet complimentary lens to understand the role of schools for fostering resilience in disaster settings. As argued in our conceptual review, the theories are well suited to allowing exploration of the symbolic role of places. While this dual theoretical lens has been used to understand social representations of the home following flooding (Harries, 2013), its application to schools remains novel. Given that schools are an institution where students spend sustained time during crucial

developmental stages, students are likely to form significant place bonds with their schools, thus highlighting the relevance of place attachment theory.

Through the application of place attachment theory, this thesis demonstrates that schools are meaningful places for fostering community integration and cohesion. Their role is analogous to that of other communal places in disaster contexts, including cafes for community members impacted by flooding in the UK (Drury et al., 2019; Ntontis, 2018). Similarly, these places provided a community hub for regular gatherings, facilitating social interaction and reinforcing the group-bonds and solidarity developed from their shared disaster experiences (Drury et al., 2019; Ntontis, 2018). Our findings regarding schools support the idea that students experienced cascading psychological benefits of place attachment (e.g., for positive affect, comfort-security and belonging; Scannell & Gifford, 2017). However, similar to how place attachment theory elucidates feelings of distress and grief felt by displaced populations (e.g., Fried, 2000; Fullilove, 1996), our findings demonstrate that disruptions to elements of schools that are valued by students resulted in negative affect, such as loss of life and physical damage to the school serving as reminders of disaster risk. These elements undermined place attachment, leading to the school's association with negative affect and avoidance. Therefore, integrating SRT with place attachment theory provided nuanced insight into the role of schools by facilitating an exploration of their capacity to both hinder and support coping and resilience after a disaster.

Phenomenology was drawn on to understand teachers' subjective lived experiences of social phenomena from their own perspectives. Since the research questions focused on *how* rather than *why* teachers experienced distress and coping, this was in keeping with the aim of phenomenology: to understand how participants' experience phenomena, by uncovering 'the things themselves' (Husserl, 1989). While the approach has been applied to numerous studies that seek to understand survivors' coping after disasters (e.g., Güler & Albayrak, 2024; Swann et al., 2016), it is important to understand the lived experiences of teachers after a disaster. This is because teachers are required to negotiate between managing their own post-disaster stressors and supporting their students' needs. The way in which teachers cope is likely to have an impact on their students' resilience and wellbeing (Mooney et al., 2021). The naturalistic phenomenological approach aligned well with the overarching aim of the thesis to understand the context-specific determinants of resilience and coping.

Contributing to resilience theory, the findings affirm the importance of enhancing the context surrounding the young person to scaffold their resilience rather than targeting individual attributes. For example, students emphasised the impact of the built environment on their recovery, including the need to improve the physical infrastructure of the school, to cultivate a sense of safety and normality, as well as the benefit of relational aspects of school environments, such as reunions with supportive teachers and peers. Due to these reciprocal interactions, supporting teachers' resilience after the disaster is likely to benefit students' resilience. This is consistent with multisystem resilience theory (e.g., Masten, 2001, Masten, 2019; Ungar, 2011c).

Furthermore, the findings of this thesis align with research regarding the common manifestations of posttraumatic growth (Henson et al., 2021; Tedeschi & Calhoun, 1996), including increased religiosity, sense of personal and collective strength, gratitude for one's life and enhanced quality of social relationships. As this research focused on understanding participants' subjective experiences, it does not aim to contribute to theoretical debates regarding whether posttraumatic growth should be considered 'real' or 'illusionary' (i.e., a genuine change vs a self-enhancing shift in perception) (e.g., see Boerner et al., 2017). Nevertheless, the finding that many participants reported subjective improvements to various life domains was often associated with action-oriented coping strategies, such as engagement in reciprocal practical and emotional support. This supports theoretical arguments that posttraumatic growth, when combined with 'growth actions', is a favourable outcome following trauma exposure as this is likely to lead to *sustained* positive adaption (Pat-Horenczyk & Brom, 2007; Hobfoll et al., 2007a). Furthermore, in the present work, 'growth actions' were often interlinked with 'growth cognitions'. For example, participants' active involvement in collective oral story telling (*tutura*) required cognitive engagement and processing, as participants disclosed their emotions and shared their experiences. This may have contributed to posttraumatic growth by helping to rebuild life narratives and challenge shattered assumptions (Henson et al., 2021). Therefore, these findings support arguments that posttraumatic growth results from a combination of 'growth actions' (Anderson et al., 2016; Pat-Horenczyk & Brom, 2007; Hobfoll et al., 2007b) and 'growth cognitions' (Calhoun & Tedeschi, 2013).

Beyond focusing on individual resilience theory, this thesis has advanced an understanding of the role of the school for fostering community resilience. Student, teacher and caregiver conceptualisations of a resilient post-disaster community closely aligned with Norris et al.'s (2008) theoretical model of community resilience and the role teachers adopted after the disaster aligned closely to the four components of the same model, demonstrating teachers' willingness and potential to contribute to aspects of community resilience. Our findings affirm that adopting a community-level theoretical lens may be particularly beneficial to some collectivistic cultures, as the wellbeing of the group is valued more highly than that of the individual (Hofstede, 1980, 2011; Hofstede et al., 2010; Schwarz, 2014). Furthermore, these findings support arguments that an individual's responsibility to cope with adversity should not be overemphasised, as it is crucial to consider the structural inequalities that may impede an individual's resilience (Chandler, 2014; Joseph, 2013).

Furthermore, this research contributes to resilience theory by elucidating the interconnectedness of the psychosocial processes involved in both community and individual resilience. As a community is generally considered to be greater than the sum of its parts, a group of resilient individuals should not be assumed to necessarily constitute a resilient community (Eachus, 2014; Kirmayer et al., 2008). Nevertheless, a resilient community may enhance individual resilience, as community members may draw on communal strengths and resources to mitigate potentially negative individual psychological impacts (Eachus, 2014). For instance, the findings of this research support existing arguments that collective efficacy, vital for community resilience, also benefits individual resilience (e.g., Kirmayer et al., 2008; Kirmayer et al., 2011; Tiessen et al., 2010). This is demonstrated in teachers' collective action, which bolstered both collective and self-efficacy. Furthermore, individuals harnessed the social networks and cultural resources embedded in the community to engage in group activities, such as sharing stories, which strengthened the community's resilience through feelings of solidarity, identity and belonging. Simultaneously, this bolstered personal abilities and adaptive cognitive strategies, such feelings of hope and intrapersonal strengths, contributing to individual resilience. This is consistent with the argument that the communal sharing of strengths-based stories can spread protective factors from the individual to the group (Kirmayer et al., 2008). While what benefits a community's resilience may not necessarily align with the interests of all individuals (Eachus, 2014), this research demonstrates that in a highly collectivistic culture, community functioning is often prioritised over individual needs.

10.5. Methodological contributions and reflections

This thesis makes a methodological contribution by incorporating novel open-ended questions into the assessment phase survey, inspired by Murphy et al. (2018), for eliciting survivor-led recommendations for resilience after disaster. Anecdotally, while open-ended questions are often included in surveys, the responses are often neglected during formal data analysis, so are rarely published. However, the use of open-ended questions was valuable for facilitating efficient data collection from a sample considered large for qualitative research ($n = 127$) (Vasileiou et al., 2018).

The open-ended questions were tailored to engage young people, such as by asking them to imagine themselves as the mayor setting the community's priorities or advising other children on effective coping strategies. This adaptation aligns with the United Nations Convention on the Rights of the Child (UNCRC) Article 12, that states children have a right to express views freely and those views should influence matters that concern them. As research may inform policy and intervention development, it can be considered 'a matter that concerns them' (Siagian et al., 2021). Consistent with this perspective, the method provides a sensitive and age-appropriate way for young people to participate meaningfully in research. Furthermore, as the questions elicited young people's conceptualisations without requiring them to reflect directly on their own experiences (e.g., by being the mayor), this is likely to be less emotionally demanding than eliciting personal accounts. Therefore, despite sacrificing on the depth of responses compared to interview methods, this method was practical in a resource-constrained post-disaster context as it was less time intensive and emotionally demanding for participants and researchers.

Complementing the results of the open-ended questions, the GEM interview method facilitated the depth and complexity of the reported findings. This research emphasises the benefit of using the GEM in a global South, low resource context. While the method has mainly been used in Western, high-income contexts, the reported findings demonstrate that the interview style is well suited to research that seeks to decentre the Western perspective through exploring possibly undocumented and culturally specific aspects of resilience, aligning with calls to 'decolonise' resilience research (Atallah, 2016). As the lack of researcher interference minimises the insertion of content and foregrounds the participants' thoughts and feelings, the

method holds potential for advancing resilience research by empowering those from the global South to articulate the meaning of social phenomena in their own terms.

Furthermore, by providing an inroad into the conceptualisations of disaster survivors from an under-researched context, the GEM method enabled their perspectives to inform the development of the intervention. This included the incorporation of cultural and linguistic nuances (e.g., *tutura*) into the intervention, which are important to consider for effective disaster risk reduction and recovery strategy (Mercer, 2012). During the intervention, summarising the GEM results to teachers illustrated that content had been devised in response to their needs and incorporated coping strategies valued by their community. This research design is likely to have increased the acceptability and potential efficacy of the intervention.

Furthermore, although the GEM has been applied to various social issues, its use for investigating the role of schools and resilience was novel. The method facilitated the exploration of symbolic elements of the school and the socioculturally specific elements of resilience that were most salient to the participants. This would not have been achievable using solely quantitative methods or highly structured interview techniques.

This research supports that the GEM is theoretically consistent with the aims of SRT and phenomenology. While the method has often been used with SRT (e.g. Joffe et al., 2013; Sawyer et al., 2022; Joffe & Smith, 2016), it has been employed less often in conjunction with phenomenology. Their combined application in this research supports the argument of Fardghassemi and Joffe (2022), that the GEM method, through revealing deep-laid thoughts, feelings and non-conscious processes, is well suited for tapping into lived experiences, consistent with the aim of phenomenology.

As the interview prompts were designed to elicit narratives of coping, resilience and the role of the school and teachers in the recovery process, the volume of data generated about the night of the disaster featuring peritraumatic content was unanticipated. It is possible that for some participants, this may have been the first time they were able to freely discuss the disaster and recount their experiences on their own terms without interruption. Although we were concerned regarding the level of distress these accounts may elicit, the method may have provided a therapeutic experience by allowing participants to reflect on their negative emotions, in line

with most therapeutic trauma-based approaches (Cooper & McLeod, 2011; Greenberg, 2017; Pascual-Leone & Greenberg, 2007; Southam-Gerow & Kendall, 2002). It is possible that some participants may have considered the interviews to be aligned with the local sociocultural practice of storytelling (*tutura*), constituting a cathartic expression of emotions regarding difficult life circumstances in a supportive environment. This assertion is supported by one participant asking at the start of the interview whether the method was “*like storytelling?*”. It is possible that, as well as the open and non-judgemental interview style, the interview setting being a familiar and trustworthy environment may have increased participants’ comfort in disclosing sensitive, personal information.

Discussing disaster experiences may have been therapeutic for participants, however, this is likely to have increased the emotional demands of the data collection process for the interviewers. For instance, listening to verbal reports of another’s trauma can lead to trauma symptoms for oneself, such as intrusions (Krans et al., 2010). When working with potentially traumatised populations, guidelines exist that seek to support the wellbeing of humanitarian workers (Antares Foundation, 2012) and clinicians (Pearlman, 1995), but not for researchers (Massazza, 2020). To mitigate against interviewers’ distress, the interviews were conducted over a period of months and distributed between three interviewers, allowing the researchers breaks between interviews and reducing the emotional burden. Although the interviewers were experienced in working with trauma-exposed populations, on reflection, regular wellbeing check-ins, including supporting effective self-care and, if needed, signposting to additional support, may have been beneficial and should be a feature of future research.

As I did not collect the data, I was not exposed to listening to the distressing accounts directly. Nevertheless, reading about participants’ disaster experiences was at times upsetting, particularly regarding their sources of distress. However, my emotional response was juxtaposed with a sense of awe and hope due to participants’ resilience and their sense of optimism to collectively overcome the challenges faced, as well as the commitment of the teachers to supporting their community’s resilience. Furthermore, regular meetings were held between the research team, including those conducting the interviews. These were beneficial for mitigating the negative emotional impacts of data collection and analysis, as during these meetings we kept in mind the purpose and meaning of eliciting the distressing accounts: that

through devising resilience building interventions we hoped to alleviate an element of the participants' suffering.

10.6. Practical contributions

This work provides important insights concerning the need for teachers to be supported with their own psychosocial recovery following disasters. This is emphasised by the finding that teachers experienced various ongoing disaster-related stressors that impacted their mental health and emotional regulation at work (e.g., due to shaking provoked by the sound of a truck driving past). Furthermore, the findings revealed that while most students conceptualised teachers as a trusted source of support, a small number felt that, at times, teachers were inactive in contributing to students' recovery and failed to meet their needs. Teachers' data suggests this was, in part, due to the strain of their personal post-disaster stressors. While teachers were willing to support their students, the emotional demands of providing support may exacerbate teachers' risk of poor post-disaster mental health and wellbeing, including emotional exhaustion and burnout (O'Toole et al., 2017). Therefore, the findings highlight that while teachers are willing to take on a support-based role, it is important to acknowledge teachers' own post-disaster impacts and their own psychological recovery supported.

These findings also highlight the imperative of in-school training to build teachers' capacity to offer appropriate, evidence-based support for students' recovery. This demand for teacher training aligns with research from outside of disaster settings that reports that teachers feel they lack the knowledge and skills to appropriately support trauma exposed students (Alisic, 2012). This can cause teachers to avoid offering emotional support to students out of fear of exacerbating distress (Johnston & Ronan, 2014), which may worsen students' trauma symptoms. If important adults avoid talking about a potentially traumatic event, this can inhibit the child from processing the trauma memory (Trickey, 2013). Teacher training can mitigate this by enhancing teachers' confidence to discuss the disaster with students, at an appropriate time. This can benefit students, as discussing a potentially traumatic event with a safe person can 'update' a memory with missing information about what happened and why, which puts the worst moments of the event into context (Trickey, 2013). The data reported in this thesis suggests that teachers are well placed for this role due to their shared disaster experience and willingness to support students. In addition, many students reported feeling comfortable to

disclose their challenges to teachers. Therefore, the results of this work suggest that teachers in low resource contexts are likely to be receptive to psychosocial training to enhance their supportive capacity and advocates for ongoing training and supervision to empower teachers to offer effectively support students' resilience.

