Chapter 18

Risk, Resilience, and Readiness: Developing an All-Hazards Perspective

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ABSTRACT
This chapter discusses how readiness contributes to developing community resilience. It does so from the perspective of understanding how people interpret risk, make disaster risk reduction (DRR) choices, and implement actions to manage their risk under conditions of uncertainty. It proposes that the development of DRR strategies that facilitate sustained readiness must accommodate two issues. The first is to identify the atypical demands and challenges people need to be resilient to and/or adapt to and that change as people negotiate the impact, response, and recovery phases of disaster experience. The second issue derives from identifying how personal, community, and societal factors interact to predict whether and to what extent people and communities proactively develop sustained resilient and adaptive capacity. The chapter draws on empirical studies undertaken in Thailand (2004 Indian Ocean tsunami) and New Zealand (2011 Christchurch earthquake) to illustrate the nature of resilience. Studies of earthquake, tsunami, and wildfire readiness serve to illustrate how theory supports an all-hazards approach to increasing readiness in DRR strategies. The chapter concludes with a discussion of issues that need to be incorporated in a comprehensive theory of readiness and the need to accommodate people at different levels of readiness when developing DRR strategies.

18.1 INTRODUCTION

The loss and disruption that natural hazard activity (e.g., from volcanic, wildfire, storm, flooding, tsunami, and seismic processes) can inflict on societies and their members have been well documented. However, evident differences in the ability of people and communities to draw on and use their knowledge, skills, and relationships to mitigate the impact of hazard events and hasten their recovery have identified a need to determine what makes some

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people and communities more resilient than others. The importance of identifying the sources of this resilience and how it can be developed and sustained was acknowledged by the Hyogo Framework for Action 2005–2015 (International Strategy for Disaster Reduction (ISDR), 2005) pinpointing the development of resilience as a pivotal aspect of any disaster risk reduction (DRR) strategy.

Variability in the resilient or adaptive capacities of disaster-affected communities and the fact that this variability can be traced, at least in part, to the community characteristics and competencies that develop from people's experiences and expectations (e.g., Paton et al., 2014) identifies where information about developing resilience can be found. This chapter discusses how readiness and readiness development strategies can be incorporated into comprehensive DRR planning in ways that can contribute to realizing the kind of benefits that led to the ISDR calls for the need to develop resilience within DRR strategies designed to manage risk.

In its most basic guise, risk can be represented as the product of the likelihood of hazard exposure and the consequences of that exposure. Although the likelihood of a natural hazard event *occurring* cannot be influenced by DRR strategy, it is possible to influence the nature, severity and duration of hazard consequences. The ISDR call for developing resilience to play a prominent role in DRR derives from its reflecting people's ability to "bounce back" or adapt to the consequences of hazard impacts (e.g., Berkes et al., 2003; Carpenter et al., 2001; Klein et al., 2003; Norris et al., 2008; Paton and Johnston, 2006; Pelling and High, 2005). The inclusion of an adaptive component in this conceptualization is important. The reason for this is outlined next.

When impacted by hazard activity, societies and their members suddenly find themselves having to deal with demands that differ considerably from anything they would encounter under normal conditions and in circumstances in which normal societal functions and resources are marked by their absence (at least during the early period of hazard impact). People, communities, and societies have to bounce back from or adapt to *what has been experienced*. The fact that the specific mix of hazard characteristics and how they interact with the social, built, and ecological context is impossible to predict (for a given event) identifies resilience, in practice, as context dependent; it can only be defined in relation to people's experience of significant levels of disruption from hazard events (Carpenter et al., 2001; Gaillard, 2007; Klein et al., 2003; Paton and Johnston, 2006). Further, because the demands and challenges community members experience fall well outside normal experience, how well people respond and recover (to sudden and significant changes in their circumstances) will be a function of whether they have developed the knowledge, skills, and relationships required to respond or how well they can adapt by developing appropriate competencies and relationships in situ.

People can experience significant changes to their circumstances with no or little warning. Consequently, their response and recovery will be expedited by

their developing appropriate capabilities prior to the occurrence of hazard events. It is the need to develop appropriate (and novel) knowledge, skills, and relationships (with neighbors, community members, government agencies, etc.) to deal with atypical and challenging circumstances that identify the interface between resilience and readiness.

