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14 Enhancing Community Resilience

A Matter of Multi-Level Framework, Mixed Methods, and Multi-Sectoral Tools

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INTRODUCTION

Resilience is gaining popularity as a term to rally forces for the betterment of societies in the face of hardship and adversity. Like stress and strain, the word “resilience” has roots in engineering, psychology, and system sciences. The ubiquity of the term flags a call for interdisciplinary and multi-level considerations in studying and fostering resilience factors. Observing disaster management, crisis recovery, and preparedness efforts, the findings presented in this chapter indicate the need for a comprehensive framework, research on individual and collective processes, and interventions that are multi-prong and multi-sectoral. In this chapter, we will review the conceptual underpinnings and scope of resilience, document the multi-layers of evidence from mixed methods approaches, and will present a series of tools that address some of the critical requirements too often overlooked in planned interventions. The effort towards developing resilience that will be described below come from our ongoing research in individual and collective social and organizational psychology, cross-fertilized by interdisciplinary work in social sciences, in risk sciences, in health sciences, and public policy.

THE CONCEPT OF RESILIENCE

Beyond the engineering analogy of a resilient material absorbing shock and bouncing back into shape, in psychology the concept of resilience relates back to early studies of children who experienced trauma and who, against the odds, survived as normally functioning and mentally healthy individuals (Rutter, 1987). In that respect, the work of Garmezy (1974) marked the field. She identified the critical role of a reliable substitute support figure to explain the resilience of deprived children (Werner & Smith, 1982, 1992). The work of pioneers such as Bowlby (1978, 1982), Piaget (1975), Bandura (1979, 1989, 1995), and Bronfenbrenner (1977) also identified the determinant aspects of attachment relations, cognitive accommodation, experience of self-efficacy, and co-constructive interpersonal relationships, respectively, in the building

of resilient individuals. More recently, Masten (2006) and Luthar (2003) have systematized these influences in early interventions for children and brought forward the transformational aspects of resilience which go beyond mere resistance and recovery. The interest for the concept of resilience has also revived in the context of the salutogenic movement (Antonovsky, 1987) and of positive psychology. Hence, resilience involves developing a sense of mastery rooted in a history of reliable trustworthy relationships.

Stress and coping. Many of the studies on resilience can be situated in the large body of research on stress and coping. Stress is a term borrowed from engineering to refer to the tension in a material. The term was coined by Hans Selye (1956) to describe the General Adaptation Syndrome of all organisms to external stimuli in three phases of Alarm, Resistance, and Exhaustion. From the early work on the endocrine response of frogs, rats, and humans, the field of experimentally induced stress moved to examine acute stressors such as life-events and chronic hardship in individuals. It related to subsequent physical and mental health, or overall well-being.

A number of studies on stress focused on trauma as an extreme case of a circumscribed acute stressor that may perturb individuals and bring them to a state of clinical psychopathology with Post-Traumatic Stress Disorder (PTSD). In the context of extreme stressors, individuals who survive functionally intact or who recover spontaneously from these devastating exposures are said to be resilient. The field of psychiatric clinical trauma has grown exponentially in the recent years (Bonnano, Westphal, & Mancini, 2010; Norris, Tracy, & Galea, 2009; Norris et al., 2008; Raphael, 1986). Beyond the relevance of clinical application, resilience has also been examined in the context of large groups of people, organizations, and communities, in relationship to maintaining adequate social and economic functions in the aftermath of a disaster or crisis (Chandra et al., 2011; Lemyre et al., 2005; Norris et al., 2008; O'Sullivan et al., 2012).

Resilience or resiliency. Two terms are in use in the literature: resilience and resiliency (Garmezy 1991, 1993; Masten, 2001). Sometimes they are used interchangeably. Other times they refer distinctively to either a pre-event capacity, or to a post-event outcome (similar to the distinction between likeability and actually being liked) (Anault, 2003). This distinction is important as it points to the temporal aspect of the evaluation of the construct. Is resilience dependent on the experience of a hardship? The very reference to an actual disaster, stressor, or crisis constitutes one point of contention in the field. Indeed, some argue there is an absolute requirement of a traumatic event to invoke the concept of resilience, and that the process of resilience is the return to normalcy (Cyrulnik, 2002; Masten, 1999). Others speak of a capacity to bounce back, with resilience being a potential, a pre-disposition, a set of skills or of assets, a reservoir or repertoire of resources, and therefore being amenable to pre-event capacity building and preparedness (Cyrulnik & Duval, 2006; Garmezy & Masten, 1991; Rutter, 1993, 2000).

The debate between capacity and impact is useful to the extent that it forces researchers to clarify their points of reference and to make explicit their assumptions. As people talk of community resilience and want to develop it, it demands clarification also on the levels or units of analysis that become involved (eg. individuals or communities), as well as the timeline, whether it is being examined pre- or post-event (Colussi, 2000). Henceforth, these considerations relate to the appropriateness of specific measurements and indicators. If we do not negate that all applications of the word "resilience" have their relevance, we only emphasize here the necessity to be clearer on the target and context: individuals or communities, pre-event capacity or post-event impact.

Time frame. The debate over capacity or outcome poses the question of time. Is resilience the residual functioning level after adversity, ex post facto, or the preparedness state of a built-in capacity to face crises and survive them? The answer lies in the mapping of the time dimension as per Figure 14.1, portrayed on a timeline from -3 to +3, from pre-event baseline (-3) to threat (-2) to pre-warning (-1) to occurrence of an incident (t0), rescue (t1), recovery (t2), restoration (t3).

