Journal of Applied Social Psychology

Journal of Applied Social Psychology 2013, ••, pp. ••–••

Psychological disaster myths in the perception and management of mass emergencies

John Drury[1], David Novelli,[1] Clifford Stott[2]

[1]School of Psychology, University of Sussex
[2]Security and Justice Research Group School of Law, University of Leeds

Correspondence concerning this article should be addressed to John Drury, School of Psychology, University of Sussex, Falmer, Brighton BN1 9QH, UK.
E-mail: j.drury@sussex.ac.uk

doi: 10.1111/jasp.12176

Abstract

Disaster myths are said to be widespread and consequential. However, there has been little research on whether those involved in public safety and emergency response believe them. A survey examined how far police officers, civilian safety professionals, sports event stewards and comparison samples from the public believe the myths "mass panic," "civil disorder," and "helplessness." Respondents endorsed the first two myths. However, they rejected the myth of helplessness and endorsed the view that emergency crowds display resilience. Despite these contradictions in stated beliefs, there was also evidence of ideological coherence: each model of mass emergency behavior (maladaptive vs. resilient) was linked to a model of crowd management (coercive and paternalistic vs. mass-democratic). The practical implications of these findings are discussed.

Introduction

Over 50 years of psychological, sociological, and documentary research evidence converges on the view that collective behavior in mass emergencies and disasters is typically socially structured and adaptive, with cooperation common among survivors (Aguirre, Torres, Gill, & Hotchkiss, 2011; Donald & Canter, 1992; Fritz & Williams, 1957; Johnson, 1987; Solnit, 2009). Despite the evidence, a number of myths about disasters persist in public discourse, some of which suggest that collective behavior in emergencies is maladaptive, irrational, and even pathological (Fischer, 2008; Quarantelli, 1960; Quarantelli & Dynes, 1972; Sheppard, Rubin, Wessely, & Wardman, 2006). These myths matter, for they can serve as rationales for inappropriate, inefficient, and even dangerous forms of emergency planning and response (Alexander, 2007; Auf der Heide, 2004; Fahy, Proulx, & Aiman, 2012). This article describes a survey study that examined the extent to which professional groups involved in public safety and emergency response—police officers, civilian safety managers, and sports event stewards—endorse psychological disaster myths and other, more veridical, beliefs about mass emergency behavior.

Three psychological disaster myths

Disaster myths might be defined as misconceptions or incorrect beliefs about disasters and emergencies. There are myths about many aspects of disasters (Alexander, 2007; De Ville de Goyet, 1991; Jacob, Mawson, Payton, & Guignard, 2008), but of especial interest to social psychologists are those that refer to crowd behavior. The most well-documented of these is "*mass panic*." This refers to an exaggerated or irrational fear that is said to spread through "contagion," leading to escape behaviors that are over-hasty, unthinking, and unrestrained by social rules (e.g., McDougall, 1920; Schultz, 1964; Strauss, 1944; see Chertkoff & Kushigian, 1999, and Mawson, 2007, for comprehensive reviews of the various "mass panic" theories in psychology and sociology). Mass panic is said to occur when a crowd has only limited opportunity for escape from impending danger. It supposedly explains the high numbers of avoidable fatalities in emergency evacuations (Quarantelli, 2001).

A second disaster myth is that "*civil disorder*" is inevitable in emergencies and disasters. According to this belief, the crowd is a "cloak" under which willful and uncontrolled wrongdoing can take place. The "civil disorder" myth suggests that emergencies and disasters "bring out the worst in people" (Jacob et al., 2008, p. 556), in particular, antisocial behavior (De Ville de Goyet, 1991), rioting, and "looting" (Alexander, 2007; Fischer, 2008).

Finally, a third myth, "*helplessness*" (or "disaster syndrome;" Auf der Heide, 2004), suggests that survivors are too stunned, passive, and helpless to care for themselves (Webb, 2002). This misconception stands in contrast to the wealth of

evidence that survivors commonly act collectively as first (or "zero") responders (Cole, Walters, & Lynch, 2011; Drury, Cocking, & Reicher, 2009) or members of "therapeutic communities" (Barton, 1969; Fritz, 1996/1961; Solnit, 2009).

Consequences of myths about the mass

Both disaster sociologists and those involved in humanitarian relief argue that these myths matter (De Ville de Goyet, 1999; NATO, 2008; Tierney, Bevc, & Kuligowski, 2006). Thus the "panic" and "helplessness" myths are said to be behind the ethos of mistrust and centralization in post-9/11 "homeland security" policies in the United States (Dynes, 2003; Tierney, 2003). The related view that the authorities are somehow immune from panic and therefore "know best" also justifies paternalistic strategies such as exclusive expert command and control (Auf der Heide, 2004), and the withholding of information from the public about the nature of danger. Thus, fear that the public would panic has led to the restriction of information about preparation for chemical and biological attacks by the Federal Emergency Management Agency in the United States (Ripley, 2008). Concern for mass panic is also the reason that event stewards and building managers use code words (e.g., "Inspector Sands") and do not tell the public when there is a fire (Fahy et al., 2012; Proulx & Sime, 1991). Likewise, overestimation of the prevalence of looting has been shown to be highly consequential; for example, following Hurricane Katrina this belief was used to justify a military rather than humanitarian response (Solnit, 2009; Tierney et al., 2006).

It is possible that disaster myths do not simply misrepresent the crowd, but actually exacerbate the effects of disasters, because the practices they rationalize may undermine the public's collective resilience. Collective resilience includes such features as mutual support and coordination, which in turn provide a basis for collective agency and adaptive action (Drury, 2012). Critical commentators argue that "top–down" or coercive strategies of emergency preparedness and response may themselves produce the psychosocial vulnerability they are premised upon. By presuming a dysfunctional or helpless public and hence restricting information or excluding the public from participation in their own protection, such responses reduce the public's mutual trust and sense of agency and hence their ability to cope with adversity (Furedi, 2007, 2008; Wessely, 2005a, 2005b). Convergent evidence for this line of argument comes from research on "public order" policing. Pathologizing representations of the mass (e.g., the "mad mob") have been shown to rationalize coercive policing practices (Drury, Stott, & Farsides, 2003; Stott & Reicher, 1998), which offend the peaceful crowd's sense of legitimacy and in turn produce the very angry, "disorderly mob" that the police presumed (O'Connor, 2009; Stott, Adang, Livingstone, & Schreiber, 2008).