Understanding how resilience/adaptive capacity and readiness are related requires a knowledge of two broad areas (Norris et al., 2008; Paton and Johnston, 2006; Paton et al., 2014). The first concerns identifying what people need to know and be able to do (individually and collectively) to cope with and adapt to the primary, secondary, and tertiary hazard consequences that emerge and evolve over the course of the response, recovery, and rebuilding phases of disaster. The second is to identify why some people develop these capabilities and others develop these less so or not at all.

Readiness strategies are intended to increase the likelihood of people and communities being in a position to be able to "respond" in planned and functional (resilient and adaptive) ways to complex, challenging, emergent hazard experiences, and demands rather than having to "react" to them in ad hoc ways. Although people can and do cope using ad hoc reactions, being prepared expedites response and recovery and reduces the psychological, social, and physical costs associated with response and recovery. The importance of being able to adapt derives from the inclusion of "emergent" in this conceptualization and the fact that some response and recovery demands are more readily anticipated than are others.

For example, although the effectiveness of any response strategy depends on things like the specific intensity of a hazard event (e.g., a given earthquake), ensuring the physical integrity of the house and storing water and food prepares people for the anticipated effects of ground shaking on buildings and on the loss of utilities such as water and power. The former not only reduces the risk of injury and death to its inhabitants but it also increases the likelihood of people having shelter and reduces demands for temporary accommodation, and makes it more likely that people will remain in an area and be able to participate in social (mutual aid, social support), economic, and environmental recovery activities. Preparing for loss of utilities increases people's self-reliance during periods of disruption to normal life. These actions, which can be developed (and ideally need to be developed) before hazard events occur, will safeguard against predictable consequences (e.g., the impact of ground shaking on the built environment).

However, other consequences are less easy to anticipate. This uncertainty derives from diversity in both the permutations of intensity, magnitude, duration, and location of hazard effects that can occur from unpredictability in how hazard characteristics will interact with the characteristics of the built, social, and ecological contexts people inhabit (Paton and McClure, 2013). Although all of these parameters can be estimated, it is not possible to predict the specific mix (e.g., how much loss will occur, how it is distributed, how long

it will last, whether people need to be temporarily or permanently relocated) that will characterize a specific hazard event. Thus, the specific mix of consequences people will experience cannot be specified in advance and so creates the unpredictable, emergent, evolving characteristics people need to respond to. Hence, it is beneficial for community members to develop their knowledge, skills, and relationships with neighbors, community members, and civic agencies necessary to expedite local response and recovery initiatives in the context of unpredictable, emergent hazard–environment consequences. In this context, readiness strategies function with the intent of developing these capabilities and relationships in advance of hazard events occurring. Finding considerable diversity in the existing levels of readiness introduces the second issue discussed in this chapter, the need to account for this diversity.

This chapter postulates that the source of this variety arises from differences in the (preevent) resources and competencies available to people and communities to make DRR choices under conditions of uncertainty (Norris et al., 2008; Paton and Johnston, 2006). Pulling these areas together, the relationship between resilience and readiness can be expressed in terms of mobilizing community knowledge, expertise, competencies, and social capital in ways that facilitate people's ability to anticipate; cope with; adapt to; recover from; and learn from the demands, challenges, changes encountered before, during, and after hazard events (Norris et al., 2008; Paton and Johnston, 2006; Pelling and High, 2005). Realizing the benefits of readiness in DRR first requires conceptualizing readiness.

18.2 CONCEPTUALIZING READINESS

Russell et al. (1995) developed a readiness typology that comprised structural, survival, and planning categories. Structural actions comprise activities that secure the house (e.g., secure house to foundations, creating a defensible space) and its contents (e.g., securing water heaters and tall furniture) to prevent contents from injuring inhabitants (e.g., from ground shaking accompanying earthquakes). Survival actions facilitate people's capacity for self-reliance during (short–immediate impact) periods of disruption (e.g., ensuring a supply of water/dehydrated or canned food for several days, having a radio with spare batteries). Finally, planning includes, for example, developing household hazard plans and attending meetings to learn about hazards and how to deal with their consequences. The latter introduces a social dimension into how readiness is conceptualized. The subdivision of readiness activities into structural, planning, and survival categories was reiterated in a study of wildfire preparedness (Prior and Eriksen, 2012). However, a subsequent factor analytic study (Lindell et al., 2009) proposed a two-factor solution comprising Direct Action (e.g., learned how to shut off utilities, have four-day supply of canned food, strapped heavy objects) and Capacity Building (e.g., joined an earthquake-related organization, attended meetings about earthquake

hazards) factors. These studies identify a need for readiness strategies to facilitate the development of structural, survival, planning, and capacity building (social) activities. The importance of doing so has been reinforced by studies of what members of disaster-affected communities identified as being required to increase their readiness (for future events).