Addressing the time frame not only helps to situate the type of resilience that is being sought and the appropriateness of efforts, programs, and measurements, it also calls directly the doctrines of two strategies vis-à-vis the massive investments required by emergency response: 1) the prevention approach, according to which resilience building should be embedded in routine practices and social fabric; and 2) the sustainability approach, by which resilience should be self-maintained, self-regulated, and self-multiplying, via the engagement of collectivities, to meet the necessary surge capacity and the long-term needs.

Measurement. The measurement of resilience also remains a challenge, above and beyond the conceptual fuzziness of the construct. To our knowledge, there is not a single instrument that fully captures the notion of resilience. It is a multi-faceted construct that expresses itself under various modalities according to time phases and units of analysis. Researchers divert towards a collection of indicators, which usually tend to focus more

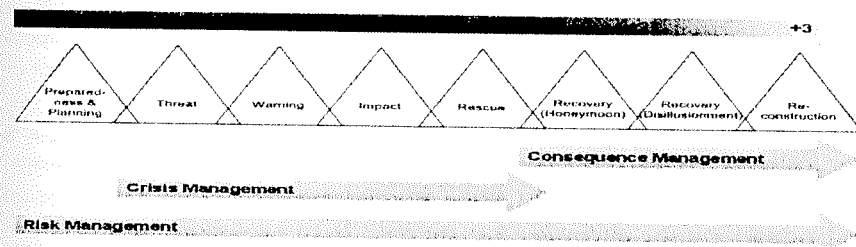


Figure 14.1 Extended timeline of disaster management by time phase -3 to +3.

on either individual mental health measures or more on social network proxies. Some are exclusively psychological (Masten, 2006) while others purely economics (Kretzman & McKight, 1993). We propose in this chapter that a multi-level, multi-time phase, multivariate, and multi-disciplinary approach is needed.

RESILIENCE: A SYSTEMS-APPROACH

Resilience is more than units of willpower, a set of skills, or as proposed by Kobasa (1987), a quantity of hardiness in individuals; instead it is composed of layers of supporting environments and involves the very processes to leverage this social capital. Therefore a systems-approach implies that resilience includes the property and characterization of the relationships and interconnectedness of the complex system of components and mechanisms.

Social ecology paradigm. As a psychosocial case of systems, the socio-ecological approach, inspired by Bronfenbrenner's seminal work, the Ecological Theory of Human Development (1979), now widely known as the Ecological Systems Theory, describes the social environment as various nested "systems" of our lives from which we derive our norms, rules, and resources. These systems include the *microsystem* (family and close social network); the *mesosystem* (work and neighborhood); and the *macrosystem* (the larger socio-cultural context and institutions). This approach is also reflected in population health research (Lemyre & Orpana, 2002), and as commented by Fleury and Lee (2006): "A consensus is emerging that multilevel perspectives consistent with social ecological models are promising approaches in health behavior research and health promotion efforts" (130). This perspective can also be captured by the term "whole community" which is detailed in the chapter by Edwards.

Gibson and Lemyre (2012) have been conducting multi-level analyses to identify layers of variance associated within the social environment that relate to preparedness and the building of resilience. They characterized the various units of analysis: the individual, the family, the neighborhood, the city (Figure 14.2).

Figure 14.2 illustrates how both individual and collective preparedness are linked to four levels of the social environment: 1) individual characteristics such as income, education, and gender, 2) microsystem of support and of networks, 3) mesosystem of neighborhoods, and 4) macrosystem of jurisdictional policies.

Tiers of ripple. In parallel to the layers of social environment, the impacts of major events, disasters, or crises can also be described in systems terms, as cascades of ripple effects from a tier perspective of direct damage on individuals, goods, and infrastructure (Tier 1), to a subsequent wave of disruption in the interconnected web of public services of a community (Tier 2), to an undertow that shakes the fundamentals of societies, institutions,

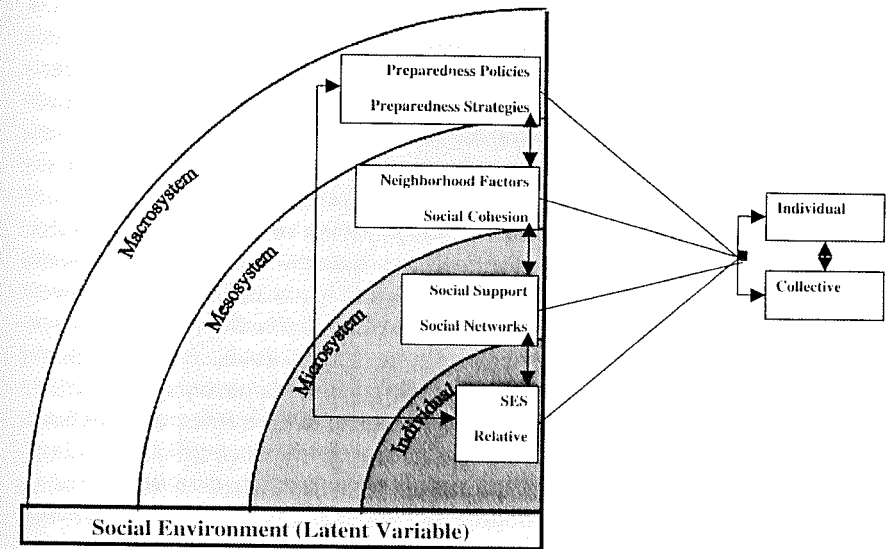


Figure 14.2 Characterization of the socio-ecological system of preparedness and its determinants.