Given both the possible consequences of psychological disaster myths and the increased interest in emergency preparedness post-9/11, it is surprising that almost all the research in this field has been carried out on either mass media representations (e.g., Mitchell, Thomas, Hill, & Cutter, 2000) or on (lay) public opinion (e.g., Wenger, Dykes, Sebok, & Neff, 1975). The only exceptions we are aware of are the studies by Fischer and Drain (1993) and Alexander (2007). Fischer and Drain's survey found that local emergency management directors in a U.S. midwestern state endorsed the "panic" and "helplessness" myths. Alexander surveyed Italian emergency management trainees. While these professionals were more skeptical than a comparison sample of U.S. students in their endorsement of the myths, all agreed that "panic" and "looting" were natural reactions to emergencies and disasters. Alexander's study was also unusual in surveying a sample outside the United States. However, neither of these studies examined other relevant professional groups involved in emergency preparedness and response, or examined the extent to which these professionals' beliefs about mass behavior influenced their stated strategies for managing mass emergencies.

Aims and expectations

The aims of the present study were fourfold. First, the aim was simply to document the extent to which certain relevant professional groups endorse psychological disaster myths. We chose groups that each have responsibilities in relation to public safety and emergencies, but whose roles differ in important ways. Thus police officers, the first group, have a law-enforcement function, a public safety agenda, and a key role as professional first responders. Civilian crowd safety professionals, our second group, have a similar level of training and specialism as police, and a similar public safety agenda, but no law-enforcement role. A third type of public safety operative—sports event stewards—has no professional qualifications or skills. Typically such operatives only have a part-time role, but nevertheless exercise responsibility for public safety, including knowledge of evacuation procedures. For this sample, we surveyed football stewards, because in the United Kingdom, football games are major crowd events where issues of safety and security have historically been important. For comparison purposes, two "baseline" groups were sampled: in line with most social scientific research a student population (cf. Alexander, 2007); and, to hold constant demographic features of age and gender, a sample from the general public that matched the police and civilian safety professional samples. Extrapolating from previous research, the expectation was that all groups would endorse the psychological disaster myths to some extent. Based on

Alexander's (2007) findings, it might be expected that the specialists (police, civilian safety professionals) would endorse the myths less than the public and the sports event stewards.

The second aim of the study was to determine the extent to which the groups endorsed two types of (veridical) beliefs about mass emergency behavior counterposed to the disaster myths. A first type of veridical belief of interest was that of resilience. There is some reason to expect that disaster myths and beliefs in resilience can coexist. In his study of media representations of emergencies, Goltz (1984) identified a theme of "adaptation" as well as "mass panic;" and Fischer and Drain's (1993) survey found that, as well as endorsing disaster myths, local emergency management directors held that survivors usually behave altruistically. A second type of veridical belief is that, rather than exaggerating danger, *underestimation* of danger is a likely source of death in mass emergencies.[1] No prediction was made for endorsement of this belief.

The third aim of the study was to examine the extent to which the groups recommend certain *practices* in the management of mass emergencies, in particular restricting information, coercion, exclusive expert control, and relying on the public's own initiative and resourcefulness. The prediction here is that each of these types of management practice will be endorsed, despite the differences between some of them.

The final aim was to explore the *ideological coherence* (cf. Drury et al., 2003) of beliefs about mass emergency behavior and its management: that is, the extent to which the three disaster myths versus the veridical beliefs are associated with each of the recommendations for practice. The disaster myths of mass panic, civil disorder and helplessness in principle rationalize paternalistic or coercive management practices, whereas the idea of public resilience rationalizes more "mass-democratic" practices (Cole et al., 2011; Drury, 2012; Jones, Woolven, Durodié, & Wessely, 2006). Thus, across the data set as a whole, belief in "mass panic" should predict recommendations for restricting information and for exclusive expert control; belief in "civil disorder" should predict recommendations for coercion; and belief in "helplessness" should predict recommendations for exclusive expert control. In contrast, belief in resilience should predict recommendations for relying on, and trust in, the public's own initiative and resourcefulness.

[1]The well-established underestimation of danger in emergencies has been explained in terms of an individual optimistic bias (Chertkoff & Kushigian, 1999) rather than a feature of crowd psychology. However, there is also an argument that people underreact to fire alarms and other signals for good reasons rather than because of faulty cognition, as fires are statistically unlikely and most alarms are false or tests.

Method

Participants

A total of 448 participants were surveyed in the United Kingdom. One hundred fifteen were police officers, 120 were sports event stewards, 46 were civilian safety professionals, 78 were students, and 89 were other members of the public.

The police officers were approached to complete the questionnaire in a number of settings including at training sessions and via mail-shots from sympathetic colleagues. Officers responded from at least seven different police services,[2] and ranged in rank from chief superintendents to constables. Of the police officers who specified their rank (60 in total), approximately half were ranked as constables or sergeants, whereas the other half were from more senior ranks (inspector and above). Of those who indicated their gender, 93 were male and 7 were female. Mean age was 42.74 (standard deviation [*SD*] = 7.55, range = 19–58).

The following civilian crowd safety professionals were surveyed: emergency planners for local and regional government ($n = 21$), fire and rescue officers ($n = 3$), coastguards ($n = 6$), and outdoor event safety and security managers ($n = 16$). They were approached at training events and conferences, and via mails-shots from training organizations sympathetic to the research. Thirty-four were men and 12 women. Mean age was 41.36 (*SD* = 11.14, range = 21–64).

Sports events stewards were sampled from two football clubs—one in southern England and the other from Wales. Of those who gave their gender, 83 were men and 22 were women. Mean age was 39.16 (*SD* = 12.07, range = 18–65).

Students completed the questionnaire as part of a psychology course requirement. Of those who gave their gender eight were men and 61 were women. Mean age was 22.07 (*SD* = 5.70, range = 18–48). The sample from the general public were chosen to match the profile of the U.K. police sample. They were approached through snowballing for people, mostly men, of a certain age range via contacts of research assistants, memberships of social clubs, and an online football discussion forum. Of those who gave their gender, 78 were men and 10 women. Mean age was 42.68 (*SD* = 12.12, range = 23–67).

