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ORIGINAL ARTICLE

After the fire: An ecological, phenomenological exploration of resilience-building following the Fuego volcanic eruption in Guatemala

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Abstract

Combining ecological resilience theory with a phenomenological epistemology, we explored experiential, social, and cultural factors mediating resilience-building with participants from a village destroyed by the 2018 Fuego volcanic eruption in Guatemala. The purpose of the study is to find out what strategies displaced families and communities employ for living through the aftermath of a volcano eruption and for building psychological resilience. We conducted semistructured interviews with nine survivors of the Fuego eruption, now relocated and coping with the loss of community and family members killed in the disaster. Interpretive phenomenological analysis was used to analyze transcripts. The analysis produced four main themes: (i) *individual and collective challenges*, (ii) *social support and protection*, (iii) *faith and culturally endorsed belief*, and (iv) *looking to the future*. As well as learning more about how a community faced challenges presented by a volcano eruption, the current study has a degree of transferability, with implications for understanding how other communities experience and cope with such events.

KEYWORDS

disaster, ecological, phenomenological, resilience

Highlights

- Participants lost relationships and communities, and experienced emotional distress after the eruption.
- Social support from community members and professionals helped survivors face loss and relocation.
- Participants used faith to answer questions about why the eruption happened and how they responded.
- Reflecting on the loss, taking advantage of new opportunities, and being future-focused aided recovery.

INTRODUCTION

Context: Volcano eruptions in Guatemala

Guatemala regularly experiences environmental disasters and extreme weather events (Baez et al., 2017). It is

particularly susceptible to volcano eruptions. Fuego volcano, near the city of Antigua, has been relatively active since 2002. Low-level tremors alternate with sometimes monthly rapid onset eruptions, rendering evacuations from surrounding areas virtually impossible. These can distribute volcanic ash to a 20-km radius and

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disperse lava for 2 km (Baez et al., 2017). Fuego's most notable eruption came on June 3, 2018. Approximately 200 people, including children, were killed and 4000 people were rehoused in nearby towns. Voluntary groups are engaged in a major operation to help people rebuild their lives. The participants in the present study are from this displaced community.

Living through a volcanic eruption and the subsequent displacement is life changing. A need for more research on how communities experience and adapt to such changes and engage in resilience-building has been identified by Guatemalan sources (Castañada & Grazioso, 2017). It has long been recognized that disasters and extreme weather events are integral to environmental and human systems, rather than just effects of the natural world (Oliver-Smith, 1996). It is therefore important to study the human, experiential, and social effects of events such as volcano eruptions. There is a need to conduct more research around strategies for overcoming risks following environmental disasters (Fernandez, 2021), and to explore adaptations of individuals and groups in the aftermath of such events (Oliver-Smith, 1996). In this paper, we deploy ecological resilience theory alongside a phenomenological epistemology to explore strategies for living through the aftermath of a volcano eruption and building psychological resilience.

Resilience-building and environmental disaster

Resilience relates to developing wellbeing in the face of risk (Ungar, 2011). It can be defined as “the capacity of individuals to navigate their way to the psychological, social, cultural, and physical resources that sustain their wellbeing” (Ungar, 2011, p. 10). Ecological theory sees resilience not as an individual trait, but as a process wherein protective factors operate at individual, community, and cultural levels, moderating risk and increasing wellbeing (Masten et al., 2014). It emphasizes how individuals, families, and communities pool physical, psychological, social, and cultural resources to enhance wellbeing (Ungar, 2011).

In the context of environmental disasters resilience-building involves returning to a state of equilibrium “after the event” by drawing on individual, psychological, and social factors (Barrios, 2016). Psychological resilience in the aftermath of a volcano eruption requires individual and collective strategies (Sandoval Díaz et al., 2022). In challenging circumstances, individuals and communities engage in adaptations which involve facing adversity, responding to change, and rebuilding routines over time. Typical adaptations are challenges of resettlement, particularly when the people involved are attached to their previous location. Place attachment contributes to individual and community identities, so the interruption of these attachments through relocation can be profoundly traumatic (Oliver-Smith, 1996).

Living through a volcanic eruption requires more than inner psychological strength and the availability of physical resources like new housing (Mearidy-Bell, 2013; Mori et al., 2019). It requires social readjustment too (Barclay et al., 2019). Building resilience following an environmental disaster involves bouncing back with support from psychological, social, and community-based resources (Mori et al., 2019). Social and community agencies (nongovernmental organizations [NGOs], voluntary groups) contribute to managing risk amidst adversity (Lounsbury & Mitchell, 2009). The greater the adversity, the greater the need for these community interventions (Masten et al., 2014). This frames resilience as an interaction between individuals, families, and communities that foster supportive environments. An ecological approach recognizes the importance of broader protective factors that transcend individuals, bricks, and mortar. These broader factors are social and cultural in nature (Field, 2017).

We have only recently begun to recognize the role of social and cultural factors in mediating adaptation to disaster. Attitudes, values, beliefs, and social norms that groups share affect how environmental disasters are experienced and how well they adapt to the changes that disasters bring (Mori et al., 2019). In other words, “the specific quality of protective processes reflects cultural variation” (Ungar, 2013, p. 255). Hence, we would expect diverse cultural belief systems to be associated with diverse postdisaster responses (Wilkinson, 2018). We argue that a better understanding of these belief systems will inform the quality of interactions between affected communities and agencies entering the theater from outside.

