BioOne COMPLETE

Ke garne? How Values and Worldviews Influence Resilience to Natural Hazards: A Case Study From Mustang, Nepal

Authors: Posch, Eva, Höferl, Karl Michael, Steiger, Robert, Bell, Rainer, and Gurung, Laxmi

Source: Mountain Research and Development, 39(4)

Published By: International Mountain Society

URL: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

Mountain Research and Development (MRD)
An international, peer-reviewed open access journal
published by the International Mountain Society (IMS)
www.mrd-journal.org

MountainResearch
Systems knowledge

Ke garne? How Values and Worldviews Influence Resilience to Natural Hazards: A Case Study From Mustang, Nepal

Eva Posch[1]*, Karl Michael Höferl[1], Robert Steiger[2], Rainer Bell[3], and Laxmi Gurung[4]

** Corresponding author: eva.posch@uibk.ac.at*

[1] Department of Geography, University of Innsbruck, Innrain 52, 6020 Innsbruck, Austria
[2] Department of Public Finance, University of Innsbruck, Universitätsstraße 15, 6020 Innsbruck, Austria
[3] Department of Geography, University of Innsbruck, Innrain 52, 6020 Innsbruck, Austria
[4] Kagbeni, Mustang District, Nepal

© 2019 Posch et al. This open access article is licensed under a Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/). Please credit the authors and the full source.

Tourism is an important source of income for many mountain communities in Nepal. However, the tourism industry is highly vulnerable to a variety of natural hazards. The ability of local people to proactively prepare, protect, and support prevention activities against natural hazards drives a mountain community's resilience. Research on whether and to what extent people have adopted such proactive behaviors has shown that human action is determined not only by sociodemographic and socioeconomic conditions—such as age, gender, or income—but also by values and worldviews. In this paper, we present data from a 2-phased survey of 160 lodge owners conducted in 2017 and 2018 in Mustang, Nepal, focusing on lodge owners' activities in disaster risk reduction (DRR) and their values and worldviews. Classifying the preparedness and support for prevention (PSP) activities of lodge owners, we found 3 different PSP types. In a second step, these PSP types were contrasted with values and worldviews held by the lodge owners, as well as sociodemographic and socioeconomic factors. This revealed strong correlations between the lodge owners' values and their PSP type. These results indicate that when trying to explain an actor's DRR activities, his or her values might be as important as commonly used sociodemographic and socioeconomic indicators. We argue that a holistic concept of resilience—combining actors' values and worldviews as well as their sociodemographic and socioeconomic status—can strengthen efforts to build resilience.

Keywords: *preparedness; prevention; segmentation; resilience; value orientations; natural hazards; tourism entrepreneurs; Nepal.*

Peer-reviewed: *May 2019* ***Accepted:*** *June 2019*

Introduction

Mountain communities in the Nepalese Himalayas face great challenges because of their remoteness, inaccessibility, and limited economic opportunities (Jaquet et al 2016). Tourism is an important livelihood strategy for these communities, offering employment opportunities and an incentive for young people to stay in the region (Nepal 2000, 2002; Childs et al 2014). However, Nepal's tourism industry is highly vulnerable to a variety of natural hazards and impacts of climate change (Nyaupane and Chhetri 2009). Limited space for settlement, intensified land use, and poor hazard prevention, disaster preparedness, and management practices are further development challenges (Gardner and Dekens 2007). The ability of local people to anticipate, cope with, and recover from natural hazards is a major focus of sustainable mountain development (UNDRR 2002). This is especially relevant in countries with weak institutional power and insufficient capital-intensive "hard" measures to protect communities and local livelihoods at risk (Kuhlicke et al 2011).

Studies on whether and to what extent some people have adopted such proactive behaviors, while others have not, clearly indicate that human action is determined not only by sociodemographic or socioeconomic conditions—like age, gender, or income—but also by cultural settings (Wisner et al 2011; Krüger et al 2015). These settings influence risk beliefs and responses to natural and technological hazards (Eiser et al 2012). Several environmental psychology studies on values and worldviews have been carried out to better understand proenvironmental attitudes and behavior. Considerably less research has been done to understand linkages between an actor's values and worldviews and their resilience to natural hazards. To fill this gap, we address the 2 research questions with regard to mountain tourism and natural hazards in Nepal:

1. What different behavior types based on preparedness and support for prevention (PSP) activities can be distinguished among touristic entrepreneurs in Nepal?
2. Do behavior types correlate with sociodemographic and socioeconomic factors as well as values and worldviews?

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

To answer these questions, we start by linking scholarship on local resilience to natural hazards with research on values and worldviews in environmental psychology and sociology. After a short introduction to our study region in the Mustang district of Nepal, we present and discuss results based on a survey of lodge owners conducted in 2017 and 2018.

Theoretical background

From a global to a local level, the concept of resilience is an integral element of disaster risk reduction (DRR) (eg Hyogo Framework for Action and the Sendai Framework for Disaster Risk Reduction). Over the last 15 years, resilience has become a prominent feature in contemporary research on disaster risk. Despite its wide use, resilience remains an ambiguous concept. Most authors use the concept to address the capacity or ability to anticipate, prepare, prevent, or recover from the effects of hazardous events (UN/ISDR 2005; Norris et al 2008; Kruse et al 2017). This capacity is most often assigned to communities or households, because many authors argue these are the most crucial agents for prevention and preparedness activities (Cutter et al 2008; Twigg 2009; Werg et al 2013; Arbon et al 2016). Access to economic, social, natural, physical, or human assets can therefore be seen as determinants of community or household resilience (DFID 2000; Norris et al 2008). This asset-based approach has been widely applied in disaster risk and livelihood research, often to develop indices or metrics for measuring resilience and vulnerability (Mayunga 2007). The main goal of asset-based approaches is to highlight vulnerable and resilient entities at different scales (eg household, community, city, region) by aggregating sociodemographic and socioeconomic indicators (Cutter et al 2003, 2008, 2010; Fekete 2009; Werg et al 2013; Quinlan et al 2016; Keating et al 2017). In resilience indices and metrics, income, gender, employment, education level, age, and previous disaster experience are among the most commonly used variables (Mayunga 2007; Cai et al 2018). In the context of Nepal, Sudmeier et al (2013) tried to determine indicators that had the greatest influence on household resilience to landslide risk, identifying inter alia gender, educational background, ethnic status, employment, and remittances as the most relevant factors.

Yet this asset-based approach to resilience leaves no room for understanding the individual's rationality toward disaster risk. Assuming that communities or households behave like rational agents—sharing the same values and worldviews (Darnhofer et al 2016)—improved access to assets leads to an increase in the entities' resilience (Ifejika Speranza et al 2014). But, acknowledging that access to assets is not the same as using these for a given purpose, it is important to integrate individual willingness to act into the concept of resilience. What someone perceives as relevant depends upon his or her values and worldviews and can be studied only at the individual level (Renn 2008, 2010; O'Brien and Wolf 2010).

The impact of values and worldviews on human behavior has been extensively studied inter alia in the field of climate change and sustainability research (O'Brien and Wolf 2010) and environmental psychology (Schwartz 1977; Ajzen 1991; Stern et al 1998, 1999). Despite theoretical differences among these different fields, they share an analytical understanding of culture as the sum of interpretations, values, and attitudes shared by a group of people, leading to similar behavioral patterns and coping strategies (Cannon and Schipper 2014). In contrast, a traditional understanding of culture focuses on a set of practices and artifacts inherently—sometimes "naturally"—linked to certain places and/or (ethnic, linguistic, etc) groups.