Furthermore, teachers considered themselves responsible for modelling and guiding students' post-disaster reactions and coping strategies. As students observe and absorb coping guidance from teachers (Mooney et al., 2021; Prinstein et al., 1996), it is important teachers demonstrate and encourage students to engage in adaptive coping strategies. While the efficacy of a coping strategy can be contextually dependent (Ungar, 2015; Zaumseil et al., 2014), the data revealed that some teachers employed potentially maladaptive strategies that may hinder resilience, such as chronic avoidance of disaster-associated areas that were previously a part of everyday life, including the beach. Avoidance may be temporarily beneficial to improve feelings of safety (Many et al., 2012), however in the long term, this can perpetuate the link between the trigger (i.e., the beach) and distress, maintaining anxiety and PTSD symptoms (Trickey, 2013). Instead, confronting disaster stressors can support disaster survivors to 'reclaim their life' (Smith et al., 2010) by providing a return to normal activities and routines, which students desired. Therefore, alongside being supported with their own psychological needs, teachers would benefit from receiving psychoeducational training, an established element of many post-disaster interventions (Pfefferbaum et al., 2014a), to ensure they are offering and modelling appropriate and efficacious resilience-promoting coping strategies.

Teachers' desire for training to build their capacity to offer psychosocial support can increase the community's adaptive capacity through reducing long-term reliance on external support, such as from NGOs. While NGO support was highly valued by students and teachers, students considered this to complement rather than replace support from their teachers. Furthermore, the presence of most NGOs is temporary. While there is typically an influx of NGOs operating in the immediate disaster aftermath, at times compensating for a lack of swift government response (Regmi, 2016), a more sustainable response is to provide teachers with the resources to effectively support students. Therefore, as well as working directly with students after disasters, it is beneficial for NGOs to train teachers to develop their psychosocial knowledge and skills. This aligns with recommendations in the literature to empower communities to foster their own recovery (Gil-Rivas & Kilmer, 2016; Snider et al., 2010).

The intervention results emphasise the importance of facilitating safe spaces for teachers to connect and engage in dialogue regarding coping since the disaster, which is consistent with the mental health competency approach to fostering positive mental health and resilience (see Campbell & Burgess, 2012; Burgess & Mathias, 2017). Increases in post-disaster solidarity, which can foster resilience through mobilising social assets, networks and resources, must be actively sustained to contribute to longer-term post-disaster recovery (Ntontis et al., 2020). Our findings demonstrate that this can be achieved through community-based intervention activities, such as the Tree of Life activity. Furthermore, this technique may have been particularly beneficial in this context as it aligned with and facilitated the cultural and community practices participants reported engaging in to support effective coping. For example, regarding the importance of sharing stories (*'tutura'*) and mutual support (*'gotong royong'*) (see Chapters 5 and 6). This emphasises the need to ensure that evidence-based techniques align with cultural values and recognise local idioms of trauma and coping, to enhance intervention engagement and efficacy.

The benefit of bringing teachers together to connect during the intervention was particularly salient given that the research occurred during the easing of Covid-19 pandemic containment measures, which had limited teachers' interactions. Teachers expressed that they valued the social opportunity that the intervention provided, and following the intervention they reported a significantly higher likelihood of coping by drawing on colleague support. The sense of togetherness fostered by the intervention may be especially valued by the teaching profession, as teachers often report feeling 'psychologically alone' (Sarason, 1982, p. 133) due to the isolated nature of teaching in individual classrooms. These findings emphasise the importance of school leaders actively carving out time and space for teachers to reconnect during working hours when schools reopen post-disaster to strengthen social bonds and maintain a sense of community. The intervention's assessment demonstrates that this can be achieved through culturally sensitive activities that encourage teachers to discuss their knowledge and experiences, including shared coping strategies and sources of strength to overcome adversity. This can contribute to sustaining collective 'resilient identities' (Drury et al., 2019) and a sense of togetherness to overcome disaster-related challenges.

The findings make clear the necessity for interventions that support disaster survivors' psychosocial recovery to extend beyond the short-term recovery period. Despite this research

taking place over three years post-disaster, the intervention was well received by the teachers, who unanimously reported subjective improvements in their recovery, showed objective increases on resilience-linked measures and expressed a desire for further activities. This positive response is likely to be due to the ongoing adversities faced by the teachers as secondary stressors evolve (Lock et al., 2012), which due to their cumulative nature can impact survivors' mental health as much as the initial event (Masten & Osofsky, 2010). Furthermore, the limited access to psychological support immediately after the disaster in this low resource context may contribute to the need for longer term interventions. Therefore, interventions should not be limited to the immediate disaster aftermath, particularly in contexts where the recovery period is protracted, as ongoing adversities continue to impact survivors' longer-term recovery.

An advantage of the intervention reported in this thesis is its relevance to all disaster-affected teachers. This avoids the need for mental health screening, which can be subject to structural and cultural barriers (Devaney et al., 2023). This is advantageous as the intervention is potentially scalable to benefit many teachers by addressing the large demand for support and unmet mental health needs, in a relatively cost-effective way. Nevertheless, the low intensity group-based intervention reported may be best considered as one aspect of a stepped care approach. This involves offering less resource-intensive treatments initially before 'stepping up' to provide specialist services for the smaller number who require additional support (Davis et al., 2023). This approach has been advised regarding the implementation of other universal (without screening) interventions to ensure that, when needed, disaster survivors can access well-evidenced high-intensity interventions (Davis et al., 2023). For example, alongside the reported intervention, some teachers may benefit from specialist, targeted psychological support based on symptom screening, such as trauma-focused cognitive behavioural therapy (TF-CBT) or eye movement desensitisation and reprocessing (EMDR), which are recommended as the first line of psychological treatment for PTSD in adults (Bisson & Olf, 2020; Martin et al., 2021). Their efficacy in adults is supported by recent large meta-analyses (Lewis et al., 2020; Mavranouzouli et al., 2020).

Nevertheless, as evidence-based treatments have mainly been based on Western models of trauma, it is important to adapt clinical interventions to the cultural context, while maintaining their core features to ensure efficacy (Kaminer et al., 2024). Beyond basic modifications, such

as the translation of materials and altering terminology, cultural adaptations should involve a deeper adjustment, including the integration of additional components and modifying explanations to align with cultural understanding (Kaminer et al., 2024). For example, to provide a culturally sensitive trauma treatment, Jalal et al. (2017) present a version of CBT adapted to align with Islamic norms and beliefs. These adaptations include integrating religious practices, such as dhikr (Islamic chanting, reported by participants in Chapters 5 and 6), as a technique to reduce rumination by increasing attentional control. Therefore, it is crucial that for the minority of teachers who may require clinical treatment, the techniques implemented are both evidence-based and culturally appropriate.

Furthermore, the findings in this thesis shed light on the need for disaster risk reduction and preparedness training in schools. Teachers and, to a lesser extent, caregivers and students, expressed a desire for disaster risk reduction training to enhance community resilience. This is crucial considering the lack of compulsory disaster curriculum in Indonesia, despite the country's disaster-vulnerability (Desilia et al., 2023; Mutch, 2023). The lack of preparedness training contrasts with findings from other highly seismic, and often high-income, countries, such as Japan and New Zealand. In these contexts, preparedness activities, such as disaster simulations, are embedded in the school culture (Mutch, 2023). Nevertheless, as teachers considered providing disaster mitigation advice to be an element of their responsibilities and students' viewed teachers as trusted sources of disaster-related information, it is crucial the information imparted by teachers is current and effective. As well as safeguarding children's physical needs at school, as children often transfer in-school learning to caregivers (Edmeade & Buzinde, 2021; Izadkhah & Hosseini, 2005), the knowledge may be applied in students' homes, impacting the wider community. At present, individual principals may choose to run programmes in their schools. However, to ensure the programme is consistently implemented and evidence-based, a compulsory national disaster risk reduction curriculum should be developed.

It is anticipated that the findings of this work could guide disaster recovery priorities, including the need for swift physical reconstruction of schools and timely decision making from the authorities regarding whether schools are to be repaired or relocated. Students' representations of the damaged school as place of risk emphasises that exposure to a damaged environment prevents the restoration of a sense of normality and safety for the school community, negatively

impacting students' psychosocial recovery. Furthermore, exposure to disaster-related infrastructural damage and debris may exacerbate ongoing trauma symptoms by triggering traumatic memories (Ehlers & Clarke, 2000), for both school staff and students. To reconstruct a positive representation of the school, it is essential that safe and predictable physical environments are re-established. Such environments are a prerequisite for effectively managing trauma symptoms (Trickey, 2013). Furthermore, students should be consulted on the reconstruction and redesign process, as adults may not be aware of the symbolic importance of micro-spaces from the perspective of young people (e.g., the canteen as a site of socialisation).

Relatedly, while the findings reported in this thesis demonstrate the capacity of teachers to effectively organise to provide practical and emotional support for their educational community, contributing to resilience processes, they also highlight the importance of government policies and investment to address the structural and socioeconomic determinants of post-disaster risk. The finding that students expressed a desire for secure living arrangements and caregivers prioritised economic support and employment opportunities for building the community's resilience aligns with the Norris et al.'s (2008) theoretical model of community resilience, which incorporates economic revitalisation. Furthermore, physical and economic security are crucial for fostering health outcomes (Burgess, 2024; Summerfield, 2006) and can have cascading positive psychological benefits (e.g., promoting feelings of safety and hope) (Panter-Brick & Eggerman, 2012). Therefore, while psychosocial interventions aimed at strengthening the educational community's capacity can enhance elements of community resilience, these should complement, rather than replace, economic investments in rebuilding community infrastructure, homes and employment opportunities. Such a holistic approach can address the structural and social aspects of post-disaster mental health to promote community resilience most effectively.

10.7. Limitations and directions for future research

Since discussion of the limitations and directions for future research relevant to each study are contained in each chapter, this section focuses on the broader points applicable to the overall research, rather than those pertaining to the individual empirical studies.

The research took place in unprecedented conditions: the Covid-19 pandemic. This involved sustained closure of the school sites, requiring adaptation to the initially proposed data collection timeline and persistent travel limitations. Unfortunately, this hindered the UK team's planned travel to the region for data collection and for the intervention phase. Consequently, I was unable to gain an enhanced understanding of the local context from visiting the region, such as by observing disaster-related damage, the school sites and immersing into local customs and culture.

However, conducting the research remotely required the team to be highly innovative to achieve the research outcomes. For example, the Indonesian researchers, who were primarily based in Banda Aceh, conducted the interviews via Zoom. To facilitate this, a fortunate yet initially unplanned collaboration was formed between the project and a local mental health NGO, Sejenak Hening, based in Palu. This partnership enabled us to consult professionals with local knowledge throughout the project, which was crucial for supporting our understanding of local cultural norms and the feasibility of logistics for recruitment and intervention organisation. This contributes to the research priority identified in a review of mental health and psychosocial wellbeing in humanitarian settings to improve alignment between researchers and practitioners, as well as ensuring that research is culturally sensitive (Tol et al., 2011).

This unforeseen situation resulted in other unintended advantages too. During the data generation phase, the lack of British researcher presence minimised a Western influence on the data collection. During data analysis, this prevented any impressions I may have formed of specific participants influencing my interpretation of their data. If I had travelled to the region, some participants may have been identifiable through their interview content, which could have biased my analysis. Furthermore, during the intervention phase this eliminated concerns about our impact as 'outsiders' who might be seen to parachute in and out of the region without investing time to build trust and rapport. Instead, the facilitation of the intervention by 'insiders' is likely to have resulted in less Western influence on the intervention outcomes, as well as building local capacity.

Furthermore, the development of a rapport with participants was not compromised by the British research team's inability to travel to the region. This was primarily achieved by local research assistants (RAs) employed by the NGO, Sejenak Hening, as the same RAs supported the project with recruitment, data collection and the intervention. Their professional

relationship was also sustained by contact between the RAs and participants in a WhatsApp group. This ongoing contact may have fostered a sense of comfort and connection among participants in the research process. This rapport potentially helped mitigate issues of attrition from the initial assessment phase to the intervention and the evaluation phase. Furthermore, the WhatsApp group may contribute to sustaining the intervention effects over time, as teachers continue to share messages, including of images of their intervention posters displayed in their schools and the exchange of generally positively valanced messages, such as wishing of one another well during religious celebrations.

A key point of reflection is whether the results of this thesis, including the devised intervention, should be considered specific to the region or can be applied to other contexts. The aim of this thesis was to engage with people in a specific context, which involved an in-depth analysis of culturally situated perspectives, to amplify voices that have been neglected in disaster research: those of disaster survivors, including children, in a remote region of a lower-middle income country. Consequently, this thesis did not necessarily seek to establish the generalisability of the findings.

While this focus led to a deep understanding of the particular sociocultural context, this may compromise the applicability of the work to other post-disaster settings. For example, the findings presented regarding the role of teachers after disasters are likely to be influenced by the context of the Indonesian education system. This includes a series of educational reforms implemented over the past two decades to drive the country's development (Fasih et al., 2018). For example, The Teacher Law of 2005 aimed to improve teacher quality by mandating a four-year degree and certification, potentially doubling teacher salaries (World Bank, 2014). While the law has its critics (see Maulana et al., 2020; World Bank, 2018), the reform has had positive consequences for the calibre of teaching staff and reducing teachers' economic precarity and their need to obtain secondary employment (World Bank, 2018). Due to teachers no longer balancing the demands of their role with secondary employment, teachers in Indonesia may be more committed to their role than in some other low resource contexts. Therefore, while we believe aspects of the reported findings may be applicable to other low income and culturally similar post-disaster settings, the findings should be interpreted in consideration of context specific factors, including the Indonesian educational system.

Nevertheless, while the intervention content was underpinned by context-specific coping strategies, the activities, which aligned with local idioms of coping, have been found to be well suited to other culturally different contexts. For example, the Tree of Life was originally designed in Zimbabwe (Ncube, 2006) and has been used with adults in Colombia (Burgess & Fonseca, 2020). Therefore, the intervention design could function as a template for use in other low resource settings. Minor adaptations may be required to contextualise the content, to ensure that it is culturally relevant and responds to the specific needs of the educational community. For example, the five principles of resilience presented should be adapted to align with local values. As the findings of this thesis and the subsequently devised intervention are likely to be relevant to other areas of Indonesia and similar collectivistic, highly religious, low resource contexts, future work would benefit from initially applying the intervention to other regions of Indonesia. Subsequently, its implementation should be broadened to culturally similar low-and-middle income countries.

Alongside the perspectives of teachers, caregivers and students, future research could benefit from involving school principals. Teachers' perspectives are valuable as they work 'on the ground' directly supporting students, however, principals influence the role of teachers as they act as 'crisis managers' during and after disasters (Mutch, 2015c; Mutch, 2023). It may be beneficial to involve principals in interventions due to their impact on a whole school approach, such as shaping the culture of school policy and climate, which can influence teacher and student mental health (Goldberg et al., 2019). In addition, the views of other influential figures such as religious leaders could be considered, as they play an important role in the wider place-based disaster community.

Besides the impact of the Covid-19 pandemic on the data collection logistics, the results of this thesis must be considered in light of this context. The empirical chapter reporting the intervention features a discussion of the extent to which Covid-19 measures may have impacted the reported outcomes. Moreover, the pandemic may have influenced the assessment phase data, including the participants' conceptualisations of resilience and the role of teachers in fostering this. For example, group processes stimulated by the pandemic may have impacted teachers' social identification (Drury et al., 2019) and solidarity (Situmorang, 2022). This may have increased participants' emphasis on coping through community participation and cohesion, including the emphasis on the cultural value of *gotong royong* (mutual support),

reflected in teachers' action-oriented efforts to support students and their families. However, research indicates that a community's sense of identification prior to the pandemic influences adaptive behavioural responses, such as giving and receiving pandemic-related support (Stevenson et al., 2021). Therefore, the reported ongoing practical and emotional support offered by teachers to their educational community is likely to have been high following the disaster regardless of the pandemic's influence.