Previous studies show how social and cultural factors help communities negotiate environmental disasters, showing that the effectiveness of responses to environmental disasters is not merely determined at an individual, psychological level, but also at the social and cultural level. Following the Baliau volcano eruption in Papua New Guinea, one study emphasized the importance of NGOs' responsiveness to indigenous belief systems for the effectiveness of those interventions (Mercer & Kelman, 2010). In researching relief responses in volcanic regions around the Mount Agung volcano in Bali, it was also found that adapting disaster management strategies to local cultural customs helped promote community resilience (Wardekker et al., 2023). Following these two studies, we explore ways in which responses to the Fuego eruption, on the part of local communities and support groups, sat within local belief systems. Elsewhere, Wilkinson (2018) highlights awareness of spiritual belief systems in relation to resilience-building in the aftermath of Typhoon Haiyan in the Philippines, as did developing effective community relations with secular relief organizations. These examples suggest, as does ecological resilience theory, that resilience-building is enhanced by interventions that are mindful of cultural

belief systems and social factors, rather than merely individuals' psychological needs. Hence, in the present study, we highlight the role of neighbors and therapeutic professionals in supporting psychological wellbeing in survivors of the volcano eruption.

A phenomenological approach to the experience of a volcanic eruption was adopted to explore the aftermath of the eruption of Mount Merapi in Indonesia (Warsini et al., 2016). Being phenomenological, the study focused on capturing the first-hand experience of the event, particularly in relation to concepts such as spatiality, temporality, and relationality. Interviews conducted with participants in affected areas revealed themes which transcended psychological stress and trauma. Phenomenological elements such as emplacement and relationality were evident in experiential accounts of coping and adaptation. Temporal elements are also featured in survivor accounts, demonstrating changing narratives before, during, and after the eruption. As in the work of Warsini et al. (2016), our phenomenological epistemology explores temporality and change in participant narratives. We note how Fuego survivors adapted over time. We focus on the losses they experienced, the subsequent protective agencies that supported them, and ultimately the development of a future orientation. These narratives of adaptation indicate the development of resilient responses temporally, rather than as a snapshot of experience.

Participants in Warsini's study reported that connectedness to places (despite the risks of eruption) and people (in relation to community) provided support post-eruption. Following feelings of disconnection brought by the eruption, some also spoke of emotional, spiritual, and physical reconnecting with a land that they felt had temporarily betrayed them. They told of becoming more resilient with the support of culturally sanctioned religious practice and by rekindling feelings of connectedness to their land and their community; a form of social attachment that goes beyond attachment to a physical space (Livingston et al., 2008). Religious practices are part of the wider set of shared meanings, beliefs, practices, and norms that different cultural groups share and which, taken together, constitute culture (Stevenson, 2020). Hence, in the aftermath of a significant event such as a volcano eruption, different cultural groups will utilize these belief systems, practices, and norms to help them overcome the challenges they face.

Social and spiritual support may also enable survivors to maintain or develop a sense of place attachment following a volcano eruption. Place attachment, defined as "affective bond developed by people with a place over time" (Steg et al., 2013, p. 105), is integral to the self (Proshansky, 1978). Identities partly arise from relationships with the environments we grow up in. Yet place attachments are more than bonds with bricks, mortar, streets, and spaces. They bond us to those neighborhoods and communities (Manzo &

Devine-Wright, 2021). Hence, we might expect that where a community has been displaced, for example, following a volcano eruption, the strengths of these bonds to spaces and people will influence the ability to bounce back, especially where whole communities are displaced together and can support each other through the challenge.

The research summarized above helps us understand the role of experiential, social, and cultural factors in supplementing individual and physical resources to aid recovery for communities affected by disasters. Drawing on these findings, our study will use a phenomenological epistemology to explore resilience-building adaptations among families who were displaced following the eruption of the Fuego volcano.

The present study

Previous research into the lived experience of volcano eruptions has focused on psychological challenges; distress, posttraumatic stress disorder, depression, and anxiety (Warsini et al., 2016). It is rarer to take a more phenomenological view of the survivor experience. Furthermore, the sociocultural impact of disasters and extreme weather events has often been oversimplified, especially in journalistic discourses, where the emphasis tends to be on material aspects (number of deaths, scale of damage), rather than social and cultural aspects which psychologists and anthropologists are more interested in (Oliver-Smith (2011).

Contrastingly, phenomenology explores lived experiences through the rich narratives of those who are doing the living. Value is placed on how participants make sense of experiences in their own life-worlds (Langdridge & Hagger-Johnson, 2013). Experiential responses to surviving a volcano go beyond individual experience, exploring community-based support networks and cultural beliefs, as well as psychological consequences. In relation to the experience of a volcano eruption, phenomenology is suitable as it emphasizes how survivors make sense of the experience through interactions with others in their community (intersubjectivity), through spatial experiences such as displacement or migration (emplacement), and through adapting to the experience over time (temporality).

The present study aims to deepen understanding of experiential, social, and cultural factors that constitute the lived experience of one community in Guatemala. We use an ecological approach to explore risks, and protective factors for mitigating those risks, among communities displaced by the Fuego eruption. To complement this ecological approach, we use a phenomenological epistemology to uncover something of the lived experience, risks, and challenges of surviving an eruption and rebuilding a community. We also suggest that engaging phenomenologically with a specific disaster not only provides richer idiographic narratives but also

yields knowledge, which is transferable to other settings, potentially helping us understand the experiences of other environmental disasters.