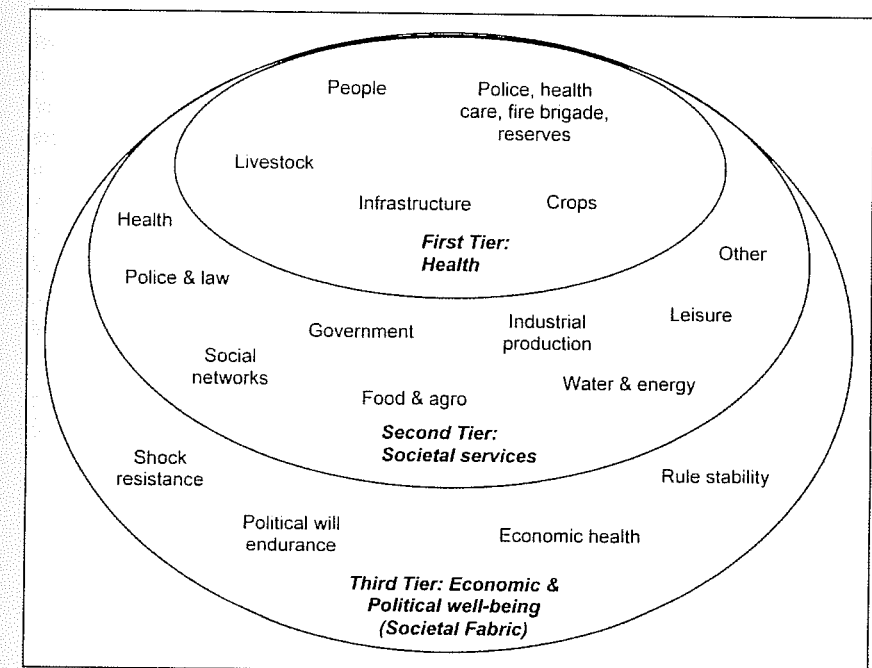


Figure 14.3 Tiers of ripple effects (EU-ASSRBCVUL & Lemyre, 2006).

social order, and values (Tier 3) (EU-ASSRBCVUL & Lemyre, 2007). The magnitude of events, disasters, and crises can be rated like a seismic “Richter” scale, on a logarithmic scale of 0 to 10 according to their ripple effects across tiers, in numbers of casualties, cost of damage, or days without public service. Resilience of a community relies on all of these foundations and manifests itself on all of their associated indicators, as followed through the timeline of preparation, impact, and recovery phases.

Risk management perspective. The integration of the various considerations—a) individuals and communities as units of analysis, b) adversity defined as stressors or life hazards, c) phases of the timeline from pre-event to post-event, and d) levels of systems—has led us to adopt a risk management perspective to resilience. The risk language allows us to situate the adversity in a hypothetical space in which both the capacity to be resilient “in case of a crisis occurring” and the residual resilient integrity and functionality are all relevant. It also helps to change the focus from a hazard-driven paradigm, investing in technological solutions, to a consequence management strategy, which focuses on response and recovery.

A risk management perspective requires stretching the usual reference to risk, as the likelihood of an event times its damage, to encompass psychosocial consequences such as distress and dysfunctionalities of organizations beyond the sole indicators of mortality and material losses. Risk becomes an integrative social and environmental paradigm. The risk perspective comes with tested tools and methodologies. It therefore brings a new set of powerful quantitative and qualitative devices to measure, model, and integrate facets, time, and levels of analysis. It serves as a heuristic to integrate and promote psychosocial resilience at the community level. The psychosocial risk analysis and management (P-RAM) of Lemyre et al. (2005) positions our perspective and study of the resilience dynamics.

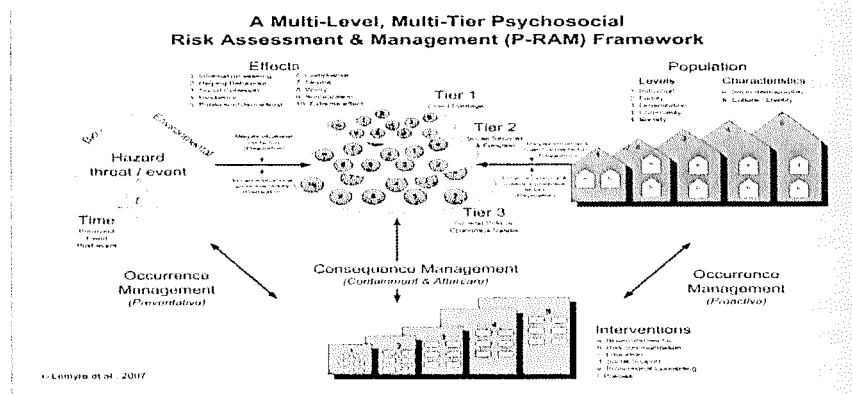


Figure 14.4 The psychosocial risk assessment and management (P-RAM) framework (Lemyre et al., 2005).

System processes. The last consideration that we will address in our framework of study bears on the leveraging of the various layers. It relates to the organizational interdependencies that foster or impair resilience. In the context of a complex situation, three types of interrelations between systems or organizations stand out: coordination, cooperation, and collaboration. These approaches to interactions of systems or organizations shape and color the potential for resilience (see Figure 14.5).

