



**Developing A Risk Communication Model  
to Encourage Community Safety  
from Natural Hazards**

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The author acknowledges the contributions of Joan Young and Les Robinson in the development of this model.

**“THE PURPOSE OF (RISK) COMMUNICATION IS TO ASSIST PEOPLE TO OBTAIN THE INFORMATION THEY NEED TO MAKE INFORMED CHOICES ABOUT THE POSSIBLE RISK THEY FACE.”**

(Wade, C R, Molony, S T, Durbin, M E, Klein S H, and Wahl L E, (1992), *P1*)

**“HUMAN BEINGS DO NOT HAVE THE TIME OR THE ABILITY TO BE CONCERNED ABOUT EVERY PROBLEM IN THE WORLD. THEY DEVOTE THEIR TIME AND ENERGY TO PROBLEMS THAT INVOLVE THEM AND FOR WHICH THEY CAN MAKE A DIFFERENCE.”**

J E Grunig quoted in Leffler (1998)

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# 1) INTRODUCTION

This discussion paper will outline issues relating to developing a risk communication model in the context of a severe but infrequent hazard such as a significant flood or storm. It will also investigate the concept of risk perception and the elements that contribute to an integrated community safety campaign. The paper will review traditional approaches to community education used by emergency agencies. It will suggest a need for a more integrated risk communication model that acknowledges community perceptions about the risks they face, and while encouraging self-reliance acknowledges the limitations of this approach. It will then present a coherent conceptual framework for communicating and involving the public, focusing on adopting protective behaviour for the pre-disaster phase. Hopefully, this paper will generate vigorous debate over future directions for community safety within the SES and lead to the development of rigorous and effective safety programs for flood and storm education.

Emergency managers are in the midst of historic changes. The focus of expectations has changed dramatically, from a pure emergency response to a proactive 'risk management' approach involving disaster mitigation, prevention, and risk communication (Keys 1999a, Buckle 1998, Granger 1999).

These shifts involve:

- a whole-of-government approach that sees community safety as a total system;
- locally focused and integrated planning;
- the need for greater community participation;
- community-centric, rather than agency-centric approaches;
- risk management and multi-disciplinary approaches;
- improved use of technology;
- the need for greater cost effectiveness and public accountability;
- the need to form and enhance partnerships and to reduce organisations' isolation;
- the need for sophisticated skills in risk management and communication (EMA 1999a, Hodges 1999).

## **A changing public**

At the same time as expectations of emergency services are changing, so is too the nature of the public changing:

- the changing nature of 'community', from communities-of-place to dispersed communities-of-interest;
- the demand for greater community participation (EMA 1999a);

- increasingly low tolerance of risk and increasing expectation of emergency services;
- a declining level of trust in government and authorities;
- a community that is shifting its concerns from the public to the private and personal (Quantum Market Research 2002);
- an increasingly complex and competitive communication environment;
- an increasing urbanisation and an increase in communities of older people living along the coast (Salt 2003); and
- a community that is sophisticated in reading and interpreting communications.

These factors reinforce the need for innovation, rigorous planning and an evidence-based culture in the design of community safety programs. However, while there has been extensive education resources developed in Australia, there has been little research to substantiate a link to an appropriate risk communication model: one that explains the relationship between vulnerable communities and their willingness to become involved with community safety programs (Boura, 1998).

## **2) Traditional approaches to community safety**

Traditional education approaches, often called public awareness programs, are increasingly being questioned. In the flood and storm safety arena, there remains a lack of clarity about what approaches are appropriate in different situations. As Keys (1999b) noted, "It has been apparent for some time that creating community awareness of floods and storms is not easy, and that our various pamphlets and guides do not 'move' in large numbers. Most of the time, people are not particularly interested in them."

From a national multi-hazard perspective, the outlook is just as bleak.

"...there is currently no nationally accepted theory which provides the basis for determining 'good practice' and programs and activities have been developed from a basis of intuition, past experience or adoption and adaption of activities from other areas...." (AMEC 2002 p7).

Historically, when emergency services have undertaken community education, they have informed the community about hazards and their risks, through distribution of prepared material emphasising actions residents can undertake to protect themselves and their property during emergencies. The communication process was often one-off and one-way, and assumed that the audience was an indistinguishable group of individuals who had the same needs and values.

The effectiveness of this traditional approach and the extent to which individuals implemented safety messages was often measured by the number of resources distributed, or the public recalling the message. The indicators used to determine a

successful campaign focussed on the ability of the individual to demonstrate an awareness of the safety messages presented (eg. Mountford and Davidson 1999, storm safety evaluation).

This traditional model is one where the emergency professional is the 'active agent' and the community member is the passive recipient of appropriate messages (Macdonald, 1998). The deficits of this model are at last being recognised and research has questioned the effectiveness of these education strategies in changing people's behaviour. "One of the most puzzling findings ... was that many people did not implement strategies that would improve their safety, despite understanding the issues associated with safety and acknowledging that safety was their own responsibility" (Esmund *et al.* 2000, p5).

Implicit in this traditional approach was the assumption that there was a direct correlation between awareness raising and behavioural change. "It is frequently assumed that providing the public with information on hazards and their mitigation will encourage preparation. This assumption is unfounded." (Paton *et al.*, undated). This failing of the traditional Information-Action model is the belief that merely informing the individual or community about a hazard, will lead to risk awareness and awareness to actions, and then to sustained behavioural change. Boura (1998) identifies the weakness in the belief that there is a strong and direct causal link between receiving information and appropriate actions.

The literature on risk communication indicates that distribution of information on the hazard and associated risk will not by itself make a significant difference in attitude, perception or behaviour (Boura, 1998). Keys (1996, p3) noted, "...public awareness strategies have had a low profile in the emergency management field. Their potential as tools for reducing the costs which floods impose has also been little developed, despite the fact that a flood-aware community is recognised in the floodplain management literature as being important in this regard."

### **Health Promotion and Injury Prevention Campaigns**

Although emergency education programs are customarily under-funded, additional resources alone will not improve residents' ability to prepare and cope with a major disaster. It is instructive to review other behavioural change campaigns that have received greater funding and have a more empirically rigorous model to support their strategies. In spite of health promotion campaigns making some advancement in lessening dangerous behaviours these measures are still the subject of constant revisions, as more effective strategies are discovered.

Researchers are still investigating why so many people continue to maintain unhealthy and potentially dangerous lifestyles. Even well funded programs in related areas, such as road safety campaigns, have been criticised for a lack of success. According to the 2002 Safety Strategy Report, "It is likely that millions of dollars have been wasted each year on road safety advertising in Victoria since 1989" (Sinclair, 2003).

The 1997/98 NSW Sun Protection Campaign (the Seymour Snowman campaign) is an example of this in a related health area (NSW Cancer Council, 1998). The campaign focussed on encouraging appropriate sun protection behaviour through a social marketing campaign and information distribution. The campaign used radio, TV, billboards, posters and leaflets to give positive information about appropriate sun protection to children and their carers. The campaign generated significant increase in awareness of the main character (Seymour Snowman) used in the campaign, with 73% recalling they had seen the commercial on TV. However, over the same time there was only a 3% increase in children engaging in the desired sun protection behaviour, while adults reported a 2% fall in appropriate sun protection behaviour.

The success and possible new directions for the smoking cessation campaigns were recently reviewed in the Sydney Morning Herald. The campaigns use a system-based intervention approach consisting of macro and micro projects such as pricing increases, mass-media projects, restricting cigarettes availability, restricting advertising, targeting vulnerable groups, bans in public areas and work places, commercial cessation programs, pack warnings, the Quitline and GP guidelines.

The multiple players in these campaigns, such as state and federal health departments, commercial companies and various independent agencies (eg. Cancer Councils) make it difficult to evaluate individual programs. However, as these various programs employ common strategies, their success is ultimately measured by the reduction in smoking and the number of new smokers. While the smoking cessation campaigns had been successful in lowering the rate of smoking, in the last few years the cessation rate has stalled at just below 20 per cent.

Professor Simon Chapman of the Cancer Council, believes that while mass-media campaigns can be effective in reducing smoking rates, there will always be smokers and that the messages won't reach everybody. To further reduce the smoking rate within 10 years in NSW, Dr Penman, CEO of the Cancer Council believes a \$15 million a year anti-smoking campaign could significantly decrease the smoking rate within 10 years (SMH, 16 Oct, 2003).

Clearly current disaster education programs are not as sophisticated or as well resourced as health promotion and injury prevention campaigns. Yet these campaigns are now struggling to have a significant impact on their target audiences. What approach should emergency managers take in encouraging safety preparation for disasters?

### 3) FINDING BETTER RISK COMMUNICATION APPROACHES FOR COMMUNITY SAFETY

It is apparent that new approaches are needed to create desirable behavioural changes. The focus in the current methodology on individual behavioural change through conveying information needs to be broadened. The Institute of Medicine (2002) has identified three major determinates of intention to undertake behavioural change. They are:

- Attitudes of a person;
- community norms; and
- the degree of self-efficacy of a person.

Macdonald (1998) also includes the social setting in which people make decisions about their risks.

In response to these challenges, alternative approaches are emerging. Fortunately, rather than re-inventing the wheel, we are able to learn and adapt approaches and models which have been proven in other jurisdictions -- notably health promotion, social marketing, community safety and adult education -- to present a community safety model that identifies and addresses the concerns of all affected groups. The report of a national flood warning workshop (Proudley and Handmer, 2003) identified many of the issues that need to be addressed in developing effective warning systems, including:

- The necessity for community engagement through increased awareness and engagement;
- The need to improve the communication of risk;
- The importance of recognising the target audience of flood warnings; and
- The need for policy improvements in the area of flash flood warnings.

Other approaches that have proved useful in improving health and safety outcomes include:

- **Comprehensive systems-based intervention.** This approach recognises community behaviour is the outcomes of interaction between legislation, organisational policy and practice, social networks, engineering solutions, and community norms. System-based intervention approaches have been widely applied in health promotion, notably in community safety and injury prevention work (Lindquist et al 2002, Cohen and Swift 2003, Jensen 1999, Esmund et al 2000). An example of this is the smoking cessation campaign. The programs are supported by federal and state governments and by community health groups. Strategies include legislation to ban smoking in workplaces, individual Quit packs, powerful advertisements to alert smokers to the danger of smoking and measures to protect non-smokers (SMH, 16 Oct, 2003).

- **Greater use of "bottom-up" (participative) strategies.** These focus on empowering and resourcing local groups and networks, to identify problems, define solutions and initiate action plans. Examples in the emergency management field include: Community Fire Guard (Vic CFA), Community Fire Units (NSW FB), AWARE (WA FESA) and the American Red Cross's Disaster Resistant Neighbourhood program.
- **Greater use of social marketing methods.** Mass persuasion methods originally developed in the commercial marketing field are now widely used to foster positive behaviours. These are being applied to improve community resilience to natural hazards, e.g. FloodSafe (NSW SES). The National Flood Warning Centre (UK) ran a social marketing and health promotion campaign that is credited with raising flood awareness from 48% to 79% over the past five years (Proudley and Handmer, 2003).
- **Greater use of evidence-based approaches.** Social research is replacing gut feeling in emergency risk communication. The last few years have seen a dramatic increase in the commissioning of quantitative and qualitative social research: for instance, FESA's Community Safety Survey 2000, the Queensland Department of Emergency Services' focus group research (AC Neislen 2003), and NSW SES research into flood knowledge and perceptions.