We argue that value is added to our study by focusing on a cultural setting that has seldom been studied in relation to these phenomena. There is a need for more research exploring the lived experiences of life-changing events such as responses to volcano eruptions and this has seldom been deployed with ecological resilience theory, particularly in the cultural context of Guatemala.

Our research question is “What strategies do displaced families and communities employ for living through the aftermath of a volcano eruption and for building psychological resilience?”

METHODS

Design

This study adopts a qualitative approach to data collection and analysis, using semistructured interviews and interpretative phenomenological analysis (IPA). Semistructured interviews are highly detailed, enabling participants to communicate personal stories and provide sufficient information for a detailed interpretation of lived experience (Brinkman, (2020).

Participants

Participants were nine adult survivors (two males and seven females) of the Fuego volcano eruption in Guatemala in 2018, representing nine families (see Table 1). The age range of participants was from Alejandro in his early 20's to Cesar in his late 50's. The majority of the participants were in their 30s.

Participants were originally residents from the village of San Miguel Los Lotes, a small rural community on the slides of an active volcano that was destroyed in a lava

flow from the Fuego eruption. For the purposes of this paper, we define a community as a geographically situated, self-identifying, and socially integrated group with common interests and values and a general sense of belonging. For clarification, in the context of the present study, following the destruction of their village, members of the community of San Miguel Los Lotes were relocated and integrated into the community of a nearby town, Alotenango.

Participants were already working with a local neighborhood NGO which had been providing practical assistance. The project coordinator of the NGO acted as gatekeeper and suggested potential participants. Selection criteria were that individuals were over 18 years of age and were living in Los Lotes at the time of the eruption, were receiving or had received support from the NGO, and were willing to talk about their experiences of the volcano eruption. Family members were invited to attend an interview in a local community center. They were met by the research team for a briefing before the interviews. The use of familiar settings enhances participant communication and is likely to yield richer data (Spradley, 1979).

Positionality

The research team worked with a local NGO, which facilitated access to the participant group. The research team also has an extensive research and publication track record from work in the theoretical field of ecological approaches to resilience with several participant groups in Guatemala (Oldfield et al., 2019; Stevenson et al., 2019, 2022).

Data collection

Interviews were conducted in Spanish by a local native speaker in January 2020, 18 months after the eruption. To ensure that research methods and interview questions were appropriate and respectful to their cultural context, researchers collaborated with a local NGO with local knowledge of the families affected by the volcano eruption. Interview questions and participant recruitment were developed in collaboration with this local NGO. Working with a local NGO also enabled us to access a local, familiar setting for the interviews, where participants would feel at home. Interviews, which each lasted between 30 min and 1 h, were conducted in a local community center building in the village of Alotenango. They were audio recorded, transcribed, and translated by the research team. Interview questions were informed by the theoretical notion of resilience, including risk and challenges experienced and potential protective factors and processes that lead to positive outcomes. Questions were ecologically focused (Ungar, 2011), relating to

TABLE 1 Pseudonyms, age, and gender of participants.

Pseudonym	Gender	Age
Alejandro	Male	20s
Ana	Female	40s
Cesar	Male	50s
Dana	Female	30s
Luisa	Female	30s
Margeory	Female	40s
Maria	Female	40s
Rosa	Female	30s
Yolanda	Female	30s

social, cultural, and individual-level factors that might have aided resilience. Interview questions included: What are some of the challenges you have faced following the eruption?; What has helped you deal with such a difficult situation?; Has anything about your personality, your family, or community helped in any way? Can you describe any kind of resource, service, or activity that has been beneficial to you following the eruption? What would you say has been the most helpful in facing these challenges? Interview questions were written by the research team and sense was checked for clarity with the interviewer and local NGO.

Data analysis

IPA allows flexibility and engagement with lived experiences. This is suitable for smaller sample sizes where participants have overlapping life experiences. This facilitates the exploration of areas of convergence and divergence in detail (Smith et al., 2022). The analysis followed steps presented by Smith et al. (2022), involving (i) reading and rereading interview transcripts; (ii) listening to the original recordings to check translations (iii) taking exploratory notes, paying attention to content and use of language; (iv) turning notes into experiential statements (experiences captured in the data which summarize the meaning for the participants in a short segment of text or summary); (v) clustering and naming of statements—first for each individual participant; and then (vi) developing group experiential themes by looking across the transcripts from all participants.

The credibility of the findings was ensured by following the guidelines of IPA (Smith et al., 2022). The analysis was undertaken separately by two experienced researchers who adopted a reflexive approach, actively acknowledging any potential biases in interpretation and taking time to analyze and then reanalyses the findings. Disagreement in the interpretations of data between researchers was resolved with open discussion and reading and rereading the transcripts together until a consensus was established. The researcher who conducted the interviews (who was Guatemalan and conducted the interviews in Spanish) checked for consistency between the original recordings and subsequent written analysis. Data interpretations were also shared with the local NGO. Full member checks were not possible due to the logistical challenges and participants' time commitments.