Coordination, as per our synthesis of the literature, corresponds to the process of communication in the planning and sharing of resources, risk, and rewards for the purposes of efficiency and effectiveness in achieving complementary goals (Alberts & Hayes, 1995, 2003). This approach involves an emphasis on efficiency and on preventing overlapping of resources and services. Activities and decision making occur within organizational silos in parallel with other organizations. These parallel activities are represented by the vertical groupings of organizations (blocks) below.

Cooperation is conceptualized as a process where parties with similar interests plan together, negotiate roles, and share resources to achieve joint goals, but maintain separate identities (Taylor-Powell et al., 1998; Paquet, 1999, 2011). With a cooperative approach to problem solving, resource and service gaps are filled by additional organizations. Organizations are more interdependent under cooperation, with joint decision making and joint outcomes being key features of this approach. This interdependency is represented in Figure 14.5 with the horizontal integration of organizations (blocks) and the introduction of new partners to fill resource gaps.

Collaboration is defined as a process whereby organizations see different aspects of the problem, identify a common goal, and explore solutions within their differences; as a result, solutions go beyond their individual limited visions of what is possible (Block, 1993; Paquet, 2005). The collaborative approach places an emphasis on a shared definition of the problem as well as on the generation of creative solutions. Under this approach, decision making can be described as “shared” or “networked”; in addition to information, activities, resources, power, and authority are all shared. While organizations maintain their unique identities when collaborating,

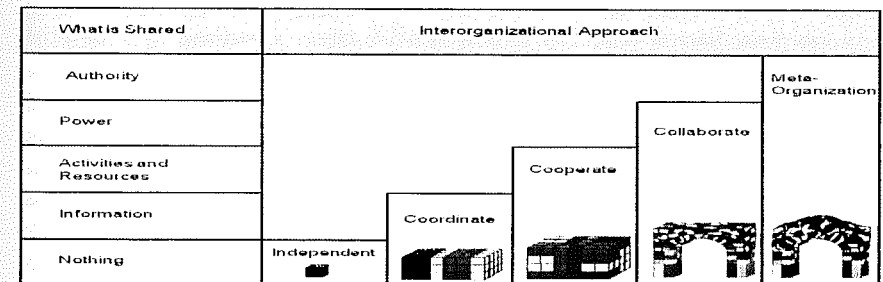


Figure 14.5 Characterization of interorganizational approaches.

the process may require the organizations to accommodate different visions of the problem using flexible interpretive frameworks. Collaboration is represented here as a bridge that is made up of organizations that support one another, fill in service gaps, and adapt their frameworks (shape) to respond to the complexity of the situation. Therefore resilience entails a set of resources that are being mobilized within a timeline via specific types of interactions and relationships.

A RESEARCH PROGRAM

With the above conceptual clarifications, our research program has followed the agenda of addressing individual, collective, and organizational parameters. A mixed methods approach is best suited for this endeavour, and we will present briefly some key features of our evidence-based model. At the individual and collective levels, contextual elements needed to be ascertained and understood in something of an anthropological and ethnographic way. Case studies of actual major events allowed revisiting the configurations of factors that yielded to more or less resilience at the community level. More subtle and intricate individual appraisal of situations, challenges, and resources required a psychometric approach of survey type, assessing perception of capacities to face adversity, preparedness, and beliefs about resourcefulness. Finally, the understanding of the complex interactions of multiple organizations in the wicked problems on the ground benefited from an experimental approach in which tasks are simulated and tested in a controlled setting. These qualitative and quantitative methods brought different insights on the requirements for resilience.

CASE STUDIES

A series of case studies based on Canadian major events are documented below. From a list of sixty-three extreme events that had occurred in Canada in the recent past, six case studies in particular were selected. They were chosen on the basis of the following criteria: i) they were recent enough (past fifteen years), ii) involved all levels of governments including the military (at least at a standby level), iii) were multi-jurisdictional, iv) impacted multiple populations, and v) involved multiple types of responders from all sectors. These included 1) the 1998 Ice Storm in Quebec and southern Ontario which deprived 50% of the population of electricity during winter for weeks, 2) the almost annual Red River floods of Manitoba, 3) the Kelowna wildfires which destroyed dozen of homes, 4) the SARS crisis as experienced in Toronto, with six deaths and hospitals closing, 5) Operation Sleepover in Gander on September 11, which allowed a dozen airplanes from the U.S. to enter no-fly zones, and 6) the Ontario blackout

in the summer of 2003 which shut down electricity in most of the provinces of the East for days. Each of these events had success stories, which helped us identify the strengths and weaknesses of resiliency during cases.

The case studies were documented using secondary data sources derived from peer-reviewed literature, the "grey" literature of agency reports, and, in some instances, media reports.

An analytic grid, described in more detail in Lemyre et al. (2011), was designed to form a matrix that outlined the key analytic dimensions, crossed with the timeline of the event. The key elements covered included: a) who made the major decisions (organizations involved); b) what the decision was (content and outcome); c) when the decision was made (in relation to the event timeline); d) where (at which level) the decision was being made; and e) how the decision was made (e.g., unilaterally, coordinated, cooperatively, collaboratively). These decisions were then positioned within the event timeline of pre-event (-3) to reconstruction (+3). Observations were also made on the outcomes and on the complexity of the event at each particular stage.