The shift from a public awareness approach to one of community safety alters the traditional top-down, 'command and control' relationship with the community. In this new model, the community is seen as an active participant in its own safety, rather than a passive recipient of services. This requires emergency agencies to become specialists, facilitators and supporters of the community, while maintaining their traditional disaster response functions. These are challenging roles which requiring flexibility, new skills and new approaches (AMEC 2002).

The behavioural models that have influenced the development of community safety programs are summarised in *Speaking of Health* (Institute of Medicine 2002). The first of these health promotion models is the Health Belief Model. According to this model, two main factors contribute to a person's willingness to adopt appropriate health behaviours. First, the person must believe that there is a significant risk to them and the suggested benefits will compensate for the cost of undertaking the appropriate behaviours. The second is the Social Cognitive Theory, that emphasises the importance of individual self-efficacy, or self-confidence that they can exercise some degree over their behaviour and the outcomes they want to achieve. The Theory of Reasoned Action asserts that the extent of behaviour change can be viewed as a function of a person's attitude towards performing the action and a person's perception of what his/her peers' attitude is towards performing the task. The identification of community norms as an incentive or hindrance to change is an important factor, especially in low perceived/high actual risk environments, and highlights the need to work closely with community expectations.

## **4) FACTORS THAT INFLUENCE COMMUNITY SAFETY**

One of the most contentious issues in the risk communication area is the identification of factors that contribute to a successful community safety program. Previous programs had centred on the Information/Action model; however, research carried out by the NSW SES in Kempsey and by Pfister (2001) at Grafton, have demonstrated that hazard and risk information, when distributed in isolation from the social setting, will have little significant impact on awareness or behavioural change.

The principal factors that contribute to an effective community safety program include:

- a) The nature of the hazard and associated risk;
- b) The perception of the risk and people's willingness to act;
- c) Identifying the stages of risk communication;
- d) Identifying audiences and associated messages; and
- e) Community resilience.

### **a. The nature of the hazard and associated risk**

Emergency managers frequently express frustration with the public when they demonstrate a lack of concern when experts identify an extreme risk that threatens a community. This is particularly so when managers need to communicate the risk resulting from an infrequent but severe hazard. "Arguably, the flood threat is neither frequent enough in its impact nor severe enough in its usual consequences for experience of it to generate deliberate protective behaviour in most people" (Keys 1999b).

Severe floods are an example of a risk that most non-experts would see as unlikely to have an impact on their lives. However floods are one of most costly natural disasters in Australia. In NSW from 1967-99 (in 1998 \$A), floods cost \$128,000,000 per annum; about 26.5% of the total cost of all disasters. For Australia as a whole, the cost was \$314,000,000 per annum or 28% of all disaster costs (Bureau of Transport Economics, 2001).

So while severe floods are a real problem for many communities, there is evidence that the public does not agree with this assessment. A recent survey of Queenslanders showed that floods are generally perceived as less risky than other hazards such as cyclones.

Flooding:

- It is low risk unless you live near a river;
- You can do little to prepare until you receive a flood warning; and
- A lot of clean-up is needed, but little damage (AC Neilsen 2003).

As risk managers one of the greatest dilemmas in flood and storm communication is how do you alert the public to the risk of low-probability, high-consequence disasters such as severe floods? The conventional wisdom is that people need to be convinced of the risks. It is therefore our role as risk managers, to give them sufficient details of the hazard, so that they will be prepared to protect themselves from the consequences.

However, conventional wisdom runs into a wall of public indifference – an indifference with its own logic. “Why should I concern myself with risks that -- while they may be severe -- are rare and usually low-intensity, and which the government and emergency agencies are practiced at managing?”

The fact is, we may be asking the public to act on someone else's problem – in this case, the risk communication manager's problem. The issue then becomes one of not only identifying the actual risk from a severe hazard, but also understanding how people will perceive the risk and be willing to adopt protective behaviours.

## **b. Risk Perception**

Integral to the community safety approach is the belief that people do not categorise all risks as the same. In other words, they will underestimate or overestimate the risk according to their perception or understanding of the impact of the risk on their own lives. In situations such as an infrequent but severe hazard, the decision-making process is made harder by the complex variables that influence an individual's perception of the risk.

Research suggests that when people feel threatened when confronted with health and safety messages, they become defensive and believe that it won't affect them. Sandman (1994) found that people were often hostile to the idea that they are at risk. People judged themselves less at risk than the 'average' person to a variety of natural and technological hazards. This psychological bias is well known: people believe that they are impervious to events that affect the average person and is referred to as Optimism Bias (Amber, 2003). This view dominates most responses to risk, and people support it by devising a rationale for the conviction that the hazard will pass them by, or that it will only inflict minor damage to their property.

Carney (1993) hypothesised that when communicating about risk there is a need to develop a contingency model that takes into consideration both the **actual risk** of the situation (Factor 1) and the **perceived risk** (Factor 2). This determines the best communication strategies to use in the situation it represents.

### Risk Contingency Factors

1. Low actual risk/ low perceived risk (e.g., volcanic eruption in Sydney)
2. Low actual risk/ high perceived risk (e.g., attack by bees)
3. High actual risk/ high perceived risk (e.g., motor vehicle accident)

4. High actual risk/ low perceived risk (e.g., severe flood).

In essence, people usually underestimate risks because they would rather believe they are safe, free to live their lives without the responsibility of feeling vulnerable and obliged to make difficult or unpopular decisions that would affect their lifestyle. Festinger (1964) identified this conflict in his Theory of Cognitive Dissonance. Festinger examined situations where there are often mutually incompatible alternatives that ensure conflict in the decision-making process. The greater the conflict before the decision, the greater the dissonance. To reduce this dissonance, a person may try to justify the decision by increasing the attractiveness of the chosen alternative and decreasing the attractiveness of the rejected alternative.

For example, people who are confronted with the devastating news of a future severe flood may deny that this level of flooding could occur and reject the information as well as assistance to reduce the risk. This is because they may consider there is a low risk from a severe flood, coupled with low benefits from becoming flood prepared and a high cost in terms of their time and effort. Thus, they would consider their vulnerability as being low and would make a decision not to become involved in any risk-management programs. When a severe flood occurs, these people would be ill prepared and require the assistance of emergency agencies to evacuate

How then, do people determine the degree of risk that they are willing to accept when going about their lives? There are many empirical studies that attempt to establish an objective comparison between risks that communities are exposed to, people's attitude towards risk and their willingness to act to reduce the risk are more subjective. Wade *et al.* (1992) identified several of the variables that a person will use to determine their reaction to a specific risk (see Table 1). Thus, a person may have a high vulnerability to a specific risk because of their belief that the risk will not affect their life, which in turn will influence their willingness to adopt safety messages.

Table 1. Variables That Influence Risk Perception Model (adapted by O'Neill from Wade <i>et al.</i> [1992])
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<p><b>HIGH BENEFITS</b> People will accept a risk if they can identify corresponding benefits (eg., car travel).</p>	<p><b>V LITTLE BENEFITS</b> People are less accepting if they see no benefits or high costs from accepting the risk (e.g., industrial pollution).</p>
<p><b>FAMILIAR</b> If a risk is an everyday occurrence, it may be accepted into a person's schema (e.g., smoking).</p>	<p><b>V UNKNOWN</b> If the risk is unknown or rare, there is likely to be resistance in accepting it (e.g., GM foods).</p>
<p><b>TRUSTED</b> The risk is more likely to be accepted if people know and trust the organisation helping to manage the risk (e.g., SES).</p>	<p><b>V NOT TRUSTED</b> If the organisation is not trusted, the message about the risk may not be accepted (e.g., a bank)<sup>1</sup>.</p>
<p><b>NATURAL</b> People are more likely to accept what is regarded as a natural hazard (this perception gives a sense of inevitability about the risk).</p>	<p><b>V TECHNOLOGICAL</b> People have a higher expectation that technological or industrial risks will be managed.</p>
<p><b>VOLUNTARY</b> People are more willing to accept a risk when they make the decision about their own exposure to it. (e.g., smoking)</p>	<p><b>V IMPOSED</b> People may react negatively if they feel they have little choice in accepting the risk. (e.g., pollution)</p>
<p><b>MEMORABLE</b> People are less willing to accept a risk concerning a hazard that will attract wide public and media attention.</p>	<p><b>V FORGETTABLE</b> People may accept a risk concerning an event not likely to create community or media interest.</p>
<p><b>CATASTROPHIC POTENTIAL</b> People are more concerned about risks from hazards that are capable of causing dread because of the significant impact on a community.</p>	<p><b>V CHRONIC POTENTIAL</b> People may be unconcerned about the risk from hazards that seem to have little potential to significantly affect a community.</p>
<p><b>FOCUSED THREAT</b> An event that occurs over a brief period concentrates media and community interest.</p>	<p><b>V DISPERSED THREAT</b> There is less media and community attention if an event occurs over a long period (e.g., drought).</p>
<p><b>UNCERTAIN TIME AND SEVERITY</b> A vague or undefined threat can make people reject safety messages as too hard to implement.</p>	<p><b>V CERTAIN TIME AND SEVERITY</b> People feel more comfortable and willing to listen to safety messages if a threat can be defined and prepared for.</p>
<p><b>MANAGED</b> People are more willing to accept</p>	<p><b>V HAPHAZARD</b> People are unwilling to accept risks</p>

risks when they feel able to influence safety of themselves and their families through appropriate actions.

when they feel personally powerless to reduce risk (e.g., plane crash).

### c. Stages of Risk Communication

Risk communication may be defined as an interactive process of exchanging information and opinions between stakeholders regarding the nature and associated risks of a hazard on the individual or community and the appropriate responses to minimise the risks. The key to behavioural change lies in risk communication designed to change people's perception of the risk and to increase their willingness to manage the risk.

Several newer models of self-protective behaviour postulate that different messages are important at different stages of the process. Information about risk magnitude may be most important in making people aware of risks they have never heard of, while information about personal susceptibility may matter more in the transition from awareness to the decision to act. (Sandman, 1994)

Specific risk communication actions may be viewed in discrete environments, with each environment and the audience determining the purposes, approaches and safety messages. For community safety purposes, four discrete stages have been identified:

Before disasters	Warning phase	During and immediately after Disasters	Recovery
<ul style="list-style-type: none"> <li>• Build resilience</li> <li>• Build the authority of emergency agencies</li> <li>• Raise awareness of hazard and risk.</li> <li>• Encourage appropriate safety behaviour.</li> <li>• Reassure that family safety is achievable.</li> <li>• Inform community about warnings.</li> </ul>	<ul style="list-style-type: none"> <li>• Evacuation warnings</li> <li>• Whom to contact.</li> <li>• Credible safety messages</li> </ul>	<ul style="list-style-type: none"> <li>• Warnings</li> <li>• Safety messages</li> <li>• Compliance with authority</li> <li>• Emergency announcements</li> <li>• Whom to contact.</li> </ul>	<ul style="list-style-type: none"> <li>• Recovery information (mainly through DoCS or recovery committee)</li> <li>• PLUS: This phase is also offers vital "teachable moments" for resilience building. (Keys 1999b)</li> </ul>

Table 2: Discrete environments for risk communication activities.

Each of these four stages will require a different type of message, because of the changing perceptions of risk. One of the keys to this approach is the use of the warning time. During the warning period people's perception of the risk becomes more realistic, the costs of action goes down and the benefits increase. If the SES



	mandatory)	What to do / not to do Evacuation announcements (e.g., floods)
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Table 3: Arnstein's ladder of public participation applied to emergency risk communication.

These different approaches are likely to be appropriate for different phases of the disaster cycle.