RESULTS

The analysis produced four main themes, each with subthemes. In the subsequent section, participant narratives have been prioritized with, accompanying commentaries, followed by an evidence-based discussion.

Things we lost in the fire: Individual and collective challenges

Participants experienced the loss of homes and communities to which they felt a sense of belonging. Many also experienced a significant loss of relationships, following the deaths of family and friends. The relocation meant that survivors could no longer return to their village. Two subthemes related to loss were identified.

Adapting to unfamiliar spaces

Following the location to a new village, all participants faced the loss of their family home: a place to call their own.

Our neighborhood was completely wiped out ... there is nothing where our home used to be. (Yolanda)

Alejandro described what the village was like when he returned after the eruption

All you could see was the roofs. Others were completely buried—there's no trace. (Alejandro)

Despite material losses, residents continue to identify with their former village and evidently display a sense of psychological attachment to it.

It's been so painful to see the place where we lived we'd like to go back because it's the place we're from; we had firewood there, space for the children to play, water, we had everything. (Cesar)

Cesar remembers access to resources in his village and expresses sadness at being unable to return to a place he feels connected to. The sentiment is evident in Luisa's story too

The area is now called “zero zone” ... you can't go back to live there ... and why would you go anyway if it brings so many sad memories? (Luisa)

Luisa was reluctant to return due to painful emplaced memories. Loss of a place to which there is an attachment, of a familiar neighborhood and the associated sense of belongingness, was a significant challenge.

Some people don't cry because they lost their family but because they lost their homes. (Cesar)

Following the eruption, some participants were given land in nearby Alotenango. Many found being relocated to another village to be a further challenge.

On one hand it really is a blessing because we have a roof ... on the other hand I don't like it ... because it's just not the same. (Alejandro)

Cesar reports that despite being grateful for the new home

There's no water so my wife can't wash the children's clothes ... there's no space for them to play, to feel and forget about their sadness and all the thoughts of the disaster. (Cesar)

Challenges of adapting to a new space were heightened by differences in how, after the relocation, the topography in the new town was so different. Luisa mentions how the houses in the new town were constructed

They built them side to side, one right beside the other ... when we lived in Los Lotes, we were used to being by ourselves. (Luisa)

Rosa also explains the challenges of adapting to a new space

living in a bigger town is more expensive ... now I get off the bus here in town and I still have to get a tuk tuk or ask for a ride to my home ... where we used to live ... it was right by the road ... I would get off the bus and my home was just across the road. (Rosa)

Despite being grateful for a new place, Alejandro describes the biggest challenges he has faced as being

Assimilating the loss of family ... and being in a place that is not our place (Alejandro)

Coming to terms with loss and adapting to a new place was significant for all participants. Relocation posed challenges in terms of being separated from places to which residents were formerly attached, and, as we will see, a loss of community.

Loss of people and community

The greatest loss following the eruption was the loss of relationships since relocation precipitated a loss of community and a feeling of belonging to a neighborhood.

We have lost so much ... material things you can still recover but not your family. (Cesar)

Between my husband's family and my own, we lost 15 members of the extended family; a terribly difficult moment. (Ana)

It was very hard for everyone during the first week; we would hear of yet another friend or neighbour who died. (Yolanda)

Besides these human losses, participants reported additional challenges presented by dispersion to nearby villages. No longer close to their neighbors, the community was being eroded.

We used to gather as a family on the street ... we would prepare food, spend time together ... there's no one to do that with anymore ... now we're dispersed. (Alejandro)

We are sad because after living together as an extended family (grandparents, parents, uncles, aunts, cousins), unfortunately we are all separated now. (Dana)

Loss and dispersion eroded communities, scattering families across greater areas, often with few transport links.

It's been hard because I don't know anyone here... I don't go out here because if I walk around the neighborhood, I can't find someone I know. (Luisa)

It's been hard to adapt to a different place ... in Los Lotes we knew how life was run ... our friends were there ... we would spend time with them but here it's not the same ... we don't go out much because we don't know the people here and don't feel confident enough to talk to them. (Margeory)

In relation to the ecological resilience theory, losing family, a place to call your own, as well as a sense of community, represent challenges faced by survivors of the eruption. Overcoming these challenges would correspondingly involve drawing on protective factors at the individual, family, and community levels (Masten et al., 2014), as the remaining themes illustrate.

Support from within and beyond: Social protection, known and unknown

Support from community members, volunteers, and professionals helped with some of the challenges outlined above. This layer of social protection supported survivors in meeting the challenges faced by the losses described above. Three subthemes were identified.

Kindness of strangers

Posteruptive support was offered to survivors from NGOs and local charities. New relationships were established with people from outside the community. The kindness of strangers illustrates the value of organizations offering safety nets after environmental disasters. Cesar reports that help came from

People we didn't know ... mostly people coming from other parts of the country or other countries like the U.S. (Cesar)

Yolanda added

There were people who came to the shelter and gave us things ... food and other items. (Yolanda)

These accounts show gratitude for the help received and surprise that it came from people they did not know. Ana, who moved to Alotenango after the eruption, was positive about her new community

We've also gotten help from the people of Alotenango ... they never turned their backs on us ... they've supported us all the way along, lifting our spirits. (Ana)

Help that came from supportive communities illustrates the ecological nature of a resilience-building effort that relies on neighboring villages and NGOs. Support was also offered from other unexpected places, like employers

The company where my husband works ... offered him a piece of land ... he was told they would give him his worker's compensation in advance ... he was also told an organization would build a house there. (Margeory)

One of my daughters who works in the capital city told us that her boss was willing to pay for the rent of a house so we could go live there. (Ana)

Professional support

Many participants highlighted the supportive role of professionals too. Connections were made with psychologists and therapists, a professional socially supportive community of practice helping residents to overcome challenges associated with the eruption.