In the debate on DRR, an analytical view on culture has been recently used to better understand individual action, behavior, and decision-making (Bankoff et al 2015; Birkmann et al 2015; Gaillard et al 2015; Kelman et al 2015). Prior to this, the cultural theory of risk (Douglas and Wildavsky 1983; Wildavsky and Dake 1990) assumed that worldviews lead to "cultural biases" in the perception, evaluation, and handling of risk. These biases are not bound to geographical regions, ethnic populations, or distinct communities, but encompass a group of people sharing the same interpretations and attitudes toward human–environment relations and similar coping strategies in the face of natural hazards. Significant relationships between this "cultural bias" and risk perceptions have been shown over the years (Leiserowitz 2006; Kahan et al 2008; van der Linden 2015b). Yet the reliability and internal validity of these worldviews have been criticized (Rippl 2002; Sjöberg et al 2004; van der Linden 2015a).

In social and environmental psychology, value orientations are seen as fundamental principles that are more specific and stable than worldviews (Schwartz 1977, 2012; Stern et al 1998, 1999; Stern 2000; Slimak and Dietz 2006). According to Hofstede (1994), basic values are at the heart of culture. Research often builds on Schwartz's (1977) work on basic values dimensions or modifications of them (Stern et al 1998; Stern 2000; de Groot and Steg 2007; Steg and de Groot 2010) to explain proenvironmental behavior and attitudes. These basic values have only recently been used to better understand individual resilience behavior (Daellenbach et al 2017; Rawluk et al 2017, 2018; Appleby-Arnold et al 2018).

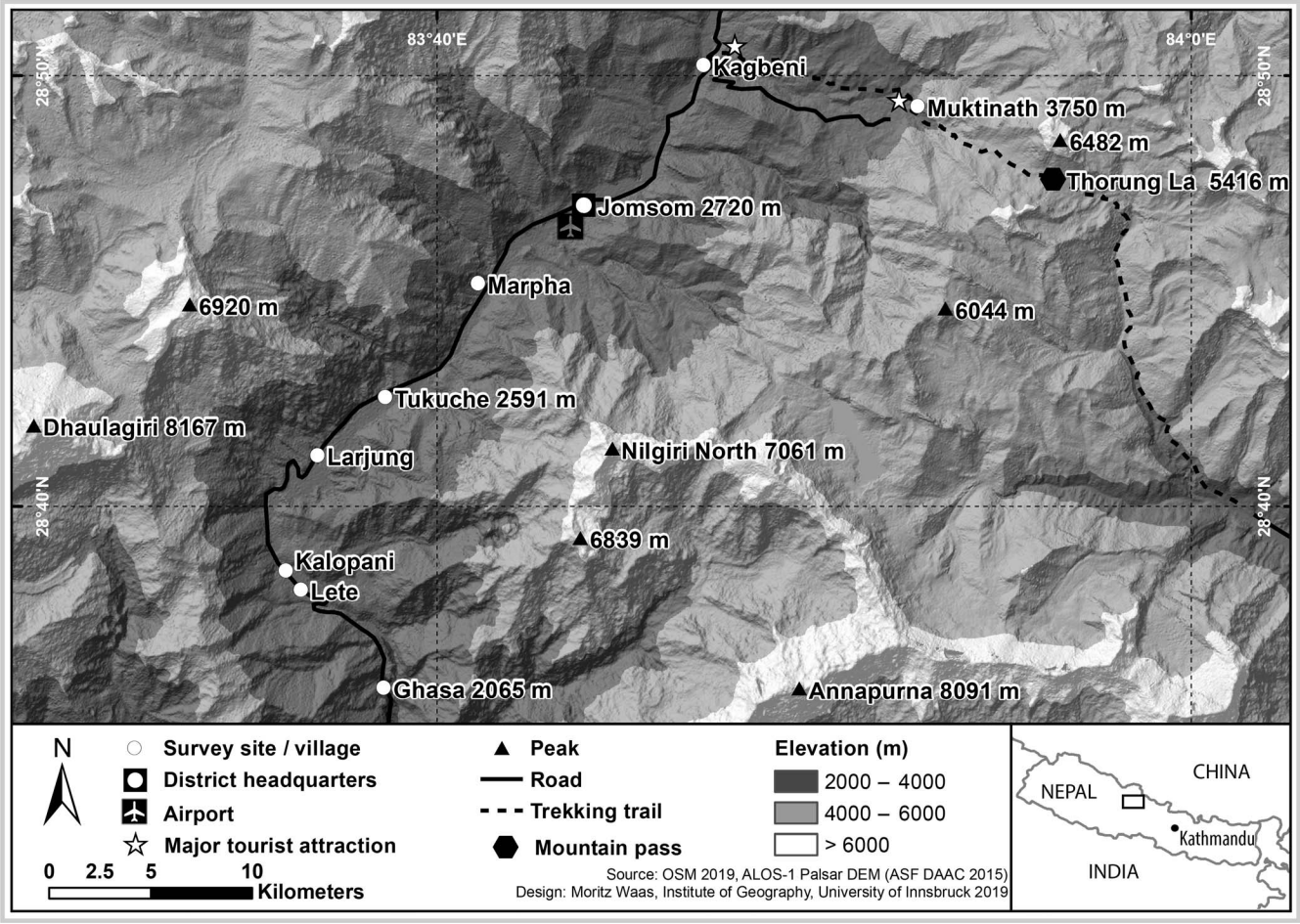
Combining the traditional asset-based with such a value-based approach leads to a more holistic understanding of resilience: the ability (based on the access to assets) and willingness (based on a value-based obligation to act) to not only reactively respond and cope, but also proactively prepare, prevent, and adapt to potential risks of natural hazards (Obrist et al 2010). To do so, we suggest combining Bohle et al's (2009) concept of resilience, which shifts the focus from a system- to an actor-oriented and agency-based perspective, with a value-based approach to action (Schwartz 1977; O'Brien and Wolf 2010). This combination acknowledges that human actors have different value orientations and might therefore pursue different courses of action toward disaster preparedness and prevention under ceteris paribus conditions (O'Brien and Wolf 2010). It further promotes the view that people's actions in the face of natural hazards are determined not only by sociodemographic and socioeconomic attributes, but also by their values and worldviews.

Study design and methodology

We applied this agency-based and value-oriented concept of resilience to gain a deeper understanding of how

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

FIGURE 1 Study sites in Lower Mustang, Nepal. (Map by Moritz Waas)



entrepreneurial resilience to natural hazards constitutes itself in Nepal's tourism industry. A part of the Annapurna Circuit in Nepal's Mustang district was chosen as study site because of its dynamic infrastructural and touristic development, exposure to multiple natural hazards, and high-mountain characteristics. Since tourist accommodation is a main and widespread source of income in this region, we chose a 2-step study design: Initially, we categorized lodge owners according to their ability and willingness to engage in individual disaster preparedness and collective prevention efforts, resulting in PSP types. In a second step, we analyzed how values and worldviews held by the lodge owners and their sociodemographic and socioeconomic status correlate with these PSP types.

