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The psychology of crowd behaviour in emergency evacuations: Results from two interview studies and implications for the Fire and Rescue Services

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Existing psychological models of crowd behaviour were applied to examine emergency egress behaviour, and how this could facilitate the safe management of mass evacuations. Two interview-based studies of survivors' experiences of different emergencies were conducted. It was found that far from mass panic occurring, being in an emergency can create a common identity amongst those affected. A consequence of this is that people are co-operative and altruistic towards others- even when amongst strangers, and/or in life-threatening situations. The analysis has direct implications for how the Fire and Rescue Services manage mass evacuations. In line with earlier critiques, the concept of mass panic is considered to be a myth unsupported by existing evidence. Crowds in emergencies can be trusted to behave in more social ways than previously expected by some involved in emergency planning.

Introduction

The human tragedy apparent in mass emergencies and disasters is depressingly familiar in society today. Media coverage after 9/11 and more recently the July 7th London bombings of 2005 was characterised by reports of fear, shock and mass panic. However, while 'panic' is a word frequently used to describe egress behaviour in disasters, a closer inspection of the behaviour of those affected rarely supports this idea of mass panic. Indeed, the behaviour of crowds during disasters is often much more social than that with which they are sometimes credited, with co-operation and altruism often predominating, rather than selfish uncooperative behaviour. While academics tend to accept that the concept of mass panic during emergencies is largely a myth (e.g., Keating, 1982; Mawson, 2005; Quarantelli, 2001), this view still persists to some extent in the applied field and in popular discourse, with the implication being that crowds in emergencies cannot be trusted to behave in a co-operative way that facilitates their safe evacuation from danger. This paper will provide evidence supporting the notion that crowds can behave in ordered and meaningful ways that seem appropriate to those

involved (given the information they have available about the current situation). It will also offer practical suggestions for the Fire and Rescue Services to help ensure the safe management of crowds in mass emergencies.

The myth of panic

Despite the frequent use of the word in coverage of disasters, the term 'panic' is rarely examined in any analytical detail to investigate what those who are 'panicking' are actually doing. Mawson (2005, p. 96) defines panic as 'inappropriate (or excessive) fear and/or flight'. However, he argues that when looking at behaviour during emergencies, it is difficult to identify such instances of panic, and descriptions of panic are usually made by outside observers with the benefit of hindsight. Indeed, people in emergencies often behave in meaningful ways according to the information available to them at the time. For instance, studies of evacuations in fires (e.g., Donald & Canter, 1990; Sime, 1983) show that people tend to leave venues by the way they entered, even if there are other, closer, exits available. This can be seen as meaningful behaviour, as the smoke and heat in fires can create uncertainty, which may cause people to seek escape through an exit that they already know exists if they are unfamiliar with other possible routes. Donald and Canter (1990) also found that fatalities could occur in fires because people were often unwilling to deviate from familiar activity, leading them to continue along known routes, even in the face of danger. He concluded that the concept of panic or 'non-adaptive behaviour' was inadequate to explain human behaviour in fires, and that the danger in such situations often lay in people's inability to evacuate quickly before the fire spread to an extent where it became impossible to escape.

Recent studies (e.g. Reicher, 2001; Stott & Drury, 2000) have argued that society's view of crowd behaviour and management often rely wrongly on early reactionary crowd theory, such as Le Bon's (1895/1947) commentary on the crowds of the Paris Commune during 1870-1. Le Bon emphasised the negative elements of crowds, frequently referring to them as an irrational mob prone to emotion and suggestibility. If one person began behaving in an anti-social or irrational way, then this would quickly spread to others in a process termed contagion. Although the crowds he studied were those involved in civil disorder, some of his key ideas have been applied to crowds during emergencies to conclude that mass panic develops in the following ways. Firstly, when faced with danger, people behave irrationally as they evacuate in a manner disproportionate to the actual threat (Smelser, 1963). Collective bonds and norms also break down, meaning that people behave instinctively as they compete with others in an uncoordinated way to escape danger (Cantril, 1958; Quarantelli, 1954; Strauss, 1944).