A limitation of the research is that a non-probability sampling technique was used. This featured the school principals from the three selected sites contacting teachers and caregivers 'at random' to invite them to participate. This technique may have resulted in sampling bias. For example, principals may have invited teachers they considered hardworking who would be more likely to take part. Nevertheless, mitigating against further bias, principals were blind to the specific aim of the study beyond its aim to promote schools as hubs of resilience. Future mixed methods research would benefit from employing randomised sampling.

The intervention evaluation relied on self-report measures. While these are commonly used in research investigating retrospective issues, such as disaster research (Pfefferbaum et al., 2013), they can be prone to social desirability bias (Van de Vijver & Tanzer, 2004). This is likely to be heightened in collectivistic cultures due to an emphasis on cooperation and adherence to social norms (Lalwani et al., 2006). To mitigate this, participants were assured of their anonymity through use of participant identifiers and students were guaranteed that their responses would not be disclosed to teachers or caregivers (Demkowicz et al., 2020). Furthermore, participants completed the measures individually with the RA rather than alongside peers or colleagues (Fendrich & Johnson, 2001; Demkowicz et al., 2020). Moreover, throughout the research process, participants were reassured that there were no right or wrong answers and that we were interested only in their thoughts and feelings. Despite these precautions, it is possible that participants' responses may have been influenced by their beliefs regarding socially acceptable behaviours. Self-report surveys are an essential psychological research tool; however, they are vulnerable to social desirability bias (Nurumov et al., 2022). For example, participants may have felt uncomfortable disclosing any behaviours that contravened the mainly Islamic norms, such as alcohol consumption, given the highly religious context.

Furthermore, using self-reported survey data to assess probable PTSD and CPTSD often results in more reported symptoms and diagnosis compared to when structured diagnostic interviews are used (Furr et al., 2010). Overreporting may be due to the criteria being too lenient and/or due to arbitrary cut off points (Bonanno et al., 2010). Due to these concerns, participants were not grouped diagnostically for the intervention or for qualitative data analysis. Instead, the measure was used to demonstrate that many teachers experienced persistent heightened distress that impaired their daily functioning, which was alleviated following the intervention. This was achieved by assessing PTSS as a continuous variable (in accordance with the design of the ITQ; Cloitre et al., 2018; Hyland et al., 2017). Furthermore, although the diagnostic criteria should be interpreted tentatively, this was useful for indicating whether the non-clinical intervention may be beneficial, or at least not detrimental, for implementation with a clinical sample.

In future research, although costly and time intensive, it would be valuable to employ observational methods alongside self-report measures, to provide a more ecologically valid method of evaluating the impact of a given intervention, both in terms of participants' in-school behaviours and the dynamics of teacher-student psychosocial support (Maulana et al., 2019). Other methods could also be considered, such ecological momentary assessment (EMA; Shiffman et al., 2008) or a diary study (e.g., Hørlyck et al., 2019; Massazza et al., 2022), to capture participants' behaviours and affect closer in time to their experience, as well as reducing researcher influence (Moskowitz & Young, 2006). Furthermore, as the reported intervention aimed to also improve teachers' ability to support students, it would also be useful for future work to collect pre- and post-intervention data directly from the students taught by participating teachers to capture potential changes attributable to the intervention and to assess students' perception of any changes in teacher support.

Furthermore, future research may benefit from following a standardised member checking process with all groups, including young people (e.g., see Birt et al., 2016). Although member checking does not automatically increase the rigour of qualitative analysis (e.g., see Thomas, 2016), the process can support the credibility of findings (Birt et al., 2016). Alternatively, the research could benefit from participants' involvement in the data analysis stage (e.g., see Liebenberg et al., 2020 for an exemplar of a rigorous 'participatory thematic analysis' process). While this thesis does not claim to be PAR (see Section 4.1.), this approach can facilitate

marginalised groups to actively contribute to the knowledge generating process through engagement and in-depth reflection (Liebenberg et al., 2020).

The intervention reported in this thesis focused exclusively on disaster *recovery* rather than preparedness. As part of the wider interdisciplinary project, an interrelated intervention featured disaster risk reduction training for school principals delivered by engineers in the same region focused on preparedness for future disasters. An avenue for future research would be to extend the duration of the intervention to include several sessions over a longer timescale to encompass an integrated programme that simultaneously targets disaster recovery and preparedness. This is likely to benefit community resilience, as recovery and preparedness are interlinked. For example, enhancing knowledge and behavioural practice of how to act during a disaster, such as is obtained through evacuation drills, can contribute to psychological recovery by increasing one's perception of control, encouraging problem-focused coping, promoting a sense of self and collective efficacy, and moderating emotional arousal (Becker et al., 2017; Ronan & Towers, 2014). Furthermore, this integrated intervention model may foster more effective preparedness, as engagement in preparedness is enhanced by participation in activities that foster collective efficacy (Becker et al., 2017; Paton, 2008; Paton & McClure, 2013). Therefore, in future, an intervention that encompasses teachers' recovery and preparedness may more effectively bolster resilience in disaster-prone regions.

Furthermore, future research would benefit from exploring the sociocultural constituents of resilience elucidated in this work in greater depth. As the finding regarding the value of reciprocal oral storytelling (*tutura*) for supporting coping is novel, future research would benefit from exploring its dynamics. This could contribute to ensuring its practical integration into interventions incorporates the resilience promoting aspects. As the term is unique to the local dialect, future research would also benefit from comparing *tutura* to other forms of Indonesian storytelling. In addition, the development of a valid and contextually sensitive measure to quantitatively capture engagement in sociocultural forms of coping would allow for culturally sensitive mixed methods and quantitative research. For example, as the concept of mutual support (*gotong royong*) has been evidenced in numerous regions of Indonesia (Zaumseil et al., 2014), creating a robust scale to assess engagement in this coping strategy would be beneficial for research in post-disaster Indonesian contexts and would be useful to gauge intervention effects on this culturally valued practice.

10.8. Concluding remarks

This thesis has provided an in-depth analysis of the role that teachers play in supporting the coping and resilience of their educational community following disaster exposure. This work foregrounds the pivotal role of schools, particularly teachers, as sources of psychosocial support in the Indonesian context. Teachers coped flexibly and collaboratively, while remaining dedicated to their professional responsibilities in the face of challenging personal circumstances. This illustrates that, in low resource settings, teachers often go beyond their academic duties during a crisis to actively support students' psychosocial recovery and the community's resilience. Nevertheless, many teachers found it challenging to balance their own post-disaster stressors and mental health with supporting others and lacked guidance on how to effectively meet their students' psychosocial needs.

Overall, the findings reinforced the need for supporting teachers' own post-disaster resilience and building teachers' knowledge and capacity to support their students. Informed by these findings, a novel group-based intervention was devised that aimed to foster teachers' resilience and their collective capacity to support students. By incorporating local idioms of coping and sources of strength into the content, the intervention recognised, harnessed and developed the community's existing strengths and capacities. This contributed to the intervention being positively regarded and empowering for teachers. An evaluation of the novel intervention found the protocol and content to be well-received, feasible in a resource-scarce context and indicated promising improvements to quantitative indicators of teachers' resilient recovery. Taken together, these findings offer wide-ranging practical implications for school-related disaster policies and the training needs of teachers in disaster-prone regions.

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12. Appendices

Appendix A

Revisions to published chapters during peer review

Chapter	Level of revisions	Changes to manuscript
Three	Minor revisions	• Explicitly defining key terms ('disaster setting' and 'resilience building') • Addition of more recent theoretical literature • Reduction of repetition regarding claims of a lack of literature on the subject • Clearer references to the specific disasters studied in existing research
Five	Minor revisions	• Justification of time frame for data collection • Altering the title to be more specific to the disaster and population • Clarification of methodological details regarding the procedure and sampling including adding a rationale for the female only sample, the location of data collection and ethical considerations • Framing the study as a feasibility study, emphasising the novelty of the method
Seven	Minor revisions	• Strengthening the conclusions about 'places of recovery' and 'places of risk' • Ensuring the critical student perspective was adequately supported
Eight	First round: major revisions	Major revisions: • Restructuring the themes by combining two separate themes ('psychosocial support' and 'educational support') into one theme ('psychoeducational support'), due to overlapping content
	Second round: minor revisions	• Contextualising the findings in relation specifics of the Indonesian education system.
		Minor revisions: • Amending the title to include the country • Including a discussion of multisystem resilience theory, in addition community resilience theory • Adding references regarding the member checking procedure • Adding sub-headings to provide a 'road map' for readers to follow the discussion section.
Nine	Two rounds of minor revisions	First round: • Clarification regarding the meaning of 'culturally grounded' and how the intervention aligned with this

procedure

- Adding sub-headings to provide a 'road map' for readers to follow the discussion section.

First round:

- Clarification regarding the meaning of 'culturally grounded' and how the intervention aligned with this
- Explanation of how the intervention is 'strengths-based'

Second round

- Amending title
 - Clarification that changes in the resilience measures cannot be attribute that increases in the quantitative measures is weak due to the absence of control group
-

Appendix B

Assessment phase (pre-intervention) survey for teachers

Data Management Information

RESEARCHER MUST COMPLETE THIS ENTIRE PAGE

THIS SECTION MUST BE COMPLETED FIRST PARTICIPANT IDENTIFIER (P-ID) [First & Last name Initials]-[Birthdate (dd-mm)]-T <i>Example: YD-30-02-T</i>	

Date (dd-mm-yyyy)	
Participant's Telephone Number <i>*not applicable if they do not have one</i>	
Participant's Address	
GPS Coordinates of Current Location	
Site	☐ School A [name removed] ☐ School B [name removed] ☐ School C [name removed] ☐ Other: _____
Participant Population	☒ Teacher
Please Confirm	☐ The participant has read the Plain Language Statement / Information Sheet ☐ The participant has signed the Consent Form

Is the participant happy to be contacted again in the future, to participate in other activities related to this research project?

☐ No

☐ Yes - If yes, what is the best way to contact the participant in the future?

Please ensure you have recorded all necessary details to contact the participant again in the future.

! Please ensure you have written the Participant Identifier on ALL pages.

! Please keep ALL pages together.

PART 1

Q1.1 Please read through the following list of dangers. Choose the five dangers that you feel most threaten you. Please rank your chosen five from the most threatening to you personally, to the second most threatening to you personally and so on. Do this by placing a 1 next to the most threatening, a 2 next to the second most threatening, and so on until you place a 5 next to the fifth most threatening.

- ☐ Terrorism
- ☐ War
- ☐ Crime
- ☐ Substance Abuse (e.g., alcoholism, drugs, smoking)
- ☐ Earthquakes
- ☐ Tsunamis
- ☐ Landslide
- ☐ Liquefaction
- ☐ Flooding
- ☐ Volcanoes
- ☐ Fire
- ☐ Transport Accidents
- ☐ Air pollution
- ☐ COVID
- ☐ Health Issues
- ☐ Not enough money
- ☐ Problems in the government

PART 2

Q2.1 Please WRITE or DRAW your first thoughts and feelings regarding how you have coped since the 2018 earthquake. Please give only one thought/image per box. Sometimes a really simple drawing or word can be a good way to show your thought and feelings. There are no right or wrong answers. Everyone can have a different response.

1	2
3	4

Q2.2 Please WRITE or DRAW regarding the role of teachers and schools in responding to the 2018 earthquake. Please give only one thought/image per box. Sometimes a really simple drawing or word can be a good way to show your thought and feelings. There are no right or wrong answers. Everyone can have a different response.

1	2
3	4

PART 3

Please complete the following questionnaire, which should take no longer than 45 minutes.

We want to know about your thoughts regarding earthquakes/tsunamis/landslides. We also want to learn more about how your community has changed since the 2018 Disaster (earthquake, tsunami, landslide). There are no right or wrong answers. All information will remain confidential. When you are ready, please begin the survey.

Q3.1 What would a strong community here in Palu look like after disaster?

Q3.2 To what extent does your current community match the description you provided above?

Not at all O	Somewhat O	Moderately O	A lot O	Exactly O

Q3.3 How has your own community coped since the disaster?

Q3.4 How satisfied are you with the state of recovery in your neighbourhood since the 2018 disaster?

Very Dissatisfied O	Dissatisfied O	Neutral O	Satisfied O	Very Satisfied O

Q3.5 How has your community changed since the disaster? If so, in what way(s)?

Q3.6 What challenges has your community faced since the disaster?

Q3.7 What would you recommend to make your community stronger for the future?

Part 4

Q4.1 How safe would you feel inside the school if a large earthquake/tsunami/landslide occurred?

- ☐ Completely
- ☐ Fairly
- ☐ A little bit
- ☐ Not safe
- ☐ Don't know

Q4.2 I am confident that my school will probably not be seriously damaged in a major earthquake/tsunami/landslide:

- ☐ Yes
- ☐ No

Q4.3 Have you participated in earthquake/tsunami/landslide safety trainings and/or drills?

- ☐ Yes
- ☐ No – please skip to question 4.4

b. Where did you participate in hazard safety trainings and/or drills?

- ☐ Home
- ☐ Work
- ☐ School (when you were a student)
- ☐ Other – Please specify: _____

c. When was the last time you participated in one?

Q4.4 Do you encourage your students to share with their family what they learn at school about preparing for an earthquake/what to do during an earthquake?

- ☐ Yes
- ☐ No

b. Do you think your students share with their family what they learn at school about preparing for an earthquake/what to do during an earthquake?

- ☐ Yes
- ☐ No

c. Do you encourage your students to share with their family what they learn at school about how to cope with a disaster?

- ☐ Yes
- ☐ No

d. Do you think your students share with their family what they learn at school about how to cope with a disaster?

- ☐ Yes
- ☐ No

PART 5

	1	2	3	4	5	6

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
I am responsible for student safety if a disaster happens at school.	☐	☐	☐	☐	☐	☐
I know what to do if a disaster happens at school.	☐	☐	☐	☐	☐	☐
I am responsible for supporting student psychological health after a disaster.	☐	☐	☐	☐	☐	☐
I can recognise when a student is struggling with their psychological health after a disaster.	☐	☐	☐	☐	☐	☐
I know how to help students when they are struggling with their psychological health after a disaster.	☐	☐	☐	☐	☐	☐
I find hearing about students experiences and emotions after the disaster difficult.	☐	☐	☐	☐	☐	☐
I can help students after the disaster because I have experienced the disaster too.	☐	☐	☐	☐	☐	☐
Students are comfortable talking to me about how they are coping after the disaster.	☐	☐	☐	☐	☐	☐
The students I teach know where/who to go to in school if they need help with their psychological health.	☐	☐	☐	☐	☐	☐

Q5.1 The following questions ask about your role as a teacher during and after a disaster (earthquake/landslide/tsunami). Remember, there are no right or wrong answers, we are interested in your own thoughts, feelings and experiences as a teacher.

