

**Submission to the Senate Inquiry into the capacity  
of communication networks and emergency warning  
systems to deal with emergencies and natural  
disasters**

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# **1 Executive summary**

The Australian Psychological Society (APS) recognises the importance of effective communication of disaster warnings and advisories before and during an emergency.

Research done by psychologists over many years and following disasters has identified that good disaster preparedness, both physical and psychological, has an important part to play in ensuring effective communication of imminent threat warnings. Then, emergency messages themselves must be specific, consistent, certain, accurate and clear, should identify the risk, location and time, and should provide precise guidance.

Research has also identified factors that will encourage people and organisations to prepare adequately for disasters. Plans are more likely to be made when organisations and structures within a community regularly include the need for such planning in their communications. It is also important that disaster plans communicate information about how people can remain psychologically strong in the face of threatening events. Post-disaster or emergency communication is also important as it can help maximise the recovery of affected people and communities, as well as validate planning for the next disaster or emergency.

Although the technology used or being considered in recent years has changed, the issues and factors identified by research are still highly relevant. Technology may help disseminate warnings more quickly, but it is still humans who have to absorb and respond effectively to the information.

The issues raised in this submission are summarised in a series of recommendations at the end of the document.

## **2 Introduction to the Australian Psychological Society**

The Australian Psychological Society (APS) is the premier professional association for psychologists in Australia, representing more than 20,000 members. Psychology is a discipline that systematically addresses the many facets of human experience and functioning at individual, family and societal levels. Psychology covers many highly specialised areas, but all psychologists share foundational training in human development and the constructs of healthy functioning.

The APS welcomes the opportunity to provide input to the Senate Inquiry into the capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters. Australian psychologists, along with other members of the scientific and professional community, are gravely concerned about the safety and psychological health of people and their capacity to initiate adaptive coping responses and behaviours before, during and after an emergency.

The APS is well placed to contribute to this consultation by identifying psychological research as it relates to human responses to warnings about hazards. The APS has a Disaster Preparedness and Response Reference Group (DPRRG) comprised of psychological experts in disaster preparedness, disaster response and recovery. Our members have expertise in psychological preparedness and situational preparedness for disasters, risk management, coping before, during and after disasters, community education, prevention, resilience, risk communication, media representations and other related areas. The APS had an extensive involvement in the Black Saturday Victorian bushfires response (2009 to present). We were involved in training mental health professionals to work with affected populations, established a disaster response network of over 1000 psychologists, participated in several multi-disciplinary expert reference groups, and worked with both Federal and State government departments on mental health and psychosocial recovery projects. The APS has also produced numerous articles, guidelines, tip sheets and brochures on psychological preparedness for disasters, including bushfires, cyclones, and floods. (For examples, see [http://www.psychology.org.au/publications/tip\\_sheets/disasters/](http://www.psychology.org.au/publications/tip_sheets/disasters/)).

### **3 Responding to the terms of the Inquiry**

The APS is not in a position to respond to all of the terms of reference of the inquiry, as several of these are outside our area of expertise. Our response will focus mainly on Term of Reference a.

a. the effectiveness of communication networks, including radio, telephone, Internet and other alert systems (in particular drawing on the spate of emergencies and natural disasters of the 2010/2011 Australian summer):

- (i) in warning of the imminent threat of an impending emergency,
- (ii) to function in a coordinated manner during an emergency, and
- (iii) to assist in recovery after an emergency;

Our response will focus particularly on the human-based aspect of communication networks, rather than the more technical considerations. We provide comment on the importance of the content and style of the message, including such factors as consistency, judicious repetition, source credibility and differing media channels to enable people to deal with emergencies in the most effective way.

We address the following themes:

- Importance of preparedness in early warnings of imminent threat, including the linkage between physical and psychological preparedness.
- Best practice effective communication during an emergency and natural disaster.
- Communication of psychosocial recovery information after an emergency and natural disaster.

## 4 Preparedness

### The importance of preparing and educating people about emergencies

It is well documented in the literature that preparation and knowledge about emergencies increases the effectiveness of early warnings (Ronan & Johnston, 2005). Disaster preparedness refers to the activities carried out in anticipation of a disaster event to support one's actions when responding to a disaster, as well as psychological preparedness (see paragraph below).