This approach (known as the 'panic model') has been influential in the design of public spaces and engineering of procedures for emergency evacuations (Sime, 1990, 1995). It suggests that plans for the evacuation of buildings should focus on physical factors such as the width of emergency exits to prevent jamming, rather than psychological factors such as the role of information and communication. In short, rather than being viewed as active, thinking agents, crowd members are considered to flow in the same way as unthinking, inanimate objects such as ball bearings. This has implications for whether emergency planners decide to provide information to the public during emergencies, as there is often a concern that people will panic if they know the true gravity of the

situation facing them. Therefore, information is often withheld, despite there being little, if any evidence to support this assertion (Drury, 2004).

However, despite the frequent usage in popular discourse of the term 'panic' to describe behaviour during disasters, studies of various different emergencies throughout the last century have found a general absence of mass panic, despite the threat of death. This includes: the atomic bombings of Japan in 1945 (Janis, 1951), fires in the US (Feinberg & Johnson, 2001) and UK (Donald & Canter, 1990), and crushes at concerts (Johnson, 1987). More recently, Blake, Galea, Westeng, and Dixon (2004) studied the behaviour of evacuees from the World Trade Centre on 11th Sept 2001, and found that 'classic panic action or people behaving in an irrational manner was noted in [just] 1/124 (0.8%) cases' (p. 5).

The social attachment model of crowd behaviour

An alternative model of emergency evacuation behaviour has been developed by Mawson (1978, 2005): the social attachment model. He argues that in times of danger people display affiliative behaviours, where they attempt to move from unfamiliar situations towards people and/or places that are familiar (such as friends or family). They will also try to evacuate within this familiar group rather than as individuals. Family and/or friendship ties remain strong in these situations with mutual cooperation predominating within these groups, as opposed to selfish, uncooperative behaviour. This approach is influenced by Bowlby's work (1969, 1973) into children's distress at separation from attachment figures (usually their mother). The presence or absence of attachment figures is also believed to influence distress during disasters. Indeed, Mawson (2005) reports that during air raids on London in World War II, children often found separation from parents more distressing than the air-raid itself, suggesting that attachment bonds endure even in highly stressful situations.

There is support for the social attachment model in a number of studies of behaviour during emergencies (Cornwell, 2003; Feinberg & Johnson, 2001; Sime, 1983). In each of these cases – evacuations from fires in buildings – it was shown that, rather than breaking down, social bonds within groups endure during emergencies, with people tending to delay their individual flight to ensure safe evacuation of the group as a whole. Sime (1983) interviewed survivors of a fire in a leisure complex on the Isle of Man, UK in 1973, and argued that families involved adopted a strategy for group rather than individual egress, with the quicker family members delaying their own escape to ensure the safe evacuation of slower individuals. However, Feinberg and Johnson (2001) argued that this could have tragic consequences for the group as a whole. Their study of the Beverley Hills Supper Club fire in the US in 1977 found that individual fatality risk increased with group size (although more groups survived than would be predicted by an individualistic panic model if all social bonds had broken down). Nevertheless, implicit within these findings is the notion that while social norms remain largely intact during an emergency, the larger the group one is in, the chances of individual escape decrease, as group members wait until all are safe. It is also possible that physical size of the group, as well as any existing attachment, can delay egress, as larger groups may take longer to evacuate.

The social attachment model has advantages over the panic model as it explains

the evidence for social behaviour and cooperation during emergencies. However a key limitation of the social attachment model is that while it rightly points out that people attempt to preserve the safety of existing attachment figures, by focussing on this, it neglects the possibility of co-operative behaviour between those who had no existing attachment bonds before the emergency began, or that attachment bonds could develop quickly between strangers. It also assumes that while being around attachment figures can diminish fear, if the individual is alone or with strangers, then, 'even mild threats can precipitate flight-and-affiliation to familiar persons and locations at a distance' (Mawson, 2005, p. 102), thus implying that flight and selfish 'panic behaviour' are more likely when in a crowd of strangers.

However, coverage of disasters throughout history is replete with examples of complete strangers behaving co-operatively towards each other, even under conditions of great personal danger, leading Furedi (2007) to state: 'even in today's highly individuated globalised society, calamities have a unique capacity to encourage acts of solidarity and altruism' (p. 2).