- ☐ **Do you have any other comments about your experience as a teacher supporting students during and after the 2018 disaster?**

Q5.2 Have you received training on how to support students' emotional needs/mental health after a disaster?

- ☐ No
☐ Yes – Please give details of training:

Q5.3 Have you received training on what to do if a disaster happens during the school day?

- ☐ No
☐ Yes – Please give details of trainings:

Q5.4 Do you have any additional role as well as being a classroom teacher (e.g., Head of Year, Pastoral Lead, Head of Subject)?

- ☐ No

☐ Yes – Job Title:

Q5.5 Do you think your own experience as a survivor of the disaster has impacted how you are able to support students during and after the disaster? If so, how?

PART 6

Q6.1 We would like to know more about your beliefs in preparing for a disaster. Please answer using the following scale from 1 (Strongly Disagree) to 4 (Strongly Agree).

	1 Strongly Disagree	2 Disagree Somewhat	3 Agree Somewhat	4 Strongly Agree
If an earthquake/tsunami/landslide happens, it will, and there is nothing I can do about it	☐	☐	☐	☐
If an earthquake/tsunami/landslide happens, there is not much my city/community can do to lessen its effect	☐	☐	☐	☐
Decisions about how to reduce the damaging effects of an earthquake/tsunami/landslide should be left to experts	☐	☐	☐	☐
Earthquake/ tsunami/ landslide are signs from God	☐	☐	☐	☐
Earthquake/tsunami/landslide are God's way of testing our faith	☐	☐	☐	☐
Earthquake are punishments from God for the sins of some people	☐	☐	☐	☐
God is likely to provide some assistance during an earthquake	☐	☐	☐	☐
No action can be taken to reduce the impact of damage and destruction from an earthquake	☐	☐	☐	☐

Q6.2 Please answer the following questions regarding your feelings after the 2018 disaster using the following scale from 1 (Strongly Disagree) to 5 (Strongly Agree)

	1 Strongly Disagree	2 Disagree Somewhat	3 Neither Disagree or Agree	4 Agree Somewhat	5 Strongly Agree
I felt at one with people around me	☐	☐	☐	☐	☐
I identified with other people affected	☐	☐	☐	☐	☐
I felt unity with others	☐	☐	☐	☐	☐
I felt that other people affected by the earthquake and tsunami were like me	☐	☐	☐	☐	☐

Q6.3 Are you a member of any social clubs (e.g., sport, youth, voluntary)?

☐ Yes – How many? _____

☐ No

Q6.4 Please read each of the following statements and describe (on a scale from 1- Not at all, to 4 - A great deal) the extent to which they apply to you:

	1 Not at all	2 Not very much	3 Quite a lot	4 A great deal
When I am in a building and it shakes a little, my first thought is, “is it an earthquake/tsunami/landslide?”	☐	☐	☐	☐
I get nervous when a building I am in shakes, even though I know it is only a truck going by	☐	☐	☐	☐
I would never move to a town where there was a higher risk of earthquake/tsunami/landslide	☐	☐	☐	☐
I avoid things that remind me of earthquake/tsunami/landslide	☐	☐	☐	☐
On humid days I think, “this is earthquake/tsunami/landslide weather”	☐	☐	☐	☐
If I think there might be an earthquake/tsunami/landslide, I make sure I am close to a safe place	☐	☐	☐	☐
I avoid thinking about earthquakes/tsunamis/landslides	☐	☐	☐	☐

Q6.5 In your opinion, earthquakes/tsunamis/landslides are a result of how much of the following?

	Not at all	Not very much	Somewhat	A great deal
Human actions	☐	☐	☐	☐
Act of God	☐	☐	☐	☐
Act of nature	☐	☐	☐	☐
Other (Please specify):	☐	☐	☐	☐

Q6.6 We would like to ask you six questions about your feelings on aspects of your life. There are no right or wrong answers. For each of these questions, please give an answer on a scale of 0 to 10, where 0 is “not at all” and 10 is “completely”.

Overall, how satisfied are you with your life nowadays?

Not at all											Completely
0	1	2	3	4	5	6	7	8	9	10	

Overall, to what extent do you feel that the things you do in your life are worthwhile?

Not at all											Completely
0	1	2	3	4	5	6	7	8	9	10	

Overall, how happy did you feel yesterday?

Not at all											Completely
0	1	2	3	4	5	6	7	8	9	10	

Overall, how anxious did you feel yesterday?

Not at all											Completely
0	1	2	3	4	5	6	7	8	9	10	

Overall, do you feel you have enough money to meet your daily needs?

Not at all 0 1 2 3 4 5 6 7 8 9 Completely 10

Overall, to what extent does God help you to overcome your problems?

Not at all 0 1 2 3 4 5 6 7 8 9 Completely 10

Q6.7 Below are a number of problems that people sometimes report in response to stressful life events. Please indicate how much you have been bothered by each problem below since the 2018 disaster:

	Not at all	A little bit	Moderately	Quite a bit	Extremely
Having upsetting dreams that replay part of the experience or are clearly related to the experience?	☐	☐	☐	☐	☐
Having powerful images or memories that sometimes come into your mind in which you feel the experience is happening again in the here and now?	☐	☐	☐	☐	☐
Avoiding internal reminders of the experience (for example, thoughts, feelings, or physical sensations)?	☐	☐	☐	☐	☐
Avoiding external reminders of the experience (for example, people, places, conversations, objects, activities, or situations)?	☐	☐	☐	☐	☐
Being "super-alert", watchful, or on guard?	☐	☐	☐	☐	☐
Feeling jumpy or easily startled?	☐	☐	☐	☐	☐
In the past month have the above problems:					
Affected your relationships or social life?	☐	☐	☐	☐	☐
Affected your work or ability to work?	☐	☐	☐	☐	☐
Affected any other important part of your life such as parenting, or school or college work, or other important activities?	☐	☐	☐	☐	☐

Below are problems that people who have had stressful events sometimes experience. Answer the following thinking about how true each statement is of you.

How true is this of you?

	1 Not at all	2 A little bit	3 Moderately	4 Quite a bit	5 Extremely
When I am upset, it takes me a long time to calm down.	☐	☐	☐	☐	☐
I feel numb or emotionally shut down.	☐	☐	☐	☐	☐
I feel like a failure.	☐	☐	☐	☐	☐
I feel worthless.	☐	☐	☐	☐	☐
I feel distant or cut off from people.	☐	☐	☐	☐	☐
I find it hard to stay emotionally close to people.	☐	☐	☐	☐	☐

In the past month, have the above problems:

Created concern or distress about your relationships or social life?	☐	☐	☐	☐	☐
Affected your work or ability to work?	☐	☐	☐	☐	☐
Affected any other important parts of your life such as parenting, or school or college work, or other important activities?	☐	☐	☐	☐	☐

Q6.8 Please answer the following thinking about how true each statement is of you in the last month.

	0 Not true at all	1 Rarely true	2 sometimes true	3 Often true	4 true nearly all of the time
Able to adapt to change	☐	☐	☐	☐	☐
Tend to bounce back after illness or hardship	☐	☐	☐	☐	☐

Q6.9 Please answer the following thinking about how true each statement is of your community in the last month.

	0 Not true at all	1 Rarely true	2 sometimes true	3 Often true	4 true nearly all of the time
Your community is able to adapt to change	☐	☐	☐	☐	☐
Your community is able to bounce back after illness or hardship	☐	☐	☐	☐	☐

Q6.10 Please answer the following questions thinking about your experience during the 2018 disaster.

	Yes	No	I don't remember
Did you feel shaking from the earthquake?	☐	☐	☐
Did you see tsunami water rising?	☐	☐	☐
Did you see liquefaction?	☐	☐	☐
Were you separated from members of your household family at the time of the earthquake?	☐	☐	☐
Were you trapped under the debris?	☐	☐	☐
Did you hear voices of people trapped under the debris?	☐	☐	☐
Did you witness any grotesque scenes? (e.g. body parts or dead bodies)	☐	☐	☐
Did you witness the death of anyone?	☐	☐	☐
Were you injured during the disaster?	☐	☐	☐
Did you participate in rescue efforts during/after the disaster?	☐	☐	☐

Q6.11 How often do you see buildings that are still damaged or destroyed from the 2018 earthquake?

☐ Very often	☐ Often	☐ Occasionally	☐ Never

Q6.12 Where were you at the time of the earthquake of the 2018?

Q6.13 Have you lost any close person due to the 2018 disaster? Please tick anyone you have lost and add the number if more than one person in that category.

- ☐ Parent(s)/ No. ____
- ☐ Brother(s) or sister(s)/ No. ____
- ☐ Spouse/romantic partner
- ☐ Aunt(s) or uncle(s)/ No. ____
- ☐ Cousin(s)/ No. ____
- ☐ Close friend(s)/ No. ____
- ☐ Other, please state: _____

PART 7**Q7.1 In order to cope with your stress, have you ever used the following:**

	Never	Occasionally	Often	Very Often
Sports and/or Exercise	☐	☐	☐	☐
Meditation and/or Prayer	☐	☐	☐	☐
Alcohol, Cigarettes and/or Drugs	☐	☐	☐	☐
Prescription Medication	☐	☐	☐	☐
Hobbies or interests (singing, gardening, cleaning)	☐	☐	☐	☐
Colleague Support	☐	☐	☐	☐
Peer Support	☐	☐	☐	☐
Family Support	☐	☐	☐	☐
Mental Health/Psychosocial Provider Services	☐	☐	☐	☐
Passage of Time (letting time pass)	☐	☐	☐	☐
Controlling your own emotions (e.g., through self-reassurance, rationalisations, etc.)	☐	☐	☐	☐

Are there any other coping methods that you may have used to help manage your stress?

Q7.2 How likely are you to seek professional support for your psychological health (e.g., therapist, counsellor, mental health practitioner, doctor)?

☐ Definitely would not	☐ Unlikely	☐ Likely	☐ Definitely would

Q7.3 Do you know where/who to go to for psychological health support?

- ☐ Yes
- ☐ No

Q7.4 Have you ever sought professional support for your psychological health?

- ☐ Yes
- ☐ No

Q7.5 Have you received Individual Counselling since the 2018 disaster?

- ☐ Yes
- ☐ No

Q7.6 Have you received Group Therapy since the 2018 disaster?

- ☐ Yes
- ☐ No

Q7.7 Please name or describe any other support received for your psychological health:

Q7.8 If any, what are the problems for you to access professional psychological health support?

Q7.9 If any, what helpful resources exist for you to access psychological health support?

Q7.10 Where would you be most likely to access psychological health support?

Q7.11 How likely are you to recommend others to seek professional support for their psychological health?

☐ Very likely	☐ Somewhat likely	☐ Not at all likely

Q7.12 We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Very strongly disagree	Strongly disagree	Mildly disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
There is a special person who is around when I am in need	☐	☐	☐	☐	☐	☐	☐
There is a special person with whom I can share my joys and sorrows	☐	☐	☐	☐	☐	☐	☐
My family really tries to help me.	☐	☐	☐	☐	☐	☐	☐
I get the emotional help and support I need from my family	☐	☐	☐	☐	☐	☐	☐
I have a special person who is a real source of comfort to me.	☐	☐	☐	☐	☐	☐	☐
My friends really try to help me.	☐	☐	☐	☐	☐	☐	☐
I can count on my friends when things go wrong.	☐	☐	☐	☐	☐	☐	☐
I can talk about my problems with my family.	☐	☐	☐	☐	☐	☐	☐
I have friends with whom I can share my joys and sorrows.	☐	☐	☐	☐	☐	☐	☐
There is a special person in my life who cares about my feelings.	☐	☐	☐	☐	☐	☐	☐
My family is willing to help me make decisions	☐	☐	☐	☐	☐	☐	☐
I can talk about my problems with my friends.	☐	☐	☐	☐	☐	☐	☐

b. When you were asked about ‘a special person’, if you answered ‘agree’, who did you think of?

- ☐ Husband/Wife/Spouse/ Partner
- ☐ Brother/sister (sibling)
- ☐ Cousin
- ☐ Aunt/Uncle
- ☐ Friend
- ☐ Religious leader (e.g., Imam)
- ☐ Other _____

PART 8

SCHOOL (8.1)**S1 Please provide the following details about your school:**

Name of

School: _____

Address of

School: _____

- ☐ Elementary School
- ☐ Junior High School
- ☐ Senior High School

S2 How long have you been working at this school?_____
(Months / Years)**S3 Are you currently teaching classes in the regular school building?**

- ☐ Yes
- ☐ No, we have not attended the school for more than 1 month because of COVID19
- ☐ No, our school has changed address
- ☐ No, we are delivering classes in makeshift tents
- ☐ No, we are delivering classes in makeshift buildings

S4 Were you based at your current school at the time of the 2018 disaster?

- ☐ Yes
- ☐ No

If you answered NO, please provide the following details the school at which you taught during the 2018 disaster:

Name of

School: _____

Address of

School: _____

- ☐ Elementary School
- ☐ Junior High School
- ☐ Senior High School

S5 Did you change schools because of the 2018 disaster?

- ☐ Yes
- ☐ No

S6 How would you describe the state of the school after the 2018 disaster?

- ☐ Unsafe to occupy
- ☐ Safe to occupy but damaged
- ☐ Safe to occupy and not damaged

S7 Which disaster(s) affected the school during the 2018 disaster? Tick all that apply:

- ☐ Earthquake
- ☐ Tsunami
- ☐ Landslide
- ☐ Liquefaction
- ☐ Flood
- ☐ Fire

Q8.2 How long have you spent living at your current residence? _____
months/years

Q8.3 What type of residence do you live in?

- ☐ House
- ☐ Temporary residence or shelter
- ☐ Other _____

b. If you are in a temporary shelter, what type?

- ☐ Tent
- ☐ Huntara
- ☐ Other _____

c. do you own your current home?

- ☐ Yes
- ☐ No

Q8.4 a. Were you based at your current residence at the time of the 2018 disaster?

- ☐ Yes
- ☐ No

b. Did you own your home at the time of the 2018 disaster?

- ☐ Yes
- ☐ No

c. Were you able to live in your home immediately after the 2018 disaster?

- ☐ Yes – my home was liveable class
- ☐ No – my home was not liveable

d. How would you describe the state of your home after the 2018 Central Sulawesi events? Please tick the option that fits best:

- ☐ Completely destroyed
- ☐ Very damaged
- ☐ Somewhat damaged
- ☐ Not damaged at all

Q8.5 Which disaster(s) affected your residence during the 2018 Central Sulawesi events? Tick all that apply:

- ☐ Earthquake
- ☐ Tsunami
- ☐ Landslide
- ☐ Liquefaction
- ☐ Flood
- ☐ Fire

Q8.6 Were you living in a different area of Indonesia during the 2018 disaster?

- ☐ Yes – Where were you living before?