Study area

The study area is located in the northern part of the Annapurna Circuit, Mustang district, Nepal (28°47′N, 83°44′E), and includes our 9 selected villages between Ghasa and Muktinath (Figure 1). The villages are located between 2085 and 3760 masl. The Mustang district is located in the northern part of Nepal between the mountain ranges of Annapurna to the east and Dhaulagiri to the west. Socioculturally, the Mustang region is home to Thakali and Gurung (84%), with a population of around 7100 people in 2000 households in 2011 (CBS 2011).

Historically, the Mustang district has always been of geopolitical importance: first as part of the salt trade route between Tibet and the south-facing slopes of the Himalayas, later as tourist destination, and nowadays as a potential economic transit corridor between India and China (Childs et al 2014; Nepal 2007). People in Mustang have a combination of different livelihood strategies. Traditionally, horticulture, agriculture, trade, and livestock husbandry have provided income for most communities (Lama 2016). The area is marked by resource scarcity owing to its harsh climate, steep topography, and fragile ecosystem (Fort 1987; Haffner and Pohle 1993). The Mustang district became a popular tourist destination in the 1980s, lying within the Annapurna Circuit and the Upper Mustang trekking routes (Nepal 2007). Since 2008, the region has also been accessible by road from the south (Beazley and Lassoie 2017). Because of this improved accessibility, the numbers of domestic tourists and pilgrims has increased significantly and has changed tourist demographics and seasonality. Today, involvement in the tourism industry—either operating lodges, working in transport services, or trading goods for tourism—is an important alternative source of income for most households (Lama 2016). In 2016, the district received approximately 39,000 tourists (ACA Unit Conservation Office Jomsom 2017).

The region has seen major natural disasters, like the snowstorms of 2014 and the earthquakes of 2015. The

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

earthquakes caused mostly minor damage, but contributed to the Baisari rock slide, leaving the central access road blocked for a month in 2015 (myRepublica 2015). Additionally, the whole region can be affected by (flash) floods and landslides (Fort et al 2010; Fort 2015). As for tourism, natural hazards have repeatedly destroyed critical tourist infrastructure (eg lodges, roads, and attractions) and have had indirect impacts on economic activities, for example disruption of tourists' travel arrangements or blocked access to important goods. Particularly during monsoon months (June–September), the road can be blocked for several weeks in a row (Kathmandu Post 2017, 2018; Pokhrel 2018).

Data collection and analysis

Fieldwork for this study—a 2-phased survey among lodge owners ($n = 160$)—was carried out by the authors and local assistants from October 2017 to November 2018. In preparation for the survey, exploratory interviews with lodge owners were conducted to discuss their PSP activities against natural hazards and changing environmental conditions. Additionally, we conducted a pilot survey among tourism entrepreneurs in Kathmandu to gain a basic understanding of the entrepreneurs' values and worldviews. Building on this understanding, a questionnaire was developed, covering a wide range of issues related to tourism and DRR, ranging through entrepreneurs' experiences with natural hazards, values, worldviews, and attitudes to sociodemographic and structural data (see Table S1, *Supplemental material*, https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1). We included context-specific activities at the individual level (eg practices that individuals can directly implement or support): 6 items on stated behavior concerning preparedness actions and 6 items on support for prevention activities derived from actions recommended by the Nepal Risk Reduction Consortium (United Nations Development Program 2012). This questionnaire was translated and then administered to all lodge owners in the study area. Because not all sections of this questionnaire are directly related to the objectives of this paper, only selected data are presented.

We implemented the 2-step study design described earlier with this methodological approach. To reveal individual preparedness and stated support for prevention activities among lodge owners, we included a set of 12 items based on context-specific policy documents (United Nations Development Program 2012), scientific studies (Lin Moe and Pathranarakul 2006; Dekens 2007; Miceli et al 2008; Orchiston 2013; Fox-Rogers et al 2016; Corwin et al 2017; for detailed references see *Supplemental material*, Table S1: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1), and exploratory interviews in the questionnaire. While all 6 stated preparedness questions were retained, we included only 2 questions on support for prevention activities in the further analysis because of high multicollinearity (Hair 2009).

A hierarchical clustering algorithm using Jaccard distance was applied to these items to determine lodge owners' PSP types. The elbow criterion confirmed a 3-cluster solution as the most appropriate, which was verified by discriminant analysis.

To analyze values and worldviews held by lodge owners we used the value items developed in cross-national research by Schwartz et al (2001) and Schwartz (2003), modifications of them (Stern et al 1998; Stern et al 1999), and items from cultural theory of risk (Kahan 2012; Oltedal et al 2004) (for detailed references see *Supplemental material*, Table S1: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1). These items were aggregated into constructs using principal axis factor analysis with promax rotation. Variables with loadings on multiple factors and/or loadings below 0.4 were excluded from further analysis. We used Cronbach's alpha to check for internal consistency of these independent constructs.

Correlations between PSP types and the lodge owners' values, worldviews, and sociodemographic and socioeconomic status were examined using chi-square tests of association, Cramer's V to measure strength of association, and Kruskal–Wallis tests to evaluate value differences between PSP types.

Results

Types of PSP activities among lodge owners

Cluster analysis allowed us to identify 3 PSP types among lodge owners in our study area. We gave the PSP types comprehensible labels based on the number of stated PSP activities (median number of actions implemented is 5) and the lodge owners' values. Table 1 describes these PSP types according to the respective frequencies of PSP activities. The lodge owners' sociodemographic and socioeconomic characteristics are given in *Supplemental material*, Table S2: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1.

The first group of lodge owners, the *self-reliant overperformers* ($n = 61$; 39%), were involved in most PSP activities (average = 6; 90% of respondents in this group implemented 6–8 actions). Members of this group were the only ones who attended meetings on natural hazards planning (21%) or participated in a first aid or emergency training (18%). Another group of lodge owners, which we labeled the *progressive communitarians* ($n = 57$), formed the second-largest segment (37% of all respondents). Although they were not engaged in many PSP activities (86% performed 5 actions), all members of this group were involved in community work and were willing to support the organization of construction and clearance equipment (eg Caterpillars) and rescue teams. The *disengaged underperformers* ($n = 38$; 24%) formed the smallest cluster and scored lowest on PSP activities (average 4 activities; 74% implement 1–4 actions). Members of this group were the least involved in community work (68%) and collective community funds (68%). All 3 PSP types were found in each village of the study area.

Values and worldviews held by lodge owners

Our factor analysis revealed 5 valid value orientations held by lodge owners: an orientation toward *biospheric altruism* (self-transcendence), an orientation toward *openness to change*, *fatalistic beliefs*, a *communitarian spirit*, and an *obligation to act/help*. The reliability of these 5 constructs relative to their hypothesized dimensions was acceptable, with 1 exception for fatalistic beliefs. To describe a questionnaire item's dominant association with 1 of these 5 constructs as well as the construct's internal consistency, Table 2 presents item loadings and Cronbach's alpha for the 5 constructs.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

TABLE 1 PSP types among lodge owners ($N = 156$); for detailed references see *Supplemental material*, Table S1: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1).[a)]

Questionnaire items	Self-reliant overperformers ($n = 61$), no. (%)	Progressive communitarians ($n = 57$), no. (%)	Disengaged underperformers ($n = 38$), no. (%)
Attended meetings on natural hazards planning	13 (21.3)	0 (0.0)	0 (0.0)
Participated in first aid or emergency training	11 (18.0)	0 (0.0)	1 (2.6)
Had access to emergency tool kits or first aid supplies	54 (88.5)	0 (0.0)	33 (86.8)
Stockpiled/stored food and materials	59 (96.7)	57 (100.0)	38 (100.0)
Contributed to a community fund for collective resource management	60 (98.4)	49 (86.0)	24 (63.2)
Involved in community work for collective resource management	61 (100.0)	57 (100.0)	26 (68.4)
Supported the organization of construction/clearance equipment (eg Caterpillar)	59 (96.7)	57 (100.0)	14 (36.8)
Supported the formation of (community) rescue teams for collective disaster response (outside of village)	61 (100.0)	57 (100.0)	11 (28.9)

[a)] 4 cases were excluded in the segmentation because of missing data.