Johnson's (1987) examination of a fatal crush at a concert by 'the Who' in the US in 1979, found that rather than displaying selfish panic behaviour as was reported, crowd members tried to help others where possible. When trampling occurred, it was largely due to people not being able to help those who had fallen because of the pressure of others upon them. It is of course possible that crowd members had an existing sense of unity that encouraged more co-operation, as they were fans of the same band, but other studies have found that this unity can develop amongst people whose only common link appears to be that they are affected by the same disaster. For instance, Tierney (2002) found that New Yorkers during and after the terrorist attacks of September 11th 2001 were generally altruistic and co-operative towards each other even at great risk to themselves.

A self-categorisation approach

Psychological research into crowd behaviour has argued that far from losing all rational thought and behaviour to a 'mob mentality', crowd members tend to operate within social norms, often imposing limits on their behaviour, even during highly stressful situations. The Elaborated Social Identity Model (ESIM) of crowd behaviour (Reicher, 2001) is derived from studies of crowd conflict (e.g. Drury & Reicher, 1999; Reicher, 1984), and suggests that a common identity emerges amongst crowd members as a result of a shared fate in the face of illegitimate attacks from an out-group. This common identity can result in people helping and supporting others who may have been complete strangers before the conflict started. The ESIM tends to focus on incidents of crowd conflict, such as political demonstrations and disorder at football matches, but has recently been applied to crowd behaviour during emergencies, such as fires, natural disasters and terrorist attacks. Here the model echoes the suggestion of the sociologist Clarke (2002) that disasters can create a sense of 'we-ness', and hence solidaristic behaviours amongst survivors. Clarke's concept of we-ness has not been tested empirically, but the ESIM, and its parent theory self-categorisation theory (SCT; Turner, 1982, 1985; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987; Turner, Oakes, Haslam, & McGarty, 1994) provide the conceptual tools and some suggestive evidence of the psychological process.

SCT suggests that cognitive representations of the self take the form of self-categorizations, which may range from personal self-categorizations (what makes us distinct from others) to shared, collective self-categorizations (what makes us similar to others). Seeing oneself as personally interchangeable with other in-group members on some relevant dimensions – ‘depersonalization’ – means not only seeing the in-group as homogeneous, but also seeing other in-group members as part of self. This, in turn, means caring about others and acting in their interests, even where they are not known. According to SCT, a shared fate is one possible determinant of a shared self-categorization. The ESIM studies described above showed how such a shared self-categorization can arise when crowd members perceive themselves to be collectively under threat from an external group. Extrapolating from this, we might suggest that, during a mass emergency, shared self-categorisation can arise in a crowd of strangers to the extent that they perceive the same shared threat. This could help explain the accounts of people helping strangers, even at risk to themselves. For, if people categorise others as part of the collective self, then a threat to others is also a threat to the self. This account would suggest that panic is a feature of individuals, and in most crowds, order will be the norm, with panic only present in a few unrepresentative individuals.

However, this account has yet to be examined empirically. Therefore, two interview-based studies of survivors of mass emergencies were carried out to investigate such incidents in more detail and gather qualitative data about people’s experiences. The following research questions were considered:

1. Would there be any evidence of mass panic behaviour, and would any individual distress and/ or fear spread to the crowd as a whole?
2. Furthermore, would orderly, altruistic and co-operative behaviour predominate as opposed to disorderly, personally selfish and competitive behaviour?
3. Could any co-operative behaviour be explained by the development of a common identity in response to the shared threat faced in an emergency?

Method

Two interview studies were conducted with survivors of mass emergencies, where there was a real or perceived threat of danger and/or death. The data from both studies were drawn from larger data-sets that have been analysed elsewhere in greater detail (Drury, Cocking, & Reicher, in submission; in preparation). The first was an exploratory study to investigate whether some situations were more likely to result in panic than others. Interview data was gathered from a diverse range of different crowd emergencies, with different physical constraints, levels of threat faced by participants, and scale of casualties suffered.