☐ No

b. Did you move to a different area of Indonesia because of the 2018 disaster?

☐ Yes - Where did you move to? _____

For how long? _____

☐ No

Q8.7 What is your gender?

☐ Male

☐ Female

☐ Other – Please Specify: _____

Q8.8 What is your age in years? _____

Q8.9 What is your ethnic background? _____

Q8.10 With which religious faith do you most closely identify?

☐ Muslim

☐ Christian

☐ Jewish

☐ Buddhist

☐ Hindu

☐ Confucius

☐ Other – Please specify: _____

Q8.11 Do you regularly attend a place of religion (at least once a month)?

☐ Yes

☐ No

Q8.12 How religious would you say you are? Check the number on the scale that is appropriate for you:

Not Religious					Very Religious
1	2	3	4	5	

Q8.13 What is your marital status?

☐ Single

☐ Married

☐ Living with Partner

☐ Other – Please Specify: _____

Q8.14 How many children do you have in each of these age ranges? Please put the number in the relevant box

0-5 years old _____

6-10 years old _____

11-15 years old _____

16 years old or older _____

Q8.15 What is your average household income?

☐ No income

☐ Less than IDR 4 Million per month

☐ IDR 4 Million – IDR 6 Million per month

☐ IDR 6 Million – IDR 8 Million per month

☐ IDR 8 Million – IDR 10 Million per month

- ☐ More than IDR 10 Million per month

Q8.16 Please indicate your highest educational qualification:

- ☐ Never attended school
- ☐ Not graduated from elementary school
- ☐ Elementary school
- ☐ Junior high school
- ☐ Senior high school
- ☐ Diploma / Vocational Training (please state type and level)
- ☐ _____
- ☐ University Degree – Undergraduate
- ☐ University Degree – Postgraduate
- ☐ Other (please state) _____

Q8.17 Have you received assistance from the government in the form of (please select all that apply)?

- ☐ Direct cash transfer (BLT)
- ☐ Rice-for-poor scheme
- ☐ Welfare card for poor families (Gakin)

THAT'S ALL! THANK YOU VERY MUCH FOR YOUR TIME AND EFFORT!

PLEASE RETURN YOUR SURVEY TO THE RESEARCHER

Note. This is the paper survey version. Link to online version:
<https://ee-eu.kobotoolbox.org/x/MH5M1OTF>

Appendix C

Feedback form completed immediately after the intervention

Thank you for your time today! We would love to hear about how you have found the day.

Q1. Colour in the face that best represents how you feel after completing today's workshop



Awful Not good Ok Good Brilliant

Q2. What did you think the main point of the day was?

Q3. What was your favourite part of the day? Please give a reason for your answer.

Q4. What was your least favourite part of the day? Please give a reason for your answer.

Q5. Did any activities make you feel calm?

- ☐ Yes
- ☐ No

If yes, which activity? _____

Q6. Did any activities make you feel anxious or worried?

- ☐ Yes
- ☐ No

If yes, which activity? _____

Q7. Did any activities give you a sense of wellbeing?

- ☐ Yes
- ☐ No

If yes, which activity? _____

Q8. Did any activities make you feel more able to cope with your own psychological disaster challenges?

☐ Yes

☐ No

Please give a short reason for your answer:

Q9. Did any activities make you feel more able to support your students to cope with their psychological disaster challenges?

☐ Yes

☐ No

Please give a short reason for your answer:

Q10. Do you feel like you the guidelines reflect what you have found to be helpful for recovery?

Q11. How likely are you to follow the guidelines your school created?

☐ Very likely

☐ Quite likely

☐ Not likely

☐ Not at all likely

Please give a short reason for your answer and any barriers to implementing them:

Q12. Will today's workshop have an impact on your practice, or not?

☐ Yes

☐ No

Please elaborate:

Q13. How likely would you be to recommend today's workshop to a colleague?

- ☐ Very likely
- ☐ Quite likely
- ☐ Not likely
- ☐ Not at all likely

Please give a short reason for your answer:

Q14. Is there anything that you recommend to improve today's workshop?

Appendix D

Evaluation (post-intervention) survey (downloaded from
<https://ee-eu.kobotoolbox.org/x/qKqIcJiY>)

Data Management - RESEARCH ASSISTANT MUST COMPLETE THIS ENTIRE SECTION

THIS SECTION MUST BE COMPLETED FIRST

WE WANT TO KNOW ABOUT YOUR THOUGHTS REGARDING EARTHQUAKES/TSUNAMIS/LANDSLIDES. WE ALSO WANT TO LEARN MORE ABOUT HOW YOUR COMMUNITY HAS CHANGED SINCE THE 2018 DISASTER (EARTHQUAKE, TSUNAMI, LANDSLIDE). THERE ARE NO RIGHT OR WRONG ANSWERS. ALL INFORMATION WILL REMAIN CONFIDENTIAL. WHEN YOU ARE READY, PLEASE BEGIN THE SURVEY.

THIS SECTION MUST BE COMPLETED FIRST

PARTICIPANT IDENTIFIER: SO WE KNOW WHO YOU ARE WITHOUT USING YOUR NAME, PLEASE WRITE YOUR: [FIRST & LAST NAME INITIALS]-[BIRTHDATE (DD-MM)]-S

PARTICIPANT IDENTIFIER, EXAMPLE: YD-30-02-T

*

ENTER A DATE

yyyy-mm-dd

*

PARTICIPANT'S TELEPHONE NUMBER (SKIP IF NOT APPLICABLE)

PARTICIPANT'S ADDRESS

SITE ☐ School A [name removed for anonymity] ☐ School B ☐ School C ☐ Other (Please specify below)
OTHER SITE, PLEASE SPECIFY:
WHAT IS THE NAME OF YOUR SCHOOL?
IS THE PARTICIPANT HAPPY TO BE CONTACTED AGAIN IN THE FUTURE, TO PARTICIPATE IN OTHER ACTIVITIES RELATED TO THIS RESEARCH PROJECT? ☐ No ☐ Yes
IF YES, WHAT IS THE BEST WAY TO CONTACT THE PARTICIPANT IN THE FUTURE?

Q1.

Q1.1. DID YOU TAKE PART IN THE TEACHER WORKSHOP? (TREE OF LIFE AND GUIDELINES) ☐ Yes ☐ No
Q1.2. WHAT IS YOUR LASTING MEMORY OF THE WORKSHOP?
1.3. DID THE TEACHER WORKSHOP HAVE AN IMPACT ON YOU? (TREE OF LIFE AND GUIDELINES) ☐ Yes ☐ No
1.4. WHAT IMPACT DID THE TEACHER WORKSHOP HAVE ON YOU?
1.5. DO YOU THINK THE WORKSHOP IMPACTED YOUR TEACHING PRACTICE? ☐ Yes ☐ No

1.5. PLEASE GIVE A REASON FOR YOUR ANSWER:

1.6. DO YOU THINK THE WORKSHOP HAS IMPACTED YOUR STUDENTS?

☐ Yes

☐ No

1.6. PLEASE GIVE A REASON FOR YOUR ANSWER:

Q2

WE WANT TO KNOW ABOUT YOUR THOUGHTS REGARDING EARTHQUAKES/TSUNAMIS/LANDSLIDES. WE ALSO WANT TO LEARN MORE ABOUT HOW YOUR COMMUNITY HAS CHANGED SINCE THE 2018 DISASTER (EARTHQUAKE, TSUNAMI, LANDSLIDE). THERE ARE NO RIGHT OR WRONG ANSWERS. ALL INFORMATION WILL REMAIN CONFIDENTIAL. WHEN YOU ARE READY, PLEASE BEGIN THE SURVEY.

Q2. HOW HAS YOUR OWN COMMUNITY COPED SINCE THE DISASTER?

Group

» Part 3

Q3.1 THE FOLLOWING QUESTIONS ASK ABOUT YOUR ROLE AS A TEACHER DURING AND AFTER A DISASTER (EARTHQUAKE/LANDSLIDE/Tsunami). REMEMBER, THERE ARE NO RIGHT OR WRONG ANSWERS, WE ARE INTERESTED IN YOUR OWN THOUGHTS, FEELINGS AND EXPERIENCES AS A TEACHER.

Strongly
Disagree

Disagree

Slightly
Disagree

Slightly
Agree

Agree

Strongly
Agree

I AM RESPONSIBLE FOR STUDENT SAFETY IF A DISASTER HAPPENS AT SCHOOL.

☐☐☐☐☐☐

I KNOW WHAT TO DO IF A DISASTER HAPPENS AT SCHOOL.

☐☐☐☐☐☐

I AM RESPONSIBLE FOR SUPPORTING STUDENT PSYCHOLOGICAL HEALTH AFTER A DISASTER.	☐	☐	☐	☐	☐	☐
I CAN RECOGNISE WHEN A STUDENT IS STRUGGLING WITH THEIR PSYCHOLOGICAL HEALTH AFTER A DISASTER.	☐	☐	☐	☐	☐	☐
I KNOW HOW TO HELP STUDENTS WHEN THEY ARE STRUGGLING WITH THEIR PSYCHOLOGICAL HEALTH AFTER A DISASTER.	☐	☐	☐	☐	☐	☐
I FIND HEARING ABOUT STUDENTS EXPERIENCES AND EMOTIONS AFTER THE DISASTER DIFFICULT.	☐	☐	☐	☐	☐	☐
I CAN HELP STUDENTS AFTER THE DISASTER BECAUSE I HAVE EXPERIENCED THE DISASTER TOO.	☐	☐	☐	☐	☐	☐
STUDENTS ARE COMFORTABLE TALKING TO ME ABOUT HOW THEY ARE COPING AFTER THE DISASTER.	☐	☐	☐	☐	☐	☐
THE STUDENTS I TEACH KNOW WHERE/WHO TO GO TO IN SCHOOL IF THEY NEED HELP WITH THEIR PSYCHOLOGICAL HEALTH.	☐	☐	☐	☐	☐	☐
Q3.2. DO YOU HAVE ANY ADDITIONAL ROLE AS WELL AS BEING A CLASSROOM TEACHER (E.G., HEAD OF YEAR, PASTORAL LEAD, HEAD OF SUBJECT)? ☐ No ☐ Yes						
IF YES - PLEASE GIVE DETAILS OF JOB TITLE 						

Q3.3. DO YOU THINK YOUR OWN EXPERIENCE AS A SURVIVOR OF THE DISASTER HAS IMPACTED HOW YOU ARE ABLE TO SUPPORT STUDENTS DURING AND AFTER THE DISASTER? IF SO, HOW?

Part 4

Q4. WE WOULD LIKE TO KNOW MORE ABOUT YOUR BELIEFS IN PREPARING FOR A DISASTER. PLEASE ANSWER USING THE FOLLOWING SCALE FROM 1 (STRONGLY DISAGREE) TO 4 (STRONGLY AGREE).

Strongly Disagree

Disagree
Somewhat

Agree Somewhat

Strongly Agree

IF AN EARTHQUAKE/Tsunami/LANDSLIDE HAPPENS, IT WILL, AND THERE IS NOTHING I CAN DO ABOUT IT

☐
☐
☐
☐

IF AN EARTHQUAKE/Tsunami/LANDSLIDE HAPPENS, THERE IS NOT MUCH MY CITY/COMMUNITY CAN DO TO LESSEN ITS EFFECT

☐
☐
☐
☐

DECISIONS ABOUT HOW TO REDUCE THE DAMAGING EFFECTS OF AN EARTHQUAKE/Tsunami/LANDSLIDE SHOULD BE LEFT TO EXPERTS

☐
☐
☐
☐

EARTHQUAKE/ TSunami/ LANDSLIDE ARE SIGNS FROM GOD

☐
☐
☐
☐

EARTHQUAKE/Tsunami/LANDSLIDE ARE GOD'S WAY OF TESTING OUR FAITH

☐
☐
☐
☐

EARTHQUAKE ARE PUNISHMENTS FROM GOD FOR THE SINS OF SOME PEOPLE

☐
☐
☐
☐

GOD IS LIKELY TO PROVIDE SOME ASSISTANCE DURING AN EARTHQUAKE	☐	☐	☐	☐
NO ACTION CAN BE TAKEN TO REDUCE THE IMPACT OF DAMAGE AND DESTRUCTION FROM AN EARTHQUAKE	☐	☐	☐	☐
QS. PLEASE READ EACH OF THE FOLLOWING STATEMENTS AND DESCRIBE (ON A SCALE FROM 1- NOT AT ALL, TO 4 - A GREAT DEAL) THE EXTENT TO WHICH THEY APPLY TO YOU:	Not at all	Not very much	Quite a lot	A great deal
WHEN I AM IN A BUILDING AND IT SHAKES A LITTLE, MY FIRST THOUGHT IS, "IS IT AN EARTHQUAKE/Tsunami/LANDSLIDE?"	☐	☐	☐	☐
I GET NERVOUS WHEN A BUILDING I AM IN SHAKES, EVEN THOUGH I KNOW IT IS ONLY A TRUCK GOING BY	☐	☐	☐	☐
I WOULD NEVER MOVE TO A TOWN WHERE THERE WAS A HIGHER RISK OF EARTHQUAKE/Tsunami/LANDSLIDE	☐	☐	☐	☐
I AVOID THINGS THAT REMIND ME OF EARTHQUAKE/Tsunami/LANDSLIDE	☐	☐	☐	☐
ON HUMID DAYS I THINK, "THIS IS EARTHQUAKE/Tsunami/LANDSLIDE WEATHER"	☐	☐	☐	☐
IF I THINK THERE MIGHT BE AN EARTHQUAKE/Tsunami/LANDSLIDE, I MAKE SURE I AM CLOSE TO A SAFE PLACE	☐	☐	☐	☐
I AVOID THINKING ABOUT EARTHQUAKES/Tsunami/LANDSLIDES	☐	☐	☐	☐

OVERALL, TO WHAT EXTENT DO YOU FEEL THAT THE THINGS YOU DO IN YOUR LIFE ARE WORTHWHILE?

A horizontal number line is shown, starting at 0 on the left and ending at 10 on the right. There are 11 vertical tick marks, one at each integer value from 0 to 10. The line itself is a solid horizontal line, and the tick marks are short vertical segments intersecting it.

0

10

OVERALL, HOW HAPPY DID YOU FEEL YESTERDAY?

A horizontal number line is shown, ranging from 0 to 10. There are tick marks at every integer value: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. The line is labeled '0' at the left end and '10' at the right end.

0

10

OVERALL, HOW ANXIOUS DID YOU FEEL YESTERDAY?

010

OVERALL, DO YOU FEEL YOU HAVE ENOUGH MONEY TO MEET YOUR DAILY NEEDS?

010

» Q8.

Q8. BELOW ARE A NUMBER OF PROBLEMS THAT PEOPLE SOMETIMES REPORT IN RESPONSE TO STRESSFUL LIFE EVENTS. PLEASE INDICATE HOW MUCH YOU HAVE BEEN BOTHERED BY EACH PROBLEM BELOW SINCE THE 2018 DISASTER (EARTHQUAKE/Tsunami/LANDSLIDE):

Not at allA little bitModeratelyQuite a bitExtremely

HAVING UPSETTING DREAMS THAT REPLAY PART OF THE EXPERIENCE OR ARE CLEARLY RELATED TO THE EXPERIENCE?