For example, research in Christchurch (New Zealand) with residents affected by the 2011 earthquake reinforced the importance of developing (preevent) structural and survival readiness and household emergency planning (Paton et al., 2014). Christchurch respondents reported how their lack of survival and planning readiness made coping with the loss of essential societal utilities (e.g., loss of water, power, and sewerage services) more challenging than was necessary. To the latter were added calls for readiness programs to address dealing with loss of or disruption to employment (both directly from damage to place of work or indirectly from being relocated or injured), developing psychological readiness, adapting to changes in living conditions and loss of and disruption to family and social relationships and to accommodate the fact that the period of loss and disruption people have to confront can extend over periods of months or years. Survivors also called for more effort to be directed to developing social relationships and competencies to deal with emergent issues within this recovery context (see above).

Respondents discussed the benefits that would accrue if readiness programs developed the capacity for neighborhood and community groups to be able to confront local physical and social demands (e.g., removing rubble, providing mutual support, setting up community meeting places, taking care of those with special needs, organizing local efforts to repair homes, and identifying and meeting local needs) under challenging conditions when access to normal societal resources and functions is absent. They identified a need for readiness programs to develop, for example, leadership, social inclusion, prioritizing problems, collective problem-solving, and decision-making skills. Similar capacities (e.g., the ability to identify community needs and the development of community-based mechanisms capable of securing the resources people required to meet their emergent needs) were identified as important by members of Thai communities dealing with the impact of the 2004 Indian Ocean tsunami (Paton et al., 2008b).

Respondents in the Paton et al. (2014) study of people's views of what contributed to their resilience in the aftermath of the 2011 Christchurch earthquake also suggested that social readiness should include developing community capacity to represent their information and resource needs to diverse agencies (e.g., to nongovernmental organizations (NGOs) such as the Red Cross, the Police) and government departments (e.g., the Christchurch Earthquake Recovery Authority). Being able to interact effectively with agencies helped community members secure the resources they needed if they were to be able to take responsibility for their own recovery. The fact that

community groups experienced their relationships with agencies and government departments as either facilitating or marginalizing community action identified a need for agency and organizational development to ensure agencies complemented and empowered community action (Figure 18.1). The perceived benefits of proactively collaborating with the government and aid agencies to meet local needs were also evident in Thai communities confronting the consequences of the 2004 Indian Ocean tsunami (Paton et al., 2008).

In Christchurch, it was evident that what people had to contend with changed over time (e.g., from loss of utilities to making neighborhoods safe to dealing with government agencies and insurance companies) as they negotiated physical, social, and institutional demands that changed over the course of a recovery period that spanned years. Recognition of the fact that recovery not only takes years but also presents people and communities with diverse and emergent needs that will change over time identifies a need to develop and implement readiness strategies that can be delivered at several points during recovery to facilitate people's capacity to cope with and adapt to demands and challenges that change over the course of what can be a long recovery and rebuilding period.

Taken together, this discussion highlights a need for readiness strategies to encompass structural, survival, planning, and community capacity capabilities. However, the Christchurch work introduced a need to complement these functional categories with those addressing livelihood, psychological and community–societal (government, NGO, business, etc.), readiness (summarized in right-hand column, Figure 18.2). While the Christchurch research discussed what people realized they needed during a disaster, the focus of readiness research is on developing these capacities and relationships prior to the occurrence of a hazard event. A need to research the latter reflects the finding that comprehensive readiness is the exception rather than the norm.