However, as the interview study progressed, little evidence was found for mass panic occurring, despite the clear threat of death in some of the emergencies studied. There were a number of practical difficulties in gaining access to survivors, and some of the emergencies studied took place years ago, with all the potential problems of accuracy in remembering. Some of the interviews therefore contained gaps.

Halfway through the project, however, the 2005 July 7th London bombings

occurred. This presented an opportunity to gather more contemporaneous data, and to further examine the suggestion that unified crowds do not panic, and that an emergency itself can unify a crowd to some extent. On July 7th (hereafter 7/7), four bombs were detonated during the morning rush-hour (three on trains on the London Underground – at King’s Cross, Edgware Road and Liverpool Street – and the fourth on a bus at Tavistock Square). The trains and bus targeted were full to capacity, and the vast majority of travellers would have been commuters with minimal existing affiliative ties to their fellow passengers. The consequent fear of fire and/ or death after the explosions may also have resulted in a highly stressful situation with no obvious escape route. According to the panic model, this may have resulted in survivors disregarding others’ welfare to ensure personal survival. Hence if solidarity and cooperation, rather than panic and personal selfishness, were evident in the events studied, then the self-categorization account would be supported over the affiliation and panic models.

Participants

Comparative events interview study

Participants were recruited via adverts in the national media, and through existing contacts. The events can be divided into five categories: sinking ships, football stadium and concert crushes, fires, bombs and bomb threats, and a train accident. Twenty-one survivors’ accounts from eleven different emergencies were gathered and analysed.

July 7th study

A total of 17 participants were recruited in a similar way to the previous study, but a web-site¹ was also set up after 7/7 asking those affected directly to send us their personal accounts by e-mail (thirteen accounts were received). In addition, background data was gathered from various on-line accounts from 117 survivors of the bombings (65 were male, 34 female, and 18 anonymous). We then approached those who had responded by e-mail to ask if they would be interested in being interviewed as well. Four further interviewees were recruited via advertisements in the press, approaching support organizations and official bodies, and through snowballing personal contacts to see if they knew others who would be willing to share their experiences. Six of the interviewees were men and six were women. Of the remaining five e-mail respondents, three were women. Five of the interviewees and three of the e-mail-only respondents were directly caught up in the blasts; the rest were eye-witnesses.

Interview procedure

We arranged for the interviews to take place where the participants would feel comfortable, usually their home or a local park. The interviewee was first asked to provide some background, to set the scene, and then to tell the story of the events as they remembered them. The rest of the questions covered the following issues:

Behaviour: e.g., ‘What did you do in response to these events? How quickly did people respond and evacuate? Did people co-operate/ help each other out? Did anyone behave selfishly?’

Thoughts/ feelings: e.g., ‘What were you thinking/ feeling as incident progressed? Did you feel in control of your actions/ feelings? Do you think that anyone panicked? If

so, what did they do?’

Identities: e.g., ‘How would you describe those in the evacuation with you? How did you feel towards them? Did you feel a sense of unity with each other? Was there a common identity before-hand?’

Each interview lasted between 45 and 90 minutes, and the data was transcribed in full and subjected to thematic analysis, with the themes determined by our research questions.

Results

As much of the material gathered contained data that overlapped between the different research questions, they are reported in two different sections, as opposed to addressing each research question in turn, which is done in the Discussion section.

The myth of panic: Was there personally selfish behaviour?

Comparative events interview study

Eleven interviewees described the crowd’s behaviour as ‘panic’, while eight did not. However, this does not necessarily support the panic model, as these accounts need more probing. What did people mean by ‘panic’, and what did people actually do? For instance, most interviewees (14 vs. 6) explicitly contrasted the over-emotional, panicked behaviour of some individuals with the relatively orderly behaviour of the rest of the crowd. Furthermore, when directly asked if they thought there was mass panic, most interviewees (18 vs. 1) also explicitly denied that crowd panic took place.

The interviewee quoted below, a survivor of the Hillsborough football disaster in 1989 where 96 Liverpool fans died in a stadium crush, was explicit in his use of the term panic:

1. You had no choice, you went where the crowd took you ... as everybody else did ... it was that scary, it was terrifying, but as I said once blind panic has set in I would think that was that was the main part, every everyone really panicked, sheer panic, the police panicked, the crowd panicked, everyone panicked (Hillsborough 1).