Therapy helped us a lot to overcome some thoughts ... the psychologist helped us

understand that we couldn't become stagnated living with all that we were carrying inside ... little by little we internalized what the psychologist said, and that she was right; we have to face life with a positive attitude and keep going. (Maria)

Yolanda added

Psychologists would come ... and after some time when they saw we were calmer they said "Ok, I've done my work, I see that I've helped." Frankly, I felt a lot better after that ... because I had so much inside, sometimes I even wanted to shout because I didn't know what else to do. (Yolanda)

The role of strangers and professionals in supporting survivors demonstrates that, from the perspective of ecological resilience theory, social support is a protective factor which extends beyond families and neighbors. Participants appreciated people coming to offer help professionally or just to listen to their stories.

It means a lot to us when someone comes and talks to us, asks questions, listens to us. (Cesar)

Support from friends

Besides strangers and professionals, close friends, new friends, and family in Alotenango provided social support to alleviate challenges of the eruption.

Without friendship you lock yourself, memories keep playing on your mind, or other thoughts, and they don't get out ... being all alone can be oppressing. (Yolanda)

When asked what was of benefit in overcoming the challenges she faced, Dana said

Making friends here has helped. Thankfully we've found very good neighbors with whom we get along well ... and that makes us feel well. (Dana)

Developing strong friendships also helped Yolanda

Women from the church come and say "Sister Yolanda let's do this or let's do that," and that helps you a lot ... to clear your head, to not be thinking the same things all over again ... I've even visited them in their homes and we've spent time together ... you may not

have money so we've shared a glass of water or sweets. (Yolanda)

The kindness of strangers, friends, and professional support operates at the levels of neighborhood and community to contribute to resilience-building. They evidence the ecological nature of the resources that the survivors of Fuego were able to deploy, and which supplemented the individual, psychological resilience-building effort (Ungar, 2011).

Faith in the resilience process: A culturally endorsed belief and practice

Faith is central to Guatemala's cultural belief system. It helped survivors make sense of the eruption and answer questions about why it occurred, how the community was affected, and what the future might hold. Such questions were answered according to two main subthemes.

God is in control

According to the predominant belief system, the eruption was part of a divine plan. Participants sensed that God was in control of their lives, giving them confidence that life has meaning, despite the challenges they experience

It's something God sent ... and we have to accept it ... it wasn't something done by man but by God. (Margeory)

I believe it was something that God allowed to happen ... we have to change our lives, our way of being. (Dana)

There is an underlying narrative of governance and control from God, of the eruption being beyond human agency and even being beneficial for helping them to realize their purpose in life

I find comfort in the idea that God has had mercy on us and that if we're alive there must be a reason for it ... a purpose. (Alejandro)

Gratitude

Faith ensured that participants felt life had a purpose and God was in control, leading to a sense of gratitude that they were still living when many had died. Faith provides a supportive belief system for making sense of challenging experiences. Using this faith community and its system of beliefs as protective factors which are

especially prevalent in Guatemala, there was a gratitude for life, despite the losses

I thank God for what he has done for us ... because we still have life, and we keep fighting for our family. (Cesar)

Despite having a difficult time processing the event, there was gratitude

...to God for the life I have, for being alive ... for the air I breathe and for my family. (Alejandro)

... to God for being alive, for living to tell the story of what happened. (Ana)

Gratitude was also articulated in relation to the new homes

We are grateful to God ... we weren't given a big house, it's quite small, but we value it because we had been left with nothing. (Margeory)

Other types of practical support elicited gratitude framed in faith

People donated and with that we were able to eat ... or we were given corn or beans and that was enough ... but we thank God for this. (Cesar)

A lot of people helped us during the first weeks and months; I'm not going to say we didn't receive help from people ... people helped us, and I thank God for that. (Alejandro)

In these sentiments we see gratitude for social support being framed within a culturally endorsed faith-based belief system. Community support and religious belief became part of one culturally sanctioned web of meanings. Social support networks and culturally sanctioned faith-based belief systems operate together as resilience-building protective factors. This is reflected in Rosa's and Yolanda's stories when asked who had supported them through the experience.

First of all, God, and also the people who have come here to help. (Rosa)

Without God and without God sending someone your way, we would be ill by now; that's why I feel so grateful for the amazing opportunity of meetings other people who have offered us their friendship. (Yolanda)



Bouncing forward: Looking to the future

Recovery from and adaptation to life changes following the eruption and subsequent displacement required survivors to orient themselves to the future. Three future-oriented subthemes were identified

Community distractions and opportunities

A recurrent subtheme revealed a desire to learn new skills and take advantage of new opportunities being offered in communities where families had been relocated.