Analyses suggested that lack of planning, lack of anticipation, and lack of training were the factors that contributed significantly the most to the complexity of a situation (e.g., 1998 Ice Storm; SARS). Communication difficulties encountered by both the private and public sectors involved paths of communication that had not been pre-defined and rehearsed. This, in turn, contributed to increased uncertainty and heightened the complexity of the situation. Many organizations were unable to communicate with each other, some hindered by lack of technology, or sometimes by lack of protocols in spite of the technology, thus limiting the distribution of information and resulting in divergence of the perceived impacts (Lemyre et al., 2011).

On the opposite, nuggets of success could be established as sort of mini-stories built on pre-established interorganizational networks that diminished the complexity of the situation during the event phase, such as with the informal networks that could mobilize during Gander, Operation Sleepover to find accommodations for travelers, or in SARS to get available staff to work. Interorganizational relationships through extensive preparedness and disaster management planning and training decreased the level of complexity by mitigating uncertainty levels.

Post-event resilience was also facilitated by flexible preparedness and response plans that had been rehearsed as well as training programs in the pre-event phase. Private and public sectors that had developed flexible preparedness and response plans as well as training programs that were adaptable to a wide variety of events, varying in scope and severity, showed better and faster adaptation. Although the level of uncertainty remained relatively high, the flexible guidelines allowed organizations to make efficient decisions and reduce the complexity of the situation.

The absence of coordination and transparency between municipalities inhibited effective decision making in the impact and rescue phases

during the Red River Flood. Plans needed to be shared and coordinated between neighboring municipalities, and the lessons learned which were identified in the post-event phase needed to be integrated in the planning of future disasters.

In the Kelowna wildfires, it was the transparent communication with the public that significantly improved public trust and reduced anxiety levels and uncertainty. By engaging the media, the scope and severity of the situation were conveyed more accurately to the public, increasing public confidence, and reducing the level of uncertainty. However, during the Ontario blackout and the SARS outbreak, lack of communication with the public and confusing interorganizational communication remained the biggest factor associated with increased complexity. This hindered decision making and contributed to a lack of trust and poor coordination.

These case studies therefore showed nuggets of strengths and streams of gaps which point to the resilience and weaknesses of systems in times of hardship. Although they all involved different contexts, events, and players, they informed us of some of the key factors. Communication in between organizations was critical, and perception by individuals of their state of efficacy was determining for people to initiate concrete actions. Hence these two variables are the subject of our next studies.

A COMMUNITY SURVEY OF CANADIANS

Following a series of national representative surveys on perception of risks in a population health framework, a public survey on preparedness was designed to benchmark the preparedness level and resilience capacity of Canadians (Lemyre et al., 2005). A nationally representative survey on Canadians' perceptions of security threats and preparedness was conducted via telephone using stratified random sampling digit dialling. Respondents included 1502 individuals over the age of eighteen, weighted to be representative of the Canadian population in terms of age, gender, and distribution across five residential regions (Atlantic region, Quebec, Ontario, Prairies, and British Columbia). The territories were not included.

During the interviews, which lasted approximately thirty-five minutes, respondents rated their willingness on a five-point Likert scale to collaborate with authorities in response to government-issued instructions, such as the behavioral responses of undergoing decontamination treatment; agreeing to remain inside a building for protection (sheltering-in-place); agreeing to strictly isolate oneself from others (quarantine); and going to a public shelter. Actual preparedness of oneself, one's family, and perceived preparedness of authorities (municipal, provincial, and federal) were also assessed. Additional items addressed trust in sources of information and indicators of social capital.

Based on the community survey, Lee, Gibson, Markon, and Lemyre (2009) showed a three-factor structure of preparedness, posed to be predictive of resilience. The first and main factor involved anticipatory behaviors such as obtaining information on shelters, establishing a plan, establishing a meeting area, preparing a supply kit, consulting for advice, learning evacuation plans, seeking social support, and receiving first aid training. The second factor centered on information seeking and turning towards one's network of support, and a third factor clustered around avoidance behaviors.

What best predicted stress, used here as a generic (inverse) marker of sense of resilience, was preparedness, controlling for age, education, and sex (adjusted R^2 of .10, $F(9, 1387)=17.87$, $p<.001$). Specifically, preparedness and avoidance behavior both emerged as respectively significant positive and negative predictors of psychological stress; and actual current formal preparedness (such as having emergency kits) further improved the prediction of psychological stress. Current avoidance behavior (not wanting to write down phone numbers or verify locations of shelters) was a significant positive predictor of psychological stress, and current anticipatory preparedness (seeking information) significantly *negatively* predicted psychological stress. It accounted for 10% of the variance in current psychological stress, used as an indicator of resilience in a normal population (Lemyre & Tessier, 2003).

AN INTERORGANIZATIONAL EXPERIMENT

The other critical aspect of response to disasters was interorganizational. In our case studies, leverage of resources by each organization required interactions of systems between organizations. Hence we examined interorganizational problem solving and decision making in the context of facing a major event with limited resources. The Problem-solving and Organizational Decision-making Simulation (PODS) experiment we designed consisted of in-vivo sessions conducted with professionals in senior emergency management decision-making roles working in small groups ("pods") connected via video teleconferencing equipment to perform two tasks related to responding to an emergency scenario. The experiment was a 2x2 design with two conditions related to the problem-solving approach based on the types of tasks (coordination versus collaboration), and two conditions related to the composition of pods according to organizational type (homogenous versus mixed). The study included both experimental quantitative methods, and qualitative interview methods. Participants consisted of professionals in senior decision-making roles related to emergency management within a variety of municipal, provincial, and federal organizations, including the military and NGOs.