Disaster preparedness can involve a range of activities to prepare for an emergency, involving organised activities at the individual and community levels. Such activities may include making a household disaster plan, clearing hazardous material from properties, keeping abreast of weather warning in the periods approaching a risk period, understanding how imminent threat warnings will be communicated, and being educated about how to best prepare oneself 'physically' for a potential disaster. In terms of prioritising pre-disaster preparedness activities, our considered opinion, based on the nature of disasters and the research literature's findings on physical and psychosocial response and recovery, is that a priority across the range of preparedness activities is the household (or organisational) disaster plan. The next most important activity is ensuring that the disaster plan is known and rehearsed so that it can be called on and enacted when under stress - when the ability to make decisions or remember the steps of a plan drawn up long ago, discussed once and "left on a shelf" - can be compromised.

### Psychological preparedness and its links to physical preparedness

An important element of the guidance that should be provided to people is how to be psychologically prepared for an emergency. Psychological preparedness refers to the process of anticipating how one will react to a threat or disaster, and to identify which emotions and cognitions are unhelpful (and helpful), in order to manage one's reactions to the event most effectively. People need to be aware that anxiety can get in the way of coping effectively. Having a better understanding of their own likely psychological responses in emergency warning situations can help people feel more in control and better able to cope. Being psychologically prepared can assist people to think more clearly and reduce the risk of serious injury and loss of life or property. Being cooler, calmer and more collected can also be very helpful to family members and others who may not be as well prepared psychologically for what is happening (Morrissey & Reser, 2001).

The objective of psychological advice in these emergency situations is not to remove or necessarily reduce anxiety; rather the objective is to assist individuals in anticipating, recognising and managing anxiety. There are three key steps (known as the AIM steps) involved:

**ANTICIPATE** that you will be feeling worried or anxious and remember these are normal, although not always helpful, responses to a possible life threatening situation.

**IDENTIFY** what the specific physical feelings associated with anxiety are and whether you are having any frightening thoughts that are adding to the fear.

**MANAGE** your responses using controlled breathing and self-talk so that you stay as calm as possible and can focus on the practical tasks that need attention.

Good disaster preparedness, both physical and psychological, has an important part to play in how effective communications of imminent threat warning can be (and vice-versa: good and timely communications can enhance disaster preparedness). Further, when people are physically prepared, they are often more psychologically prepared as a result (e.g., feeling more in control as a result of physical preparations). People who are more prepared are more likely to:

- Have a household disaster plan to activate when a warning is communicated
- Manage reactions to the warnings
- Stay focused on their plan
- Think more clearly
- Think more rationally and be better able to assess risks
- Have a calming influence on other people
- Have practised their plans more and thus may be more inoculated against stress
- Be more likely to evacuate when it is appropriate because they will be thinking more rationally

Unfortunately, most individuals and communities are largely unprepared for the event of a disaster. Thus an important part of any communication strategy must include concerted work pre-disaster to help individuals and communities to prepare. Current research indicates that the effectiveness of preparedness at the community and individual level is improved with relevant education about disaster preparedness leading up to a potential risk period (for review see Ronan & Johnston, 2005). Motivators that may encourage people to prepare and practice a plan include:

- Significant others in their community have spoken with them about their own plans.
- Structures within the community make planning a normal part of community activities and development (meetings, school based education, etc).
- Disaster preparedness activities are tied to other community-based activities (e.g., first aid training).
- Planning and preparedness is supported by a consortium of government, NGO, business and other organisations, including local media, that ensures it has an increased profile.
- Information disseminated across agencies provides:
  - specific guidance
  - through multiple media
  - across different, linked, trusted organisations
  - across time
- Education efforts recognise the importance of continual repetition of key preparedness messages
- Simulations are run by councils, schools, and other agencies to promote community preparedness.

Research addressing the effectiveness of psychological preparedness, which is a type of psycho-education for disaster and other emergency situations, also strongly attests to the importance of such community education at the commencement of a disaster season, as well as through reminder communications and materials which walk one through the AIM steps when managing one's own responses to an escalating emergency situation (e.g., Morrissey & Reser, 2001, 2003).