HAVING POWERFUL IMAGES OR MEMORIES THAT SOMETIMES COME INTO YOUR MIND IN WHICH YOU FEEL THE EXPERIENCE IS HAPPENING AGAIN IN THE HERE AND NOW?	☐	☐	☐	☐	☐
AVOIDING INTERNAL REMINDERS OF THE EXPERIENCE (FOR EXAMPLE, THOUGHTS, FEELINGS, OR PHYSICAL SENSATIONS)?	☐	☐	☐	☐	☐
AVOIDING EXTERNAL REMINDERS OF THE EXPERIENCE (FOR EXAMPLE, PEOPLE, PLACES, CONVERSATIONS, OBJECTS, ACTIVITIES, OR SITUATIONS)?	☐	☐	☐	☐	☐
BEING "SUPER-ALERT", WATCHFUL, OR ON GUARD?	☐	☐	☐	☐	☐
FEELING JUMPY OR EASILY STARTLED?	☐	☐	☐	☐	☐
IN THE PAST MONTH HAVE THE ABOVE PROBLEMS: 	Not at all	A little bit	Moderately	Quite a bit	Extremely
AFFECTED YOUR RELATIONSHIPS OR SOCIAL LIFE?	☐	☐	☐	☐	☐
AFFECTED YOUR WORK OR ABILITY TO WORK?	☐	☐	☐	☐	☐
AFFECTED ANY OTHER IMPORTANT PART OF YOUR LIFE SUCH AS PARENTING, OR SCHOOL OR COLLEGE WORK, OR OTHER IMPORTANT ACTIVITIES?	☐	☐	☐	☐	☐

BELOW ARE PROBLEMS THAT PEOPLE WHO HAVE HAD STRESSFUL EVENTS SOMETIMES EXPERIENCE. ANSWER THE FOLLOWING THINKING ABOUT HOW TRUE EACH STATEMENT IS OF YOU. <i>How true is this of you?</i>	Not at all	A little bit	Moderately	Quite a bit	Extremely
WHEN I AM UPSET, IT TAKES ME A LONG TIME TO CALM DOWN.	☐	☐	☐	☐	☐
I FEEL NUMB OR EMOTIONALLY SHUT DOWN.	☐	☐	☐	☐	☐
I FEEL LIKE A FAILURE.	☐	☐	☐	☐	☐
I FEEL WORTHLESS.	☐	☐	☐	☐	☐
I FEEL DISTANT OR CUT OFF FROM PEOPLE.	☐	☐	☐	☐	☐
I FIND IT HARD TO STAY EMOTIONALLY CLOSE TO PEOPLE.	☐	☐	☐	☐	☐
IN THE PAST MONTH, HAVE THE ABOVE PROBLEMS: 	Not at all	A little bit	Moderately	Quite a bit	Extremely
CREATED CONCERN OR DISTRESS ABOUT YOUR RELATIONSHIPS OR SOCIAL LIFE?	☐	☐	☐	☐	☐
AFFECTED YOUR WORK OR ABILITY TO WORK?	☐	☐	☐	☐	☐
AFFECTED ANY OTHER IMPORTANT PARTS OF YOUR LIFE SUCH AS PARENTING, OR SCHOOL OR COLLEGE WORK, OR OTHER IMPORTANT ACTIVITIES?	☐	☐	☐	☐	☐

Q9.1. PLEASE ANSWER THE FOLLOWING THINKING ABOUT HOW TRUE EACH STATEMENT IS OF YOU IN THE LAST MONTH.	Not true at all	Rarely true	Sometimes true	Often true	True nearly all of the time
ABLE TO ADAPT TO CHANGE	☐	☐	☐	☐	☐
TEND TO BOUNCE BACK AFTER ILLNESS OF HARDSHIP	☐	☐	☐	☐	☐
Q9.2. PLEASE ANSWER THE FOLLOWING THINKING ABOUT HOW TRUE EACH STATEMENT IS OF YOUR COMMUNITY IN THE LAST MONTH.	Not true at all	Rarely true	Sometimes true	Often true	True nearly all of the time
YOUR COMMUNITY IS ABLE TO ADAPT TO CHANGE	☐	☐	☐	☐	☐
YOUR COMMUNITY IS ABLE TO BOUNCE BACK AFTER ILLNESS OR HARDSHIP	☐	☐	☐	☐	☐
Q10. PLEASE ANSWER THE FOLLOWING QUESTIONS THINKING ABOUT YOUR EXPERIENCE DURING THE 2018 DISASTER.	Yes	No	Don't Know		
DID YOU FEEL SHAKING FROM THE EARTHQUAKE?	☐	☐		☐	
DID YOU SEE TSUNAMI WATER RISING?	☐	☐		☐	
DID YOU SEE LIQUEFACTION?	☐	☐		☐	
WERE YOU SEPARATED FROM MEMBERS OF YOUR HOUSEHOLD FAMILY AT THE TIME OF THE EARTHQUAKE?	☐	☐		☐	

Part 9

Q11. IN ORDER TO COPE WITH YOUR STRESS, HAVE YOU EVER USED THE FOLLOWING:	Never	Sometimes	Often	Very Often
SPORTS AND/OR EXERCISE	☐	☐	☐	☐
MEDITATION AND/OR PRAYER	☐	☐	☐	☐
ALCOHOL, CIGARETTES AND/OR DRUGS	☐	☐	☐	☐
PRESCRIPTION MEDICATION	☐	☐	☐	☐
HOBBIES OR INTERESTS (SINGING, STORYTELLING, GARDENING/PLANTING, COOKING, CLEANING)	☐	☐	☐	☐
COLLEAGUE SUPPORT	☐	☐	☐	☐
PEER SUPPORT	☐	☐	☐	☐
FAMILY SUPPORT	☐	☐	☐	☐
MENTAL HEALTH/PSYCHOSOCIAL PROVIDER SERVICES	☐	☐	☐	☐
PASSAGE OF TIME (LETTING TIME PASS)	☐	☐	☐	☐
CONTROLLING YOUR OWN EMOTIONS (E.G., THROUGH SELF-REASSURANCE, RATIONALIZATIONS, ETC.)	☐	☐	☐	☐

Q11.1B ARE THERE ANY OTHER COPING METHODS THAT YOU MAY HAVE USED TO HELP MANAGE YOUR STRESS?

Q11.2 HOW LIKELY ARE YOU TO SEEK PROFESSIONAL SUPPORT FOR YOUR PSYCHOLOGICAL HEALTH (E.G., THERAPIST, COUNSELLOR, MENTAL HEALTH PRACTITIONER, DOCTOR)?



Q11.3 HOW LIKELY ARE YOU TO RECOMMEND OTHERS TO SEEK PROFESSIONAL SUPPORT FOR THEIR PSYCHOLOGICAL HEALTH?

- ☐ Not at all likely
- ☐ Somewhat likely
- ☐ Very likely

Q12. WE ARE INTERESTED IN HOW YOU FEEL ABOUT THE FOLLOWING STATEMENTS. READ EACH STATEMENT CAREFULLY. INDICATE HOW YOU FEEL ABOUT EACH STATEMENT.

Very strongly disagree Strongly disagree Mildly disagree Neutral Midly Agree Strongly Agree Very strongly agree

THERE IS A SPECIAL PERSON WHO IS AROUND WHEN I AM IN NEED

THERE IS A SPECIAL PERSON WITH WHOM I CAN SHARE MY JOYS AND SORROWS

MY FAMILY REALLY TRIES TO HELP ME

I GET THE EMOTIONAL HELP AND SUPPORT I NEED FROM MY FAMILY

I HAVE A SPECIAL PERSON WHO IS A REAL SOURCE OF COMFORT TO ME	☐	☐	☐	☐	☐	☐	☐
MY FRIENDS REALLY TRY TO HELP ME	☐	☐	☐	☐	☐	☐	☐
I CAN COUNT ON MY FRIENDS WHEN THINGS GO WRONG	☐	☐	☐	☐	☐	☐	☐
I CAN TALK ABOUT MY PROBLEMS WITH MY FAMILY	☐	☐	☐	☐	☐	☐	☐
I HAVE FRIENDS WITH WHOM I CAN SHARE MY JOYS AND SORROWS	☐	☐	☐	☐	☐	☐	☐
THERE IS A SPECIAL PERSON IN MY LIFE WHO CARES ABOUT MY FEELINGS	☐	☐	☐	☐	☐	☐	☐
MY FAMILY IS WILLING TO HELP ME MAKE DECISIONS	☐	☐	☐	☐	☐	☐	☐
I CAN TALK ABOUT MY PROBLEMS WITH MY FRIENDS	☐	☐	☐	☐	☐	☐	☐
Q12.1 WHEN YOU WERE ASKED ABOUT 'A SPECIAL PERSON', IF YOU ANSWERED 'AGREE', WHO DID YOU THINK OF? ☐ Husband/Wife/Spouse/ Partner ☐ Brother/Sister ☐ Cousin ☐ Aunt/Uncle ☐ Friend ☐ Religious Leader ☐ Other, please specify below							
OTHER, PLEASE SPECIFY: 							

Part 9

» 13. School

13. DID YOU ATTEND THE SAME SCHOOL AS BEFORE THE 2018 DISASTER?

- ☐ Yes
- ☐ No

Q14. HOW WOULD YOU DESCRIBE THE STATE OF YOUR HOME AFTER THE 2018 CENTRAL SULAWESI EVENTS? PLEASE TICK THE OPTION THAT FITS BEST:

- ☐ Completely Damaged
- ☐ Very Damaged
- ☐ Somewhat Damaged
- ☐ Not damaged at all

Q15. WHAT IS YOUR GENDER?

.....

- ☐ Male
- ☐ Female
- ☐ Other (please specify)

Q16. OTHER (PLEASE SPECIFY)

.....

Q17. WHAT IS YOUR AGE IN YEARS?

.....

Q18. WHAT IS YOUR ETHNIC BACKGROUND?

.....

Q24. WHAT IS YOUR AVERAGE HOUSEHOLD INCOME?

-

- ☐ No income
- ☐ Less than IDR 4 Million per month
- ☐ IDR 4 Million – IDR 6 Million per month
- ☐ IDR 6 Million – IDR 8 Million per month
- ☐ IDR 8 Million – IDR 10 Million per month
- ☐ More than IDR 10 Million per month

Q25. PLEASE INDICATE YOUR HIGHEST EDUCATIONAL QUALIFICATION:

-

- ☐ Never attended school
- ☐ Not graduated from elementary school
- ☐ Elementary school
- ☐ Junior high school
- ☐ Senior high school
- ☐ University Degree – Undergraduate
- ☐ University Degree – Postgraduate
- ☐ None of the above
- ☐ Other (please specify)

Q25. OTHER (PLEASE SPECIFY)

-

Q26. HAVE YOU RECEIVED ASSISTANCE FROM THE GOVERNMENT IN THE FORM OF (PLEASE SELECT ALL THAT APPLY)?

- ☐ Direct cash transfer (BLT)
- ☐ Rice-for-poor scheme
- ☐ Welfare card for poor families (Gakin)

THAT'S ALL! THANK YOU VERY MUCH FOR YOUR TIME AND EFFORT!

PLEASE RETURN YOUR SURVEY TO THE RESEARCHER

Q19. WITH WHICH RELIGIOUS FAITH DO YOU MOST CLOSELY IDENTIFY?

- ☐ Muslim
- ☐ Christian (Protestant, Catholic or other forms of Christianity)
- ☐ Jewish
- ☐ Buddhist
- ☐ Hindu
- ☐ Confucius
- ☐ Other (please specify)

Q19. OTHER (PLEASE SPECIFY)

Q20. DO YOU REGULARLY ATTEND A PLACE OF RELIGION (AT LEAST ONCE A MONTH)?

Age Group	Percentage
18-24	10%
25-34	20%
35-44	25%
45-54	20%
55-64	15%
65-74	10%
75-84	5%
85+	5%

- ☐ Yes
- ☐ No

Q21. HOW RELIGIOUS WOULD YOU SAY YOU ARE? CHECK THE NUMBER ON THE SCALE THAT IS APPROPRIATE FOR YOU, FROM 'NOT RELIGIOUS' BEING 0 AND 'VERY RELIGIOUS' BEING 5.

Q22. WHAT IS YOUR MARITAL STATUS?	
-	
☐ Single ☐ Married ☐ Living with Partner ☐ Other (Please specify)	
Q22. OTHER (PLEASE SPECIFY)	
-	
Q23. HOW MANY CHILDREN DO YOU HAVE IN EACH OF THESE AGE RANGES? PLEASE PUT THE NUMBER ON THE RELEVANT LINE	HOW MANY CHILDREN DO YOU HAVE PER AGE RANGE?
0-5 YEARS OLD	
6-10 YEARS OLD	
11-15 YEARS OLD	
16 OR OLDER	

Appendix E

Coding frame used in Chapter 5

Coding Frame		
Coding category	Content	Example
The home/living arrangement	Evacuation of home, damage/rebuilding of home, moving location, living in temporary accommodation, change in relationship with home, any mention of home of self or others	<i>“The houses on the coast were rebuilt for the people whose houses were hit by the tsunami.”</i>
Livelihood and economic	Unstable economy, lack of finance (micro and macro scale), employment loss or change, mention of businesses	<i>“Doing activities like making chips for business”</i>
Community participation and cohesion	Wider community togetherness, helping and altruism to those less fortunate, supporting, feeling closer to one another, practical action of mutual help (“gotong royong”)	<i>“Help and support each other”</i>
Family support	Family support, any mention of family members	<i>“By going on vacation with family”</i>
Built environment	Repair and improvement or on-going damage of the physical built environment, including infrastructure (i.e., roads, buildings, the city)	<i>“Rebuilding the 4 Palu bridge so that the Palu community can transport wherever they can and don’t have to go around looking for a way.”</i>
External assistance (e.g., government or NGO)	Assistance external to the community of place. Mention of government (including provincial bureaucracy) or NGOs including both positive and negative support (i.e., including lack of support, unequal support or desired support), specific support schemes (i.e., to rebuild homes), government training (e.g., in disaster mitigation). Mention of aid provisions	<i>“In the early days after the incident, the community was very dependent on assistance from the government and NGOs that helped ...”</i>
Religiosity	Gratitude to God, attribution to God, individual prayer/religious activities, communal religious activities, relationship to God, importance of mosques	<i>“Dhikr [collective form of prayer] with the people of Loru village in mosques”</i>
Relief from negative psychological/emotional experiences	Experiencing negative emotions including trauma, fear and anxiety; relieving trauma, fear and anxiety; professional support such as trauma healing and activities that relieve	<i>“There are people who hold trauma healing/events that function to relieve</i>

	psychological distress and negative emotions	<i>trauma for people affected by disasters.”</i>
Intrapersonal psychological resources/strategies	Hardiness, strength of the people or individual, rising up, being enthusiastic, overcoming challenges, adopting a positive attitude/mental outlook, individual strategies to manage psychological responses (e.g., self-regulation to stay calm) Intrapersonal strategies to control emotions	<i>“Stay strong because you have experienced yesterday’s disaster so your strength is maintained ...”</i>
Loss of life	Mention of death or loss of individuals or community members, reference to the disaster claiming lives or victims	<i>“Some recover quickly and some don’t. For example, the people of Tito have experienced a lot of trauma, especially when they witnessed the death of their own family or relatives”</i>
Basic needs and necessities	Food, water, clothing, anything deemed essential Cleanliness/hygiene	<i>“gotong royong [mutual help] to find necessities such as food, drink and evacuation equipment ...”</i>
Return to normality	Normal life resuming including reopening of services, returning to pre-disaster experience, carrying out activities as usual	<i>“Returning their pre-earthquake roles in their respective activities”</i>
Disaster mitigation, knowledge and awareness	Being more alert/careful, more knowledgeable or taking precautions against disaster, specific strategies of disaster mitigation such as tree planting	<i>“Knowing about disaster mitigation”</i>

Note: Coding categories are not mutually exclusive, and responses may be assigned more than one category when the response clearly belongs to both. For example, the response “*We are trying to lighten the burden on our fellow community members by carrying out social and religious actions*” would be coded as both ‘community participation and cohesion’ and ‘religiosity’.