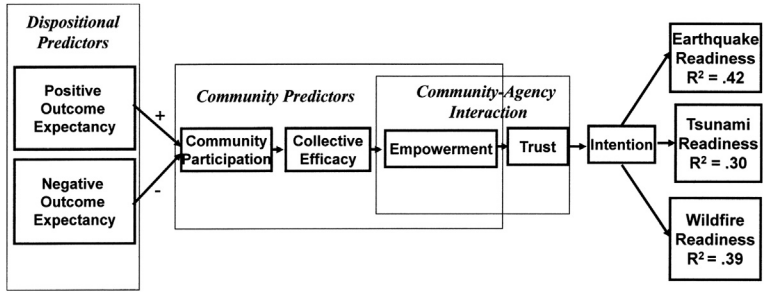

FIGURE 18.1 Summary of relationship between dispositional factors, structural factors, trust, and intention to adopt readiness measures. *(Adapted from Paton (2013).)*

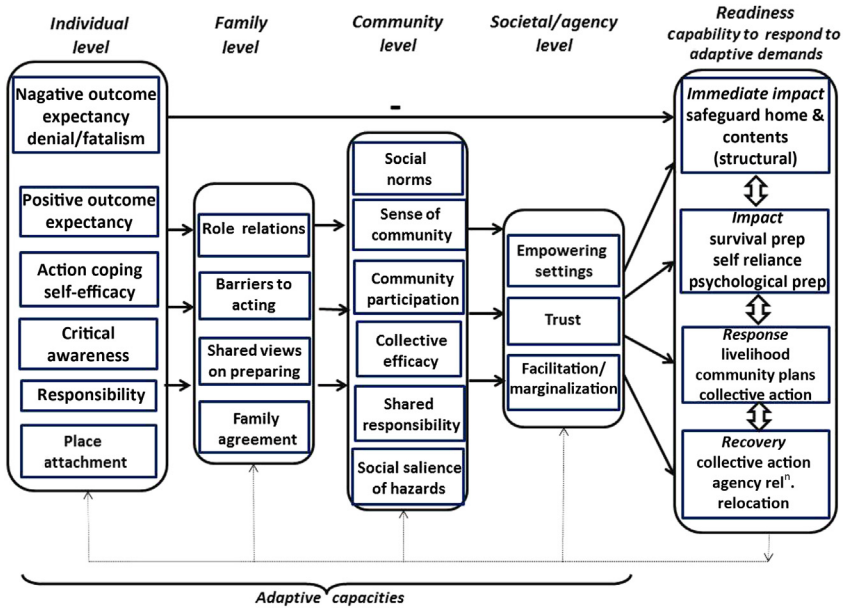

FIGURE 18.2 Summary of the predictor (adaptive capacities) variables and readiness measures (capability to respond to adaptive demands presented by actual hazard events during impact, response, and recovery).

18.3 ACCOUNTING FOR DIFFERENCES IN READINESS

Readiness research has consistently identified that, even when people acknowledge their risk, there is considerable diversity in levels of readiness. This prompted the development of theories to account for this (e.g., Duval and Mulilis, 1999; Lindell et al., 2009; Paton et al., 2005; Paton, 2008). A theory needs to demonstrate its validity across a range of hazards that differ with respect to their characteristics and behaviors (e.g., earthquake readiness encompasses preparing for ground shaking, volcanic preparedness includes readiness to deal with ashfall hazards) and their consequent implications for what being prepared means. That is, any theory must have "all-hazards" applicability (Eiser et al., 2012; Paton, 2013). Much readiness research has focused on hazard-specific work (e.g., earthquake preparedness). Testing all-hazards applicability requires a different strategy. One approach derives from focusing less on the hazard and more on a common denominator that all hazards present to those at risk, uncertainty.

People face uncertainty with regard to, for example, when they might experience a hazard event, what magnitude or intensity of hazard activity they could experience, what actual consequences will be experienced and for how long, and how long it will take for recovery to occur. The infrequent nature of hazard activity introduces additional uncertainty regarding knowledge of what

can be done to manage their risk and how effective measures are likely to be. Under these circumstances, citizens cannot rely on experience. Rather, they have to rely on interpretive and decision-making competencies and relationships developed and used to deal with the more regularly occurring trials and tribulations of life (Norris et al., 2008; Paton and Johnston, 2006).