	Before	Warning	During Immediately After	and Recovery
<p>Greater levels of empowerment and transparency</p>	Resourcing local organisation for self-reliance			Resourcing local organisation for self-reliance
	Problem solving: community-level			Problem solving: community-level
	Problem solving: individual / small group			Problem solving: individual / small group
	Public awareness	Public awareness	Public awareness	Public awareness
	Social marketing	Social marketing	Social marketing	Social marketing
		Emergency Announcements	Emergency Announcements	

Table 4: Where different communication types fit into the risk communication cycle.

Audience segmentation is therefore an important issue in program design. This paper has focused on three main segmentation criteria that have been identified by researchers: demographic factors, psychological traits and degree of personal experience of the hazard.

#### i. Demographic factors

Though often discussed, demographic variables do not appear to be used as primary criteria for segmenting audiences in risk communication marketing campaigns. This may be because it has proved difficult to empirically isolate the demographic variables that determine resilience. While intuitively it may make sense to link specific variables such as income and education standards to the

willingness to accept and act on safety messages, there is little hard evidence to support these ascertains.

However, the research that has been carried out does support some generally held beliefs – namely that women are more responsive to safety issues and that men tend to be more risk-deniers or risk-seekers.

Goulter and Myska (1987, p300) noted that women are somewhat more risk averse than men are. The 'white male' effect has also been studied by a number of researchers. This refers to the well-established tendency of certain white males with both individualist and hierarchical (i.e., trust for institutions and authority) traits, to have low risk perceptions (Flynn *et al.*, 1994, Solvic 1997, Palmer 2003). Interestingly, the research also found the same attitudes held by middle class Asian men.

Millar *et al.* (1999) noted that vulnerability is commonly considered to increase with age; however, in his study of volcanic risks in New Zealand, the 50+ age group appeared less vulnerable. They speculated that this was due to this group having greater financial security than younger groups (Millar *et al.*, 1999, p352).

## ii. Psychological traits

People's reactions to hazards are said to be mediated by their perceptions, notably their perception of the risks generated by a particular hazard and their belief in their ability to deal with those risks (Esmund *et al.* 2000, p3; Granger 1996 p14). Psychologists have tried to explain predispositions to act based on psychological traits such as perceived self-efficacy, anxiety, and independence. In other words, people who are confident and want to be independent are more likely to be risk managers.

A typical example of this approach is the recent AC Neilsen social research project exploring disaster preparedness in Brisbane, Cairns and Charleville (AC Neilsen 2003). In analysing the results of six focus groups, the researchers proposed two underlying psychological traits: level of anxiety<sup>1</sup> and level of personal independence.

The result was a matrix that aimed to predict both likely responses in a flood and audiences' differing communication needs.

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<sup>1</sup> The relevance of anxiety in risk perception has been subject to critical research, with results that generally support the idea that individuals with more chronic anxiety (as opposed to passing fears) are more likely to perceive higher risks. (Simpson-Housley and De Man 1986, Goulter and Myska 1987). The anxiety trait may also be a correlate of the well-known concept of self-efficacy of Albert Bandura (Bandura 1982) "People avoid activities that they believe exceed their coping capabilities, but they undertake and perform assuredly those they judge themselves capable of managing." (p123)

Self-efficacy:	<b>Independent</b> (make own decisions: self-empowering, confident)	<b>Affiliative</b> (socially connected - await decisions by authorities)
Low anxiety	"Warriors" or Risk seekers - Feel disasters are a rare occurrence - Believe they can handle any situation - Don't believe preparation will make a difference - Will want to act independently from safety advice Young 1999: 32%	"Minimisers" or Risk deniers - Feel disasters are low probability - Believe a disaster won't be that bad - Don't believe it will interfere with their lives - Will expect help from emergency workers Young 1999: 16%
Higher anxiety	"Controllers" or Risk averse - Feel disasters are powerful - believe their own actions can make a difference - Believe that preparation can prevent further damage, save cost and time - Want to take care of the risk to their family Young 1999: 19%	"Boy scouts" or Risk tolerant - Feel disasters are dangerous and scary - Focus on ensuring family and community safety - Believe being prepared will mean less chance of damage or injury - Will need assistance to manage the risk  Young 1999: 33%

Table 5: An audience segmentation matrix. (AC Nielsen 2003)

Notes:

1) Self-efficacy was also used as primary variable in Millar and Paton's analysis of community vulnerability to volcanic hazards in New Zealand. (Millar and Paton 1999)

2) Elsewhere Paton has noted that anxiety can reduce the likelihood people will prepare. (Paton, undated)

These categories are very similar to the dynamics proposed by Young in her Hawkesbury-Nepean segmentation study (Young 1999). The AC Nielsen study did not include quantitative data, however Young attempted to allocate population percentages to these groups based on 604 telephone interviews in Windsor and Richmond.<sup>2</sup> For interest, her figures are included in the above matrix.

<sup>2</sup> Two vulnerable communities in western Sydney. Both are relatively established communities with a strong sense of place and a living memory of flooding.

The need to identify risk-averse audiences has long been a goal of emergency agencies, as they are the most productive group to work with. Pfister (2001) surveyed Grafton residents after the 2001 floods and concluded that about one-third of respondents were 'risk averse'. "They described themselves as cautious people, or used phrase such as 'you're better safe than sorry.' This conforms to the expectation that personal risk aversion is a critical factor in the decision to evacuate" (Pfister 2001, p7).

A perennial challenge in communication is how to target the right message to the right audience. There is also a related question of cost effectiveness - there is no point in spending time and effort on audiences that are unlikely to respond to any message. Audience segmentation is therefore an important issue in program design. At this stage it's important to note simply that the effect of most segmentation approaches is the divide an audience into:

- "risk averse": people who are sufficiently concerned, and have sufficient self-efficacy, to take personal action to reduce their risk. They also may be regarded as risk managers. These consist of two groups:
  - those who are concerned about the same hazard as the emergency agency; and
  - those who while concerned about hazards in a general way and may not perceive the specific threat articulated by the emergency agency as significant. They may be concerned about other specific hazards, or about the general safety of their family, household or business.
- 'risk tolerant': people who are ambivalent about the risk, depending on their personal experience of the hazard.
- 'risk deniers': people who are unlikely to take any form of action until an emergency occurs, either because they are in denial, lack self-efficacy, or have high dependence needs.
- 'risk seekers': people who have an unfounded belief in their ability to manage risk and will often seek out risks for a personal challenge or a sense of adventure.

In many community safety programs the audience has been identified as being on a continuum from risk managers (or risk averse) to risk deniers. However, a well-designed communication program should develop messages and tools for all four audiences. Table 5 demonstrates the way different messages can be developed for specific audiences.

<b>Risk averse</b>	Concerned with same hazard as the agency	Target this group with <u>hazard-specific</u> information and messages and focus on how they can manage their response to the risk (i.e. what to do in a <i>flood</i> ).
	Concerned about general family safety	Target this group with <u>non-hazard specific</u> safety initiatives (i.e. what to do in an <i>emergency</i> ). (Potential for joint agency partnerships using the Safe Community approach)
<b>Risk tolerant</b>	Ambivalent about the hazard or the effect on them.	Target this group with general information about the hazard. Highlight the risk from the hazard and how it will affect their family.
<b>Risk deniers</b>	Denies that the hazard will occur or that it will affect them.	Target this group with messages that build the credibility and authority of the agency.
<b>Risk seekers</b>	Sees a disaster as an opportunity to become involved in rescue efforts or to pursue their interests.	During the event, warn of the dangers and the penalties for interfering with the work of the emergency agencies. After the event, target with specific messages relating to safety for individuals and families.

Table 6: A proposed approach to segmenting risk communication audiences, focussing on BEFORE-disaster communications.

### iii. Experience of the hazard

#### Personal exposure

Several studies have highlighted the role of personal experience of disasters as a driver of heightened risk perception (for instance Kunreuther 2001, Penning-Rowsell 1994, Berry and King 1998, Goulter and Myska 1987, AMEC 2002 p16).

In 1999 Mountford and Davidson asked residents of four Sydney councils, to nominate ways to minimise property damage from storms. An extraordinary 72% of Ku-ring-gai residents correctly nominated three or more techniques, compared to 32% in Sutherland, 12% in Blacktown and 10% in Liverpool. The authors concluded, "the high response rate for Ku-ring-gai and Sutherland Shires is due in part to the residents' recent experience with major storms. Many respondents

mentioned their personal experiences - clearly experience is a good teacher." (Mountford and Davidson 1999, p9)

This is supported by recent Queensland research into disaster preparedness (AC Neilsen 2003) that concluded that personal experience was a decisive factor in shaping both people's perception of risk and the likelihood of preparations.

"People who have experienced a disaster are much more likely to have things in place in case a disaster happens because they may:

- have experienced a disaster before;
- have lived in the same area for a long period and are familiar with what to expect;
- have experienced 'severe' damage either personally or to property (especially if the disaster has been recent);
- have more to lose; i.e., their own house and furnishings." (AC Neilsen 2003, p20)

However just experiencing a hazard does not mean that a person will be willing to adopt safe behaviour. This was demonstrated in the 2001 Grafton floods, where the flood waters were within centimetres of overtopping the town levee and people still did not evacuate (Pfister 2001). Yale *et al.* (2003) also identified this issue in their study of drowning deaths associated with inland flooding after Hurricane Floyd. According to their study, 16 people drowned in fully or partially submerged vehicles. Most of the people who drowned were familiar with the road and they had all received severe weather warnings.

A possible criticism of the importance of experience is that people may have had personal experience of low-intensity floods or storms and therefore do not appreciate the potential danger of future severe events. Still, those with no experience of the power of major floods or storms are unlikely to respond meaningfully to any kind of communications about these hazards. Emergency risk communicators can at least work with people who have some experience.

### **Vicarious experience**

Although personal experience is likely to be the best teacher, people may also have surrogate exposures of hazards in a number of ways:

1) Through social norms of the region. This can be seen in northern Australia, where cyclone warnings are taken seriously by the entire community - including those with no experience of tropical weather. The power of such 'normative social pressure' is recognised in the literature (for example, Boehm *et al.* 1992). This is also evidenced in the Blue Mountains, east of Sydney, which has a culture of bush fire awareness that is apparent to new residents.

2) Through vicarious experiences. For instance flood commemorations, including a chance to view historic flood photos, may help build increased risk awareness (Keys 1999a<sup>3</sup>), as well as reinforce local social norms.

3) Personal connections, such as family stories, and the experiences of other family members or long-term residents.

As these experiences can't duplicate the personal and emotional turmoil, as well as the physical destruction produced by a significant disaster, they work best in raising awareness of the hazard and the associated risks.

## A triage approach to audience segmentation

The review of the literature therefore suggests the following prominent characteristics as determinants for identifying audiences for community safety campaigns. They are:

- risk attitude and perception;
- degree of independence and self-efficacy and;
- past exposure to the particular hazard.

Risk deniers are those who would agree to the proposition: "There is very little chance of a severe flood or storm affecting me." Those with past exposure would answer 'yes' to: "Past severe floods or storms have had an influence on my life or thinking."