Measures

Disaster myths

There are no established measures for belief in disaster myths. Alexander (2007) and Fischer and Drain (1993) each used different single-item statements. For the present study, we sought to go beyond this by creating a series of scales. First,

[2]Some officers responding to a circular sent out through the Superintendents Association did not state which police service they worked for.

separate subscales representing different aspects of "mass panic" were developed, based on academic accounts. There were three general items referring simply to "mass panic" *per se*: for example, "When there is an emergency, mass panic is inevitable," $\alpha = .81$. Two items represented the belief that crowds exaggerate threats (cf. Smelser, 1962): for example, "In an emergency, people in crowds exaggerate the threat," $r = .72$, $p = .001$. Eight items represented the idea that emotions and instincts overwhelm rational thought (cf. Strauss, 1944): for example, "In an emergency, people in crowds are driven by simple instincts," $\alpha = .86$. Three items represented the idea of contagion (cf. McDougall, 1920): for example, "When there is an emergency, false rumors spread easily through a crowd," $\alpha = .80$. Two items represented the view that personal survival becomes the overriding concern: for example, "When there is an emergency, crowd members act selfishly," $r = .35$, $p = .001$. Finally, two items represented the belief, implicit in the notion of "mass panic," that the authorities and "experts" outside the crowd are immune: for example, "When there is an emergency, the emergency services are not subject to the same tendency to panic as the crowd," $r = .65$, $p = .001$. There were four items to represent the second disaster myth, "civil disorder": for example, "When there is an emergency, social order breaks down," $\alpha = .76$. One item represented the third disaster myth: "When there is an emergency, crowd survivors wait helplessly to be rescued."

Beliefs about resilience and underestimation of danger

Items and scales were developed for five types of beliefs about resilient behavior. First, there were two items representing orderliness: for example, "When there is an emergency, mass evacuation tends to be orderly," $r = .78$, $p = .001$. Second, a single item represented cooperation: "When there is an emergency, crowd survivors pro-socially assist one another." Third, a single item represented heroism: "When there is an emergency, examples of heroism among survivors take place." Fourth there was an item representing the idea that evacuation behavior is knowledge-based: "When there is an emergency, people in a crowd draw upon their knowledge of (e.g.) building layout." Finally, three items represented the belief that people come together in emergencies: for example, "Emergencies and disasters bring people together in solidarity," $\alpha = .82$. The belief that people underestimate the threat in emergencies was represented by a scale of six items: for example, "When there is an emergency, people don't take the danger seriously enough," $\alpha = .78$.

Recommendations for practice

Five types of measures for practice recommendations were constructed. First, two items represented the need for coercion: for example, "The tendency of crowds to panic means that we need a strong response from authority to maintain order in emergencies," $r = .59$, $p = .001$. Second, there were two items representing the belief that information should be restricted: for example, "When there is an emergency, it is best to give out only minimal information about the nature of the danger," $r = .31$, $p = .001$. Third, there were three items representing the recommendation for exclusive expert control of the response by the emergency services to the exclusion of public involvement: for example "When there is an emergency, members of the public from outside need to be kept away for practical reasons (i.e., enabling the emergency services to get on with their job)," $\alpha = .59$. Finally, there were two separate items representing trust in the public and hence a more "mass-democratic" view: "When there is an emergency, crowd survivors have the resourcefulness to organize their own escape," and "When there is an emergency, the emergency services may have to rely on the initiative of survivors themselves (e.g., organizing evacuation and first aid)."

All items were measured on 7-point Likert scales anchored by "disagree strongly" and "agree strongly."

Results

Preliminary analysis

A preliminary analysis examined the extent to which actual experience of mass emergencies affects strength of belief in disaster myths and other views about such events. Of the 183 participants who indicated whether or not they had had any experience of mass emergencies,[3] 52 were coded as "no experience," 97 had experienced one to two emergencies, and 34 had experienced three or more. There were no differences between the groups on any of the measures.

In the sample as a whole, there were gender differences on just six items.[4] There was no pattern across these items so no further analysis was therefore undertaken of the role of gender.

No other differences were identified within the groups.[5]

[3]Two hundred sixty-five participants had to be coded as "missing data."

[4]The items on which differences were found were as follows: general statement of mass panic (female $M = 5.28$, $SD = 1.26$; male $M = 4.88$, $SD = 1.39$), t (211.81) = –2.69, $p = .01$; contagion (female $M = 5.81$, $SD = 0.91$; male $M = 5.55$, $SD = 1.01$), t (402) = –2.29, $p = .02$; authorities immune to panic (female $M = 4.64$, $SD = 1.40$; male $M = 5.02$, $SD = 1.52$), t (403) = 2.29, $p = .02$; underestimating threat (female $M = 4.05$, $SD = 0.93$; male $M = 4.45$, $SD = 0.98$), t (401) = 3.74, $p = .001$; orderly behavior (female $M = 3.14$, $SD = 1.11$; male $M = 3.60$, $SD = 1.28$), t (226.06) = 3.55, $p = .001$; and need for exclusive expert control (female $M = 4.88$, $SD = 0.96$; male $M = 5.17$, $SD = 0.95$), t (406) = –2.75, $p = .006$.

[5]An assessment of differences between police ranks was not conducted as relatively few police respondents stated their rank.

Table 1 Belief in Disaster Myths: Means (*M*) and Standard Deviations (*SD*s)

	Police		Civilian safety professionals		Football stewards		General public		Students	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Mass panic										
General	4.07	1.27	3.86	1.66	5.77***	.94	5.30***	1.03	5.42***	1.10
Exaggerated threat	4.35**	1.43	4.33	1.37	5.08***	1.26	5.27***	1.07	4.77***	1.19
Emotions/instincts overcome rational thought	4.58***	.95	4.52**	1.19	5.16***	.94	5.28***	.74	4.76***	1.06
Contagion	5.30***	1.09	5.32***	.94	5.64***	1.05	5.85***	.83	5.78***	1.02
Selfishness	3.51***	1.13	3.66	1.40	4.01	1.29	4.39**	1.23	3.48**	1.41
Authorities immune to panic	4.65***	1.59	4.49*	1.46	5.11***	1.49	5.25***	1.44	4.56**	1.39
Civil disorder	4.17	1.15	4.36*	1.19	4.79***	1.07	4.95***	.93	4.45***	1.01
Helplessness	2.92***	1.23	3.33**	1.42	3.38***	1.44	3.20***	1.24	2.88***	1.08

Note. Asterisks denote a significant difference from the scale center-point; *p = .05. **p = .01. ***p = .001.

Disaster myths

Agreement (or disagreement) with statements representing disaster myths is operationalized as significant difference from the scale midpoint (4).

All means and *SD*s for endorsement of the disaster myth statements are presented in Table 1, above.