When faced with uncertainty, people turn to others to help them reduce their uncertainty and decide what to do to manage their risk (Eng and Parker, 1994; Earle and Cvetkovich, 1995; Marris, Langford and O'Riordan, 1998; Rippl, 2002; Paton, 2008). These others can be civic agencies (e.g., emergency management), and they can also be family members, neighbors, and members of the communities (e.g., workplaces, social and sporting clubs, and churches) with whom people interact regularly. When making choices under conditions of uncertainty, when people are heavily reliant on others for information and advice, an important predictor of whether information and advice is used to make decisions is peoples' assessment of how much they trust their source of information rather than information about hazard risk per se (Earle and Cvetkovich, 1995; Siegrist and Cvetkovich, 2000). Because it affects people's interpretation of other's motives and their competence and the credibility of the information they make available, trust acts to reduce uncertainty and facilitate action in circumstances in which people are dependent on others for information (Earle, 2004; Siegrist and Cvetkovich, 2000). Trust will thus play a pivotal role in a theory of readiness.

Paton (2008) developed a theory that identified how trust mediated the relationship between the personal and social characteristics that influenced the social construction of risk and hazard readiness. The theory describes how interaction between outcome expectancy beliefs (i.e., whether people believe that personal actions can mitigate risk), community characteristics (community participation and collective efficacy) that articulate risk beliefs and facilitate the formulation of plans for action, and people's beliefs about whether they have been empowered by agency sources predicted trust, with intentions mediating the relationship between trust and hazard preparedness. The intention measure comprised items that assessed people's intention to acquire hazard knowledge, increase actual preparedness, and to work with other people/civic agencies to develop knowledge and capability (Paton et al., 2005). This theory is summarized in Figure 18.1.

Empirical confirmation of the all-hazards utility of this theory (Paton, 2013) indicates a need for readiness strategies to facilitate the development of outcome expectancy beliefs and social interpretive (community participation, collective efficacy, empowerment, and trust) processes (Figure 18.1). Positive outcome expectancy beliefs can be developed by presenting people with a small number of readiness items initially (e.g., storing canned food and water), starting with relatively easily adopted items, and introducing progressively more complex preparedness tasks (e.g., developing neighborhood emergency

plans) over time (Paton and Wright, 2008). By presenting specific explanations about how readiness actions reduce risk and mitigate hazard consequences progressively over time, sustained adoption is more likely.

Confirmation of roles for community participation, collective efficacy, and empowerment (Paton, 2013) highlight the importance of facilitating social interaction and relationships with those who share similar beliefs and values to construct risk beliefs and to facilitate the development and use of the planning and problem-solving competence required to enact risk beliefs in readiness strategies that will meet community needs. This illustrates the benefits that can occur when DRR strategies are based on community engagement principles.

The all-hazards utility of this work is supported by its ability to account for differences in levels of readiness for hazards (e.g., tsunami, earthquakes, and wildfire) that differ in the consequences they create, and thus the kinds of readiness activities required (Paton, 2013). However, given that the theory accounted for 30%, 42%, and 39% of the variance (R^2) in levels of preparing for tsunami, earthquake, and wildfire hazards, respectively (Paton, 2013), a need to expand the constructs canvassed in order to develop a more comprehensive understanding of readiness processes is clear. This issue is considered in the next section and commences with potential candidates that relate to personal characteristics.

18.4 INDIVIDUAL PREDICTORS

Several individual-level predictors have been identified. Some, such as fatalism, reduce the likelihood of preparing. Others influence how people make judgments about who is responsible for their readiness. Yet other factors increase the likelihood of people preparing (Figure 18.2).

People who are *fatalistic* about hazard activity are unlikely to prepare (McClure and Williams, 1996; Turner et al., 1986). However, fatalistic attitudes can be reduced by asking people what can be done to help specific vulnerable groups, such as people living in unsafe buildings or young children in schools (McClure et al., 2001; Turner et al., 1986). When people deliberated about readiness in vulnerable groups, they became less fatalistic and were more likely to perceive readiness actions as more manageable.

Another dispositional characteristic that acts to reduce readiness is *Denial* (Crozier et al., 2006; DeMan and Simpson-Housley, 1988). If people believe that they have no control over a hazard and/or its activity, they can attempt to cope with this by denying the seriousness of the risk. Denial can be countered by providing information that focuses people's attention specifically on how readiness actions can mitigate the consequences of hazard activity and increase a degree of control over them (Lehman and Taylor, 1987). The degree to which people prepare is also affected by how their interpretation of threat influences their beliefs about the distribution of responsibility for community readiness.