Associations between lodge owners' PSP types and their values and worldviews as well as their sociodemographic status

Comparing lodge owners' PSP types to selected items in their sociodemographic and socioeconomic status (Table 3), no significant association ($P < 0.05$) with gender, education level, age, or size of business was found. In contrast, business satisfaction, financial resources usable in case of emergency, migration status, and ethnic group were significantly, but rather weakly, associated with lodge owners' PSP types: self-reliant overperformers were most satisfied with their business situation (mean value: 3.38 out of 5), had the best financial resources (eg savings) to cover unexpected losses (mean value: 2.80 out of 5), and had the lowest share of migrants (12%) of all PSP types. In comparison, the disengaged underperformers were the PSP type least satisfied with their business situation (mean value: 2.55 out of 5) and had the highest share of migrants (32%) (see *Supplemental material*, Table S3: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1).

For associations between values and worldviews held by lodge owners and their PSP type, we found significant and medium to strong associations with obligation to act/help, orientation toward biospheric altruism, and openness to change. Kruskal–Wallis tests indicated significant differences among PSP types for all 5 value orientations. Subsequently, pairwise comparisons were performed, using Dunn's procedure with Bonferroni correction. These comparisons revealed significant differences between z-transformed median value orientations, with the exception of fatalistic beliefs, between progressive communitarians and disengaged underperformers (Table 4; *Supplemental material*, Table S4: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1). These differences revealed a strong polarity between progressive communitarians and disengaged underperformers. While the first showed the highest orientation toward community spirit, biospheric altruism, openness to change, and an obligation to act/help, the latter showed a clearly below-average orientation toward these values. Here, in particular, the combination of a very low obligation to act/help and high prevalence of fatalistic beliefs emphasized the disengaged position of these lodge owners. Despite the above-average orientation of self-reliant overperformers toward biospheric altruism and an obligation to act/help, lodge owners of this PSP type shared a below-average community spirit and orientation toward fatalistic beliefs.

Discussion

Our findings indicate that PSP activities are predominantly not significantly associated with a lodge owner's sociodemographic and socioeconomic status, as frequently asserted in studies on resilience. Most prominently, education and previous experiences with natural hazards showed no significant association with lodge owners' PSP types. In contrast, the selected lodge owners' values and worldviews are strongly correlated to their PSP types. These results are in line with studies on climate change, where individuals' values are found to have a stronger impact on behavior than education or previous experiences (Whitmarsh 2011; Wang and Kim 2018). This may imply that, when working on strategies fostering resilience, a focus merely on classical knowledge production through communication, training, or education—main components of classic DRR policies—may be inefficient (Weichselgartner and Pigeon 2015).

We often hear the argument that some cultures are more fatalistic than others when it comes to DRR (Bista 1994; Hoffman and Oliver-Smith 2002; Eiser et al 2012). In Nepal, *ke garne*—meaning literally "what can you do?"—is common in everyday conversations. This phrase is used to indicate that there is nothing you can do to change your fate and therefore it is pointless to take any action to change your current situation (Bista 1994). While on one hand, *ke garne* refers to accepting life as it is, it can also be interpreted as a form of apathy, ignorance, and fatalism (Pradhan 2015). As underlined in Dor Bahadur Bista's popular anthropological work on underdevelopment (*Fatalism and Development: Nepal's Struggle for Modernization*), "this deep belief in fatalism has had

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

TABLE 2 Factor loadings and Cronbach's alpha for values and worldviews held by lodge owners; for detailed references see *Supplemental material*, Table S1: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1.

Values and questionnaire items	Association (factor loading)	Internal consistency (Cronbach's alpha)
Obligation to act/help (based on Schwartz et al 2001)		
I would financially help others in [village of respondent] when they face hard times.	0.932	0.875
Concerning all kinds of natural disasters, how much is it your personal obligation/your duty to take actions in [village of respondent]?	0.899	
It's very important to help other people and care for them.	0.846	
Openness to change (based on Stern et al 1999)		
He/she likes to take risks. He/she is always looking for adventures.	0.863	0.797
Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way.	0.827	
He/she thinks it is important to do lots of different things in life. He/she always looks for new things to try.	0.831	
Biospheric altruism (based on Stern et al 1999)		
It is important to him/her to adapt to nature and to fit into it. He/she believes that people should not change nature.	0.795	0.780
He/she strongly believes that people should care for nature. Looking after the environment is important to him/her.	0.850	
It is very important to him/her to help the people around him/her. He/she wants to care for other people.	0.795	
He/she believes all the world's people should live in harmony. Promoting peace among all groups in the world is important to him/her.	0.695	
Communitarian spirit (based on Kahan 2012)		
It is society's responsibility to make sure everyone's basic needs are met.	0.765	0.555
Our society would be better off if the distribution of wealth were more equal.	0.792	
People who are successful in business have the right to enjoy their wealth as they see fit. (reversed)	0.575	
Fatalistic belief (based on Schwartz et al 2001; Oltedal et al 2004)		
The central government interferes far too much in our everyday lives.	0.688	0.387
Natural hazards harming people are part of God's will.	0.678	
I do not worry about politics because I cannot influence things very much.	0.641	

a devastating effect on [. . .] the Nepali response to development" (Bista 1994: 4). He considers social and cultural aspects of Nepali society—mainly fatalistic attitudes along with the evasion of responsibility—as the main barriers to progress in Nepal. Fatalistic beliefs may prevent people from taking precautionary action against natural hazards, as nature is often seen as uncontrollable and unpreventable (McClure et al 2007, 2010; McClure 2017). We also see this correlation in our results, but we can show that fatalistic beliefs are not evenly spread among the lodge owners: while self-reliant overperformers showed a below-average fatalistic orientation and were most prepared and supportive of prevention activities, the disengaged underperformers, least engaged in PSP activities, shared above-average fatalistic beliefs (see Table 3).

In many studies, culture is defined as a shared set of symbols, artifacts, rituals, customs, language, and social practices that individuals hold within a society (Edgar and Sedgwick 2013). This view reflects a descriptive, functional notion of culture by setting up "an equation of the form 'region = people = culture'" (Boesch 2007: 6) without questioning the inhomogeneity of this construct. From a critical perspective, the question of "whose culture" should be central, as there is no such a thing as a homogenous culture that is place or group based (Boesch 2007).