The samples comprised of police officers and civilian safety professionals neither agreed nor disagreed with the general statement that crowds panic in emergencies—see Table. However all three non-specialist groups—stewards, general public and students—endorsed this view. Univariate analyses of variance (ANOVAs) revealed an overall significant difference between groups, $F(4, 175.51) = 40.84$, $p = .001$;[6] and Games–Howell post hoc tests showed that the differences between police and each of the three non-specialist groups, and between civilian safety professionals and each of these three groups, were all significant ($p = .001$).

All professional groups except one, and both the comparison samples, agreed that people in crowds exaggerate the threat in an emergency. The exception was the sample of civilian safety professionals, who neither agreed nor disagreed. Overall, there was a significant difference between the groups, $F(4, 183.76) = 9.48$, $p = .001$. Post hoc tests revealed that the general public endorsed the belief significantly more than did the police ($p = .001$), the student sample ($p = .05$) and the civilian safety professionals ($p = .001$); and the football stewards endorsed the belief more than did the police ($p = .001$) and the civilian safety professionals ($p = .02$).

All five groups agreed that emotions and instinct overcome rational thought in mass emergency crowds. There was a significant difference across the groups, $F(4, 176.44) = 12.00$, $p = .001$. The strongest agreement was from the general public, whose score differed significantly from that of the police ($p = .001$), the student sample ($p = .005$), and the civilian safety professionals ($p = .002$). Football stewards endorsed the belief more strongly than the police ($p = .001$) and civilian safety professionals ($p = .01$).

All five groups also agreed that in emergencies the crowd is subject to "contagion." ANOVA revealed a significant difference across the groups, $F(4, 439) = 5.62$, $p = .001$. The general public endorsed the belief significantly more than did the police ($p = .001$) and the civilian safety professionals ($p = .02$); and the student sample endorsed the belief significantly more than did the police ($p = .02$).

On the measure of belief that crowd members act selfishly in emergencies, there was a significant difference across the groups, $F(4, 438) = 8.32$, $p = .001$. The student group rejected the statement, their score being significantly different than that of the general public ($p = .001$), who agreed that crowd members behave selfishly. The police disagreed with the statement; their score on this measure was significantly different from that of the general public ($p = .001$) and the football stewards ($p = .02$), who agreed with the statement. The civilian safety professionals and football stewards neither agreed nor disagreed with the statement. The civilian safety professionals' score was significantly lower than that of the general public ($p = .03$).

All groups agreed that the authorities and emergency services are not subject to panic. There was a significant difference across the sample as a whole, $F(4, 440) = 4.41$, $p = .002$. Post hoc tests revealed that the general public endorsed this view significantly more strongly than each of the police ($p = .05$), the student sample ($p = .02$), and the civilian safety professionals ($p = .04$).

In relation to the second disaster myth, all groups except the police officers (who neither agreed nor disagreed) endorsed the view that when there is an emergency, there is

[6]Throughout the Results, where it has been found that the homogeneity of variance assumption has been violated for a particular dependent variable, the Welch *F* ratio is reported owing to the fact that sample sizes vary across comparison groups.

civil disorder. There was a significant difference across the groups, $F(4, 437) = 8.77$, $p = .001$. The general public agreed with the statement more strongly than the other groups; their score on this measure was significantly different from that of the police ($p = .001$), the civilian safety professionals ($p = .04$), and the student sample ($p = .01$). The football stewards agreed with the statement significantly more than did the police ($p = .001$).

Finally, all the groups rejected the myth that survivors wait helplessly to be rescued. There was a significant difference across the groups, $F(4, 184.14) = 2.95$, $p = .02$. The student sample rejected the statement more strongly than did the civilian safety professionals ($p = .05$).

In summary, therefore, the professional groups endorsed most aspects of the disaster myth of mass panic, and most of them endorsed the myth of civil disorder. On most measures, the comparison samples of the public were relatively more likely than most of the professional groups to endorse aspects of the myth of mass panic. Against expectations, all groups rejected the myth that survivors wait helplessly to be rescued.

Beliefs about resilience and underestimation of danger

Table 2 (later) displays all means and *SD*s for responses to items on resilience and underestimating danger.

The police sample marginally disagreed with the statements that mass evacuations are orderly. Football stewards disagreed, but civilian safety managers neither agreed nor disagreed. The public and student samples also disagreed with the statement. Overall, there was a significant difference across the groups, $F(4, 442) = 3.34$, $p = .01$. Post hoc tests revealed that the only significant difference was between the student sample and the police ($p = .003$). All groups agreed that people in crowds are cooperative in emergencies. There were no differences between the groups on this measure, $F(4, 187.01) = 1.69$, $p = .15$. All groups also agreed that examples of heroism take place among survivors in emergencies; again there were no differences in the level of agreement between the groups on this measure, $F(4, 443) = 1.13$, $p = .34$. All groups agreed that when there is an emergency, people in a crowd draw upon their knowledge (e.g., of building layout); again there was no difference in the level of agreement between the groups, $F(4, 440) = 1.03$, $p = .39$. All groups agreed strongly that mass emergencies bring people together. There was no difference between the groups on this measure, $F(4, 442) = 1.52$, $p = .20$.

Police officers, civilian safety professionals and football stewards all agreed that in emergencies people underestimate the threat. The general public sample marginally agreed, while the student sample marginally disagreed. There was a significant difference across the groups, $F(4, 184.12) = 11.41$, $p = .001$. Post hoc tests revealed significant differences between the police and the student sample ($p = .001$) and the public ($p = .02$), and between the student sample and each of the football stewards ($p = .001$), and the civilian safety professionals ($p = .001$).

In summary, therefore, the groups endorsed most of the resilience beliefs, and most of them also endorsed the view that people underestimate the threat they face in emergencies.

Recommendations for practice

Table 3 (later) displays means and *SD*s for responses to all measures relating to recommended practices in mass emergencies.