It is proposed that the following rule-of-thumb approach is for developing flood and storm preparation programs, as illustrated by the following diagram:

<b><u>Risk Perception</u></b>	<b><u>Audience</u></b>	<b><u>Actions</u></b>
<p><b>Past exposure to the specific hazard</b> e.g., flood or bushfire;</p> <p>or</p> <p><b>Influenced by strong local norms</b></p>	<p><b>Risk deniers (exposed)</b></p> <p>Will want to manage their own risk</p> <p>It's unlikely to be cost-effective to target this group until a flood</p>	<p><b>Focused risk averse</b></p> <p>A high priority audience: Target this group with <i>hazard-specific</i> messages (such as what to do in a <i>flood</i>). These people are concerned and intend to</p>

<sup>3</sup> "In all probability there are only a few moments in any particular community in, say, a decade when people might be genuinely receptive to flood information. These are:

- when drought-breaking rains have just occurred.
- when a flood is rising
- when the clean-up is underway
- during a period when flooding is on the political agenda
- at the time of the anniversary of a significant and well-remembered event." (Keys 1999b)

<p>A high risk perception of this particular hazard: but it must be to a specific hazard; for example, not just 'flooding' but 'overtopping levee'</p>	<p>warning occurs</p> <p>Creating “brand awareness” and image for the authority: an important target for these messages</p>	<p>independently manage the risk.</p> <p>Carry out resilience-building initiatives.</p> <p>In the warning phase, messages include: "activate your flood plan".</p>
<p><b>No past exposure to the specific hazard</b> (low perception of this particular risk)</p>	<p><b>Risk deniers (unexposed)</b></p> <p>Unlikely to respond to pre-hazard communications</p> <p>Will rely on emergency agencies during a disaster</p>	<p><b>Unfocused risk averse</b></p> <p>Will have limited ability to manage their own risk</p> <p>Target this group with <u>non-hazard specific</u> safety initiatives (that is, what to do in <i>an emergency</i>). For example:</p> <ul style="list-style-type: none"> <li>- Safe Communities partnerships</li> <li>- household and family safety marketing</li> </ul>

**Risk deniers**

or risk tolerant  
Neither is likely to be receptive to specific messages before the event.

**Risk averse**

(risk averse)  
Want to limit their personal risk.

Figure 7: A triage approach to audience segmentation in the BEFORE phase.

This approach suggests three types of activities as being appropriate to ‘BEFORE’ community safety programs:

**1) Specific hazard programs**

These focus on preparation for a specific hazard, such as floods.

This approach is indicated where:

- i) The particular community has a recent memory of damaging floods (For example, Lismore or Kempsey);

or

- ii) The 'teachable moments' identified by Keys.

*Purpose:* resilience-building relating to immediate, event-specific safety.

*Tools:* the full spectrum of methods, customised to the particular community.

## **2) Non-specific hazard programs**

These are recommended where communities have no recent exposure of damaging events. They focus on preparation for non-specific 'emergencies' and general hazard safety information. This approach would facilitate partnerships between diverse agencies, using Safe Communities or Safe Town programs.

*Purpose:* resilience-building to ensure receptivity to warnings and safety advice during a specific event.

*Tools:* the full spectrum of methods, customised to the particular community.

## **3) Authority-building programs**

These target all communities considered vulnerable.

*Purpose:* building the authority of emergency agencies, and the credibility of local emergency leadership and of their safety messages; this is intended to increase compliance with emergency-service directives and receptivity to safety advice.

*Tools:* primarily social marketing and public relations (media and advertising).

## **E. Resilience**

Vulnerability and resilience have emerged as critical concepts in risk management, with research being carried out to isolate the variables that make one community more vulnerable than another during times of disaster. In this risk communication paper, it is proposed to extend the use of the term 'resilience' beyond a measure of recovery - to cover the entire adaptive capacity of a community.

"The size of the disaster, coupled with the intensified impact on services and infrastructure, meant that most of the impacted people were on their own. This is probably the most critical issue in a natural hazard. The whole population has to understand precisely what to do in a disaster situation because the services and infrastructure of the community will inevitably be overwhelmed" (Goudie and King 1999 p54).

Vulnerability is a measure of the potential for events to damage the resources of a community. The issue of vulnerability involves subjective risk perception that needs to be included in the communication campaign. It is this combination of actual and perceived risk plus the perceived benefits and costs of behavioural change that determines the vulnerability of a community and the willingness of community members to accept safety messages. While technical bodies may recognise a high actual risk, if the community regard it as a low risk, detailed or involved risk communication may be counter-productive.

Research carried out on the community's attitude towards the Hawkesbury-Nepean flood hazard indicates that residents believe that there is low *perceived* risk, while experts believe that there is a high *actual* risk. In this situation, a long-term communication and marketing campaign needs to be developed that will overcome people's natural indifference or hostility to the flood message, and incorporate the different perceptions of stakeholders towards the risk.

Resilience is a measure of the capacity to recover. These reflect "a situation...whether the people affected can prevent and resist the damage and whether, if the damage does occur, they can recover successfully" (Buckle 1995 p11). Concerning community safety programs, vulnerability and resilience may be regarded as two sides of the same coin (Buckle 1995).

Thus, resilience may be seen as the positive side of vulnerability: the capacity to prevent or resist damage, as well as to recover. This usage of resilience is becoming more widespread (for example, Esmund *et al.* 2000 p5, Jensen 1999, Paton 2001 quoted in AMEC 2002, Pooley *et al.* 2003).

For instance, Pooley *et al.* (2003) considered the components of resilience to include:

- Individual factors:
  - perceived self-efficacy
  - coping styles
  - social connections
- Community factors
  - sense of belonging
  - community competence (collaboration skills)

From a risk communication perspective, this means that both individual and community concerns need to be included when developing a community safety program. An essential element is an inter-connected community. (AEMC 2002, p8) The term 'community resilience' recognises that communities operate as networks and groups, rather than as discrete individuals. This is especially so in times of disaster. But it is also true in normal times. People make decisions about their response to a severe risk in consultation with their family and in the context of community climate. The Institute of Medicine (2002) referred to this 'perceived

norm' model as one of the significant factors in predicting willingness to adopt appropriate safety behaviour.

Communities take a variety of forms based on a sense of cohesion and mutual interest and include spiritual, ethnic, political or through their locality. Communities therefore need to be considered as systems: interconnected networks of individuals, groups and institutions, linked by shared experiences, values, norms and beliefs. These systems enable or disable a community's response in times of disaster. This idea is identical to the concept of 'social capital'. (AMEC 202, p8) Pro-resilience programs should therefore aim to foster and resource capacity building between members of communities.

The evidence also suggests that people do not react in isolation, but will help their families, friends and wider community (Buckle, *et al.*, 2003). For hazards that are ill defined or perceived as low risk, it may be more productive to first build up the sense of community resilience, rather than place an undue emphasis on individual responsibility.

Actions that build community resilience would include:

- fostering local coalitions and networks;
- fostering local leadership;
- fostering local ownership of problems and solutions through participative planning;
- developing individual competency (esp. disaster survival knowledge and skills):
  - individual preparations
  - confidence in selves (self-efficacy);
- building the authority and credibility of emergency agencies; and
- building awareness of hazards.

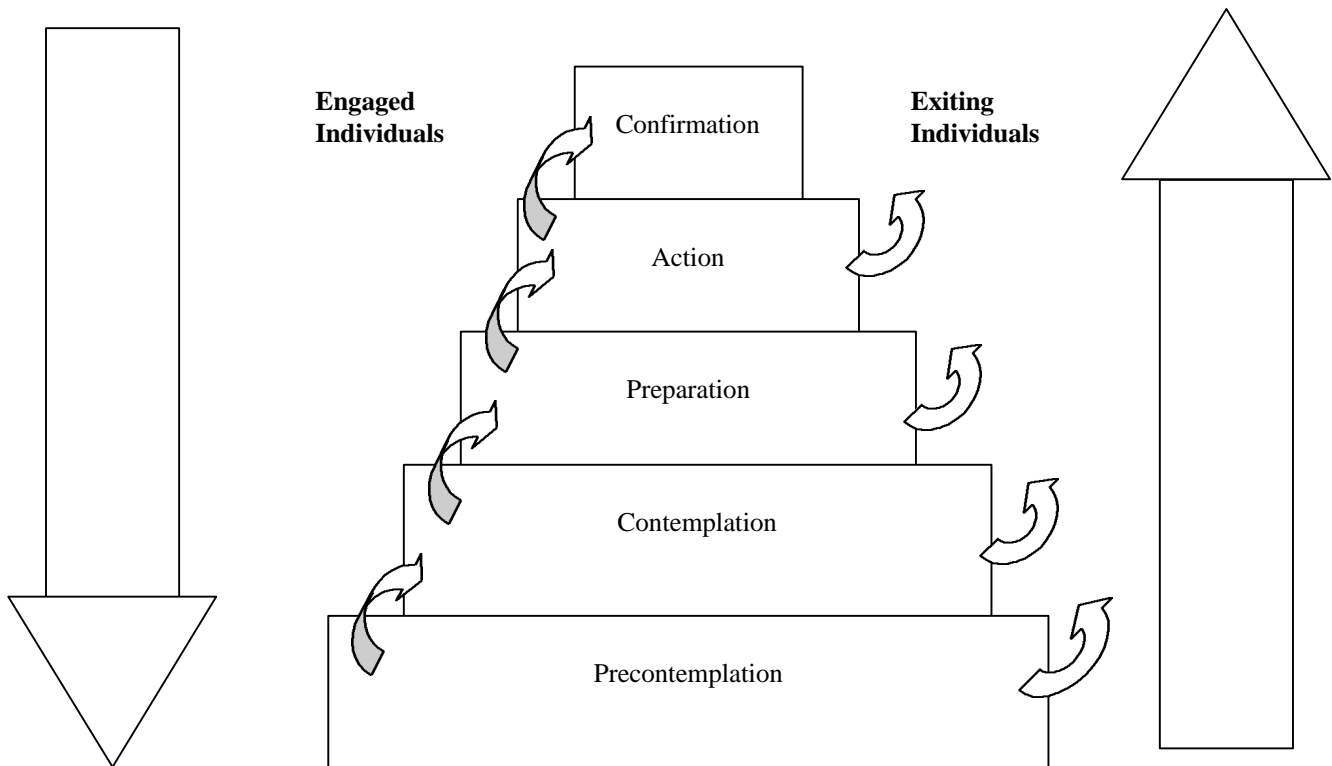
## **5) AN INTEGRATED COMMUNICATION FRAMEWORK**

The challenge for risk educators is to devise programs which both alter perceptions of risk and foster protective behaviours in target audiences, while acknowledging that not everyone will go on to adopt appropriate safety behaviour.

The approach discussed will have a significant impact on people who are concerned about the effects of the hazard and are able or prepared to manage their own risk. However, an effective risk communication model should acknowledge the differing perceptions that will guide individuals towards their understanding of their own flood hazard, their vulnerability to the flood risk and their willingness to develop their own risk-management plans.

This approach recognises that individuals or communities will be at different levels of readiness and willingness to change as a result of the perceived hazard. Individuals will enter and leave the education process according to their own

understanding of the flood hazard, their own sense of vulnerability and their preparedness to act. The research carried out by Young (1999) suggests that some individuals will only engage in the education/communication process as long as it satisfies a need and will exit at that point, rather than move through to the next behavioural stage (Figure 1).



**Figure 1: Stages in behavioural change.** In high actual risk/low perceived risk environments, individuals will enter and exit these stages according to the cost to them and the benefits they see from the engagement. Based on model by Prochaska & Dillemente (1986) and modified by O'Neill (1999).

This approach will also have implications for the development and delivery of warning messages during significant response operations. What is required is a holistic risk education framework that builds on established insights into the processes of personal and social change. As a starting point, it is proposed to adapt a framework based upon Everett Rogers' *The Diffusion of Innovations* (1962-1995). This theory is widely used to explain the adoption of technological innovations, especially in the rural sector and in commercial product marketing. It has been widely applied to the adoption of new farming practices in Australia (Dunn *et al.* 2000).