The experimental procedure involved participation in pods responding to a specific emergency scenario. Participants were divided into three separate pods (groups), with two to four people per pod. Some sessions had homogenous pods as a condition. For example, participants with similar decision-making structure were grouped together in a command-and-control military pod, an Incident Command System (ICS) POD with first responders, and a non-ICS POD for public sector agencies and NGOs. For the mixed sessions, participants were purposely placed in PODS that combined different types of organizations.

Each POD room was equipped with a multimedia set-up with a computer station to share, audio and video recording, and webcams fed into the NEF-SIS video conferencing software. An overall session "controller" guided the PODS through the various tasks, presented the city of "GAP-ville," and briefed them on the emergency situation. Various slides and scripted voice-overs prompted participants to open certain envelopes according to a set timing and sequence throughout the experiment session. The tasks focused on either coordinating or collaborating with respect to public communications (Task 1) and responder health and safety (Task 2).

The dependent variables included task outputs, communication patterns intra-POD and inter-POD, leadership-stewardship behaviors, as well as questionnaires on prior knowledge and relationships, evaluation of the task, of the performance, and of the process, plus a network assessment. Analyses were conducted to compare problem-solving approaches (coordination versus collaboration) and multi-organizational environments (homogenous versus mixed PODS).

Participants in the collaboration tasks rated their POD's participation in problem solving significantly higher than in the coordination tasks ($t(25)=-2.82, p<.01$). They also reported higher individual satisfaction levels with opportunities to provide input to the problem solving among those who participated in collaboration tasks when compared with those who had participated in coordination tasks ($t(25)=-2.82, p<.01$). Participants in the coordination sessions actually reported higher levels of frustration working with the people in the other PODS when compared with those participating in the collaboration sessions ($t(25)=-2.44, p<.02$). Those participating in collaboration tasks were more likely to indicate higher levels of communication effectiveness when compared with participants in coordinating tasks ($t(25)=-2.30, p<.03$); and they were also more likely to indicate that there was greater discussion during the task when compared with those undertaking coordination tasks ($t(25)=-2.21, p=.04$).

Perception of leadership was higher in the coordination task than in the collaboration tasks ($t(25)=-2.72, p<.01$) but there was more satisfaction with the outcome ($t(25)=-2.82, p<.01$) among those who participated in a collaborating task, and they reported more that the decisions were consensus-based ($t(25)=-2.89, p<.01$). Then, the qualitative follow-up semi-structured interviews explored different aspects of decision making and problem

solving within a multi-organizational context during various stages of an extreme event. The content analysis yielded to the notion of "stewardship" as an alternative style to leadership for serving the group and the mission. Stewardship, as described by Block (1993), involves a high-level sense of the goal, openness to diversity, sharing of information, value of engagement and participation, and a sharing of authority and power in a distributive subsidiary way (Paquet, 2011).

Although this study was preliminary and exploratory, the experiment validated the pattern of sharing information, resources, and power according to the constituency of the working groups. It allowed for evaluation of different types of tasks which involved distinct approaches, in term of processes and of outcomes. For example, in a complex situation, communication benefited from a collaborative approach staged in a mixed environment, albeit requiring more time and involving more frustration. Participants reported appreciating the diversity and alternative solutions and were overall more satisfied with the outcome.

TOOLS FOR ENHANCING COMMUNITY RESILIENCE

Using the knowledge developed from this multi-layer research base, we also simultaneously produced intervention tools for stakeholders. These tools could be employed at the individual, community, or organizational level for community resilience building.

Psychosocial Awareness Program

Our results pointed to the need to better understand all the ways in which psychosocial considerations interplay in human behavior and social interaction to improve the adequacy of disaster response. Our research, especially case studies and interviews, had shown that planners, managers, and responders had underestimated or neglected the impact of psychosocial factors, while success stories had documented the creative use of psychosocial resources. Hence we created the Psychosocial Risk Manager (PRiMer) Platform as a knowledge tool to educate people on the relevant psychosocial considerations. The PRiMer presents a framework for multi-level psychosocial considerations built as an interactive multimedia awareness program. It has a community facilitation tool designed to promote a paradigm shift in emergency planning and response. The purpose is to build community resilience and speed recovery in the face of extreme events. PRiMer was developed in an iterative fashion by the GAP-Santé research team at the University of Ottawa, based on a series of round-table consultations with a wide range of community and professional responders, from the public sector and NGOs. It provides basic psychosocial education for those tasked with planning and implementing emergency responses on

how people behave before, during, and after a crisis. It aims to foster a shared understanding and common language about psychosocial risks and identifies their implications for planning and mitigation. PRiMer offers an introduction to key psychosocial considerations and concepts, drawing its content from evidence-informed research.

The research has been translated into a suite of practical tools that facilitate the embedding of psychosocial considerations into an organization's emergency planning and continuity of operations. Through a variety of instructional approaches, PRiMer promotes capacity and competency building within communities by creating a mechanism to include public engagement and participation in responding to psychosocial considerations. It demonstrates a practice method to enhance community resilience and coping capacity. It includes a web-based self study guide, a one-day interactive scenario-based workshop, a psychosocial checklist and an asset tool. The PRiMer tool has been subjected to expert validation for content. It has also been deployed in five field demonstrations in Halifax, Montreal, Ottawa, Toronto, Winnipeg, for evaluation (Lemyre, Johnson, & Corneil, 2010).