Risk compensation (e.g., Etkin, 1999) describes how people's motivation to take "Responsibility" for their readiness is influenced by their perceptions of how personally threatening the environment is. One factor that influences perceived environmental threat is people's interpretation of the actions of agencies that have a responsibility for managing risk have undertaken to mitigate risk (Paton et al., 2000). Paton and colleagues found that receipt of information about what scientists and civic agencies were doing to mitigate volcanic risk (which they did not have or know beforehand) resulted in people perceiving the environment as being less threatening to them and reduced their sense of being personally responsible for their own safety or readiness. They transferred this responsibility to risk management agencies. This cognitive bias can be reduced by explicitly informing people that societal mitigation and personal readiness complement one another (rather than being substitutable) and by explaining that personal action is required to cover the fact that societal resources cannot cater for all eventualities (Paton and Wright, 2008). That is, risk communication and community outreach must facilitate the personalization of risk to increase the likelihood that people understand how their specific circumstances (over which societal agencies have no control) influence their risk (e.g., the degree to which their house is structurally capable of withstanding certain levels of ground shaking, or how topographical factors introduce household-level differences in wildfire risk). Encouraging the personalization of risk and outreach information in this way increases the likelihood that people will understand how risk has localized characteristics that they need to take personal responsibility for. Personal characteristics can also increase readiness (Figure 18.2).

Research on community response to adversity identified *Critical Awareness* (the extent to which people think and talk about hazards with others) as an important precursor of actions to deal with a community threat or opportunity (Dalton et al., 2001). Critical awareness was identified as an important predictor (Paton et al., 2005). The latter work introduced a need to understand how people's discussions of hazard-related issues could both increase or decrease the likelihood of people preparing. This underlines the value of community engagement-based approaches to risk communication and community outreach. Engagement-based approaches are more likely to be able to identify social processes that may undermine preparedness and adapt strategies to reverse this.

Paton et al.'s (2005) work also identified how people's belief in their ability to act influenced preparedness. This was assessed using the *Self-efficacy* construct. An important contribution made by self-efficacy to understanding readiness derives from its influence on the number and quality of action plans people develop, and the amount of effort and perseverance people invest in risk reduction behaviors (Paton, 2003). The importance of encouraging perseverance derives from its role in supporting preparedness that needs to be sustained during potentially prolonged periods of hazard quiescence.

A role for *Action Coping* as a precursor of preparedness has been recorded in several studies (Duval and Mulilis, 1999; Lindell and Whitney, 2000; Paton et al., 2001), as has the degree to which people feel that they are embedded within their social–ecological environment. The degree to which people feel they are psychologically embedded in their environment increases their emotional investment in their community (Hummon, 1992). Recognition of this has led to *Place Attachment* acting as a predictor of readiness (Frandsen et al., 2012; Paton et al., 2008). Readiness is also affected by social characteristics.

18.5 FAMILY AND COMMUNITY PREDICTORS

Family and community factors influence readiness (Figure 18.2). For example, Goodman and Cottrell (2012) discuss how gender *Role relationships* within families influence perceptions of responsibility for readiness and response decision making (e.g., acting as *barriers to planning*, inhibiting developing *shared views* on readiness needs). This echoes Paton and Buergelt's (2012) finding that the presence of conflicting views about the need for preparing within the family (particularly when husbands attributed a lower priority to readiness than other family members) was a significant impediment to preparing. They also identified how *Conflict* with or a lack of willingness to collaborate with neighbors to manage risk acted to reduce the likelihood of preparing, with this being explained using Fault Line theory. Consistent with the tenets of Fault Line theory, Paton and Buergelt found that the process of facilitating community readiness could activate divisions in communities that would remain dormant under any other circumstances. This highlights the need for an adaptive approach to risk communication and one that accommodates changes in community dynamics over time. They also identified how preexisting community processes and beliefs could positively influence preparedness.

Paton and Buergelt (2012) found that active *Community Participation* and the *Social Salience* of risk (e.g., sharing stories about hazards within their community) enhanced hazard knowledge, risk acceptance, and the importance of preparing. It also provided community members with information about what to do to prepare and increased trust in the effectiveness of preparedness measures. This social construction of risk beliefs and readiness facilitated the development of a sense of *Shared responsibility* for preparing and a *Sense of community*.

Sense of community has been implicated as a predictor of readiness (Paton et al., 2001). When the sense of community is high, others within that community are more likely to be regarded as credible and trusted sources of information (Lasker, 2004; McGee and Russell, 2003). When these others have local hazard experience and knowledge, they become an important resource for developing shared representations of risk and its management and

for facilitating the development and maintenance of locally relevant risk management activities (Frandsen et al., 2012). That is, it contributes to the development of normative expectations.