Where we used to live, by the volcano, we didn't get any kind of help ... but here there have been projects that have helped us get ahead. (Ana)

Dana revealed that she had *taken*

a couple of courses where I learned things, I never thought I would learn ... they've helped me a lot. (Dana)

Ana learned

how to make shampoo, which we have started selling too ... also whitening creams, hand creams... I've liked the experience a lot ... and I thank God because that's also a way in which our lives have changed. (Ana)

Dana and Ana have taken up new skills, participating in skill-sharing communities of practice that have supported resilience-building

Perhaps if we hadn't gone through all of this I wouldn't have learned and experienced all that we have lived up to now ... now we feel more capable as people, because in the past for us life was just to stay at home and care for the children ... but now we have learned new things, I am fighting side by side with my husband. (Maria)

Evoking social and familial networks, Maria highlights the value of community-based strategies to overcome adversity. Ana reinforces this message, emphasizing the protective value of participating in the community

If I stay at home all day, sadness comes ... but if you're outside of your home—or you set up a business in your home—then your mind is focused on something else. When I'm

out selling disinfectant, when I have to deliver a product, or when I'm just hanging out in the street while talking to my daughter, I feel a lot better. (Ana)

Being distracted and focusing on new opportunities motivated Maria

I know that I have to find something to do to avoid thinking of the same things over and over again. (Maria)

Alejandro would also like to run a business and

do projects that would help people distract their minds from everything that happened. (Alejandro)

Children are the future

A temporal element in bouncing back from the eruption has the children at the center of resilient community responses. Participants acknowledged the importance of children in keeping them motivated to overcome the challenges they face. Also evident was their aspiration that these youngsters would have more opportunities than they had

When you see your children, you somehow gather strength to keep fighting for them ... my children ... they motivate me and give me strength to keep fighting. I didn't have the opportunity to finish school, so I tell my children "Look, a lot of people came to help us, people who have studied a lot, they had the chance to come to us and give us help." (Yolanda)

For Maria, the projected success of her children acts as a future-oriented protective factor

To see my children become professionals. This is why I fight so hard, because I don't want them to abandon their studies ... as parents we didn't have the opportunity to go to school and to get a degree to have better jobs ... with my husband we say that we will fight so that our children can be what we weren't able to become in life ... what we didn't have we want them to have. (Maria)

Supporting the younger generation to achieve more than the parents was evident in all the interviews and appears to help make sense of the tragedy, giving them a

future-oriented purpose. This focus on educational opportunity is evident in Margeory's story

my hope and dream is for my children to have a better future that's why I tell them: "do your best at school". Because that's something you as a parent can give to them ... as someone said once: "education is better than a big inheritance." (Margeory)

Moving forward

Despite life-changing experiences, participants reported determination to fight for their futures by combining psychological, familial, and community-level resources which, in accordance with ecological resilience theory, act as protective factors for survivors of events such as volcano eruptions (Ungar, 2011). Maria explains how her own determination, buoyed by social support and her future orientation, helps her to look positively forward

I'm active too, I sell food ... I also learned how to make disinfectant and I sell it ... so my children see that I fight, and they fight by my side. (Maria)

Ana reiterates the importance of combining personal qualities with collective support networks, especially in relation to her role in the community

I've always had a strong and positive spirit ... in my community I was the kind of person who got involved in committees ... I served as president and vice-president of the community councils. (Ana)

Alejandro agrees, reiterating the fight for the future, aided by the local cultural belief systems and social support network.

it's hard to tell our story but we gather strength and God gives us strength ... we will carry on fighting for our family. (Alejandro)

Adopting a future orientation is evidence of resilient responses which are temporal in nature, shifting the focus towards striving for recovery with the help of families, neighbors, and families.

DISCUSSION

The four themes outlined above align with the following areas for discussion.

Things we lost in the fire: Individual and collective challenges

Participants lost relationships, homes, and communities and we endorsed the previously reported view that emotional distress is a common consequence of relocation following environmental disasters (Warsini et al., 2016). Typically, volcano eruption survivors who lose family, homes, and property experience several varieties of psychological distress (Ohta et al., 2003). This may be felt more deeply in Latin America, where there is evidence of a more holistic cognitive style that values community over individualism (de Oliveira & Nisbett, 2017).

Losses incurred by relocation after a disaster can be interpreted in the context of place attachment theory. Place attachments are affective bonds developed by people with places over time (Steg et al., 2013, p. 105) and are an integral part of the self. Displacement from places which are meaningful, as well as from the communities which inhabit and comprise those places, can lead to a sense of rootlessness, as though part of the self has been taken away. This process was evidenced in our findings and in previous research relating to life-changing events such as volcano eruptions (Ruiz & Hernández, 2014). Evidently, these losses challenge the individual's sense of self and the stability of the community which are being dispersed.

The losses incurred by relocation can be interpreted in the context of ecological resilience theory (Ungar, 2011), since the impact goes beyond the individual psychological level. At a community level, when families are relocated a reorganization of social networks is also required, as evidenced in the present study. Individual's challenges following relocation are inseparable from the emplaced (moving from one location to another) and intersubjective experiences which were revealed using our phenomenological approach. These echo those experienced by survivors of Hurricane Katrina in the United States, which precipitated the dispersal of communities as well as reduced feelings of belonging and mattering among those affected (Morris & Deterding, 2016). Several participants in the present study reported a reduced sense of belonging and a feeling that they were not integral to their newfound (re)location. We can understand this by using the term *solastalgia*, which refers to the distress experienced from losing a homeland and community, negatively affecting the quality of life (Albrecht et al., 2007). Someone experiencing *solastalgia* lacks the consolation that home and community can give, thus impacting wellbeing (Warsini et al., 2016). This loss can be understood at the individual level but also socially, in terms of a loss of neighborhood and friendship. This was understood in our research using a phenomenological approach which focused on changes in intersubjective experience (e.g., being relocated into a place with new neighbors).