Community Asset Mapping

The collaborative process required to develop the community asset map opens communication channels among traditional and non-traditional responder groups and builds relationships and networks of support. Communities and organizations actually know little of the resources of other players in their environment. The GAP-Ville Capability Tool works on the premise that when extreme events occur, individuals and organizations have a lot to offer and will "emerge and converge" to do so. Pre-identifying these community assets will improve the ability to collaborate, coordinate, and potentially improvise when required. It is in keeping with a "strength-based approach" in building community resilience (Kretzman & McKnight, 1993). The tool aims to promote a "culture of preparedness" within communities, fostering anticipatory thinking: "What can I do? How can I help?" Its use affirms that people at the local level know their community best and can creatively respond to the challenges they face. It allows information to be collected from and used by many different groups. It utilizes a bottom-up approach to encourage greater public engagement (Colussi, 2000; Gurwitsch et al., 2007).

The GAP-Ville Capability Tool starts with a face-to-face interaction to support a web-based application. It was designed to encourage greater collaboration and coordination among relevant community stakeholders at disaster planning and preparedness. It is launched at a community participation and planning workshop in which participants first learn of the process from the example of a theoretical community, GAP-Ville. They then move into characterizing their own locality and capturing its resources. The intent of the tool is not so much on identifying gaps or deficiencies in a

community (although this may well become apparent in the mapping process) as on identifying the positives in the community, the common assets, and the potential for sharing.

For each community, the content is meant to be self-organizing and self-correcting in keeping with the norms of social media and wiki tools. Users mark and record community assets using an online social map, indicating contact information and locations for established or potential responder organizations. Assets can be categorized in terms of people (e.g., individuals with leadership positions and/or particular skills), equipment (vehicles, generators, communications systems), space (facilities, meeting areas, kitchens, recreation space, storage), services (mass care/shelter, transportation, child care, health care, protective services). Using Geographic Information System (GIS) from Google Maps technology, people map their community assets. An opportunity is also available to establish a Facebook link to a specific location, should one be available. Many individuals and organizations use Facebook and this offers a low-cost way to utilize its functionality in creating profiles of available assets. A wealth of information about the status of the asset is readily available, and maintaining updated profiles is therefore easier.

The capability tool is a relatively straightforward process in terms of data inputs for specific locations. Identifying interested stakeholder groups and involving them in the mapping process, however, is much more of a challenge. A well-defined process for engaging the public in this activity will enhance and extend the social networks needed to build

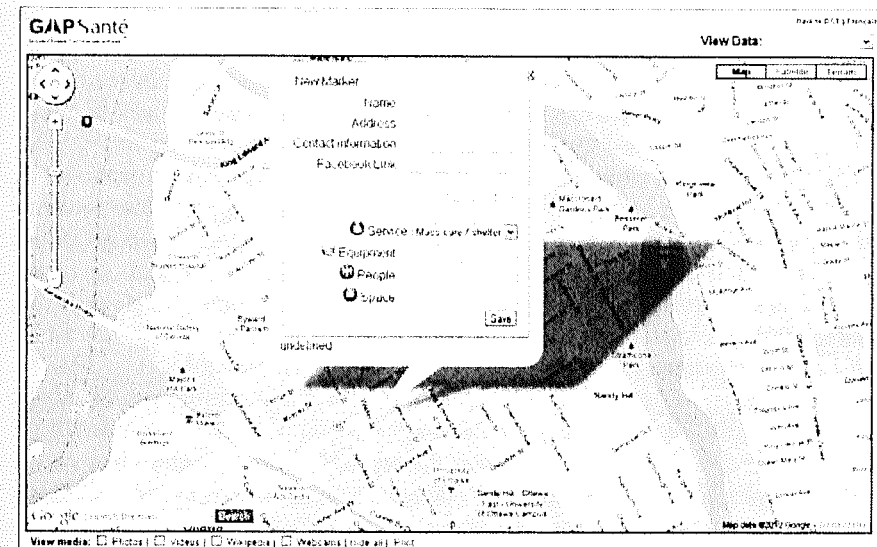


Figure 14.6 Screenshot of the GAP-Ville Capability Tool interface.

community resilience. An example of a public engagement process and how asset mapping can be utilized to build resilience can be found in the *Community Resilience Activity Book* prepared by Hutchins and Spevak-Sladowski (2009).

High-Risk Groups and Functional Needs

In a similar fashion as for assets, our results also showed that communities and organizations did not have prior knowledge of special needs. They had not planned for special populations and how to service special needs such as mobility restriction, communication deficit, and oxygen-supply-dependent people. Based on the World Health Organization Functional Needs assessment, a sister project was created, the Enhancing Resilience and Capacity for Health (EnRiCH Initiative), a community-based participatory research program which focuses on the design, implementation, and evaluation of a community intervention aimed at enhancing resilience among high-risk groups (O'Sullivan et al., 2012).

Here the term "high risk" refers to people who are at higher risk of experiencing negative impacts from a crisis or disaster due to clustering of personal and social determinants of health. These include functional needs related to communication, mobility/transportation, intellectual and emotional disabilities, and other conditions which limit an individual's ability to live independently. As part of the intervention, the team adapted the principles of asset mapping of the GAP-Ville Capability Tool into an online collaborative task using Google Docs. Following a brief face-to-face training session, the community stakeholders collaborated to populate a spreadsheet which maps the assets in the community which can assist people with disabilities and other functional needs that could limit their ability to cope with the impacts of a disaster. This tool has been pilot-tested in four communities in Canada (Truro, Nova Scotia; Gatineau, Quebec; the Region of Waterloo, Ontario; and Quebec City, Quebec).