However, we do not wish to understate the relevance of a lodge owner's sociodemographic and socioeconomic status to an asset-based approach toward entrepreneurial resilience. The lodge owners' business satisfaction, available financial resources, and migration status all significantly correlate with their PSP types. These associations can provide further insights into the rationality of certain PSP types. For example, disengaged underperformers not only are the lodge owners least involved in community work (eg

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

TABLE 3 Association of PSP types with lodge owner values as well as their sociodemographic and socioeconomic status; for detailed references see *Supplemental material*, Table S1: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1).[a)]

Variables	Description	Association and its strength (Cramer's V)
Sociodemographic and socioeconomic variables		
Age (y)	19–33, 34–39, 40–48, 49–72	—
Gender	Male, female	—
Education	Highest education level (illiterate, primary level, under SLC, SLC, university degree)	—
Migration status	Migrated, not migrated	0.216*
Ethnic group	Thakali, Gurung, other	0.218*
Annual household income (*lakh*)[b)]	≤4, 5–10, ≥11	0.236*
Household size (no. of people)	≤4 people, 5 people, ≥6 people	—
Membership in formal and informal group (eg women's group, youth club) (no. of groups)	None, 1, 2, 3 or more	0.243**
Lived/worked abroad	Yes, no	—
Receive remittances	Yes, no	—
Business satisfaction	Satisfied, neutral, dissatisfied	0.353**
Number of rooms	≤8, 9–14, 15–50	—
Number of guests (annual average)	≤300, 300–1100, 1200–10,000	—
Other livelihood activities: livestock farming	Yes, no	—
Other livelihood activities: agriculture	Yes, no	0.246*
Other livelihood activities: pastures/woods	Yes, no	—
Other livelihood activities: land for renting	Yes, no	—
Previous disaster experience	Yes, no	—
Financial resources available in case of emergency (eg savings)	Low, high	0.402**
Values and worldviews		
Obligation to act/help	4 groups based on regression factor scores from factor analysis	0.585**
Communitarian spirit	5 groups based on regression factor scores from factor analysis	0.416**
Biospheric altruism	5 groups based on regression factor scores from factor analysis	0.385**
Openness to change	5 groups based on regression factor scores from factor analysis	0.359**
Fatalistic beliefs	5 groups based on regression factor scores from factor analysis	0.322**

[a)] SLC, School Leaving Certificate; —, not significant.
[b)] 1 *lakh* = 100,000 Nepalese rupees.
* $P < 0.05$.
** $P < 0.001$.

participating in an emergency community fund or community work), but they also have the highest share of respondents with a migration background among the 3 PSP types identified. We assume that migrant status poses a serious obstacle for lodge owners to participation in and therewith access to local social networks. In Mustang, collective actions and participation in village community councils have a strong tradition and are also associated with disaster prevention and restoration activities (Messerschmidt 1981; Johnson et al 1982; Holmelin and Aase 2013). Thus,

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

TABLE 4 Differences between median value orientation (z-transformed) of lodge owners and their PSP types (mean of 0).[a)]

Basic values	Self-reliant overperformers ($n = 61$)	Progressive communitarians ($n = 57$)	Disengaged underperformers ($n = 38$)
Obligation to act/help	0.40	**0.81**	*−1.57*
Openness to change	0.01	**0.68**	*−0.83*
Biospheric altruism	0.38	**0.47**	*−0.49*
Communitarian spirit	−0.34	**0.59**	*−0.91*
Fatalistic beliefs	*−0.31*	0.16[b)]	**0.49**[b)]

[a)] Bold figures, highest median for given value; italic figures, lowest median for given value.
[b)] No significant differences in median value orientation ($P < 0.05$).

having access to such networks plays an important role in enhancing entrepreneurial resilience.

Combining a value- with an asset-oriented perspective on resilience widens our horizon of understanding in at least 2 ways. On the one hand, it empowers us to challenge traditional narratives in DRR, such as the dominant role of communication, training, and education for building individual resilience against natural hazards. On the other hand, an analytical approach to values held by actors can improve our understanding of individual rationales behind more or less proactive approaches to DRR. It does so by helping us understand why lodge owners do (not) have access to certain assets, and also by giving an insight into what is driving their decision to (not) use these assets for certain purposes. As shown in our case study, most lodge owners' DRR activities are not correlated with fatalistic beliefs, but rather with optimistic values such as biospheric altruism, an obligation to act and help, or communitarian spirit, which showed the strongest association with lodge owners' PSP types. These findings question generalized attributions like the fatalistic orientation of Nepali society and the deduced "natural" limitations for DRR in Nepal. Following research in environmental psychology (eg Stern et al 1999), we assume that the promotion of these positive values among lodge owners—along with traditional asset-oriented activities—might be a useful step to foster entrepreneurial resilience against natural hazards.

Conclusion

In this study, we segmented PSP activities among lodge owners in Mustang district, Nepal. In doing so, we identified 3 PSP types among lodge owners: the self-reliant overperformers, the progressive communitarians, and the disengaged underperformers. Further, we empirically showed that lodge owners' DRR activities are only partially correlated with their sociodemographic and socioeconomic statuses. In contrast, the lodge owners' values and worldviews showed, without exception, significant and relatively stronger correlations with the identified PSP types. These results indicate clearly that we should pay more attention to actors' values and worldviews, as they are at the basis of how people will respond to DRR initiatives and resilience building. Consequently, we argue that a holistic concept of resilience—taking the actors' values as well as their sociodemographic and socioeconomic status into account—can strengthen efforts to build resilience in mountain regions.

Looking for limitations of our study, the narrow spatial focus becomes evident. We focused only on tourism entrepreneurs in 9 selected villages in the northern part of the Annapurna Circuit, Mustang district, Nepal, and therefore acknowledge that a more extensive study across different mountain regions could strengthen the analysis. Further, by using a limited, ex ante–defined set of values and worldviews in our study, we cannot provide a conclusive and nuanced list of lodge owners' values and worldviews relevant to their DRR activities. To do so, a systematic analysis of environmental values and their associations with lodge owners' PSP types is needed. Since we found significant correlations between lodge owners' values and their DRR activities, a qualitative analysis of causal relationships behind these correlations might be of relevance. The question of why some lodge owners do not engage in actions for sustainable DRR recommended by the Nepal Risk Reduction Consortium is a worthwhile subject for further research.

ACKNOWLEDGMENTS

We would like to thank the people in our study region for participating in our surveys; Biju Thakali, Tshering Gurung, and Yungdrung Tsewang for their valuable field assistance; and Moritz Waas for his support in cartography. This research was funded by the Earth System Sciences Program (ESS) of the Austrian Academy of Science.

REFERENCES

ACA [Annapurna Conservation Area] Unit Conservation Office Jomsom. 2017. *Tourist Check Post and Information Centre Jomsom. Report on Tourist Statistics, 2012–2017.* Jomsom, Nepal: ACA Unit Conservation Office.

Ajzen I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50(2):179–211. https://doi.org/10.1016/0749-5978(91)90020-T.

Appleby-Arnold S, Brockdorff N, Jakovljev I, Zdravković S. 2018. Applying cultural values to encourage disaster preparedness: Lessons from a low-hazard country. *International Journal of Disaster Risk Reduction* 31:37–44. https://doi.org/10.1016/j.ijdrr.2018.04.015.

Arbon P, Steenkamp M, Cornell V, Cusack L, Gebbie K. 2016. Measuring disaster resilience in communities and households. *International Journal of Disaster Research in the Built Environment* 7(2):201–215. https://doi.org/10.1108/IJDRBE-03-2015-0008.