The police and civilian safety professionals neither agreed nor disagreed that coercion was required in emergencies because of the tendency to mass panic. However, football stewards agreed with this recommendation, as did the general public. Students neither agreed nor disagreed. There were significant differences across the groups, $F(4, 178.04) = 33.73$, $p = .001$. Post hoc tests revealed that the football stewards agreed with the need for coercion significantly more than each of the other groups (all at $p = .001$), the general public agreed with the need for coercion significantly more than did

Table 2 Beliefs in Resilience and Underestimation of Danger: Means (*M*) and Standard Deviations (*SD*s)

	Police		Civilian safety professionals		Football stewards		General public		Students	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Resilience themes										
Orderly behavior	3.79 ($p = .06$)	1.20	3.68	1.30	3.49***	1.37	3.42***	1.15	3.16***	1.10
Cooperation	4.79***	.98	5.04***	.94	4.67***	1.25	4.91***	1.03	5.00***	1.03
Heroism	5.77***	1.00	5.52***	1.05	5.63***	1.20	5.85***	1.05	5.62***	1.06
Use of knowledge	4.68***	1.41	4.87***	1.45	4.73***	1.49	5.04***	1.24	4.82***	1.27
People come together	5.40***	.99	5.47***	.78	5.51***	1.05	5.70***	1.01	5.39***	.87
Other themes:										
Underestimating danger	4.62***	.78	4.53***	.76	4.49***	1.11	4.20 ($p = .08$)	1.07	3.80 ($p = .06$)	.90

Note. Asterisks denote a significant difference from the scale center-point; *$p = .05$. **$p = .01$. ***$p = .001$.

Table 3 Practice and Policy Implications: Means (*M*) and Standard Deviations (*SD*s)

	Police		Civilian safety professionals		Football stewards		General public		Students	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Policies and practices										
Coercion	3.95	1.32	4.02	1.51	5.63***	1.10	4.89***	1.37	4.26	1.55
Restrict information	2.76***	1.25	3.00***	1.46	3.75*	1.24	3.47**	1.46	3.38***	1.36
Exclusive expert control	4.91***	.86	4.99***	1.02	5.33***	1.01	5.33***	.87	4.70***	.87
Rely on survivors' initiative	5.12***	1.19	5.02***	1.31	4.38**	1.41	4.71***	1.32	4.67***	1.05
Survivors have resourcefulness to escape	4.83***	1.04	4.59***	1.02	4.48***	1.24	4.63***	1.07	4.50***	1.13

Note. Asterisks denote a significant difference from the scale center-point; *$p = .05$. **$p = .01$. ***$p = .001$.

each of the police ($p = .001$) and the civilian safety professionals ($p = .01$).

All groups disagreed that information should be restricted in emergencies. There was a significant difference across the groups, $F(4, 441) = 9.15$, $p = .001$. The police were the group who disagreed most strongly with this recommendation; their score on this measure differed significantly with that of the student sample ($p = .01$), the public ($p = .003$), and the football stewards ($p = .001$). The civilian safety professionals also disagreed with the recommendation significantly more than did the football stewards ($p = .02$).

All groups agreed with the need for exclusive expert control. There was a significant difference between the groups, $F(4, 443) = 8.13$, $p = .001$. The football stewards and the general public agreed most strongly with this statement. For both groups, the average score on this measure was significantly higher than those of the police ($p = .008$ for both groups) and the sample of students ($p = .001$ for both groups).

All groups agreed that the emergency services may have to rely on the initiative of survivors to help themselves. There was a significant difference between the groups on the extent of their agreement with this statement, $F(4, 184.36) = 5.32$, $p = .001$. The police were the group that agreed most strongly; their score on this measure was significantly higher than that of the students ($p = .05$) and the football stewards ($p = .001$). Finally, all groups endorsed the view that survivors have the resourcefulness to organize their own escape in an emergency. There was no difference between the groups on this measure, $F(4, 443) = 1.72$, $p = .14$.

In summary, therefore, there were mixed views on appropriate crowd management practices in emergencies, with support for paternalism and coercion inconsistent within and between groups. The groups were more consistently supportive of mass-democratic crowd management practices.

Ideological coherence of beliefs

The final set of tests explored the extent to which there was a relation between belief in specific disaster myths and recommendations for practice, irrespective of group.

A first prediction here is that belief in the myths of mass panic and helplessness should each predict support for exclusive expert control. By contrast, resilience beliefs should be negatively or non-predictive of this recommendation for practice. In order to reduce the analysis to a manageable but meaningful form, the 18 separate items representing the different aspects of mass panic were scaled into a single composite measure ($\alpha = .92$). Together, belief in mass panic and belief in helplessness accounted for 14% of the variance in endorsement of exclusive expert control ($R^2 = .14$), which was significant, $F(2, 416) = 33.36$, $p < .001$. When controlling for the impact of the other variable in the model, belief in mass panic was a significant predictor ($\beta = .36$, $p < .001$) with an increase associated with greater endorsement of exclusive expert control, whereas belief in helplessness ($\beta = .03$, $p = .50$) was not a predictor.

As a set, the five resilience beliefs accounted for 5% of the variance in support for exclusive expert control ($R^2 = .05$). This was significant, $F(5, 437) = 4.54$, $p < .001$, but the direction of prediction was inconsistent. Orderly evacuation ($\beta = -.12$, $p = .02$) was a significant negative predictor, whereas the idea that emergencies bring people together ($\beta = .20$, $p = .001$) was a significant positive predictor. The items relating to people using their knowledge ($\beta = .004$, $p = .93$), heroism ($\beta = -.03$, $p = .58$), and cooperation ($\beta = .04$, $p = .50$) were not predictors.

A second specific prediction was that belief in mass panic should predict support for restricting information (whereas resilience beliefs should be negatively or non-predictive). As expected, belief in mass panic accounted for 19% of the variance in support for restricting information ($R^2 = .19$) and was a significant positive predictor, $F(1, 416) = 95.75$, $p = .001$, $\beta = .43$, $p = .001$. As a set, the five resilience beliefs accounted for 4% of the variance in the endorsement of the practice of restricting information ($R^2 = .04$). This was significant, $F(5, 435) = 3.89$, $p = .002$, but the direction of prediction tended to be different to that of the belief in mass panic. When controlling for the other resilience measures, the items relating to heroism ($\beta = -.13$, $p = .03$), cooperation ($\beta = -.11$, $p = .03$), and orderly evacuation ($\beta = -.14$, $p = .005$) were significant

negative predictors: as endorsement of these themes increased, endorsement of restricting information decreased. The item relating to emergencies bringing people together was a marginally significant positive predictor ($\beta = .12$, $p = .05$) whereas the belief that people use their knowledge ($\beta = -.01$, $p = .79$) was not a predictor.