We argue that following their experiences of relocation in the aftermath of Fuego's eruption, participants faced individual distress, the loss of family and home, plus a fight to come to terms with somewhere where they did not feel integral.

Support from within and beyond: Social protection, known and unknown

Disasters affect individuals and mediate social relationships (Kaniasty, 2020). According to ecological resilience theory, the effect of events such as volcano eruptions cut across individuals and communities (Masten et al., 2014). After Fuego, compensatory relationships were forged. Social support from community members and professionals helped survivors face loss and relocation. Our findings, drawn from an epistemology which explores intersubjective experience, endorse the view that social support, "a social network's provision of psychological and material resources intended to benefit an individual's capacity to cope with stress" (Cohen, 2004, p. 676), is an ecological, protective resilience-building mechanism, once again illustrating the ecological theory (Ungar, 2011). Whether coming from within or beyond the survivor community, we heard stories of neighbors, volunteers, and professionals helping participants to bounce back. We support the view that social and emotional support is key for environmental disaster survivors (Lee & Lee, 2022). This finding can be interpreted in the Central American cultural context, especially in relation to the prevalent cultural value of collectivism in Guatemalan and Latin American society (Arevalo et al., 2016).

Although the circumstances of volcano eruptions vary in different parts of the world and cannot therefore be seen as standardized, our findings suggest some similarity with reports from survivors of Eyjafjallajökull volcano eruption (Iceland), where strong bonding and bridging networks helped navigate the challenges of loss and relocation (Ómarsdóttir et al., 2022). Resilience-building after a volcano eruption involves neighbors and outsiders who, within the web of relational, intersubjective experiences of participants, offer social support to communities to enhance resilience and adaptation. As an intersubjective phenomenon, social support exceeds the realm of individual wellbeing (Norris et al., 2008). We argue that research such as ours highlights the web of supportive relationships that are involved in repairing communities after a disaster (Sippel et al. (2015).

Faith in the resilience process: A culturally endorsed belief and practice

Participants used faith to find answers to questions about why this eruption happened and how they might respond. The role of faith in disaster recovery has been

well documented (Alawiyah et al., 2011; Banerjee & Pyles, 2004). From the perspective of ecological resilience theory, communal faith-based practice acts protectively to supplement individual psychological resources. As a culturally endorsed worldview, faith, and communal faith-based practice, had a grounding influence, enhancing feelings of safety during challenges. Despite disruption and uncertainty, faith can give structure and togetherness (Milstein, 2019), meaning, purpose, and hope in the face of uncertainty. Being part of a religious community provides others with help in decision-making and offers social support (Alawiyah et al., 2011; Bell et al., 2005). A literature review on faith and resilience concurs, suggesting that religious belief and practice can help communities comprehend and cope with environmental disasters (Aten et al., 2019). We also note that the dynamics of this process are likely to vary across cultures. This said, there is evidence that faith and religious practice also reportedly helped build resilience following the effects of Typhoon Haiyan in the Philippines (Wilkinson, 2018). We can interpret faith-based resilience-building as a community-based phenomenon, rather than merely one founded on belief. Hence, being part of a religious community and engaging in communal faith-based practice are both ecological factors which provide resources for resilience at the community level.

After the Fuego eruption, some participants offered thanks, seeing the event as part of a larger plan. Similarly, earthquake Vina Vieja in Peru was described as "God's will being done," as survivors reporting having limited control over events (Karlin et al., 2012). In the present study, some participants framed the disaster as beyond human agency, and even as helping them re-evaluate their purpose in life. Gratitude to a divine power following a disaster was also observed in a community recovering from flooding of Surakarta in Indonesia (Taylor & Peace, 2015). Evidently, culturally endorsed religious belief and practice, experienced at the personal and community level can moderate responses to disaster (Mori et al., 2019), by forming protective factors for families whose lives have been disrupted (Norris & Anbarasu, 2017).

Bouncing forward: Looking to the future

Disaster recovery involves a period of reflection on past losses. Yet with time, there are opportunities to move forward. "Bounce forward resilience" describes a process of moving from a retrospective focus to a future orientation (Manyena et al., 2011). Using phenomenological epistemology, this theme highlights the temporal nature of the experiences reported by our participants. For survivors of disasters such as the Fuego volcano, this means accepting, with the passage of time, new opportunities and learning new skills. Many of these opportunities arise at the level of neighborhood and

community enterprises and support groups, once again showing how resilience-building is an ecological (more than individual) process. Several participants in this study used learning opportunities to distract them from their losses. We heard stories of survivors working together to learn skills such as soap making and perfume selling. The use of community-based learning projects and skill-sharing suggests that interventions based on existing, culturally relevant skills and activities can improve wellbeing among communities after natural disasters (Jackson et al., 2017).