Appendix F

Coding frame used in Chapter 6

Coding Frame

Code	Description	Example
Meta-code: Peri-disaster reaction		
Peri-disaster reaction – narratives of the event	Actions taken peri-disaster. Includes, but not limited to, helping others, evacuating and finding a safe space during the disaster.	<i>“So, at that time I was still at school, practicing with some students for the competition in Palolo on October 2nd. Because of the disaster, I was confused what to do. What steps should I take? ...by seeing the screams of some people and feeling what we were going through at that time.”</i>
Peri-disaster reaction – separation from family members	Separation from family members during the disaster.	<i>“I was separated from my husband and parents. I went with the crowd. Wherever the crowd went, even though I was separated from their family, I had to come to save myself, while I could save myself.”</i>
Meta-code: Emotional experiences		
Emotional experiences - negative affect	Negative emotions at the time of the disaster event, including fear, trauma, panic, anxiety, and sadness.	<i>“My thoughts at the time of the earthquake were very sad and chaotic because most of my family and relatives were victims of the disaster.”</i>
Emotional experiences – reduction in negative affect	A reduction in negative affect or positive affect. Includes reduction in trauma, feeling less afraid, feeling happier.	<i>“The trauma has started to diminish.”</i>
Meta-code: Distress		
Distress – concern for others	Concern for others (e.g., community/friends/family) during the disaster.	<i>“I was worried. Worried about the condition of the people in the village. Same as the fear earlier.”</i>
Distress - trauma	Mention of ‘trauma’ or feeling ‘traumatised’	<i>“I was still traumatised so I felt like I wanted to move to another area...”</i>

Distress – trauma triggers	Any triggers of trauma or reminders of the disaster, such as sounds, media, images, minor earthquakes and specific places.	<i>“... it was a few months after the earthquake hit... there were times when I heard the rumble or the sound of a truck passing in front of the house, I immediately jumped up, I got really shocked. "What is this?"</i>
Distress – loss of life	Death or loss of individuals/community members. Includes reference to the disaster claiming lives, victims, corpses and searching for bodies.	<i>“Houses were destroyed and collapsed and many people died. Many people have not been found untill this moment. And recently the body was found again in the Petobo area. Even though it happened a long time ago, there's still a lot of bodies buried there, so pity.”</i>
Distress – concern for others	Feeling concerned for others (e.g., community/friends/family) related to the disaster	<i>“I was worried. Worried about the condition of the people in the village. Same as the fear earlier.”</i>
Distress – fear of disaster happening again	Fear of future disaster or feeling concerned that a disaster could happen again.	<i>“Yes, I’m worried that until now. In fact, I think that this tsunami could still happen again.”</i>

Meta-code: Coping strategies

Coping – internal psychological resources	Internal psychological resources and individual behaviours that have helped coping with trauma and negative feelings. Includes not being afraid, adopting a fighting attitude, being strong (including for others), rising, expressing gratitude. Excludes <i>keeping calm as coded separately</i> .	<i>“Just like the others... fighting back, to be able to live again... being able to rise like before... pretending that disaster never existed even though it actually happened. Because if we remember it exists ... we would live in fear.”</i>
Coping – keeping calm	Reference to keeping calm/ breathing/ being patient to cope with negative emotions, including trauma. Includes keeping calm to support others.	<i>“The most important thing when an incident happens is to be calm, because if we panic, what we think is definitely an error”</i>
Coping – passage of time	Overcoming negative emotional experiences and trauma due to time passing. Includes references to forgetting and returning to normal.	<i>“Even though there are still those whose houses have collapsed and are living in temporary shelters, it is now slowly become a memory.”</i>
Coping – trauma healing and	Any form of professional psychological support (e.g., trauma	<i>“What I wrote here is, after the disaster, I took a lot of trauma</i>

professional psychological support	healing, seeing a psychiatrist and prescribed medication).	<i>healing activities to overcome its impact. I, my husband, my children, whenever there was an activity... what is it called... 'trauma healing' by some volunteers, we tried to get involved in it. There were activities from the Sukma Bangsa foundation, and then there were those from the Ministry of Education and Culture. There were also other social institutions."</i>
Coping – looking for entertainment / distractions	Distractions and entertainment as a coping mechanism. Includes trying not to think about the disaster and avoiding thinking about the disaster.	<i>"So, my mind would be... what is it called... not focused on what has happened. So, I looked for a light reading, or just entertained myself, and did some works that can distract my mind."</i>
Coping – social support	Support from others including friends, family, colleagues and community members. Includes talking (sharing / discussing) to others about the disaster. May feature emotional and/or practical support from social network contexts (does not include external aid such as NGOs, volunteers)	<i>"I shared stories to those closest to me about the worries and fears that arose, because after this incident, if there was a slight shock, I started to remember again, I started to worry again and I was afraid that it might happen again. So sharing stories with other people reduced the anxiety I felt a little."</i>
Coping – hope	Post-disaster hope, such as that the situation will improve or that such a disaster will not happen again. Includes positive forward, future thinking.	<i>"What I mean is, after this earthquake, I have to keep moving on, and hopefully in the future, there will be no more incidents like what happened in Palu, Sigi and Donggala. Hopefully it won't happen again, and could be safer."</i>
Meta-code: Aid		
Aid – received aid	Post-disaster aid (tangible and intangible). Often from volunteers, NGOs, or the government. Includes reference to activities and donations from NGOs such as Save the Children, UNICEF etc. Excludes assistant from social support networks.	<i>"Then I received training from Save the Children. Save the Children held a 3 days."</i>
Aid – challenges with aid	Challenges with receiving aid such as inequitable distribution of goods	<i>"Luckily, the village head is my relative, he is my cousin.. when he</i>

and financial support post-disaster. Includes a lack of aid, no help received or difficulties accessing basic necessities.

visited, I told him didn't receive any aid, even drinking water.. he said okay and delivered rice, instant noodles, even with all that, we were still lacking aid, we would go where the aids were supplied."

Meta-code Economic and livelihood

Economic – loss of economic resources

Difficulties arising from a loss of economic resources, including reduced finances and loss of livelihood (i.e., loss of employment), as well as the resulting economic hardship.

"It's been on my mind. At the time of the tsunami, the government gave a policy for suspension. There was a suspension of bank loans for 6 months, and then thankfully, I only had 5 months left at the bank. If so, after retirement, I would still have debt. Actually, that's what bothered me a bit."

Economic– improvement and recovery

Improvement in financial situation since the disaster. Includes diversifying income to cope with economic hardship, for example selling rice or starting a small business.

"Now, we have already started. We have started a business, which means we have started to lose the feeling of what we experienced after the earthquake. There is a zest for life. The economy has started to grow."

Meta-code: Religiosity

Religiosity – praying / having faith

Mention of religion or religious activity. Includes praying, having faith and believing in God's plan as a coping mechanism to deal with negative emotions / detrimental circumstances.

"I wrote about to re-conduct the reciting. So, in my opinion at that time, only Allah can help us. So we asked for suggestions, which prayers are better to make us feel safer and comfortable after praying and that's what we are doing until this moment, sir."

Meta-code: Covid-19

COVID-19 – impact of covid-19 on daily life

Any mention of the impact Covid-19/the pandemic on daily life.

"When we started to get fully spirited, now we are faced with Covid. Fear is growing again because its presence is unknown."

Meta-code: Built environment and living situation

Built environment and

Reference to damage or the loss of familiar built

"It's just that when he [son] saw the walls of the house crumble, he said,

living situation – loss of familiar built environment	environment/infrastructure due to the disaster. Includes, but not limited, to schools, homes, mosques.	<i>"oh we can't go in here, mum, don't let us fall into the ground again" "oh yes we can't, dear," that's it. He saw that the house had a lot of cracks and collapsed, so he didn't dare to enter either."</i>
Built environment and living situation – change to living situation and temporary accommodation	Mention of staying in temporary accommodation and/or moving away due to the disaster (e.g., for safety).	<i>"Yet, we did not stay inside but on the roadside. We were living on the roadside. We stayed on the roadside, spending nights sleeping without a tent for a week, without anything... no longer thinking about it. The important thing was to survive the disaster."</i>

Note: Codes are not mutually exclusive, so the responses can be assigned to multiple

Appendix G

Coding Frame used in Chapter 7

Code	Definition	Example
Meta-code: Disaster recovery		
Disaster recovery – trauma healing	Trauma healing activities and sessions designed to explicitly relieve trauma.	<i>“Participated in a lot of trauma healing”</i>
Disaster recovery – activities	Activities to improve wellbeing/reduce trauma (e.g., playing, singing, storytelling).	<i>“Then we went to the tents in front and behind my school. There, we played and told stories about the time of the earthquake and there we finally rested.”</i>
Meta-code: Emotional experiences		
Emotional experience – positive emotional experiences	Positive affect/emotional experiences related to school (e.g., happiness, patience, calmness). Includes relief of negative emotions (e.g., not being afraid anymore).	<i>“Happy because I could forget. Their presence made us feel happier”</i>
Emotional experience – negative emotional experiences	Negative affect/emotional experiences (e.g., stress, fear, trauma, feeling strange).	<i>“After the disaster, I saw that my school was hit by the disaster. I was so sad because my school was hit by the disaster. Going back to school was gloomy. Previously, schools were not like that. Only later, after the disaster.”</i>
Emotional experience – negative emotions/ experiences of others	Negative affect/emotional experiences of others (e.g., their teacher)	<i>“The teacher's experience was also traumatised.”</i>
Meta-code: school changes		
School changes – physical environment changes	Physical changes to the school building, damage/destruction of the school building and school supplies (e.g., uniform, books). Includes a new/temporary physical environment, such as tents/emergency school.	<i>“It used to be strong but now many buildings have fallen down. There was a lot of garbage.”</i>
School changes – rules and routine	Change in the school routine related to disaster (e.g., new lesson times, less/more breaks, less/more extracurricular/socialising)	<i>“I studied in school. During the break, I just bought food. Even then, the time was only 10-15 minutes to eat. After eating, I went straight home. There was no</i>

		<i>such thing as going somewhere else to play. Before the earthquake, when I came home from school, I often stopped by [location of shopping centre removed for anonymity], the school was close to [location of shopping centre removed for anonymity]. After the earthquake, the principal said, no one else should go here and there because it was still an earthquake situation, so I went straight home.”</i>
School changes – school challenges	Challenges since the disaster, not mentioned in another code (e.g., reduced communication, lack of school supplies, crowded, interruption to schooling, lack of learning, being sent home from school).	<i>“Only in elementary school, I couldn't explain much about her junior high school because we had minimal communication.”</i>
School changes – collective action	Collective action such as cleaning the school with teachers and peers.	<i>“At that time, there was an earthquake and tsunami too, some time when the situation was getting better we were ordered to go to school to clean the school and class. Cleaning the trash carried by the tsunami. All students and also teachers cleaned the school environment.”</i>
Meta-code: Role of teacher		
Role of teacher – supporting students	Teachers supporting students during and after the disaster. Includes processing the disaster by asking students about the disaster, helping them understand what has happened, sharing experience, telling stories about the disaster. Also, activities to relieve and regulate negative emotions, foster motivation and encouragement of strength. Includes encouraging	<i>“Very meaningful. Teachers are like second parents, second homes. With my homeroom teacher, I could talk about my situation at home, what I felt during the earthquake. I was happy because I could share experiences with my teacher.”</i>

	students with religious practice if they feel this is supportive.	
Role of teacher – disaster risk reduction and mitigation	Reference to knowledge of or implementing disaster awareness, preparedness or mitigation.	<i>“The teacher taught the students what to do if an earthquake occurs. Possible ways to avoid.”</i>
Role of teacher – collective action	Collective action for school recovery (e.g., to clean the school).	<i>“When we wanted to enter school, all students had to clean it because there was a lot of dirt in the school and all teachers were involved in cleaning the school for community service. And everything was clean, there was no more dirt and we studied actively. Because there was a lot of dirt in the school, we have not actively studied.”</i>
Meta-code: school as a social support		
School as social support – the role of friends	Peer support, including reference to friendships, playing, joking with friends.	<i>“Playing with friends”</i>
School as social support – role of volunteers/NGOs	Supportive role of volunteers/NGOs.	<i>“Volunteers came not just once, but several times. What I remember, we played games, the games were in the field with the students. Actually, there was a tent on the field, but it was just taken off so we could play there. There were games and sports as well, one day we were free and we didn't study at all. So it was a lot of fun and maybe we forgot about the earthquake a little bit. So there were more games that we know more about. What's the name here? "kadende" if I'm not mistaken, playing pol - polan.”</i>
School as social support – aid distribution	Instrumental support or financial assistance distributed via the school.	<i>“Mine did not. The school equipment like clothes, shoes, only those whose houses got hit by mud. We have just been given government assistance.”</i>

*Assistance of 750.000 IDR.
The money was given as an
aid.”*

Meta-code: Earthquake experience

Earthquake experience – occurrence of disaster	Occurrence of an earthquake or aftershock during the school day.	<i>“After that, there was an earthquake, then we ran out.”</i>
Earthquake experience – loss of life/community members	Reference to loss of life or loss of community member due to the disaster.	<i>“The loss of several teachers due to liquefaction in Petobo.”</i>