The third set of predictions relates to coercion: belief in the disaster myth of civil disorder should predict belief in coercion, whereas resilience beliefs should do so negatively or be non-predictive. As expected, belief in civil disorder accounted for 23% of the variance of scores for support for coercion in mass emergencies ($R^2 = .23$), and was a significant predictor, $F(1, 436) = 132.79$, $\beta = .48$, $p = .001$. As a set, the five resilience beliefs accounted for 5% of the variance in the endorsement of coercive strategies ($R^2 = .05$). This was significant, $F(5, 433) = 4.50$, $p = .001$; however, the direction of prediction was inconsistent. When controlling for all other resilience measures, the belief that emergencies bring people together was a significant positive predictor, $\beta = .13$, $p = .03$. But beliefs in orderly evacuation ($\beta = -.13$, $p = .009$) and cooperation ($\beta = -.18$, $p = .001$) were significant negative predictors. The items relating to people using their knowledge ($\beta = .03$, $p = .56$), and heroism ($\beta = -.01$, $p = .99$) were not predictors.

The fourth and final set of predictions concerns the two mass-democratic recommendations for practice; resilience beliefs should predict each of them, but belief in disaster myths should do so negatively or nonsignificantly. As a set, the five resilience beliefs accounted for 18% of the variance in the scores for endorsement of the view that the emergency services may have to rely on the initiative of survivors themselves ($R^2 = .18$) which was significant, $F(5, 434) = 18.79$, $p = .001$. When controlling for each of the other variables, the following were significant positive predictors: belief in orderly evacuation ($\beta = .17$, $p = .001$), cooperation ($\beta = .26$, $p = .001$), and heroism ($\beta = .16$, $p = .003$). The items relating to people coming together ($\beta = .03$, $p = .60$) and drawing on their knowledge ($\beta = .04$, $p = .34$) were not predictors. As a set the three disaster myths accounted for 2% of the variance of the endorsement of the view that the emergency services may have to rely on the initiative of survivors themselves ($R^2 = .02$), which was not significant, $F(3, 410) = 2.20$, $p = .09$. When controlling for the other variables, mass panic was a marginally significant negative predictor, $\beta = -.16$, $p = .05$. Civil disorder ($\beta = .04$, $p = .61$) and helplessness ($\beta = .04$, $p = .48$) were not predictors.

As a set, the five resilience beliefs accounted for 25% of the variance in the scores for endorsement of the view that crowd survivors have the resourcefulness to organize their own escape ($R^2 = .25$), $F(5, 437) = 29.03$, $p = .001$, which was significant. When controlling for the other variables, the following resilience beliefs were significant (or marginally significant) positive predictors: orderly evacuation ($\beta = .10$, $p = .03$), cooperation ($\beta = .37$, $p = .001$), heroism ($\beta = .10$, $p = .06$), and knowledge ($\beta = .15$, $p = .001$). The belief that people come together was not a significant predictor ($\beta = .04$, $p = .48$). As a set, the three disaster myths accounted for 2% of the variance in the scores for endorsement of the view that crowd survivors have the resourcefulness to organize their own escape ($R^2 = .02$), which was significant, $F(3, 412) = 3.16$, $p = .02$. When controlling for each of the other predictors in the model, mass panic was a marginally significant negative predictor ($\beta = -.15$, $p = .05$), but civil disorder ($\beta = .04$, $p = .59$) and helplessness ($\beta = -.07$, $p = .15$) were not predictors.

In summary, therefore, for the sample as a whole there were clear ideological linkages between disaster myths and endorsement of paternalistic or coercive crowd management practices; and there were also clear ideological linkages between resilience beliefs and endorsement of mass-democratic crowd management practices.

Discussion

On the whole, the survey shows that a number professional groups involved in public safety and emergency preparedness and response believe in at least some of the well-established psychological disaster myths. Taking the myth of mass panic first, police officers did not endorse a general statement of mass panic, but nor did they reject it. More importantly, they agreed with most constituent elements of the concept of mass panic: crowds exaggerating the threat they face, emotions and instincts overcoming rational thought, and "contagion." They also accepted the implication that the authorities and emergency services are somehow immune from panic. However they rejected the view that mass emergencies lead to selfishness. Civilian safety professionals' views were similar to those of the police. Their agreement with the view that crowds exaggerate threats was not significant, but the mean score for this item was close to that of the U.K. police. The football stewards were more ready to endorse most aspects of the myth of mass panic. The only part they did not agree with was the belief in selfishness. The general public, on the other hand, agreed with every aspect of the mass panic myth, while the student comparison sample agreed with all except the belief in selfishness.

The police sample neither agreed nor disagreed with the second myth, that civil disorder takes place in emergencies. However, civilian safety professionals and football stewards both agreed that civil disorder occurs, as did both the general public and student samples. Against expectations, and in contrast to previous research, nobody endorsed the third myth, that survivors are helpless in mass emergencies.

Despite the fact that the notion of mass panic implies a psychologically vulnerable and irrational public, there was agreement across the sample that people in mass emergencies

also display various resilient behaviors. The groups were either neutral (police, civilian safety professionals) or disagreed with the notion that evacuations are orderly; but almost all agreed that emergency crowds are cooperative, exhibit heroism, and use knowledge (e.g., of building layout) when they evacuate. There was also agreement across the professional groups with the statement representing veridical beliefs about risk—that people underestimate threats in an emergency. The public and student samples were less likely to agree with this statement, however.

The sample's recommendations for practice paralleled these contradictory views on disaster myths and resilience. In line with the view that a crowd will panic or otherwise behave in maladaptive ways in emergencies, there was endorsement across the sample of the need for exclusive expert control. On the other hand, in line with the view that crowd reactions in emergencies are rational and resilient, the sample rejected the view that information should be restricted. They also agreed with the views that the emergency services will have to rely on survivors' initiative and that survivors have the resourcefulness to escape. There was disagreement between the police and civilian safety professionals on the one hand and the football stewards and general public on the other over the use of coercion as a tactic in mass emergencies. In line with the finding that these nonspecialist groups were the ones who most strongly endorse the panic and civil disorder myths, these were also the subsamples more likely to endorse coercion.

While there was some contradiction between different beliefs about mass emergency behavior (psychologically vulnerable vs. resilient), as expected there was a clear pattern of consistency between these beliefs and specific recommendations for practice. Thus, belief in mass panic predicted support for exclusive expert control and restricting information; belief in civil disorder predicted endorsement of coercion (cf. Drury et al., 2003; Hoggett & Stott, 2010; Prati & Pietrantoni, 2009); and beliefs in resilience were associated with support for mass-democratic management principles and practices (i.e., relying on the resourcefulness and initiative of the public). The only predicted relationship that was not found was between "helplessness" (which was rejected anyway) and exclusive expert control. Thus, overall, there was clear evidence of ideological coherence: each model of mass emergency behavior (maladaptive vs. resilient) was linked to an implicit model of crowd management (coercive and paternalistic vs. mass-democratic).