Bankoff G, Cannon T, Krüger F, Schipper L. 2015. Introduction: Exploring the links between cultures and disasters. *In:* Krüger F, Bankoff G, Cannon T, Orlowski B, Schipper L, editors. *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk Reduction.* London, United Kingdom: Routledge, pp 1–16.

Beazley RE, Lassoie JP. 2017. *Himalayan Mobilities: An Exploration of the Impact of Expanding Rural Road Networks on Social and Ecological Systems in the Nepalese Himalaya.* Cham, Switzerland: Springer.

Birkmann J, Setiadi N, Fiedler G. 2015. A culture of resilience and preparedness: The last mile case study tsunami risk: Padang city, Indonesia. *In:* Krüger F,

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

Bankoff G, Cannon T, Orlowski B, Schipper L, editors. *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk Reduction.* London, United Kingdom: Routledge, pp 235–254.
Bista DB. 1994. *Fatalism and Development: Nepal's Struggle for Modernization.* Calcutta, India: Orient Longman.
Boesch M. 2007. Is "culture" still relevant to regional policy? Conclusions from DIAMONT, a European Union research project. *Mountain Research and Development* 27(1):4–10.
Bohle H-G, Etzold B, Keck M. 2009. Resilience as agency. *IHDP Update* 2:8–13.
Cai H, Lam NSN, Qiang Y, Zou L, Correll RM, Mihunov V. 2018. A synthesis of disaster resilience measurement methods and indices. *International Journal of Disaster Risk Reduction* 31:844–855. https://doi.org/10.1016/j.ijdrr.2018.07.015.
Cannon T, Schipper L. 2014. *World Disasters Report 2014: Focus on Culture and Risk.* Geneva, Switzerland: International Federation of Red Cross and Red Crescent Societies.
CBS [Central Bureau of Statistics]. 2011. *Population Census 2011.* Kathmandu, Nepal: CBS.
Childs G, Craig S, Beall CM, Basnyat B. 2014. Depopulating the Himalayan highlands: Education and outmigration from ethnically Tibetan communities of Nepal. *Mountain Research and Development* 34(2):85–94.
Corwin KA, Brand BD, Hubbard ML, Johnston DM. 2017. Household preparedness motivation in lahar hazard zones: Assessing the adoption of preparedness behaviors among laypeople and response professionals in communities downstream from Mount Baker and Glacier Peak (USA) volcanoes. *Journal of Applied Volcanology* 6(1):218. https://doi.org/10.1186/s13617-017-0055-8.
Cutter SL, Barnes L, Berry M, Burton C, Evans E, Tate E, Webb J. 2008. A place-based model for understanding community resilience to natural disasters. *Global Environmental Change* 18(4):598–606. https://doi.org/10.1016/j.gloenvcha.2008.07.013.
Cutter SL, Boruff BJ, Shirley WL. 2003. Social vulnerability to environmental hazards. *Social Science Quarterly* 84(2):242–261. https://doi.org/10.1111/1540-6237.8402002.
Cutter SL, Burton CG, Emrich CT. 2010. Disaster resilience indicators for benchmarking baseline conditions. *Journal of Homeland Security and Emergency Management* 7(1):Article 51. https://doi.org/10.2202/1547-7355.1732.
Daellenbach K, Parkinson J, Krisjanous J. 2017. Just how prepared are you? An application of marketing segmentation and theory of planned behavior for disaster preparation. *Journal of Nonprofit & Public Sector Marketing* 30(4):413–443. https://doi.org/10.1080/10495142.2018.1452830.
Darnhofer I, Lamine C, Strauss A, Navarrete M. 2016. The resilience of family farms: Towards a relational approach. *Journal of Rural Studies* 44:111–122. https://doi.org/10.1016/j.jrurstud.2016.01.013.
de Groot J, Steg L. 2007. Value orientations and environmental beliefs in five countries: Validity of an instrument to measure egoistic, altruistic and biospheric value orientations. *Journal of Cross-Cultural Psychology* 38(3):318–332. https://doi.org/10.1177/0022022107300278.
Dekens J. 2007. *The Snake and the River Don't Run Straight: Local Knowledge on Disaster Preparedness in the Eastern Terai of Nepal.* Kathmandu, Nepal: International Centre for Integrated Mountain Development.
DFID [Department for International Development]. 2000. *Sustainable Livelihoods Guidance Sheets.* London, United Kingdom: DFID.
Douglas M, Wildavsky A. 1983. *Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers.* Oakland, CA: University of California Press.
Edgar A, Sedgwick PR. 2013. *Cultural Theory: The Key Concepts.* 2nd edition. London, United Kingdom: Routledge.
Eiser RJ, Bostrom A, Burton I, Johnston DM, McClure J, Paton D, van der Pligt J, White MP. 2012. Risk interpretation and action: A conceptual framework for responses to natural hazards. *International Journal of Disaster Risk Reduction* 1:5–16. https://doi.org/10.1016/j.ijdrr.2012.05.002.
Fekete A. 2009. Validation of a social vulnerability index in context to river-floods in Germany. *Natural Hazards and Earth System Sciences* 9(2):393–403. https://doi.org/10.5194/nhess-9-393-2009.
Fort M. 1987. Geomorphic and hazards mapping in the dry, continental Himalaya: 1:50,000 maps of Mustang District, Nepal. *Mountain Research and Development* 7(3):222–238.
Fort M. 2015. Natural hazards versus climate change and their potential impacts in the dry, northern Himalayas: Focus on the upper Kali Gandaki (Mustang District, Nepal). *Environmental Earth Sciences* 73(2):801–814. https://doi.org/10.1007/s12665-014-3087-y.
Fort M, Cossart E, Arnaud-Fassetta G. 2010. Hillslope-channel coupling in the Nepal Himalayas and threat to man-made structures: The middle Kali Gandaki Valley. *Geomorphology* 124(3–4):178–199. https://doi.org/10.1016/j.geomorph.2010.09.010.
Fox-Rogers L, Devitt C, O'Neill E, Brereton F, Clinch JP. 2016. Is there really "nothing you can do"?: Pathways to enhanced flood-risk preparedness. *Journal of Hydrology* 543:330–343. https://doi.org/10.1016/j.jhydrol.2016.10.009.