Appendix H

Coding frame used in Chapter 8

Code	Definition	Example
Meta-code: Disaster recovery		
Disaster recovery – trauma healing and formal psychological support for students	Trauma healing activities and sessions designed to explicitly relieve trauma for students. Includes counselling / clinical / psychological support.	<i>“After the trauma healing therapies, student slowly recovered”</i>
Disaster recovery – trauma healing and psychological support for teachers	Teachers receiving psychological support/trauma healing (i.e., as described above, for teachers). Includes psychological support that involved training teachers.	<i>“In the second column, after the disaster, in about a week or two, NGOs began to arrive and provided trauma healing to educators as well as students...”</i>
Disaster recovery – activities	Reference to specific activities that may improve students’ wellbeing, reduce trauma or improve psychological disaster recovery (e.g., playing, singing, storytelling).	<i>“There, we played and told stories about the time of the earthquake and there we finally rested.”</i>
Disaster recovery – return to normal	Reference to returning to normal and/or how it was before the disaster. Includes reference to passage of time, attending school every day again, building returning to normal, bouncing back and return of former routines. Includes desire to continue improving the school and hope to improve the school to return to normal in the future.	<i>“Day by day, year by year passed, we have used the proper classroom ...”</i>
Disaster recovery – received aid	Any disaster aid/instrumental assistance distributed via school. Includes financial aid to teachers. Aid from the government or institutions, including the school.	<i>“And, at that time we also received assistance from several countries. There were food aids, pen, bags and more.”</i>
Meta-code: Emotional experiences		

Emotional experience – positive emotional experiences of the self	Reference to one’s own positive emotional experiences (e.g., happiness, patience, calmness, gratitude, hope). Includes relief of negative emotions (e.g., ‘not afraid anymore’ or ‘fear has begun to decrease’, ‘trauma has reduced’). Includes enthusiasm for going to school/feeling eager to teach.	<i>“Happy because I could forget. Their presence made us feel happier”</i>
Emotional experience – negative emotions/ experiences of the self	Reference to one’s own negative emotional experiences (e.g., stress, fear, trauma, feeling strange). Includes concerns around returning to school and learning.	<i>“After the disaster, I saw that my school was hit by the disaster. I was so sad because my school was hit by the disaster. Going back to school was gloomy. Previously, schools were not like that. Only later, after the disaster.”</i>
Emotional experience – Positive emotions/experiences of students	Reference to positive emotional experiences of students (e.g., happiness, patience, calmness). Includes relief of negative emotions (i.e., ‘not afraid anymore’). Includes students feeling motivated or enthusiastic to study.	<i>“I saw she was happy ... were happy because they studied at school again”</i>
Emotional experience – negative emotions/ experiences of students	Reference to negative emotional experiences of students (e.g., stress, fear, trauma, feeling strange, dispirited). Includes concerns around returning to school and learning.	<i>“As children, they were still scared.”</i>
Emotional experience – Positive emotional experiences of other teachers	Reference to positive emotional experiences of teachers (e.g., happiness, enthusiasm, calmness, gratitude). Includes relief of negative emotions (e.g., ‘not afraid anymore’).	<i>“I felt happy about many things... My children and their teachers were happy too.”</i>
Emotional experience – Negative emotional experiences of other teachers	Negative emotional experiences of other teachers (e.g., stress, fear, trauma, feeling strange). Includes concerns around	<i>“In my opinion, the teacher was very sad because she saw that the school was no longer in a good condition.”</i>

	returning to school and learning.	
Meta-code: School changes		
School changes – physical environmental damage	Physical damage to the school environment, including the school building. Features damage at the time of the disaster and that is still present.	<i>“ In the second box, because some of our school buildings have collapsed, so I thought how students can learn with the condition of the collapsed school buildings... how did these children have experienced trauma and then went to school in a place like this. But, thank God, there was help for a temporary place to study.”</i>
School changes – temporary school	Reference to novel or temporary physical environment such as learning in tents or an emergency school. Includes attending other schools temporarily in different regions.	<i>“The school here collapsed, the school was in a tent.”</i>
School changes – rules and routine	Change in the school routine related to disaster (e.g., new lesson times, less/more breaks, less/more extracurricular/socialising, more or less studying in school, changes hours, open shorter periods of time). Includes change to routine immediately after disaster (e.g., open shorter periods of time, returning in shifts). Includes the closure of school after the disaster (e.g., ‘extended holidays’)	<i>“Some wore uniforms, some said they wanted to wear t-shirts. I said it's okay. Some said the house was swept away, so they wore a t-shirt to school with flip-flops. I said that it would be okay.”</i>
School changes – school challenges	Challenges related to the school and students since the disaster (e.g., any barriers to learning/a return to normality, reduced communication, not feeling close, lack of space to study, crowded, lack of learning, concerns regarding looting, change in atmosphere of the school, parents not giving	<i>“Only in elementary school, I couldn't explain much about her junior high school because we had minimal communication.”</i>

	permission for attendance, online learning difficulties).	
School changes – uniform and supplies	Any reference to school uniform and supplies, such as supplies lost.	<i>“Some wore uniforms, some said they wanted to wear t-shirts. I said it's okay. Some said the house was swept away, so they wore a t-shirt to school with flip-flops. I said that it would be okay.”</i>
School changes – Covid-19	Any reference to the Covid-19 pandemic.	<i>“They studied at home again during pandemic.”</i>
Meta-code: Role of teacher		
Role of teacher – supporting students psychologically/emotionally	Reference to teachers supporting students’ psychological recovery. Includes processing the disaster by asking students about the disaster, teachers assessing, identifying or enquiring about psychological concerns, helping students understand what has happened, sharing experiences, telling stories, being empathetic and understanding of children’s situation. Includes being flexible to meet students’ emotional needs. Also, activities to relieve negative emotions/regulate emotions, to foster strength and encouragement.	<i>“Yes, she was the homeroom teacher in the 3rd grade, in the 6th grade, her homeroom teacher was [name removed]. She was also very close with me, we always communicated by asking how we were doing. She wondered if [name removed] was still traumatised.”</i>
Role of teacher – educational support	Reference to teachers supporting students with the learning process. Including adapting the learning materials/pedagogy to meet the needs of students.	<i>“ So, we... I thought about how we as teachers... what methods should we use so that this child can learn and be able to get rid of the trauma immediately.”</i>
Role of the teacher - motivating students to return to school	Motivating students to return to school. Included providing families reassurance that the building was safe to encourage a return to school and allowing flexibility to facilitate a return.	<i>“I did it to motivate the students. In the beginning they were not excited, so I approached the parents, cooperated with them.”</i>

Role of teacher – sense of duty/responsibility	The teacher feeling bound by duty or responsibility. Includes engaging in activities out of duty, feeling they so not have a choice in supporting the school/students due to their job/role/duty.	<i>“Yes, I have to take care of the students, because it is my duty.”</i>
Role of teacher – contacting students/their families	Mention of contacting students after the disaster, such as by phone or in person, to check on them and find out information about their situation (e.g., their safety, disaster losses and post-disaster needs).	<i>“Then after I came home from Makassar, I tried to contact my students one by one and apparently one of my students died.”</i>
Role of teacher – collecting data and keeping records	Teachers collecting data and keeping records (e.g., counting students and reporting on how students had been affected).	<i>“We had already started taking data at that time. How many died, whose houses were affected, we have started to record the data at that time. So we could know how many students died, how many houses of students got washed away, lost, collapsed and slightly damaged at that time.”</i>
Role of teacher – disaster risk reduction and mitigation	Teachers transmitting knowledge related to disaster awareness, preparedness or mitigation. Includes implementing activities related to disaster risk reduction, disseminating information and communication about disaster risk, encouraging students to plan for if a disaster strikes, staying ‘alert’ to risk, and a desire for additional teacher training.	<i>“Teachers’ role increased, one of which is ensuring disaster risk reduction prevention facilities.”</i> <i>“Yes, at that time, when there was a disaster reduction activity, two people from the school was appointed then asked to make a evacuation point and then the evacuation route, however when the activities were about to start, covid happened and it ended up being abandoned...”</i>
Role of teacher – organising support and calling for collective action to support students and their families	Reference to teachers calling for collective support and action. Included organising social support for the wider community.	<i>“I asked my students who were not too affected... since there were approximately 3 of my students who were really affected. So, asked</i>

		<i>those who still have some clothes, what can we donate to their friends, let's give them something whatever it is. So, they won't feel alone just like that. Whatever they bring me, I would share it. So, they also feel cared for."</i>
Role of teacher – collective action related to school's physical environment	Reference to the teachers working collectively with other teachers, students and/or caregivers to support the schools' physical/environmental recovery (e.g., to clean the school) or to establish a new temporary, safe educational space.	<i>"... we [teachers] came to the school to see how things were going, because it was impossible for us to continue in the tent, we slowly entered the school and cleaned it up."</i>
Role of teacher - religiosity	Reference to teacher involvement in religious activities with students (e.g., collective prayer), encouraging religious acts (i.e., encouraging prayer) and/or promoting religious values and beliefs (e.g., that the disaster was God's will).	<i>"So, in a tent, we were together with the students to do praying together and then play afterwards."</i>
Role of teacher – absence of teacher support	Reference to teachers being unavailable to offer post-disaster support. Includes due to teacher shortages, teachers moving away, teachers being injured. Includes teachers being inactive or busy in tasks to the detriment of supporting students.	<i>"Because after the disaster, one week after the disaster... it was 8 days later... at that time we were instructed by the local head of education to go to school. However, there were no teachers or students who came to school. Moreover, at that time, the principal of our school was injured and couldn't stand up."</i>
Meta-code: school as a psychosocial support		
School as social support – role of volunteers/NGOs	Reference to supportive role of volunteers and NGOs. Includes other government workers who supported the school due to the disaster.	<i>"Right, Alhamdulillah, friends from the NGO have been responsive. They came out, they provided motivation, and debriefing. So the work of teachers was reduced a little and then they were refreshed by meeting new people."</i>

School as social support – teachers supported by colleagues	Teachers supporting one another. Includes meeting again, sharing stories, gifting items (e.g., clothes), and encouraging one another.	<i>“For the second box after we met, we supported each other, gave support then also without... without being asked spontaneously some friends said, “I am here and I have this, what do you need?” by sharing information and supporting each other or whatever.. so that we could recover as soon as possible from that situation.”</i>
Meta-code: Earthquake experience		
Earthquake experience – occurrence of disaster	Reference to the occurrence of an earthquake or aftershocks during the school day. Includes narratives of the disaster event.	<i>“The earthquake was very terrible. My students and I each saved ourselves. And unconsciously, I was already on the ground. Coincidentally, at that time there was an alumni of my student who was practicing basketball and saved and took me to the front of the school. It felt like I was under siege because the right and left side of the building had been destroyed. When it was evening, there were several people who came to evacuate me with some students.”</i>
Earthquake experience – injuries, loss of life/community members	Reference to injuries, loss of life or general loss of community member. Includes mention of corpses in school.	<i>“I saw my school was in ruins -There was a lot of debris at the school ... There was still an uncomfortable smell, I didn't know corpses or what, they were still piled up there.”</i> <i>“I saw first-hand there were children who died from liquefaction...”</i>

Appendix I

Extracts demonstrating examples of questions asked during the GEM interviews

Student example 1

Respondent: By working together, doing mutual cooperation so that the earthquake does not happen again.

Interviewer: Alright, can you tell me what you mean by cooperation or mutual cooperation, what was it like?

Respondent: Maintained cleanliness in the environment so as not to cause a tsunami.

Interviewer: How did you maintain cleanliness?

Respondent: Planted trees to prevent tsunamis. Keeping the environment and around the house clean.

Student example 2

Respondent: Happy, happy, happy to meet again with friends at school. Meeting the teacher.

Interviewer: Okay, so it was nice to meet the teacher, wasn't it?

Respondent: Yes

Interviewer: Oh... can you tell me what it means by happy. What do you mean by nice meeting the teacher?

Respondent: I was happy to meet the teacher, at school the teacher was our parent, so it is as if we were happy to meet our parents at school. Could talk again with the teacher, communicate, tell what happened.

Student example 3

Respondent: I was panicked because *holds breath* I just got home from reciting, then suddenly the earthquake happened

Interviewer: So, at that time, you had just returned home from the recitation, then the earthquake happened, right?

Teacher example 1

Respondent: After the earthquake, while waiting... after the earthquake, I have started to organise my fear. I began to manage my anxiety... what was it... I was with my husband at the time, so we tried to comfort each other, we gave a support to our son, and we hope the

children were okay. So, slowly we could manage that feeling of anxiety.

Interviewer: By comforting each other, You and your husband, right ma'am? Because the children hadn't come home yet... so, you comfort each other at that time. Could you please tell me more about that, ma'am?

Respondent: After that, our feelings at that time... what... most probably because of the situation in the house at that time was already a mess, the earthquake kept shaking. But I had time to take ablution water at home. We prayed on the side of the road, both of us. People passed us by. It just so happened that our house was right on the side of the road, next to a small alley. so, people passed by to get to the airport. We just watched while waiting for our son who had not yet come home. Anyway, we stayed comforting each other. Hopefully the kids were okay.

Teacher example 2

Respondent: Yes. What happened to me before. Fear.

Interviewer: Fear. What do you mean?

Respondent: It means, when it happened, I thought, Astagfirullah alazim [I repent to Allah the almighty], Oh Allah, is this the end of the world? Because I suddenly remembered it was on Friday. Don't be so doomsday. What I immediately thought of was my son. Perhaps he was at the because I told him to pray at the mosque . But he said he didn't want to, he wanted to pray at home. I immediately shouted because I was in the bathroom . So I shouted [name removed for anonymity]! Called my son. Yes Mama, he said we weren't home because? He said yes. It was just the two of us at home at that time because my husband was out. He was out so I was alone with the child. Anyway, it was on the day it happened. Oh my God, I was frightened, was it the end? I immediately looked up because the shock was so big I was thrown to the bathroom. Couldn't get out of the bathroom because the doors closed tightly. It was chaotic, afraid that it would fall. I was still in the bathroom. Was in fear right there. It was all messed up in the brain. Alarmed. Okay, that's about me...

Interviewer: Scared, right?

Teacher example 3

Interviewer: Okay, let's continue, what was the story about Ma'am?

Respondent: Finding out about students including my homeroom students. Because we wanted to find out right away about who was safe, who fled. I didn't really want to find out about other children, but I, as the homeroom teacher, I first found out about my students.

Interviewer: Your homeroom students first, right

Respondent: Yes, they were. I was sorry because there were some who lived in Petobo [devastated region], including [removed for anonymity], even though he was not my homeroom student. Then, it turned out that recently it was discovered that they lived in [removed for anonymity], because there were some students whose address did not match the address they lived in. So some reported that his/her mother died because during that incident, she was with my sister as soon as she said it. So, yes, if it's a guardian's child, it turns out that it happened. His mother hasn't been able to find him until now. He has a corpse with his sister. I immediately found out who else. I checked one by one who had not attended. What's the problem that they haven't been attending, because we have been ordered directly from the office to find out the condition of each student.

Interviewer: That means one of the duties of the homeroom teacher and teacher was to find out the students' condition when the school reopened.

Respondent: Yes, that was what we looked into. We lost contact with a lot of people... At the time of the incident. Especially the ones at [location removed for anonymity] because some of our students were at [location removed for anonymity] at the time of the incident, several died. [School name removed for anonymity], around 5 months. If I'm not mistaken, the students who died were [location removed for anonymity] students