While he mentions panic six times in this extract, he does not explain in any detail what it is people were doing that led to him describing it as panic. When asked to give an example of what he felt was panicked behaviour, he gave the following account:

2. Never ever would I consider stepping on a dead body. I did that to save myself because I panicked ... 2 I thought to myself look I’m either going to step on he or she ... to get out of this and live or die (Hillsborough 1).

However, while this is an exceptional situation, a closer analysis begs the question as to whether this is actually personally selfish panic or logical flight behaviour. He was faced with a stark choice of stepping on someone who was dead (and so beyond help) to escape the crush in the pens, or be killed himself. He also later described his own co-operative behaviour to help other injured fans once he was free from the crush:

3. As soon as I could get my arms out I was helping people and pushing them up ... it’s only when you look back you just feel ‘oh I could have done that’, I mean you look back, I mean everyone did help each other and I don’t think there was anyone that could really look back and say I didn’t do anything to help anybody (Hillsborough 1).

If the panic model was correct, we would expect little in the way of such co-

operative behaviours. However, consistent with the suggestion that mass panic is rare, accounts of helping (including physically helping people, allowing others to go first, and comforting others) were more common than personally selfish behaviours (barging others aside, ignoring others in need, trying to push ahead of others etc.). Indeed, more interviewees reported behaving helpfully (12) than said they did not (6), more interviewees reported being helped (13) than not (0); and more reported observing others helping others (20) than did not (1). Likewise, fewer interviewees reported behaving personally selfishly or competitively (3) than said they did not (14), fewer interviewees reported suffering from others' personal selfishness (6) than said they did not (14). However, more interviewees reported observing others being personally selfish (11) than did not (5).

July 7th study

Affiliation theory would suggest that mass panic would be more likely under the conditions present on 7/7, as those affected would be in a situation of extreme danger largely with strangers. However, of the 7/7 survivors interviewed, only one said they 'panicked', while four others said they 'felt' panicky, but this was usually feelings of fear rather than any overt behaviour. Two respondents were explicit that they did not panic. When describing others' behaviour, only one respondent used the term 'panic', and when asked what she meant, she replied that people were screaming. However, she also described others' behaviour as overwhelmingly 'calm'. The other respondents either denied that people panicked (five respondents), said that people 'started to panic' but were ultimately calm or controlled (two), said that they did not see any panic (two), or limited it to one individual or a small minority in the crowd 'hyperventilating', 'screaming' or becoming 'hysterical' (four). The following quote from a witness of the Edgware Road bomb indicates the lack of panic:

4. It was so calm and relaxed it was almost like a fire drill ... everyone was sat down and the driver was saying 'you might as well sit down as there'll be a bit of a wait till we get out' and ... some people trying to get a bit further along the line but there was no-one desperately running along the train, it was a very relaxed calm evacuation, and I think the atmosphere and the instructions from the driver because he was very calm about the whole situation obviously ... he'd seen the blast from his carriage but he was calm and I think his calm instilled calm throughout the whole train yeah there wasn't it wasn't a panic really bolt for the door by any means (July 7th 1).

Evidence for shared identity and cooperative behaviour

The third research question was whether there was a sense of common identity which would at least partly explain the lack of panic and extent of helping behaviour. This was tested by examining the data for references to common identity, and for a link between common identity and helping.

Comparative events interview study

Participants placed great importance on unity with others involved, often spontaneously mentioning this before we asked them about the concept. Therefore, we can have some confidence that the data reflect a genuine sense of common identity that existed in the

crowd. Thirteen participants referred unambiguously to a sense of unity or togetherness with the rest of the crowd during the emergency. Their comments usually included examples of other people's motivations and behaviour, suggesting that the unity was not something that existed only subjectively for them, but was felt by the crowd as a whole. In most of the references to common identity, it is also described as developing over the course of the emergency itself. Only seven participants described any sense of unity before the incident, and these were all at football matches or concerts. Conversely, most of the people who described a shared sense of threat also referred to a sense of common identity developing over the course of the event, sometimes explicitly explaining the feeling of unity in terms of the threat to the crowd as a whole.