The Diffusion of Innovations offers two advantages over social cognitive models derived from the health sector. First, it predicts the behaviour of large populations, whereas the social cognitive models focus on the behaviours of individuals, usually

in a clinical setting. Secondly, it offers guidance on the design of the actions which people are supposed to adopt, rather than focusing solely on the psychology of persuasion and decision-making.

Rogers' theory assumes that consecutive groups adopt a successful innovation or strategy across a population, dependent on their openness to new ideas and willingness to experiment - beginning with innovators, then early adopters, early majority, late majority, and finally laggards.

The propensity to adopt a particular behaviour across a population at a given time, as well as the temporal process of adoption, is illustrated by the standard distribution curve, or 'bell-curve', where the different coloured areas approximate proportions of a population in the different adoption classes. This shape - especially the left-hand 'take-off' part of the curve, has been empirically verified in numerous studies of the take up of new behaviours and technologies. (Rogers 1995)

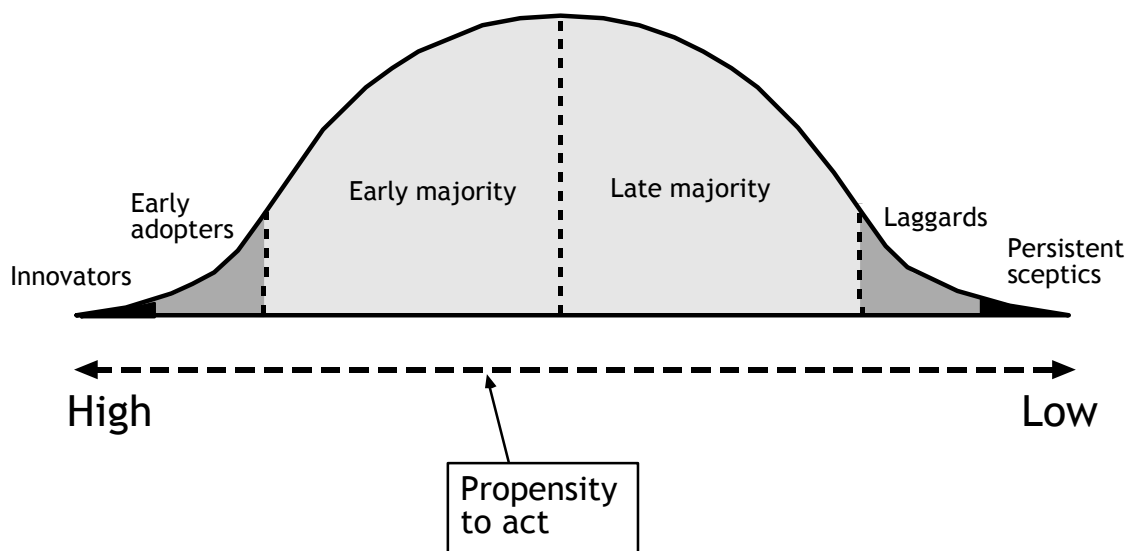


Figure 2: The stages of change from the Diffusion of Innovations theory. The vortex shape has no mathematical basis. Its purpose is to illustrate the point.

### Developing the model

Kent *et al.* 2000 developed the Diffusion model further by assuming a different *motivation level* for each of Rogers' adoption stages. These motivation levels notionally represent the different amounts of time and energy that members of the public are likely to invest in adopting a particular innovation. To illustrate, an additional axis is added to the diagram, producing a vortex shape.<sup>4</sup>

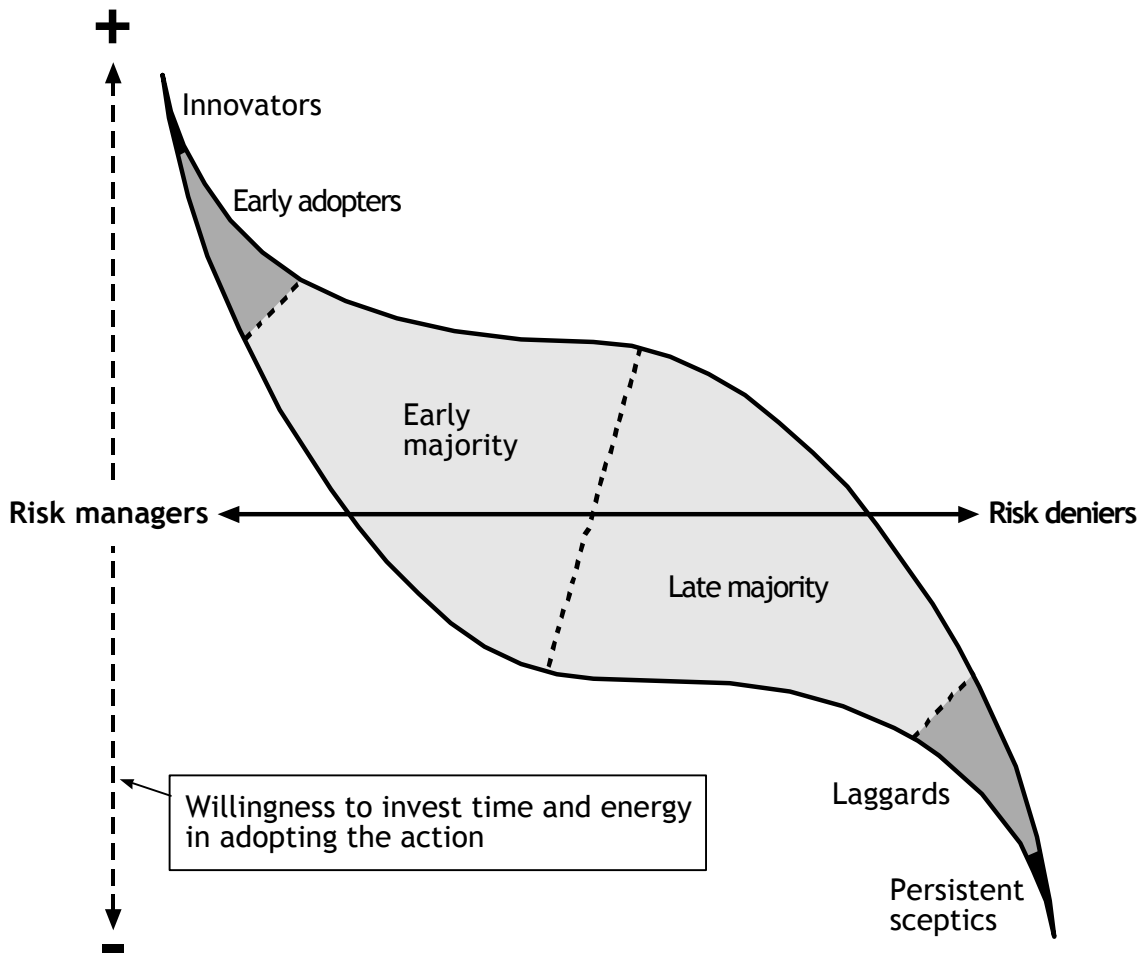


Figure 3: The Diffusion vortex, after Kent *et al.* 2002. The vortex shape has no mathematical basis. Its purpose is to illustrate the point.

An explanation of the five involvement levels is given in the table below.

<i>Adoption stage</i>	<i>Involvement level</i>	<i>Explanation</i>
<b>Innovators</b>	High involvement	'Global visionaries': May invest a high level of learning, time and creativity in innovating new solutions to community safety issues. Does not count the cost of engagement.
<b>Early adopters</b>	Medium involvement	'Private visionaries': May engage in significant learning as they adopt lifestyle improvements to enhance personal and family safety. Personal benefits outweigh the cost.
<b>Early majority</b>	Low involvement	Pragmatists open to better safety practices: they want simple guaranteed 'products or services' with minimum learning and investment of personal time (in other words, costs).
		Pragmatists in denial about safety issues - but will

<b>Late majority</b>	Resistance	follow mainstream trends. Currently they do not see the benefits as substantial.
<b>Laggards and sceptics</b>	Strong resistance	Those resistant the need for safety from natural hazards. They deny any benefits and will require regulatory and enforcement solutions.

Table 8: The meaning of the different adoption segments in the risk communication context.

The advantage of focusing on desired levels of involvement is that it is possible to match Rogers' adoption stages with Arnstein's typology of participation methods, which also imply a scale of audience commitment. The following figure illustrates the relation between the two models. The result is a direct correlation between the different audience segments and a different communication approaches.

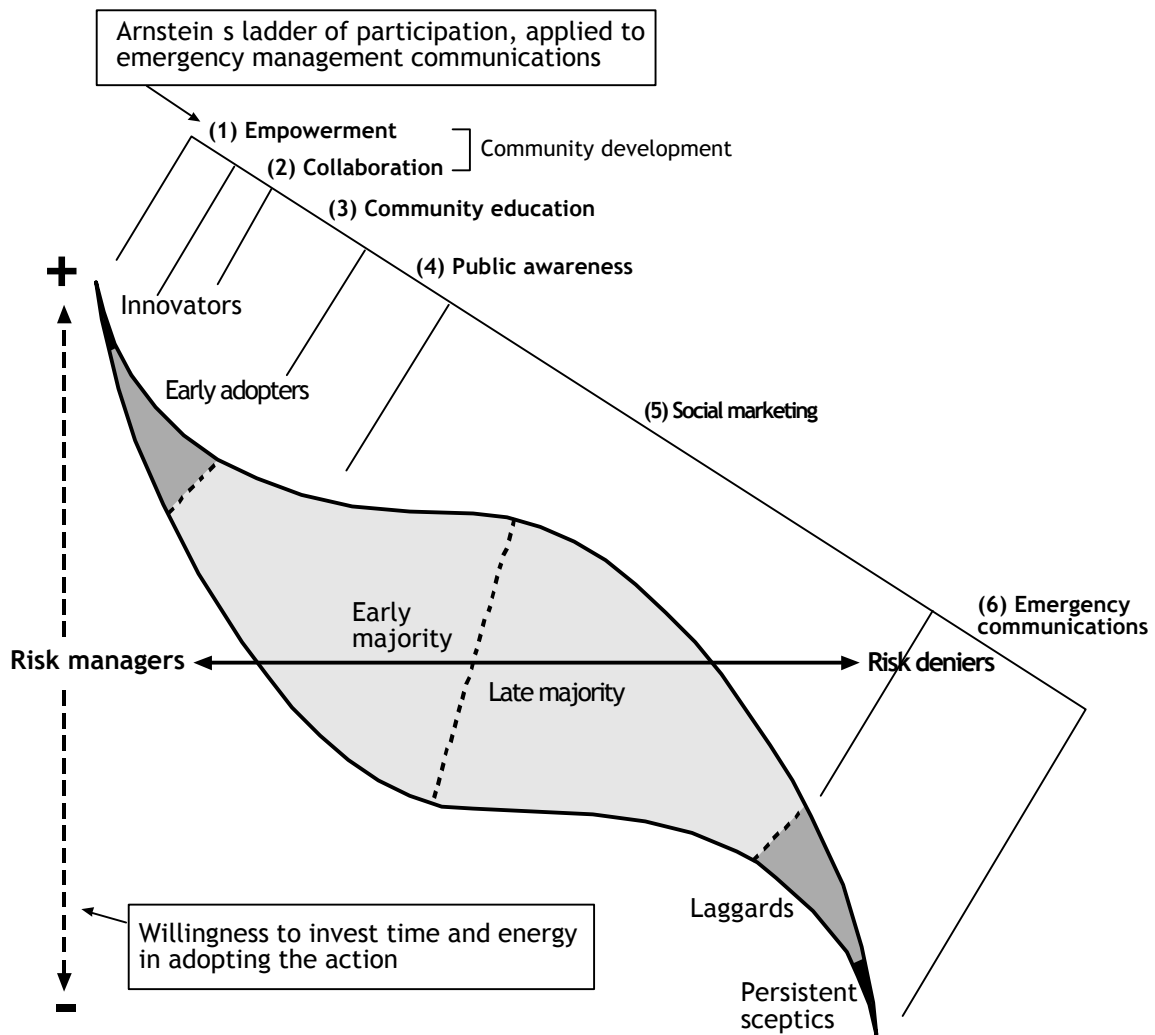


Figure 4: Mapping different risk communication approaches against desired involvement level.