The APS has produced a series of preparedness resources including:

Tip sheet: Psychological preparation for natural disasters

[http://www.psychology.org.au/publications/tip\\_sheets/disasters/](http://www.psychology.org.au/publications/tip_sheets/disasters/)

Bushfire brochure: Don't panic, be prepared

Cyclone brochure: Don't panic, be prepared

Preparing children for the threat of cyclones

Preparing children for the threat of bushfire

<http://www.psychology.org.au/community/topics/bushfire/community/>



## 5 Emergency warnings and communications

### Risk communication

Event-specific risk communication and warning messages and advisories are messages that are sent out to alert and inform people when a threat is imminent. During the alert and warning phase prior to the actual impact, or the passing of the threat, people need to engage in pre-impact, precautionary and preparatory activities. The purpose of these warnings may also be to remind people of the disaster preparedness advice they have been given, to get people to activate their disaster plans and take necessary actions to protect themselves, other people, and property.

Coupled with pre-emergency preparedness activities, one key to saving lives and protecting people is access to early warning system information (Simmons & Stutter, 2005). The effectiveness of communication of warnings of imminent threat is determined by a number of factors, including individual risk perception (understandings, appraisals, beliefs), nature of the warning information (specificity, consistency, certainty, accuracy, clarity, media, frequency), source and media channel credibility and authority, personal characteristics of the recipient (demographic profiles, knowledge, prior experience of the hazard, social network, etc) (Mileti & O'Brien, 1992 in Ronan & Johnston, 2005). There exists a very substantial social science literature about risk communication, early warning systems, etc. (e.g., APA, 2010; Fischhoff, 1995; Lundgren & McMakin, 2004; Mileti & Sorensen, 1990; Rohrman, 1998; Ruiter & Abraham, 2001; Witte, Meyer & Martell, 2001; Wood & Quinn, 2003).

Disaster warning situations are anxiety-inducing and stressful, with most messages carrying high threat and fear content. When people are under severe stress they are typically not able to think as clearly as under normal circumstances and this can affect decisions and reactions. Also, when people are faced with fearful messages, they typically employ multiple protection motivation strategies, ranging from selective attention, to dismissal, to unrealistically optimistic personal risk appraisals, to risk denial (e.g., Milne, Sheeran & Orbell, 2000; Rogers & Prentice-Dunn, 1997; Weinstein, 1987). Such strategies can erode their situational preparedness and constitute poor strategies for managing one's response to an emergency situation, which, in turn, reduces their ability to respond effectively to the unfolding disaster situation itself. Effective disaster communication needs to be designed to effectively combine and integrate appropriate psychological advice along with best practice communication and warning message content for dealing with the emergency situation itself. An extensive research and practice literature indicates that it is neither helpful nor realistic to attempt to substantially reduce anxiety in an emergency situation, but assisting individuals to more effectively manage their anxiety and other emotional responses to an emergency is very valuable. Anxiety can otherwise get in the way of effective preparedness and adaptive responding (e.g., Reser & Morrissey, 2008).

The following sections address important factors that will increase the effectiveness of warning communications and maximise people's ability to respond in appropriate ways to the messages.

## **Content of warning materials and advisories**

A consistent and clear conclusion of social science research is that, of all the factors listed above, the warning message itself is one of the most important factors that influence the effectiveness of the warning system (Peek & Mileti, 2002).

Research indicates that an effective warning needs to have the following characteristics to be successful, or to produce enough concern for action, but not so much that it overwhelms people's capacity to act (Ronan & Johnston, 2005):

- Specificity
- Consistency
- Certainty
- Accuracy
- Clarity

Unfortunately, one or more of these important attributes are usually deficient or missing during a crisis.

Furthermore, according to Ronan and Johnston (2005), five topics are important when constructing a warning message: the risk itself, guidance, location, time, and source. The warning message must contain information about the impending hazard with sufficient but simple detail so that the public can understand the characteristics of the threat from which they need to protect themselves.

Three further general variables are identified in the emergency management research (see Perry, 1985; Lindell & Perry, 1992) which also play a critical part in how effective warning messages are:

- The definition of the threat as real.
- The level of perceived personal risk.
- The presence of a well-rehearsed plan, developed prior to a disaster, of what to do immediately preceding and during the disaster itself.

## **Impact of repeated warnings**

Overuse or abuse of any early warning system is problematic because it undermines the effectiveness of the message. Once people have heard a number of similar warning messages, there is a risk that they may start to expect that nothing serious is going to happen. The repeated warnings lose their impact and people feel a sense that things are unreal or that the risk isn't as threatening as it really is. The messages can be repetitive and it may be that the threat of the disaster becomes just a threat, because the disaster misses one's own area or simply doesn't happen. To be useful, warning systems have to be used only in times of dire emergency.