Explaining the results

One possible explanation for the results is participants' personal experiences of mass emergencies. Yet no differences on any measures were found between those who reported experiencing mass emergencies and those who said they had not, or between those who reported a few experiences versus those who reported many. Previous research is not entirely consistent on whether experience affects belief in myths about crowds. Alexander (2007) suggested that the trainee emergency managers he studied endorsed disaster myths less strongly than a comparison sample of students because of the former's experience; Drury et al. (2003) reported no effect for experience; and Prati and Pietrantoni (2009) found that police officers with experience of crowd conflict were actually more likely to endorse pathologizing representations. There is no simple relation, then, between experience and views of crowds.

A second possible explanation for the endorsement of disaster myths is culture. Most previous research has been carried out in a North American context. The present study is one of the few to look at European participants. The fact that the present results broadly correspond with previous research suggests that endorsement of disaster myths is not particular to North American populations. However, a noteworthy exception to this pattern of replication was the finding that all groups in the present study rejected the idea that survivors are helplessness, which might therefore be understood as a peculiarly North American disaster myth.

The present study goes beyond previous research in sampling a range of groups with different functions and levels of professional training in relation to public safety and emergency preparedness and response. Those with a specialist professional role involving crowds and planning for mass emergencies were less likely than the samples from the public to endorse the disaster myths. This is in accord with the findings by Fischer and Drain (1993). The differences between the specialist groups (police, civilian safety professionals) and non-specialists (stewards) within the sample suggest the role of professional training in explaining at least part of the pattern of results. The football stewards have a role in helping to manage crowds, but not the level of training of the other groups; thus their views were actually closer to those of the public than to the professionals.

Another difference between the present study and most previous work is that, as well as examining their belief in disaster myths, we also took measures of the extent to which participants endorsed veridical beliefs about behavior in mass emergencies. A potential problem with a one-sided focus on disaster myths is that it could lead to the mistaken conclusion that these are the only views that people hold about mass emergency behavior. By providing alternative statements to the disaster myths for respondents to consider, the present survey avoided portraying them as simply ignorant or biased in their beliefs. Our participants in fact endorsed most of the resilience statements and the veridical statement about public underestimation of danger. Indeed, there was much more consensus across the groups for the resilience beliefs than for the disaster myths.

This takes us to perhaps the most striking feature of this data set requiring explanation: the contradictions within the views of each group. The same people that endorsed pathologizing disaster myths also endorsed contrary notions of crowd resilience and rationality. Police officers for example stated both that people overestimate and underestimate the danger they face in mass emergencies.

This pattern of agreement with contradictory statements cannot be down to an acquiescence bias. The extent of agreement with many items was significantly stronger for some issues than for others. There is evidence, therefore, that the pattern reflects the participants' genuine beliefs.

The finding that respondents endorse contradictory views on mass emergency behavior is in fact not entirely new (Fischer & Drain, 1993), although it is perhaps more prominent in the present study than in previous works. Disaster myths can be thought of as part of the stock of popular "common sense," along with other (pathologizing) views of crowds (Drury, 2002; Reicher & Potter, 1985). "Mass panic," for example, is an instantly recognizable "off-the-shelf" explanatory framework. But notions of "resilience" are part of public discourse too. For example, in the United Kingdom the "Blitz spirit"[7] is a widely recognized metaphor for the common-sense view that people come together and draw strength from their unity in the face of adversity. The finding that people endorse contradictory views on mass emergency behavior is only troubling if we assume an inherent drive for cognitive consistency. In fact, it has been shown that common-sense beliefs are typically dilemmatic (Billig et al., 1988), and hence cognitive contradiction is the norm rather than an inherently aversive state (Billig, 1987).

Limitations and implications

One possible methodological problem with the present design lies with the sample. Our sample of "civilian safety professionals" comprised emergency planners, coastguards, music event crowd safety managers, and fire and rescue officers. These groups have different professional agendas and relationships to crowds and emergencies, which have been glossed over in the present analysis. However, in defense of our strategy of treating them as a single group distinct from the other groups in the sample as a whole, we can point to the fact that their scores on our measures were, as might be expected, generally more accurate, less pathologizing and more mass-democratic than those of the other subsamples.[8] Thus, while there is a methodological argument for separating out these subgroups, it is unlikely that results would be different if we did so.

A second methodological limitation of the study has to do with the measures. Clearly, some fall short of the usual psychometric standards. Some measures consisted of just one item. The measure of "helplessness" is an example. To be more confident in its validity as a measure of people's belief in the "disaster syndrome," it would be preferable to have used a scale, perhaps including items on apathy (Alexander, 2007) and inability to care for oneself. However, previous studies have relied exclusively on the use of single-item measures to assess disaster-related beliefs and attitudes (e.g., Alexander, 2007; Fischer & Drain, 1993) and have found results comparable with most of those reported here.

Another measurement problem was that some of the items on recommended practices also referred to the disaster myth of mass panic itself (e.g., "The tendency of crowds to panic means that we need a strong response from authority to maintain order . . ."). Obviously, in the future, such "double-barreled" items should be avoided.

A deeper and more fundamental limitation of the present study is the fact that a questionnaire survey by its nature cannot tell us how and when people actually use the beliefs they say they agree with. Arguably then it is not clear outside of this context whether and to what extent the professional groups surveyed here might draw upon the disaster myths they endorsed in our survey. To what extent do references to (mythical) crowd behaviors occur in either emergency planning or spontaneous decision-making within an emergency? Or are beliefs in disaster myths in fact more prevalent as post hoc justifications? There is a consensus that the "human factor" explaining mass fatalities in emergencies is often mismanagement (Challenger & Clegg, 2011); but "mass panic" can be mobilized as an explanation after the event to draw blame away from management and onto the crowd instead (Chertkoff & Kushigian, 1999). Future research might complement the present survey results using ethnographic case study methods to explore professionals' occasioned use of disaster myths (vs. other kinds of knowledge) in relation to specific crowd events.