The following extract is from someone evacuated from a hotel fire in Boston, US in 1971, and who had only arrived the day before from the UK, not knowing anyone else in the hotel. Therefore, his chances of having a prior common identity with other guests were unlikely. What is of interest, however, is the emergence of a sense of unity with others in the course of the emergency, as all faced the same danger:

5. We were herded into groups of about ten or fifteen people or so in the hall talking and milling around amongst themselves at that point yes there was a little bit of camaraderie that we'd all come through something that could have been potentially very dangerous (Boston Hotel Fire).

This common identity was not just a perception amongst participants, as it also appeared to influence their behaviour to others, as the following quote from another survivor of Hillsborough illustrates:

6. The behaviour of many people in that crowd and simply trying to help their fellow supporters was heroic in some cases. So I don't think in my view there was any question that there was an organic sense of unity of crowd behaviour. It was clearly the case ... that people were trying to get people who were seriously injured out of that crowd, it was seriously a case of trying to get people to hospital, get them to safety ...w I just wish I'd been able to prevail on a few more people not to put themselves in danger (Hillsborough 2).

July 7th study

Most respondents from 7/7 were amongst strangers (only one interviewee and three e-mail respondents were with friends or family) and so would have had minimal existing affiliative ties to their fellow commuters. However, as will be shown, there is evidence of a sense of unity amongst survivors. Moreover, when asked to describe how this unity developed, there was evidence that it emerged from a sense of shared fate. Nine interviewees (plus two of the e-mail respondents) were explicit that there was a strong sense of unity in the crowd. Indeed, as with the comparative event interview study, some of them mentioned this before being asked about it by the interviewer, with the following terms being used: 'empathy', 'unity', 'similarity', 'part of a group'. When asked to rate the strength of this feeling of togetherness, participants used scores such as: 8/10, 9/10, 100%, 10/10, suggesting that this was a strong subjective feeling. Some explicitly contrasted this positive feeling of unity in the emergency with the unpleasant sense of competition and atomization with other commuters they would experience on a normal rush-hour morning. Only one respondent reported a low sense of unity with others

(scored as 3/10), and this was someone who was not directly affected by the explosions, but was in the area of the bus bomb and heard the explosion from a distance. Therefore, it is possible that he did not feel the same immediate threat of death that others felt, thus reducing the sense of shared fate which would predict such a sense of unity.

The following quote from a female survivor of the King's Cross bomb is taken from a web-site where survivors offer mutual support³, and illustrates the sense of unity that developed amongst those caught up in the blast:

7. One of the things which struck me about this experience is that one minute you are standing around strangers and the next minute they become the closest and most important people in your life. That feeling was quite extraordinary (July 7th 2).

There was also clear evidence of cooperation, with thirteen interviewees reporting at least one instance of helping others – ranging from providing comfort, water, or first aid. While there were no reports of overtly personally selfish behaviour, seven interviewees said they felt 'selfish' or guilty for being overly concerned for their own personal safety. However, this may be evidence for survivor guilt, where people sometimes struggle to come to terms with why they survived emergencies and others did not, or even feel they were to blame for some aspect of the trauma they later suffer. Seven interviewees were explicit that they witnessed no personally selfish or competitive behaviour in others. However, two interviewees described one individual being concerned with his mobile phone when he could have helped (although they did also report that others remonstrated with the person for doing so), and two described people outside the events who showed no concern for the plight of those affected. Only one described people 'ignoring others, walking past'. The following quote from a survivor of the Edgware Road bomb describes the general co-operative atmosphere:

8. Some people took charge of the situation by looking for stuff and then other people were just looking after people next to them and other people were just keeping out of the way (July 7th, 1).

Discussion

The two interview-based studies generated a rich qualitative data-set which provided evidence for the remarkable resilience that people are capable of under extreme pressure. Moreover, this resilience appears to be not despite the crowd, but because of it, as it was a product of the sense of collective identification that they derived from others involved in the same incident. Each research question will now be addressed in turn.