## **Diverse sources of information**

Communication during an emergency is increasingly transmitted through a diverse range of sources, including radio and television, print media and internet, as well as a range of social media such as Twitter and Facebook. These multiple sources through which people can obtain information about the unfolding disaster means that agencies must, in the preparation time, have worked together to ensure that the same guidance will be delivered throughout multiple channels. The information/guidance provided during the preparation stage will need to highlight the sources of information that will be available during an emergency or disaster.

Time of day of the threat warning is an important consideration in the type of communication technology that is used to issue warnings. Emergencies that occur with little prior warning when people are asleep are much more difficult to warn people about, compared to events that have a slower build-up.

## **Issues with use of social media**

The use of social media for disaster communication has grown rapidly in a very short time. Indeed, disaster information is among the most highly forwarded or re-tweeted information in social media. Its use can both facilitate and hamper the effective communication of warnings and advisories.

The advantages offered by social media are that information can be spread very rapidly, and can be instantly updated. It can also be used to pick up information quickly from those in the heart of the emergency.

In spite of its speed, there are also risks that social media can keep sending around information that is out of date. Incorrect information can then spread very quickly. This is not necessarily through any malicious intent by the sender, but can come about because emergency situations often change faster than the speed of any media, or the heightened state of pressure present during a crisis can often lead to the misreading of a situation.

There is also the risk that public source applications can be hacked, and misinformation be deliberately spread. This occurred recently during the recent Japanese disaster (ABC Radio National Saturday Extra. 6 April 2011, Kim Stephens). Such incidents raise the importance of agencies being well-resourced to ensure that the information being distributed is always accurate, specific, consistent, reliable, and clear.

## **6 After an emergency**

### **Communication of the ending – near misses or false alarms**

A critical part of the disaster story, and media coverage, is the ending. Severe natural disaster warning situations are themselves powerful and dramatic events, and they have very consequential impacts on communities, whether or not the actual cyclone or bushfire strikes a particular community. Media coverage typically ends when the threat has ceased. Yet people still need and want post-event coverage. They are still dealing with what has been a powerful human drama, and want and need to spend some time with it.

Post-event coverage once the threat ends will also determine whether the threat is viewed and remembered as a 'near miss' or a 'false alarm', and will either reinforce and validate a community's responsible preparedness behaviours, or substantially erode such behaviours in future emergencies. Calling an event a 'close call', and acknowledging a community's efforts to prepare themselves, validates people's efforts to psychologically and physically prepare themselves, and importantly, reinforces these behaviours for the next time. Calling an event a 'false alarm', by contrast, risks eroding people's preparedness behaviours, thus putting people at risk of being under-prepared the next time a disaster warning is issued. It is important not to convey the impression that the only precautions worth taking were the precautions that turned out to be needed.

### **Communication to enhance recovery**

In this section we limit our comments to the communication of information that can assist in psychosocial recovery.

In the immediate aftermath of a disaster, current best practice for psychosocial recovery focuses on psychological first aid - a commonsense approach to coping that focuses on reducing arousal, calming people down and enhancing problem solving (APS/ARC, 2011). Research indicates that the majority of people recover after a period of stress on their own, or with the support of family and friends (Bonnano, 2004).

It is important to be able to communicate information to people affected by a disaster about useful strategies for promoting their own recovery and that of those around them. Strategies might include information about self-care, importance of social support, value of routines, strategies for caring for distressed children etc.

One of the hardest things about communicating with those affected by disaster trauma is the predictably low level of retention of information. Essential information impacting on victims of a disaster needs to be given using multiple media and repeated a number of times to ensure that it has reached and been understood by the target audience. Online information can play an essential role in this, as the displacement of large numbers of people during disaster recovery means that online information is the one central point of information, assuming access is possible. Again, messages need to have the following characteristics (Ronan & Johnston, 2005):

- Specificity

- Consistency
- Certainty
- Accuracy
- Clarity

For messages to be effective, they need to come from trusted sources, and must be consistent between sources. The potential sources for this information will begin to expand as other agencies are brought in to provide assistance, and the messaging needs to reinforce these agencies as trusted/trustworthy. This expectation can also be established during the preparedness stage using an all-agencies approach.

At this stage of the recovery, and in the proceeding months, communication becomes individual or community based as needed, and is managed and coordinated through many agencies. It becomes less of a matter for the disaster communications that are the subject of this Inquiry.

## **7 Recommendations**

### **Preparedness**

Good disaster preparedness, both physical and psychological, has an important part to play in how effective communications of imminent threat warning can be.