### Mapping recent programs

Recent education programs can be sketched onto the vortex model as follows:

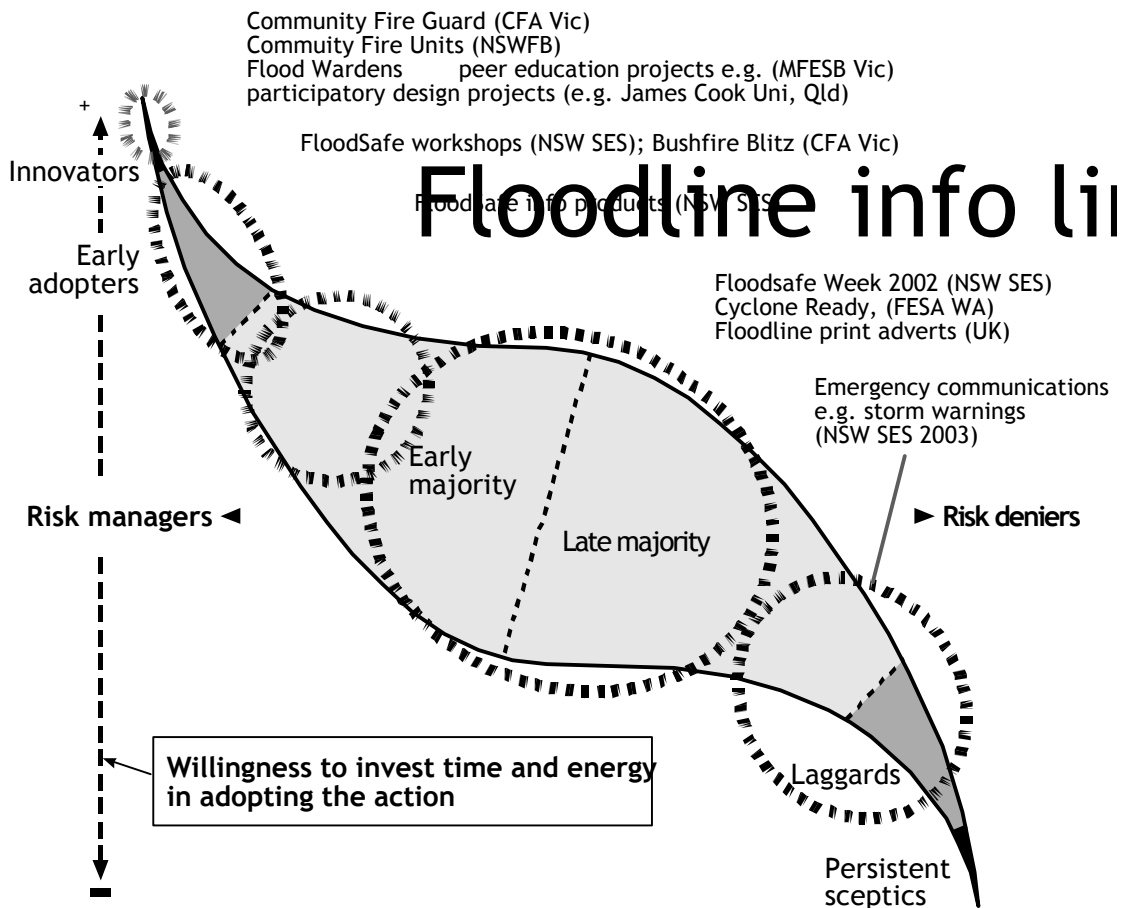


Figure 5: Examples of recent community safety programs

**Example of an integrated program: FloodSafe (NSW SES)**

FloodSafe (NSW SES) is an example of a program that has consciously attempted an integrated approach.

The different components of FloodSafe can be mapped onto the Diffusion vortex as follows:

**The FloodSafe model (NSW SES)**

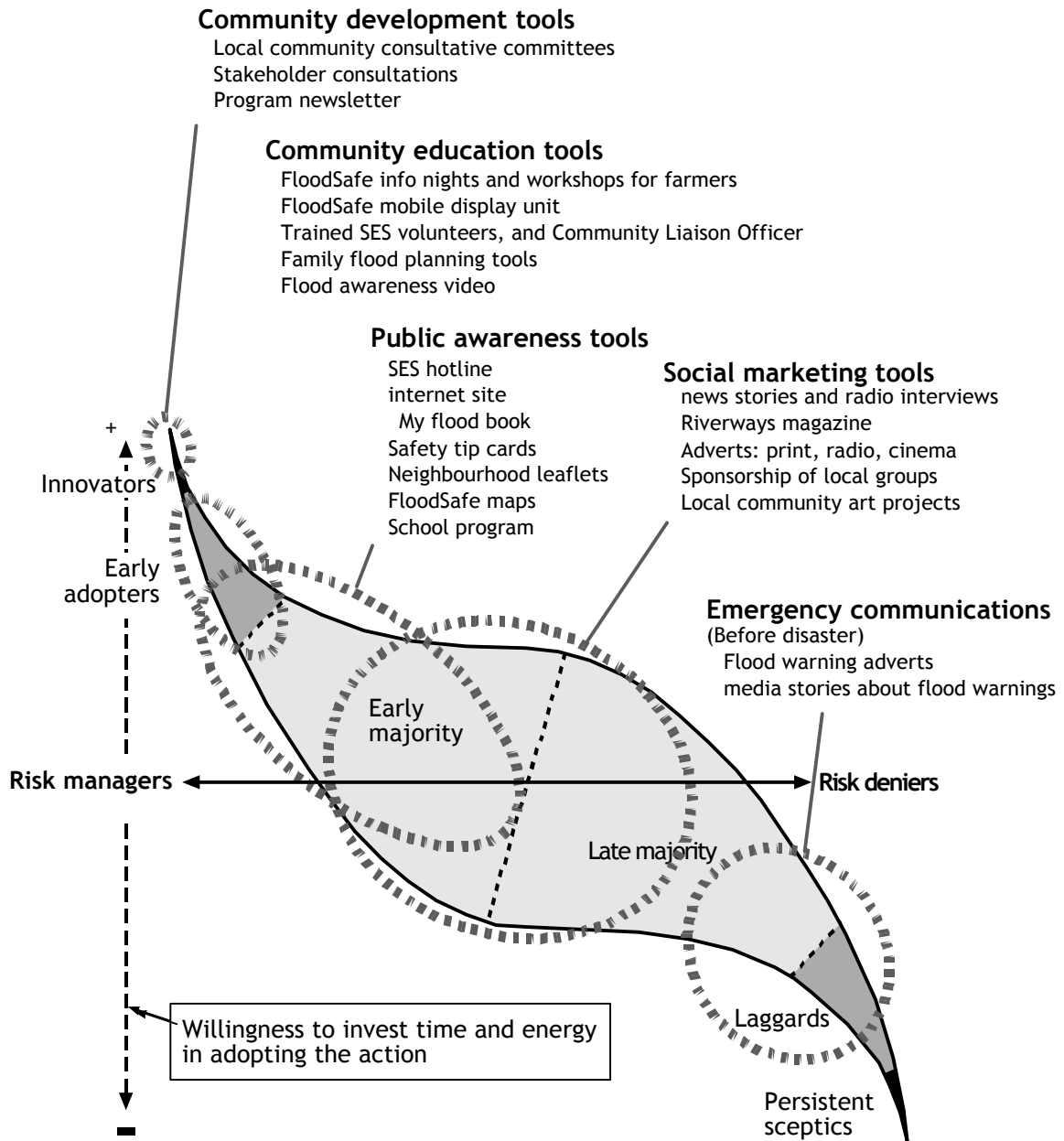


Figure 6: Mapping initiatives under the FloodSafe program (NSW SES).

**6) FOSTERING BEHAVIOURAL CHANGE**

The model suggests that the adoption of new behaviours across a population is a *process* that begins with small *participatory* projects. These are as much about the

process of program design as they are about changing the behaviour of individual participants (and the program managers!).

This high-participation groundwork makes possible the confident design of initial outreach programs, which rely on relatively high investment, two-way *face-to-face* processes. In this stage, 'early adopters' negotiate the problems of adoption with experts, discovering how to implement relatively untested behavioural prescriptions into their own lives.

Many health promotion campaigns have identified clear behavioural changes that the target audience should adopt. For example, there is sound epidemiological evidence that having a sensible diet and moderate exercise will reduce the risk of heart attacks. However, in the example of a severe flood, most of the desired behavioural changes that are being advocated are only applicable during a flood event. Evidence of intention therefore must be used as a predictor of future behaviour and this has implications for the type of educational programs that are developed and how they are evaluated.

According to the Institute of Medicine (2002), while the ultimate goal of public safety activities should be to change and reinforce a given behaviour, communication also creates, changes or reinforces specific beliefs. These beliefs in turn influence attitudes, perceived norms or self-efficacy - which are indicators of one's intent to engage in the appropriate behaviour. Identification of these beliefs requires an understanding of the benefits and barriers to performing the appropriate action, from the perspective of the targeted community.

Research undertaken by Colmar Brunton and Associates used quantitative and qualitative surveys to ascertain public knowledge and attitudes towards floods (Young, 1999) identified the importance of identifying the community's perception of the specific risk and their sense of vulnerability. Most residents had little awareness of the potential severity of future floods and believed that floods of the magnitude of larger historical floods, such as the one that occurred in 1867, would not happen again. Residents' reactions varied when confronted with the flood risk. Some residents became angry or denied the flood risk, while others accepted the risk but indicated that they were not willing or able to adopt protective behaviour.