Lack of mass panic

The evidence gathered supports the theory that there would be little evidence of mass panic, and while the term 'panic' was often used by participants, it did not stand up to scrutiny. Behaviour described as panic usually consisted of vocal expressions of fear or distress amongst individuals rather than any physical behaviour, and this did not spread to others. Furthermore, mass panic did not occur even under the conditions of the July 7th London bombings, where the affiliation model too would have predicted it.

Orderly, cooperative behaviour would pre-dominate

People's behaviour during the events in question tended to remain orderly and meaningful,

with selfish, uncooperative behaviour being rare. Moreover, any behaviour in others that was perceived by participants as personally selfish did not spread, and sometimes other crowd members remonstrated with the 'selfish' individuals in question.

The development of a common identity in response to the threat would explain this cooperative behaviour

Participants were often explicit that they felt a common unity with others affected as a result of having a shared fate in response to the danger they faced, and that this influenced their cooperative behaviour. Furthermore, participants often spontaneously mentioned this sense of unity before being asked by the interviewer, lending strength to this hypothesis.

Conclusion and implications for practice

The widespread cooperative behaviour reported by participants in emergencies contradicts the assumptions of personally selfish behaviour inherent in the panic model. Furthermore, the evidence we found for the development of a common shared identity amongst participants who had minimal attachment bonds to others before the emergency began highlights the limitations of the attachment model in explaining all behaviour in emergencies. Therefore we can concur with previous critiques (e.g., Keating, 1982; Sime, 1990) that the idea of mass panic occurring in emergencies is largely a myth unsupported by evidence, and that the term is neither a helpful nor accurate description of human behaviour in emergencies.

This research has implications for the safe egress of large numbers of people in emergency evacuations (see Drury & Cocking, 2007), and the following recommendations are proposed to facilitate safely such evacuations:

1. Those involved in crowd management need to take the possibility of emergencies seriously and be prepared for the worst case scenario, regardless of how likely they believe it is to happen, as it may not be over-reaction, but rather under-reaction that tends to lead to deaths in emergencies. There is evidence that people can delay their own evacuation from danger (e.g., Sime, 1995), and that they can also assess risk inaccurately, such as being in denial that negative events can occur or that they are more likely to happen to others than themselves (e.g., Plous, 1993). Therefore, planners need to be aware of these processes and pre-empt them, by considering how they would respond to every possible type of emergency (especially the most extreme events).

2. Planners need to be aware that mass emergency evacuation behaviour is often cognitive and meaningful. People's behaviour in emergency evacuations is affected by their knowledge of the nature of the emergency, the physical layout of the area, and that they will seek further information and guidance during the incident. Therefore, more rather than less information should be provided wherever practically possible during emergencies. People in emergencies can digest and act upon information much more effectively than they are often given credit for. Assuming that crowds will panic may indeed delay efficient evacuations, if emergency planners withhold information from crowd members in the mistaken belief that panic will occur if people become aware of the threat they face. Indeed, a study of different methods of evacuation from the Metro system in Newcastle, UK found that providing clear information to the public from

a believable source about a threat, far from hampering efficient evacuation, actually improved evacuation times (Proulx & Sime, 1991).

3. Forms of communication that can nurture a sense of collective identity should be encouraged, and appealing to people's cooperative nature before and during mass emergencies can be an effective tactic to ensure a safe and efficient evacuation. A shared identity can be encouraged in public spaces (such as underground stations) on an everyday basis. This might be achieved via public information campaigns and the wording of public addresses, advertisements, notices and so on. There is some evidence (e.g., Muir, 2004; Ripley, 2005) that those who access emergency information in trains and planes are more likely to survive such crashes.

Finally, and from a more general perspective, emergency planners should be aware that crowds in evacuations can usually be trusted to behave well during evacuations. We believe that our findings are part of a growing body of evidence that crowd behaviour is meaningful and cognitive, and using this knowledge could help reduce the risk of severe injuries and/or fatalities happening during future mass emergencies.

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Notes

1. Available via; <http://www.sussex.ac.uk/affiliates/panic/lb/index.htm>.
2. In this and future extracts, the symbols '...' denote that material was edited for reasons of space .
3. <http://www.londonrecovers.com>.

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