Gaillard JC, Fordham M, Sanz K. 2015. Culture, gender and disaster: From vulnerability to capacities. *In:* Krüger F, Bankoff G, Cannon T, Orlowski B, Schipper L, editors. *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk Reduction.* London, United Kingdom: Routledge, pp 222–235.
Gardner JS, Dekens J. 2007. Mountain hazards and the resilience of social–ecological systems: Lessons learned in India and Canada. *Natural Hazards* 41(2):317–336. https://doi.org/10.1007/s11069-006-9038-5.
Haffner W, Pohle P. 1993. Siedlungsprozesse und Staatenbildungen im Tibestischen Himalaya. *Spiegel der Forschung* 10(1):10–15.
Hair JF. 2009. *Multivariate Data Analysis.* 6th edition. New Delhi, India: Pearson Education.
Hoffman SM, Oliver-Smith A, editors. 2002. *Catastrophe & Culture: The Anthropology of Disaster.* Santa Fe, NM: School of American Research Press.
Hofstede G. 1994. *Cultures and Organizations: Software of the Mind: Intercultural Cooperation and Its Importance for Survival.* London, United Kingdom: Harper Collins.
Holmelin N, Aase TH. 2013. Flexibility of scope, type and temporality in Mustang, Nepal. Opportunities for adaptation in a farming system facing climatic and market uncertainty. *Sustainability* 5(4):1387–1405. https://doi.org/10.3390/su5041387.
Ifejika Speranza C, Wiesmann U, Rist S. 2014. An indicator framework for assessing livelihood resilience in the context of social–ecological dynamics. *Global Environmental Change* 28:109–119. https://doi.org/10.1016/j.gloenvcha.2014.06.005.
Jaquet S, Shrestha G, Kohler T, Schwilch G. 2016. The effects of migration on livelihoods, land management, and vulnerability to natural disasters in the Harpan watershed in western Nepal. *Mountain Research and Development* 36(4):494–505.
Johnson K, Olson AE, Manandhar S. 1982. Environmental knowledge and response to natural hazards in mountainous Nepal. *Mountain Research and Development* 2(2):175–188.
Kahan DM. 2012. Cultural cognition as a conception of the cultural theory of risk. *In:* Roeser S, editor. *Handbook of Risk Theory: Epistemology, Decision Theory, Ethics, and Social Implications of Risk.* New York, NY: Springer.
Kahan DM, Braman D, Slovic P, Gastil J, Cohen G. 2008. Cultural cognition of the risks and benefits of nanotechnology. *Nature Nanotechnology* 4:87–90. https://doi.org/10.1038/nnano.2008.341.
Kathmandu Post. 2017. Flooded Kaligandaki damages Beni-Jomsom road section, transportation halted. *Kathmandu Post.* https://kathmandupost.com/national/2017/07/07/flooded-kaligandaki-river-damages-beni-jomsom-road-section-transportation-halted; accessed on 18 November 2017.
Kathmandu Post. 2018. Settlements along Kaligandaki river at risk of flooding. *Kathmandu Post.* https://kathmandupost.com/national/2018/09/14/settlements-along-kaligandaki-river-at-risk-of-flooding; accessed on 06 February 2019.
Keating A, Campbell K, Szoenyi M, McQuistan C, Nash D, Burer M. 2017. Development and testing of a community flood resilience measurement tool. *Natural Hazards and Earth System Sciences* 17(1):77–101. https://doi.org/10.5194/nhess-17-77-2017.
Kelman I, Gaillard JC, Mercer J, Crowley K, Marsh S, Morin J. 2015. Culture's role in disaster risk reduction: Combining knowledge systems on small island developing states (SIDS). *In:* Krüger F, Bankoff G, Cannon T, Orlowski B, Schipper L, editors. *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk Reduction.* London, United Kingdom: Routledge, pp 208–221.
Krüger F, Bankoff G, Cannon T, Orlowski B, Schipper L, editors. 2015. *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk Reduction.* London, United Kingdom: Routledge.
Kruse S, Abeling T, Deeming H, Fordham M, Forrester J, Jülich S, Karanci AN, Kuhlicke C, Pelling M, Pedoth L, et al. 2017. Conceptualizing community resilience to natural hazards: The emBRACE framework. *Natural Hazards and Earth System Sciences* 17(12):2321–2333. https://doi.org/10.5194/nhess-17-2321-2017.
Kuhlicke C, Steinführer A, Begg C, Bianchizza C, Bründl M, Buchecker M, Marchi B de, Di Masso Tarditti M, Höppner C, Komac B, et al. 2011. Perspectives on social capacity building for natural hazards: Outlining an emerging field of research and practice in Europe. *Environmental Science & Policy* 14(7):804–814. https://doi.org/10.1016/j.envsci.2011.05.001.
Lama AK. 2016. *Understanding Institutional Adaptation to Climate Change: Social Resilience and Adaptive Governance Capacities of the Nature Based Tourism Institutions in the Annapurna Conservation Area, Nepal* [dissertation]. Würzburg, Germany: Julius-Maximilians-Universität Würzburg.
Leiserowitz A. 2006. Climate change risk perception and policy preferences: The role of affect, imagery, and values. *Climatic Change* 77(1):45–72. https://doi.org/10.1007/s10584-006-9059-9.
Lin Moe T, Pathranarakul P. 2006. An integrated approach to natural disaster management. *Disaster Prevention and Management* 15(3):396–413. https://doi.org/10.1108/09653560610669882.
Mayunga JS. 2007. Understanding and applying the concept of community disaster resilience: A capital-based approach. A draft working paper prepared for the summer academy for social vulnerability and resilience building, 22–28 July 2007, Munich, Germany. https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi_blog/r/11._Joseph_S._Mayunga.pdf; accessed on 14 December 2018.
McClure J. 2017. Fatalism, causal reasoning, and natural hazards. In: Benouar D, editor-in-chief. *Oxford Research Encyclopedia of Natural Hazard Science.* Vol 1. Oxford, United Kingdom: Oxford University Press, pp 1–24. https://doi.org/10.1093/acrefore/9780199389407.013.39
McClure J, Allen MW, Walkey F. 2010. Countering fatalism: Causal information in news reports affects judgments about earthquake damage. *Basic and Applied Social Psychology* 23(2):109–121. https://doi.org/10.1207/S15324834BASP2302_3.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