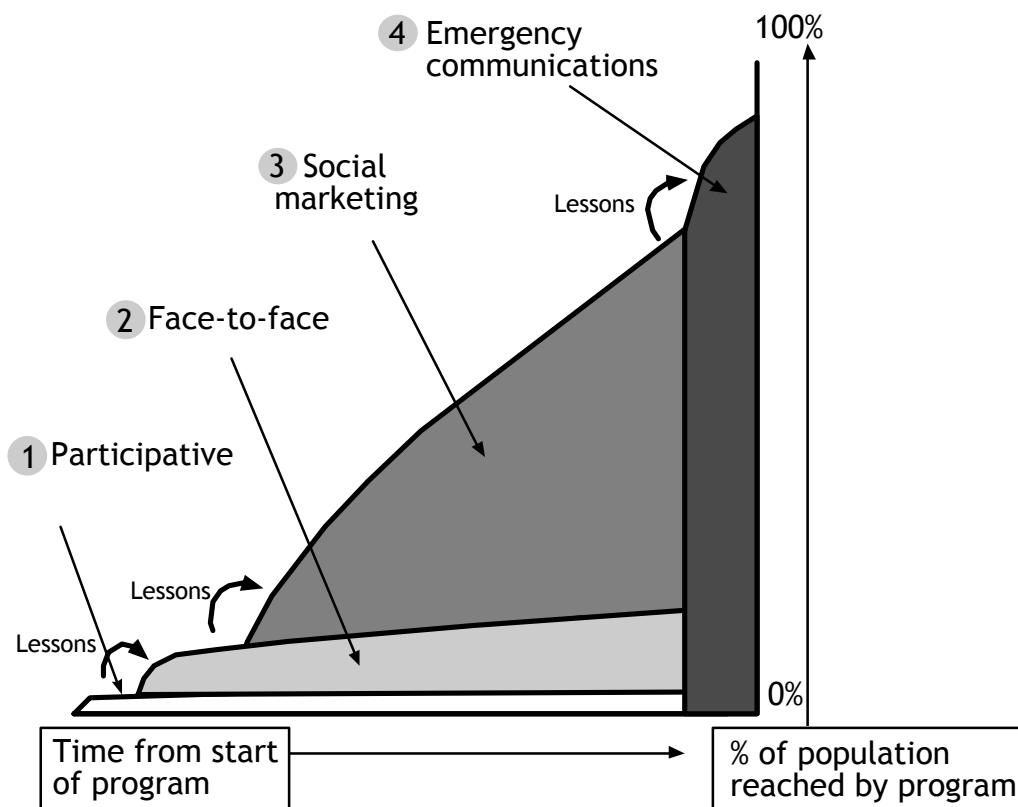
Careful monitoring and evaluation of this two-way phase teaches program managers how to customise and transform their behavioural prescriptions, messages, and tools to meet the demands of mainstream audiences in the following phase.

The step from early face-to-face programs with relatively small numbers of self-motivated 'early adopters' to mainstream mass audiences been called a 'chasm'. It is the most difficult phase in program delivery. Credible local people must endorse the 'product'. It must have proven benefits and known costs. It must be simple, easy to understand and use. It must be 'plug-and-play' and compatible with established lifestyles and business practices. In most cases the key to bridging this

chasm is the quality of program evaluation and re-designs during the 'face-to-face' stage (Moore 2002).

In the mainstream phase the strategy shifts primarily to social marketing methods. The purpose is to 'sell' the benefits of proven behaviours and to reinforce social norms. Finally, once the desired behaviours have been accepted as norms by a majority of the population, stronger regulatory and enforcement approaches are appropriate. In the risk communication context, this phase matches the emergency situation, where 'laggards' must be left in no doubt of the authority of emergency agencies to enforce safety directions.

This integrated 'behaviour change' framework is a phased process of transition through these four different approaches. Each approach is matched to a different stage of the social adoption process. In practice of course, where bundles of behaviours, some innovative and some normalised, are being simultaneously promoted, more than one approach would be mobilised at once.



**Figure 7: Sequencing of the four phases of the risk communication model.**

## **Implications for program design**

Many authorities speak of the need for multi-faceted communication programs. This model suggests that an integrated communication program is one that responds to the spectrum of motivational levels in the community.

Quite different communication strategies and tools are needed to target quite different levels of interest amongst the public. It is also acknowledged that for many people, the only time when safety messages will 'sink in' is during the warning period. Hence, there is not one catch-all educational style that is applicable to all situations.

Instead, a holistic community safety program will involve a number of quite different sub-programs under one brand or banner. They would require quite different approaches, skill sets, outcomes, and investment. All however need to be integrated to ensure coherent 'behaviour change' and 'action' strategies are implemented to encompass the needs of all audiences.

This suggests a number of related goals, which could be integrated into future community safety programs.

### Goals for high-involvement audiences

- 1) Harness their local knowledge, commitment, and innovative thinking to develop effective local education programs such as Community Fire Guard (CFA Vic) and the participatory appraisal methodology recently trialed by James Cook University in rural Queensland (AMEC 2002).
- 2) Harness their energy and commitment as peer educators to spread messages to the broader community.
- 3) Encourage families or communities to adopt appropriate safety behaviour for their particular hazard.

### Goals for medium-involvement audiences

- 4) Harness their willingness to be early adopters of safe living actions as test beds to identify better ways of promoting those concepts.
- 5) Harness their desire for recognition by promoting them as credible endorsers of new ideas and products (open days, recognition programs, pilot programs).

### Goal for low-involvement audiences

- 6) Harness their aspirations and pragmatism as the drivers for the mainstream adoption of new practices (through social marketing).

#### Goal for resistant audiences

- 7) Listen to their criticisms in order to adapt, improve and diversify ideas and products.
- 8) Prepare safety action messages directed specifically to this group.

These goals can support each other, forming an integrated 'engine' with the capacity to develop, test, and market original, safe living concepts and practices.

#### **A decision support tool**

The wide range of goals identified for a community safety program suggests that fostering preparedness and resilience may be amongst the most challenging communication tasks facing emergency services. It's therefore vital for educators to be able to make rational decisions about the best mix of approaches for a given need. To ensure that the different strategies are used appropriately, a simple decision support tool has been created to assist in identifying the appropriate strategies.

Building on the work of McArdle 1999 and Robinson 2002, the appropriateness of different communication types can be determined by *inherent complexity* of the desired action verses the *inherent certainty* of the desired action. The desired action is the discrete action which the emergency agency hopes members of the public will carry out as a result from the communication (for example, prepare an emergency disaster kit or become acquainted with local evacuation routes).

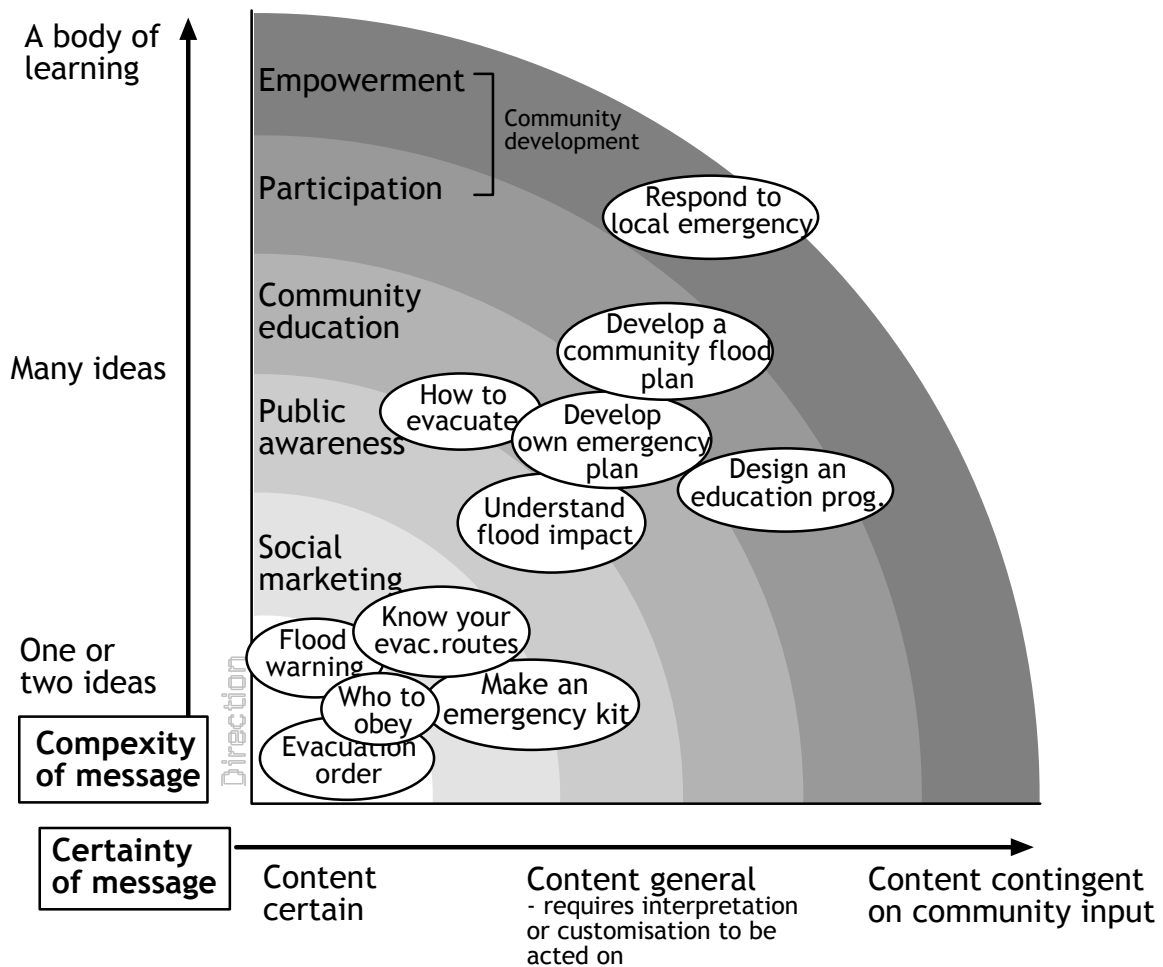


Figure 8: A Decision Support Tool for identifying appropriate risk communication strategies

This decision support tool is intended to allow communicators to choose the appropriate level of approach, or suite of approaches, which is appropriate for a specific communication challenge. For instance, safety information can be distributed via social marketing or public awareness activities. The tool also helps explain why it is critical to determine your aims, audience and appropriate activities as you plan your education program.

### Segmentation of specific audiences

The issue of how to economically reach a variety of audiences with specific safety messages has often been difficult for non-profit organisations. There are no single safety messages that can reach all audiences. Different safety campaigns will need to be presented using a variety of strategies to reach diverse audiences. While it is often not possible to target the delivery of preferred messages to designated audiences, it is possible to guide marketing or safety decisions through appreciating the needs or attitudes of a particular audience. An audience may be

viewed as a selection of people who have common defined characteristics that ensures they will relate to a specified campaign with similar attitudes or actions. There are different options for segmenting a particular target audience. They include demographic, social, socio-economic, psychographic, behavioural or combinations of these approaches. Each approach has advantages and the appropriate methodology will be determined by the circumstances of the campaign.

## **7) SUMMARY: THE PROPOSED MODEL**

The approach used in designing the proposed risk communication model includes the following principles:

- Programs support the development of self-reliant communities able to manage their own flood and storm safety.
- Programs convey safety information during operations to the public and the media in a timely, accurate and relevant manner.
- Programs contribute to an integrated public communication approach.
- People are empowered with the knowledge, skills and resources needed to work together as households or communities to ensure they have safer communities.
- Residents recognise the identifiers and roles of the SES and their volunteers.
- SES volunteers and community members are an integral part of the program.

The model consists of:

**1) A strong process orientation**, with emphasis on community participation, especially in the formative stages, social research, critical evaluation and adaptive management. Models such as action learning are valuable here.

**2) Audience-focused content.** The program begins with an understanding of audience needs and perceptions, not simply so these can be manipulated, but so that the program can be adapted to the audience's reality. Participative methods, focus groups, interviews, and quantitative research are used.

**3) A sequential process of deepening public engagement.** An integrated sequence of approaches is used; each approach caters for different segments of the population, with different goals and using different methods. These approaches reflect Grunig's four models of public relations (Grunig and Hunt 1984).

### **a. Community development phase**

*The participants:* selected for their expertise in their community and its environment, and commitment to safety issues.

*Goal:* Use participants' expertise and commitment to guide the design and adaptive evaluation of the project, including the design and interpretation of formative research.

*Methods:* various participative methodologies adapted from those widely used in adult learning, health planning and rural assessment.