Qualitative interviews have documented the evolution of engagement, mapping perceived resources and effective strategies to mobilize communities, while the quantitative data have indicated more networking, more exchange of critical information, and the actual construction and use of the web repertory EnRiCH High Risk Identification Tool (EHRIT) (O'Sullivan et al., 2012).

Interorganization Collaboration

Finally, our results stressed the need for collaboration between organizations beyond, and before, the mere efforts for coordination. Collaboration requires special behaviors and the sharing of higher level information on mandate and mission, plus other "cultural" norms. The In-Vivo PODS was created to provide an environment in which collaboration could be

rehearsed and studied. In today's science and technology environment, most of the coordination and collaboration research is done using agent-based computer simulation and modeling. Yet, little data is being generated using real humans in group decision making and problem solving. We therefore developed an in-vivo human platform for exercises of interorganizational problem solving (Lemyre et al., 2011). The system allows for exercises involving intersectoral tasks under various scenarios, and diverse configurations of actors at different time phases. It permits testing of roles and functions that are not prescribed by standard operating procedures. Too often, exercises rehearse only the "knowns" and avoid in their script the "unknowns," or the blind spots and the emergent phenomena. Also, most simulations involve only a restrictive subset of participants and usually the associative sector and the public are left out, neglecting the largest portion of the people on scene. The PODS system offers the systematic inclusion of the third sector.

Such a platform can be used to train skills in collaboration and in stewardship. It also creates a space for virtual encounters and distance participation. Indeed a number of the stakeholders, from the government or the private sector, usually reside at a distance from the disaster. Knowledge about prior and continuous collaborative practices in major cities will enable the preparedness for higher resiliency.

CONCLUSION

There are some caveats in the resilience approach. Resilience has become a fashionable term these days to replace the mantra Prepare-Prevent-Respond-Restore of the previous decade. It may only be a repackaging of best practices that brings us back to marvel again at the basics of coping with adversity of previous generations, and civilizations across the ages. The resilience "banner" can certainly yield to noble pro-social community development; it also points to a critique of the overprofessionalization of disaster management.

States cannot afford to rely only on professional responders and emergency managers. Professionalization has also shown it can fail us in our blind spots. The revival of the orientation towards resilience also reminds us of the capabilities of lay people and the power of astute common sense, as well as the lessons to be learned of more modest countries around the globe who rebuild again and again after repeated disasters.

At another level, the current support for resilience building also grows on an insidious withdrawal of government-assisted support. The new motto might be ironic—"You're on your own": organize thyself. With this in mind, let us hope we can use our developing knowledge on resilience to increase the effectiveness and coverage of equity in well-being. The United Nations Hyogo Agreement that created the UN International Strategy for Disaster Reduction

(UN-ISDR, 2005) launched a "Building Resilience" campaign: Get your City Ready. It aims to stimulate all levels of collaborative efforts required to develop and sustain member-state resilience. In Canada, for example, the translation of these goals into a National Platform for Risk Reduction is stimulating the growth of working groups around resilient communities.

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15 Management Capacity and Rural Community Resilience

William L. Waugh, Jr.

INTRODUCTION

Community resilience has become the holy grail for emergency managers and policy makers concerned about risks to life and property. It is a goal driven by the needs to reduce reliance upon increasingly scarce federal resources and to encourage the exercise of local responsibility for managing risks posed by natural and unnatural hazards. It is also driven by the necessity to increase local self-reliance in the event that the nature or scale of a disaster may make it difficult or even impossible for federal and even state authorities to respond to all communities needing assistance and even for neighboring jurisdictions to share resources via formal or informal mutual assistance agreements. Demand for assistance may far outstrip federal and state capabilities, in other words. Assistance may not just be slow in coming, it may not come at all or may be very late in arriving and communities will have to fend for themselves. This is the kind of scenario that might result from a pandemic, asteroid strike, nuclear attack, and other cataclysmic event or from the cascading impacts of long-term trends such as climate change or earthquake storms. Indeed, some communities in Mississippi and Louisiana did not receive outside aid for a week or more after Hurricane Katrina made landfall in 2005.

Rural communities are particularly vulnerable because they lack the resources of urban areas and have populations that require greater support. The focus of this analysis is the impact of low management capacity on rural community resilience, in particular the lack of capacity for planning and program management necessary to manage hazards, prepare for disasters, respond to disasters, and recover quickly. The question that may not be answerable is whether rural communities will be willing to do what is necessary to reduce risks to life and property. Might culture and politics still trump social need?

Clearly, the emphasis on local self-reliance is also a response to the current economic crisis and increasing pressure to reduce budget outlays. The costs of disaster assistance have been escalating and there is pressure to reduce budget outlays in other areas to compensate for aid to communities

"*Disaster Resiliency* is a very important collection of essays on what has become not only a theory of disasters but also an organizing principle around which research and practice are conducted. This book is essential reading for those new to the idea of resiliency, as well as experienced researchers for whom this compendium of essays, written by top scholars in the field, will be very useful."

—Thomas Birkland, *North Carolina State University*

"The concept of resilience has become increasingly important in motivating practice in applied settings. This book is an exceptional contribution to this development: it provides a great many insights into what resilience means to the management of risk and hazard vulnerability. It does so across an impressive range of topics from whole community and social capital perspectives to planning and inter-organizational coordination issues. I expect it to be a widely-used book for classroom instruction and for general readers interested in hazards and disasters—and most deservedly so!"

—Brian J. Gerber, *University of Colorado Denver*

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