McClure J, Sutton RM, Sibley CG. 2007. Listening to reporters or engineers? How instance-based messages about building design affect earthquake fatalism. *Journal of Applied Social Psychology* 37(9):1956–1973.
Messerschmidt D. 1981. Nogar and other traditional forms of cooperation in Nepal: Significance for development. *Human Organization* 40(1):40–47. https://doi.org/10.17730/humo.40.1.k7811l2478272681.
Miceli R, Sotgiu I, Settanni M. 2008. Disaster preparedness and perception of flood risk: A study in an Alpine valley in Italy. *Journal of Environmental Psychology* 28(2):164–173. https://doi.org/10.1016/j.jenvp.2007.10.006.
myRepublica. 2015. Transportation along Beni-Jomsom road resumes. *myRepublica.* https://myrepublica.nagariknetwork.com/news/transportation-resumes-along-beni-jomsom-road/; accessed on 29 January 2018.
Nepal SK. 2000. Tourism in protected areas. *Annals of Tourism Research* 27(3):661–681. https://doi.org/10.1016/S0160-7383(99)00105-X.
Nepal SK. 2002. Tourism as a key to sustainable mountain development: The Nepalese Himalayas in retrospect. *Unasylva* 53(208).
Nepal SK. 2007. Tourism and rural settlements Nepal's Annapurna region. *Annals of Tourism Research* 34(4):855–875.
Norris FH, Stevens SP, Pfefferbaum B, Wyche KF, Pfefferbaum RL. 2008. Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology* 41(1–2):127–150. https://doi.org/10.1007/s10464-007-9156-6.
Nyaupane GP, Chhetri N. 2009. Vulnerability to climate change of nature-based tourism in the Nepalese Himalayas. *Tourism Geographies* 11(1):95–119. https://doi.org/10.1080/14616680802643359.
O'Brien KL, Wolf J. 2010. A values-based approach to vulnerability and adaptation to climate change. *WIREs Climate Change* 1(2):232–242. https://doi.org/10.1002/wcc.30.
Obrist B, Henley R, Pfeiffer C. 2010. Multi-layered social resilience. *Progress in Development Studies* 10(4):283–293.
Oltedal S, Moen B-E, Klempe H, Rundmo T. 2004. *Explaining Risk Perception. An Evaluation of Cultural Theory.* Trondheim, Norway: Norwegian University of Science and Technology, Department of Psychology.
Orchiston C. 2013. Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: The case of the Southern Alps, New Zealand. *Current Issues in Tourism* 16(5):477–494. https://doi.org/10.1080/13683500.2012.741115.
Pokhrel M. 2018. Mixed blessings in Mustang: Climate change has unleashed floods, but also allowed apple and vegetable farming in what used to be a desert. *Nepali Times.* https://www.nepalitimes.com/banner/mixed-blessings-in-mustang/; accessed on 14 December 2018.
Pradhan R. 2015. Chakari, karma and ke garne. *Our Kirtipur.* http://ourkirtipur.com.np/index.php/life-style/society/633-chakari-karma; accessed on 14 December 2018.
Quinlan AE, Berbés-Blázquez M, Haider LJ, Peterson GD, Allen CR. 2016. Measuring and assessing resilience: Broadening understanding through multiple disciplinary perspectives. *Journal of Applied Ecology* 53(3):677–687. https://doi.org/10.1111/1365-2664.12550.
Rawluk A, Ford RM, Neolaka FL, Williams KJ. 2017. Public values for integration in natural disaster management and planning: A case study from Victoria, Australia. *Journal of Environmental Management* 185:11–20. https://doi.org/10.1016/j.jenvman.2016.10.052.
Rawluk A, Ford RM, Williams KJH. 2018. Value-based scenario planning: Exploring multifaceted values in natural disaster planning and management. *Ecology and Society* 23(4). https://doi.org/10.5751/ES-10447-230402.
Renn O. 2008. Concepts of risk: An interdisciplinary review: Part 1: Disciplinary risk concepts. *GAIA – Ecological Perspectives for Science and Society* 17(1):50–66.
Renn O. 2010. *Risk Governance: Coping With Uncertainty in a Complex World.* Reprint, digital print. London, United Kingdom: Earthscan.
Rippl S. 2002. Cultural theory and risk perception: A proposal for a better measurement. *Journal of Risk Research* 5(2):147–165.
Schwartz S. 1977. Normative influences on altruism. *In:* Berkowitz L, editor. *Advances in Experimental Social Psychology.* Vol 10. Boston, MA: Academic Press, pp 221–279.
Schwartz S. 2003. A proposal for measuring value orientations across nations. *In:* European Social Survey, editor. *Questionnaire Development Report of the European Social Survey.* Available from http://www.europeansocialsurvey.org/index.php?option=com_docman&task=doc_view&gid=126&Itemid=80; accessed on 14 December 2018.
Schwartz S. 2012. An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture* 2(1):3–20.
Schwartz S, Melech G, Lehmann A, Burgess S, Harris M, Owens V. 2001. Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *Journal of Cross-Cultural Psychology* 32:519–542.
Sjöberg L, Moen B-E, Rundmo T. 2004. *Explaining Risk Perception. An Evaluation of the Psychometric Paradigm in Risk Perception Research.* Trondheim, Norway: Norwegian University of Science and Technology, Department of Psychology.
Slimak MW, Dietz T. 2006. Personal values, beliefs, and ecological risk perception. *Risk Analysis* 26(6):1689–1705. https://doi.org/10.1111/j.1539-6924.2006.00832.x.
Steg L, de Groot J. 2010. Explaining prosocial intentions: Testing causal relationships in the norm activation model. *British Journal of Social Psychology* 49(4):725–743. https://doi.org/10.1348/014466609X477745.
Stern P. 2000. Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues* 56(3):407–424.
Stern PC, Dietz T, Abel T, Guagnano GA, Kalof L. 1999. A value-belief-norm theory of support for social movements: The case of environmentalism. *Research in Human Ecology* 6(2):81–97.
Stern PC, Dietz T, Guagnano GA. 1998. A brief inventory of values. *Educational and Psychological Measurement* 58(6):984–1001.
Sudmeier K, Jaboyedoff M, Jaquet S. 2013. Operationalizing "resilience" for disaster risk reduction in mountainous Nepal. *Disaster Prevention and Management* 22(4):366–377. https://doi.org/10.1108/DPM-02-2013-0028.
Twigg J. 2009. *Characteristics of a Disaster-resilient Community: A Guidance Note.* Version 2. https://discovery.ucl.ac.uk/id/eprint/1346086/1/1346086.pdf; accessed on 14 December 2018.
UN/ISDR [United Nations Inter-Agency Secretariat of the International Strategy for Disaster Reduction]. 2005. *Hyogo Framework for Action 2005–2015: Building the Resilience of the Nations and Communities to Disasters.* Kobe, Japan: Asia ISDR Outreach.
UNDRR [United Nations Office for Disaster Risk Reduction]. 2002. *Disaster Reduction for Sustainable Mountain Development.* Geneva, Switzerland: United Nations Office for Disaster Risk Reduction. http://www.unisdr.org/files/4031_MountainBooklet2002eng1.pdf; accessed on 14 December 2018.
United Nations Development Program. 2012. *Nepal Risk Reduction Consortium (NRRC): Flagship Programmes.* Kathmandu, Nepal: NRRC Flagship 2. http://flagship4.nrrc.org.np/document/nrrc-overview; accessed on 14 December 2018.
van der Linden S. 2015a. A conceptual critique of the cultural cognition thesis. *Science Communication* 38(1):128–138. https://doi.org/10.1177/1075547015614970.
van der Linden S. 2015b. The social-psychological determinants of climate change risk perceptions: Towards a comprehensive model. *Journal of Environmental Psychology* 41:112–124. https://doi.org/10.1016/j.jenvp.2014.11.012.
Wang J, Kim S. 2018. Analysis of the impact of values and perception on climate change skepticism and its implication for public policy. *Climate* 6(4):99. https://doi.org/10.3390/cli6040099.
Weichselgartner J, Pigeon P. 2015. The role of knowledge in disaster risk reduction. *International Journal of Disaster Risk Science* 6(2):107–116. https://doi.org/10.1007/s13753-015-0052-7.
Werg J, Grothmann T, Schmidt P. 2013. Assessing social capacity and vulnerability of private households to natural hazards: Integrating psychological and governance factors. *Natural Hazards and Earth System Sciences* 13(6):1613–1628. https://doi.org/10.5194/nhess-13-1613-2013.
Whitmarsh L. 2011. Scepticism and uncertainty about climate change: Dimensions, determinants and change over time. *Global Environmental Change* 21(2):690–700. https://doi.org/10.1016/j.gloenvcha.2011.01.016.
Wildavsky A, Dake K. 1990. Theories of risk perception. who fears what and why? *Daedalus* 119(4):41–60.
Wisner B, Gaillard JC, Kelman I, editors. 2011. *Handbook of Hazards and Disaster Risk Reduction.* London, United Kingdom: Routledge.

Supplemental material

TABLE S1 Questionnaire.
TABLE S2 Lodge owners' sociodemographic and socioeconomic characteristics.
TABLE S3 PSP types and selected sociodemographic and socioeconomic variables.
TABLE S4 Kruskal–Wallis test for differences in median scores.

All found at DOI: https://doi.org/10.1659/MRD-JOURNAL-D-19-00005.1.S1.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 24 Apr 2024
Terms of Use: https://bioone.org/terms-of-use