## **b. Community education phase**

*The participants:* 'early adopters', risk averse, motivated to improve the safety of their family, business or neighbourhood.

*Goals:* Develop a diffuse network of informed, competent individuals capable of influencing community resilience in a disaster.

Monitor the experiences and responses of this group to refine the program for the next phase. *Information collected, and impressions gained by the program managers in this phase will be vital for the design of the social marketing stage.*

*Methods:* various face-to-face methods, such as workshops and demonstrations where participants can formulate individual solutions to their needs through interaction with experts and trained educators.

## **c. Social marketing and public awareness phases**

*The audience:* a mass audience of less motivated or more distracted individuals - many in denial about natural hazard risks.

*Goals:* awareness of risks; carry out simple protective actions; reinforce the authority of the combat agencies.

*Methods:* mass marketing: advertising, media stories, public events.

## **d. Education about mandatory directions during emergencies**

*The audience:* the whole community, including highly resistant individuals.

*Goals:* educate the community before the event to ensure compliance with authority, safe evacuation, and protection of property.

*Methods:* media announcements, news stories, and door-to-door visits.

The following diagram sets out the essential features of the model.

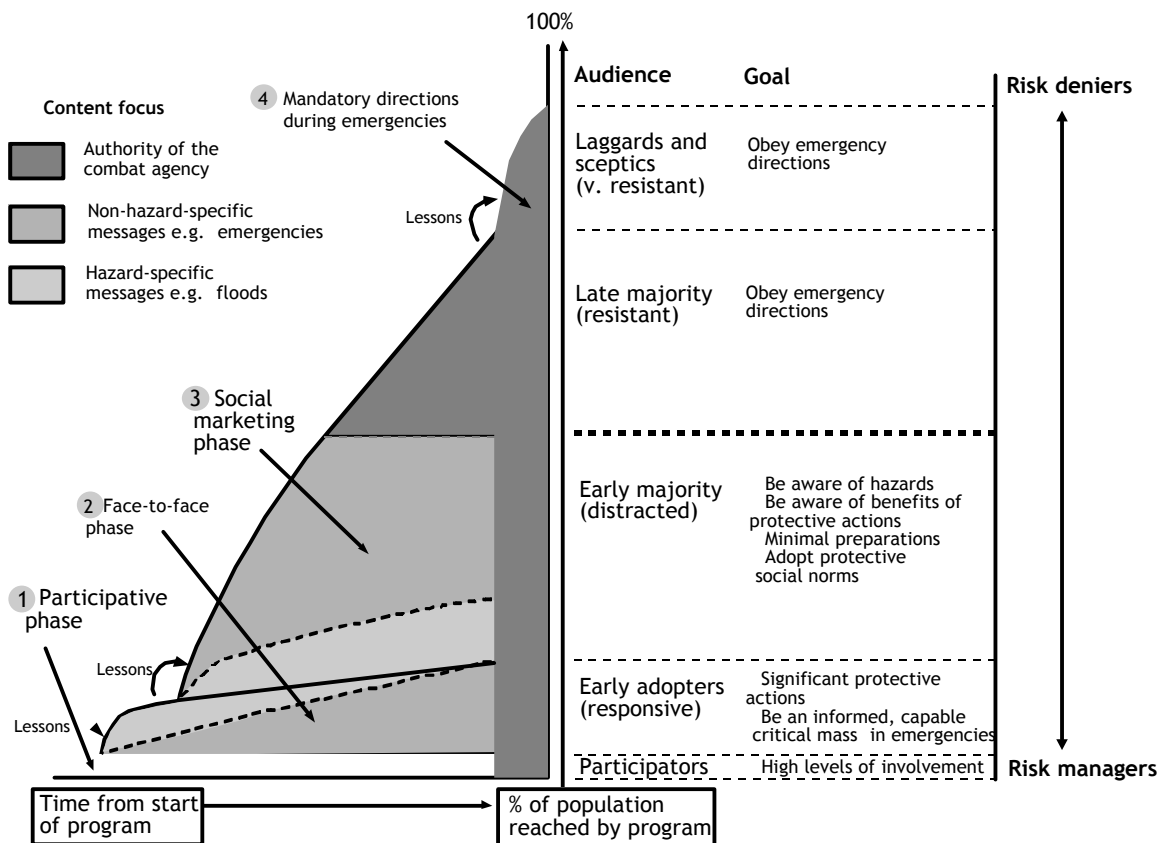


Figure 9: An integrated model of risk communication.

## 8) DETAILS OF THE INTEGRATED PROGRAM

A Community Safety Program should aim to:

- Empower communities to work towards self-reliance;
- Create community partnerships that support FloodSafe and StormSafe initiatives;
- Build community preparedness to prevent loss of life and property;
- Build the capacity of the units to implement community safety projects by enhancing the knowledge and skills of volunteers;
- Engage with a broad range of communities and develop strategies that reflect community diversity;
- Develop flexible and interactive programs based on participation, engagement and empowerment;

- Deliver quality programs based on accurate and substantiated information and the principles of risk management; and
- Maintain a commitment to strategic management supported by a research and evaluation program.

Details of the specific programs, each targeting a different level of interest in the public, are set out below.

### **a) Community development**

This targets keen, active members of the public, often with many years of involvement in community issues. Tools include planning workshops, reference committees, and various 'action research' methodologies.

Experienced members of the public are closely or creatively involved developing or managing programs (e.g., community reference committees, volunteer programs). These audiences, though relatively tiny in number, are important because they bring local knowledge, energy and creativity to the program. Many SES volunteers fit into this category, especially the Community Liaison Officers who have shown great enthusiasm for their new role.

This approach is often referred to as 'capacity-building'. It draws on theories and practices from the fields of community development, adult learning and health promotion (Minkler 1991). This participation phase could be called the 'keystone' phase, because it is fundamental to ensuring that the project is genuinely sensitive to the needs and perceptions of its target audience, who will develop their own solutions to the issues.

Emerging best practice suggests that the participation phase lasts throughout a project, with participants taking a fundamental 'ownership' role in program design and evaluation; meanwhile, other 'high participation' individuals are recruited to act as peer educators (AMEC 2002, p8, p12).

### **b) Community education**

This approach targets early adopters (typically 10 to 15% of a given population). They are risk-averse individuals who are quick to make the connection between a program's offering and their personal, family or business needs. Tools include workshops, small public meetings, demonstration events, field days and open days. Media stories are used to promote events and build credibility. Print products are used to support 'how-to' explanations.

Peer educators (such as trained SES volunteers, Community Liaison Officers) are important intermediaries in this phase, which requires extensive face-to-face interaction. This approach involves face-to-face learning, experiential learning, and two-way interactions between experts and individuals. Face-to-face learning is the

most powerful form of learning and it is strongly recommended in the risk communication situation. A goal in this phase is to develop a dispersed mass of informed, capable, risk managers in the community, whose roles may be critical in a disaster.

In his study of Grafton residents following the 2001 flood, Pfister reported that the three-quarters of the survey respondents who did not evacuate did not believe their homes were under threat. Pfister concluded: "If a critical mass of people believed the seriousness of the flood threat and decided to evacuate during a flood in the future, then a cumulative 'snow-ball effect' could result, and the number choosing to evacuate could increase markedly" (p14).

### **c) Social marketing and public awareness - one-way persuasion**

This targets majority audiences, typically 60 to 70% of the population. These audiences are likely to be in denial of natural hazard risks - sometimes strongly so.

As the target is a mass audience, this phase necessarily relies on social marketing and public awareness approaches. Social marketing can be defined as one-way, persuasive communications that use commercial marketing techniques and tools to encourage socially desirable goals. Public awareness campaigns are designed to provide information on the hazard and associated risks.

In this phase, integrated marketing techniques are used to raise awareness of risks, and to encourage and enable people to adapt a useful behaviour or to alter a behaviour that may be harmful to themselves or society.

Tools include coordinated campaigns involving advertising, community service announcements, media stories, staged events and print materials. High profile 'early adopters' act as endorsers and 'voices' for the campaign. A rigorous process of development of these campaigns is vital, with a strong reliance on qualitative research, pre-testing, evaluation and an audience-centred approach (Andreasen 1995, p14). Social marketing focuses on understanding the marketing place and target audience, not just the subject matter. It is based on the concept of mutual benefit – both parties must gain some benefit from the exchange process (money, time, or peace of mind). Programs that fail to create high benefits and have low engagement costs will have little impact on the target audience.

An important creative component of the social marketing/ public awareness approach is the identification of the often pivotal 'Take Away' message that will make a difference to the target audience. In a recent Environmental Protection Agency campaign, it was the slogan – "It's a Living Thing". This approach is linked to the promotion of an agency or program brand that conveys a clear identity to the desired audience. The brand identity is 'shorthand' device that conveys value to the audience through practical and emotive paybacks (e.g., FloodSafe brand).

The National Flood Warning Centre (Environment Agency, UK) is an example of a flood agency that has adopted a conscious social marketing approach, with a 10

year plan (Proudley and Handmer 2002, also see [www.environment-agency.gov.uk/subjects/flood](http://www.environment-agency.gov.uk/subjects/flood)).

The essential features of the social marketing/ public awareness approaches are:

- Programs must lead to an increased awareness of the social issues being promoted;
- Programs must be cost-effective;
- All strategies begin with the consumer (rather than the agency);
- Interventions involve the *Four P's*: Product, Price, Place and Promotion;
- Market research is essential to designing, pre-testing and evaluating intervention programs;
- Markets and messages are carefully segmented; and
- Competitions (i.e., other health or safety campaigns) are always recognised. (Andreasen 1995, p14).

#### **d) Education about mandatory directions (emergency warnings)**

Emergency agencies issue safety advice and mandatory warnings during an emergency. The implementation of emergency warnings by the public is one of the most critical areas in a response. Warnings must be supported by information given to all audiences in the education stage about the types of warnings and the actions to take to ensure the safety of themselves and their family. The other critical factor during the warning stage is who delivers the message. Safety messages need to come from an authoritative source that the community believes in. The emergency agency must also promote trusted local personalities, such as a community emergency leader (e.g., the SES Controller), who has local credibility, to confirm the messages.

"In a trusting relationship with a person who is perceived to have expertise or authority, even brief comments have a lasting impact, particularly when reinforced over time through community norms and practices" (Cohen and Swift 1999).

However, the public will also want to confirm with a trusted contact that there is real danger. In talking about the reaction of Grafton residents to the 2001 flood, Pfister reported that the three-quarters of the survey respondents, who did not evacuate did not believe their homes were under threat. Significantly, all of the people interviewed had spoken to neighbours, friends and relatives about the flood and evacuation warnings. Often these were older, long-term residents with experience of floods (p8).

## **9) CONCLUSION**

Emergency services across Australia are expanding their roles and taking a strategic view of their responsibilities. There is now a greater emphasis on mitigation, including community safety, rather than agencies being seen and acting purely as emergency responders. The greatest potential for increasing safety is for

emergency agencies to encourage community self-reliance, through long-term community based safety programs that work with affected residents. This in turn will reduce the immediate cost of a severe hazard in terms of life and property, as well as the cost of social dislocation and psychological distress that occurs when vulnerable communities are exposed to a disaster.

The risk communication model presented in this paper also recognises that people will have different perceptions towards a hazard and associated risks and any community safety program needs to acknowledge this, by including strategies that take into account the needs of different audiences.

Programs that recognise these issues and take an integrated communication approach that emphasis the importance of a safe community will be more successful and directly reduce the risk of vulnerable populations to severe hazards.

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