If people believe that their significant others (parents, spouses, friends, peer group, etc.) hold favorable attitudes toward a particular behavior or that performance of a specific behavior is likely to be interpreted favorably by significant others, they are more likely to perform these actions (Smith and Terry. 2003). Prevailing *Social norms* regarding preparedness expectations of significant others, and personal motivation to act in ways consistent with these expectations, have a positive effect on readiness (McIvor and Paton, 2007).

18.6 CONCLUSION

This chapter discussed how readiness planning informs the development of resilience and adaptive capacity within DRR strategies. The discussion covered two areas. These are summarized in Figure 18.2. The first addressed the need for comprehensive measures of readiness to encompass structural, survival, planning, community, livelihood, psychological, and community−agency functional categories. Measures of structural, survival, planning, and community categories are well developed (if not always used to inform practical intervention). However, complementary work on the livelihood, psychological, and community−agency functional categories should be included in future research agendas. Future research and debate are required to identify how a mix of hazard-specific (e.g., to accommodate differences in the physical consequences posed by different hazards) and generic all-hazards measures can be developed to facilitate theory development and testing. Additional debate should also be directed to considering the need to include readiness strategies in recovery planning and intervention to accommodate and facilitate people's ability to respond to emergent demands over the prolonged period of disaster recovery and not just in the immediate impact period.

The second area addressed focused on how developing theory capable of accounting for differences in levels of readiness plays a pivotal role in understanding how readiness contributes to resilience. This discussion proposed that theories identify person-, family-, community-, and societal-level predictors and how they interact to explain differences in levels of readiness across a range of hazards (Figure 18.2). The issues canvassed in relation to this second area are important from the perspective of developing practical DRR strategies intended to facilitate sustained readiness in communities that coexist with hazardous circumstances. Bridging the theory−practice gap introduces some additional issues. One relates to the content of intervention strategies, and the other to the nature of intervention strategies used.

A need for additional research into the content of intervention strategies derives from the possibility that different predictors may play different roles in

different facets of the preparedness process. Support for this contention comes from studies that identify readiness as a process in which people and communities progressively develop more comprehensive readiness over time. Work in this area has identified how the relative salience of predictors changes as people negotiate this developmental process (see Paton and McClure, 2013 for a review). Paton and McClure discuss how strategies to get people started (e.g., facilitating people's ability to personalize risk, using information from those in similar circumstances) differ from those designed to encourage adoption (e.g., providing information about risk, providing cause—effect information about hazard consequences and how specific actions are effective) and from those intended to sustain readiness (e.g., providing detailed hazard characteristics information, community-based planning). The transition between these levels describes a developmental process that should be mirrored in readiness strategies if they are to facilitate sustained readiness (Paton and McClure, 2013).

A need for additional attention to be directed to understanding the relative salience of preparedness predictors derives from the possibility that each functional category (e.g., structural, survival, relationship, and psychological) differs with regard to its knowledge, skill, and relationship antecedents. For example, decisions about survival preparedness can be made by a person/family independently. However, developing community preparedness makes different resource (e.g., giving time to work with others) and skill (e.g., social skills, planning skills, sense of community) demands on people. This contention has been supported by some preliminary work on this relationship, with evidence suggesting that survival and community categories are influenced by different predictors (Paton et al., 2014).

Additional work on the design of intervention strategies is also called for. The rational for this suggestion comes from finding that, in the studies cited above, the predictors of readiness reflected mainstream (as opposed to being specifically hazard-related) community processes and competencies. That is, the social context (community participation, collective efficacy, empowerment, and trust) variables identified as predictors tapped into preexisting community characteristics and competencies and patterns of community—agency relationships that reflect people's day-to-day experiences. This highlights the benefits that could accrue from integrating risk communication and community development processes rather than conceptualizing risk communication as a standalone process delivered independently from other community initiatives. Consequently, DRR programs that integrate risk management and community development activities in ways that specifically encourage discussion of hazard issues, develop community members' problem-solving competencies, and encourage agencies to engage with communities in ways that empower them will increase the likelihood of readiness strategies contributing to realizing the ISDR goal of developing sustained community resilience.

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