Psychological preparedness refers to the process of anticipating how one will react to a threat or disaster, and identifying which emotions and cognitions are unhelpful (and helpful), in order to manage one's reactions to the event most effectively.

An important part of any communication strategy thus must include concerted work pre-disaster to help individuals and communities to prepare physically and psychologically.

Agencies can assist people and organisations to prepare disaster plans by:

- Recruiting leaders in communities to talk about their own plans within communities
- Addressing communities through their normal structures (e.g., meetings, school-based education)
- Linking disaster preparedness activities to other community-based activities (e.g., first aid training)
- Increasing the profile of disaster planning by recruiting important community agencies, such as government, NGO, business and other organisations, and local media, to include disaster planning in their communications to their staff and stakeholder
- Providing information across agencies that gives:
  - Specific guidance
  - Through multiple media
  - Across different, linked, trusted organisations
  - Across time
- Ensuring that the need for disaster planning is communicated through the above channels regularly
- Working with community organisations to practice disaster plans through setting up simulated emergencies

### **Emergency warnings and communications**

Effective disaster communication needs to be designed to effectively combine and integrate appropriate psychological advice along with best practice communication and warning message content for dealing with the actual emergency situation.

The warning message itself is one of the most important factors that influence the effectiveness of the warning system. To be successful, an effective warning needs to have the following characteristics:

- Specificity
- Consistency
- Certainty

- Accuracy
- Clarity

The warning message must contain information about the impending hazard with sufficient but simple detail so that the public can understand the characteristics of the threat from which they need to protect themselves. The message should be clear about:

- The risk itself
- Guidance
- Location
- Time
- Source

Repeated warnings lose their impact and people feel a sense that things are unreal or that the risk is not as threatening as it really is. To be useful, warning systems have to be used only in times of dire emergency.

Agencies must work together in preparation times to ensure that the same guidance will be delivered throughout multiple channels. The information/guidance provided during the preparation stage will need to highlight the sources of information that will be available during an emergency or disaster.

### **After an emergency**

Agencies should use words such as 'near miss' or 'close call' after a potential threat has not materialised. This language validates people's responsible preparedness behaviour. Using language such as 'false alarm' will not validate preparedness behaviour and may erode future planning and preparedness behaviours.

People affected by disaster trauma have low level of retention of information. Essential information needs to be given via multiple media and repeated a number of times to ensure that it has reached and been understood by the target audience.

As well as providing essential information about safety, people also need information about useful strategies for promoting their own recovery and that of those around them, including information about self-care and the importance of social support.

## 8 Selected and cited references

- Australian Psychological Society/Australian Red Cross (2011). *Psychological First Aid: An Australian Guide*. Published by Australian Red Cross.
- American Psychological Association (2010) *Communicating about health risks: The important role of preparatory communications in large-scale health risks - What the risk-communications science tells us*.
- ABC Radio National Saturday Extra. 6 April 2011: Social Media and Disasters, with guests Axel Bruns, ARC Centre for Excellence in Creative Industries and Innovation (CCI) and Kim Stephens, Blogger, researcher and practitioner in the field of emergency management. <http://www.apo.org.au/audio/social-media-and-disasters>
- Burgess J, Bruns A, <http://www.slideshare.net/Snurb/social-media-use-in-the-queensland-floods-7506161>
- Bonanno, G.A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59, 20–28.
- Breznitz, S. (1984). *Cry wolf: The psychology of false alarms*. Hillsdale, NJ: Lawrence Erlbaum.
- Fischhoff, B. (2000). What forecasts (seem) to mean. In T. Connolly, R.H. Arkes & K.R. Hammond (Eds.), *Judgment and decision making: An interdisciplinary reader* (2<sup>nd</sup> edn., pp 353-377), New York: Cambridge University Press.
- Fischhoff, B. (1995). Risk perception and communication unplugged – 20 years of process. *Risk Analysis*, 15, 137-145.
- Government 2.0 Taskforce, December 2009, Social Media helping emergency management NGIS Australia, <http://gov2.net.au/projects/project-14/>
- Kuriansky, J. (2006). Working effectively with the mass media in disaster mental health. In G. Reyes & G.A. Jacobs (Eds.), *Handbook of international disaster psychology: Fundamentals and overview, Vol 1 (127-146)*, Westport, CT: Praeger.
- Lindell, M. & Perry, R. (1992). *Behavioral foundations of community emergency planning*. Washington, DC: Hemisphere.
- Lundgren, R. & McMakin, A. (2004). *Risk communication: A handbook for communicating environmental, safety, and health risks (3rd edn)*. Columbus, OH: Battele Press.
- Mileti, D.S. & Sorensen, J.S. (1990). *Communication of emergency public warnings: A social science perspective and state-of-the-art assessment*. Oak Ridge, TN: Oak Ridge National Laboratory.
- Milne, S., Sheeran, P. & Orbell, S. (2000). Prediction and intervention in health-related behaviour: A meta-analytic review of protection motivation theory. *Journal of Applied Social Psychology*, 30, 106-143.