Another manifestation of future-oriented resilience came from reports of securing the future of young people. Participants expressed their determination to fight to give them opportunities they never had. This resonates with previous literature in which survivors of the Vina Vieja earthquake (Peru) focused on hopes for the future and educating their children (Karlin et al., 2012). In this study, as in our own, participant experiences were reported as part of an ongoing, temporal phenomenology, showing resilience to be a process that arises gradually. A phenomenological epistemology helps us to acknowledge this, and to go beyond “snapshot” accounts which report on experiences from one moment in time.

CONCLUSIONS AND LIMITATIONS

Combining ecological resilience theory with a phenomenological epistemology, we explored experiential, social, and cultural factors that mediate the lived experience of a volcano eruption and its consequences for families and communities. We heard stories about life-changing experiences, yielding four main themes, focusing on loss, social support, faith, and future orientation. By engaging with lived experiences ecologically we argue that we have seen beyond the negative psychological consequences of the eruption. Our analysis incorporates the intersubjective, temporal, and emplaced experience of trying to bounce back from an event that most of us will never encounter. We have learned, from first-hand participant narrative accounts, how survivors adapted to a life-changing event over time, through experiences of loss, offers of protective support, their faith, and attempts to develop a future orientation.

The themes and findings from our study will not only communicate the experiences of one community in Guatemala. They can also tell us something of the challenges of living through other environmental disasters (Creswell & Zhang, 2009), and how these challenges can be better acknowledged and understood by voluntary organizations, policy makers, and NGOs that are involved in events of this kind. Our findings may for instance raise awareness about social and cultural factors that NGOs might acknowledge when supporting

populations that have been relocated. After all, it is useful to be wary of a reduced sense of belonging among displaced persons. A practical suggestion here would be to develop interventions involving community-based social events to enhance belongingness for displaced survivors. Additionally, our study suggests that both informal neighborhood support and professional support from psychologists can help survivors facing loss and relocation. Hence, a practical suggestion for other communities would be to recommend both these forms of support in disaster-affected communities, by supplementing neighborhood welcome events with new clinics staffed by psychologists. Furthermore, our findings indicate that local faith groups and religious practices can promote structure and togetherness among displaced families. Hence, the involvement of local religious groups in relief and resilience strategies might be encouraged as another practical suggestion. We also found that activities such as learning new skills were helpful for displaced families. We recommend projects involving local skill-sharing and handicraft workshops as part of future relief strategies. Overall, we argue that important lessons can be learned about resilience building from our research, which can offer guidance for those working with other communities with challenges.

To aid this transferability, more research is required to help us learn about common challenges faced by disaster-affected communities across cultures, and about the diverse lived experiences of specific populations (Lucini, 2014). Future research could change the focus from the perspectives of displaced families following events such as volcano eruptions to those of host families from neighborhoods to which displaced families move. It would be interesting to set up focus groups with participants from displaced families and hosts, exploring strategies for reconciliation. Another suggestion, building on our observation of the beneficial role of practical skill-sharing in wellbeing enhancement, would be to work with displaced communities and local artists, using creative methods such as participatory mapping (Green et al., 2016), to develop skills and produce artworks (drawing, photography, creative writing) to commemorate former neighborhoods, alleviate feelings of disconnection, recognize place-attachment and develop feelings of purpose.

We agree with Oliver-Smith (2011), who has been critical of popular disaster response discourses that focus on material consequences. Research such as ours potentially can broaden these discourses and inform policy planning. To do so, evidence-based findings about social and cultural factors implicated in adaptation to disasters need to be disseminated beyond academia, through the regional press, local political movements, social media platforms, and university press agencies, enabling those involved in disaster response funding to make informed, culturally sensitive choices.



This project is based on interviews with a relatively small sample of participants. Whilst a larger sample would have been welcome, it should be remembered that the project took place when the community around San Miguel Los Lotes was still recovering from a life-changing event. Working with a locally situated gatekeeper, the researchers were acutely aware of the sensitive nature of the subject matter, so it was important to approach only those families who were psychologically prepared to contribute. By this, we mean those who were willing to talk about their experiences, who were considered by the gatekeeper to understand the impact of, and processed their reactions to, the volcano eruption, and who knew how to seek any additional support. We argue that the families who were represented here provided affecting stories, allowing for a rich analysis. We concede that the relatively small sample who participated in this study about resilience building means that our perspective is necessarily idiographic. We have learned a lot about the meanings and experiences of a particular community. This said, we cannot claim to have generated knowledge about resilience building from a universalist or cross-cultural perspective.

The findings from the present study enrich our understanding of individual, social and cultural factors which contribute to the development of resilience-building among families who were affected by the eruption of Fuego in 2018. However, working with a small sample in a specific location, we acknowledge that these same factors may not easily map onto other communities elsewhere who are recovering from other environmental disasters or extreme weather events. The nature of idiographic, phenomenological research is that it lacks generalizability, since the specific protective processes reflect cultural distinctiveness (Ungar, 2013). This said, we contend that some of the methodological approaches and thematic findings from the current study will have a degree of transferability.

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ETHICS STATEMENT

Ethical approval was granted by the University Ethics Committee, with written consent obtained before interviews commenced. Participants were fully informed, confidentiality was protected, and they were granted the right to withdraw their data. Wellbeing was managed by offering to pause or terminate the interview if participants became upset. All participants were grateful for the

opportunity to talk about their experiences and felt listened to which they stated at the end of the interview. Details of support agencies were provided postinterview, and ongoing support from the NGO was made available.

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