- Morrissey, S.A. & Reser, J.P. (2003). Evaluating the effectiveness of psychological preparedness advice in community cyclone preparedness materials. *Australian Journal of Emergency Management*, 18, 44-59.
- Morrissey, S. & Reser, J.P. (2001). Evaluation of a psychological preparedness guide for coping with cyclone threat. In T. Scrimali & L. Grimaldi (Eds.), *Cognitive psychotherapy: Towards a new millenium: Scientific foundation and clinical practice* (pp 369-372), New York: Kluwer Academic Press.
- Peek, L.A. & Mileti, D.S. (2002). The history and future of disaster research. In R.B. Bechtel & A. Churchman (Eds.), *Handbook of Environmental Psychology* (pp 511-524). New York: Wiley.
- Reser, J.P. (1996). Coping with natural disaster warnings: The nature of human response and psychological preparedness. In R.L. Heathcote, C. Cutter & J. Koetz (Eds.), *United Nations National Disaster Reduction 1996 (NDR96)* (pp 126-136), Sydney: Institution of Engineers, Australia /EA Books.
- Reser, J.P. & Morrissey, S.A. (2008) A psychological perspective on environmental hazards and disasters: Situating and framing individual and community experience and response. In K. Gow & D. Paton (Eds) *The phoenix of natural disasters: Community resilience* (pp 47-71). Washington, D.C.: Nova Science Publishers.
- Reyes, G. & Jacobs, G.A. (Eds) (2006). *Handbook of international disaster psychology*. Vols 1-4. Westport, CT: Praeger.
- Rogers, R.W. & Prentice-Dunn, S. (1997). Protection motivation theory. In D.S. Gochman (Ed) *Handbook of health behaviour research. Vol I: Personal and social determinants* (pp 113-132). New York, NY: Plenum.
- Rohrmann, B. (2000). Critical assessment of information on bushfire preparedness for residents. *Australian Journal of Emergency Management*, Autumn, 14-19.
- Rohrmann, B. (1998). Assessing hazard information/communication programs. *Australian Psychologist*, 33, 105-112.
- Rohrmann, B. (1995). Effective communication for fire preparedness: A conceptual framework. *The Australian Journal of Emergency Management*, 10, 42-46.
- Ronan, K.R. & Johnston, M.J. (2005). *Promoting Community Resilience in Disasters*. New York: Springer.
- Ruiter, R.A.C., Abraham, C., & Kok, G. (2001). Scary warnings and rational precautions: A review of the psychology of fear appeals. *Psychology and Health*, 16, 613-630.
- Tierney, K.J. (2007). From the margins to the mainstream? Disaster research at the crossroads. *Annual Review of Sociology*, 33, 503-525.

- Tierney, K.J., Lindell, M.K. & Perry, R.W. (2001) *Facing the unexpected: Disaster preparedness and response in the United States*. Washington, DC: Joseph Henry Press.
- US Department of Health and Human Services (DHHS) (2002). *Communicating in a crisis: Risk communication guidelines for public officials*. Washington, DC: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration [www.samhsa.gov](http://www.samhsa.gov)
- Weinstein, N.D. (1987) *Taking care: Understanding and encouraging self-protective behaviour*. Cambridge, UK: Cambridge University Press.
- WHO Mental Health in Emergencies. Mental and Social Aspects of Health of Populations Exposed to Extreme Stressors, Department of Mental Health and Substance Dependence World Health Organization Geneva 2003  
<http://www.who.int>
- Witte, K., Meyer, G. & Martell, D. (2001) *Effective health risk messages: A step by step guide*. London: Sage.
- Wood, W. & Quinn, J.M. (2003). Forewarned and forearmed? Two meta-analytic syntheses of forewarnings of influence appeals. *Psychological Bulletin*, 129, 119-138.