A second form of data that could be analyzed to complement and extend the present study is documentation. While surveys can tell us what those involved in public safety and emergency response might believe, in practice, professionals often act according to guidelines produced by official institutions. It would be useful to know the extent to which

[7]The "Blitz spirit" refers to the increase in neighborliness, solidarity, and morale said to have characterized relations among those British citizens suffering from German bombing raids during the Second World War; see Fritz (1996/1961) for the relevance of the Blitz for understanding mass emergency behavior, but also Gardiner (2010) for the Blitz as a site of conflicts.

[8]An exploratory analysis found significant differences among the subgroups among the civilian safety professionals on just two out of 13 dependent measures: belief in the use of coercive strategies and support for exclusive expert control. Fire officers endorsed the use of coercion more strongly than did the other groups in the subsample, whereas event safety managers expressed greater support for exclusive expert control than did the emergency planners.

the implicit psychology in emergency preparedness and response guidelines matches the stated beliefs of professionals. For example, recent analysis has shown that some official documentation on chemical and biological mass emergency decontamination procedures refers to "rowdy" and "panicking" crowds and recommends "control" (Carter, Drury, Rubin, Williams, & Amlot, 2013).

Concluding comments

Among social scientists, disaster management agencies, and public health organizations, there is convergence on the views (1) that mass emergency behavior is typically characterized by resilience; (2) that resilience is a good thing; and (3) that it can be facilitated by the right emergency management practices—or undermined by the wrong ones (Newland, 2010; Wessely, 2005a, 2005b; Williams & Drury, 2010). Disaster myths are not only factually wrong, but counterproductive as rationales for practice. It is reassuring that the professional groups sampled in this study displayed awareness of some of the genuine features of mass emergency behavior—in particular resilience and underestimation of danger. But it is concerning that some disaster myths are still so widely and strongly endorsed. There is a powerful case here for greater dissemination of academic research findings on crowd behavior to professional audiences, to dispel myths about the "mass."

Acknowledgments

The research described in this article was made possible by a grant from the Leverhulme Trust awarded to John Drury and Clifford Stott, grant number F/00 230/AO. We would like to acknowledge the assistance of the following people in the collection of the data: Amanda Goldman, Elio Martino, Yesim Akin, Owen Grainger-Jones, Tim Smith, Megan Hurst, Sharon Cicco, and Anne-Marie Chebib.

References

Aguirre, B. E., Torres, M. R., Gill, K. B., & Hotchkiss, H. L. (2011). Normative collective behavior in the station building fire. *Social Science Quarterly*, *92*, 100–118.

Alexander, D. E. (2007). Misconception as a barrier to teaching about disasters. *Prehospital and Disaster Medicine*, *22*, 95–103.

Auf der Heide, E. (2004). Common misconceptions about disasters: Panic, the "disaster syndrome," and looting. In M. O'Leary (Ed.), *The first 72 hours: A community approach to disaster preparedness* (pp. 340–380). Lincoln, NE: iUniverse Publishing.

Barton, A. H. (1969). *Communities in disaster: A sociological analysis of collective stress*. New York: Doubleday.

Billig, M. (1987). *Arguing and thinking: A rhetorical approach to social psychology*. Cambridge: Cambridge University Press.

Billig, M., Condor, S., Edwards, D., Gane, M., Middleton, D., & Radley, A. (1988). *Ideological dilemmas: A social psychology of everyday thinking*. London: Sage.

Carter, H., Drury, J., Rubin, G. J., Williams, R., & Amlot, R. (2013). Communication during mass casualty decontamination: Highlighting the gaps. *International Journal of Emergency Services*, *2*, 29–48.

Challenger, R., & Clegg, C. W. (2011). Crowd disasters: A socio-technical systems perspective. *Contemporary Social Science*, *6*, 343–360.

Chertkoff, J. M., & Kushigian, R. H. (1999). *Don't panic: The psychology of emergency egress and ingress*. Westport, CT: Praeger.

Cole, J., Walters, M., & Lynch, M. (2011). Part of the solution, not the problem: The crowd's role in emergency response. *Contemporary Social Science*, *6*, 361–375.

De Ville de Goyet, C. (1991). *The role of WHO in disaster management: Relief, rehabilitation, and reconstruction*. Geneva: World Health Organization.

De Ville de Goyet, C. (1999). Stop propagating disaster myths. *Prehospital and Disaster Medicine*, *14*, 9–10.

Donald, I., & Canter, D. (1992). Intentionality and fatality during the King's Cross underground fire. *European Journal of Social Psychology*, *22*, 203–218.

Drury, J. (2002). "When the mobs are looking for witches to burn, nobody's safe:" Talking about the reactionary crowd. *Discourse and Society*, *13*, 41–73.

Drury, J. (2012). Collective resilience in mass emergencies and disasters: A social identity model. In J. Jetten, C. Haslam, & S. A. Haslam (Eds.), *The social cure: Identity, health, and well-being* (pp. 195–215). Hove, UK: Psychology Press.

Drury, J., Cocking, C., & Reicher, S. (2009). The nature of collective resilience: Survivor reactions to the 2005 London bombings. *International Journal of Mass Emergencies and Disasters*, *27*, 66–95.

Drury, J., Stott, C., & Farsides, T. (2003). The role of police perceptions and practices in the development of "public disorder". *Journal of Applied Social Psychology*, *33*, 1480–1500.

Dynes, R. R. (2003). Finding order in disorder: Continuities in the 9–11 response. *International Journal of Mass Emergencies and Disasters*, *21*, 9–23.

Fahy, R. F., Proulx, G., & Aiman, L. (2012). Panic or not in fire: Clarifying the misconception. *Fire and Materials*, *36*, 328–338.

Fischer, H. W., III. (2008). *Response to disaster: Fact versus fiction and its perpetuation: The sociology of disaster* (2nd ed.). Lanham, MD: University Press of America.

Fischer, H. W., III, & Drain, E. M. (1993). Local offices of emergency preparedness (LEMA) belief in disaster mythology: What has changed and why? *Disaster Prevention and Management*, *2*, 58–69.

Fritz, C. E. (1996). Disasters and mental health: Therapeutic principles drawn from disaster studies. University of Delaware, Disaster Research Center. Historical and comparative disaster series #10. (Original work published 1961).

Fritz, C. E., & Williams, H. B. (1957). The human being in disasters: A research perspective. *The Annals of the American*

Academy of Political and Social Science, *309*, 42–51.

Furedi, F. (2007). *Invitation to terror*. London: Continuum Press.

Furedi, F. (2008). Fear and security: A vulnerability-led policy response. *Social Policy and Administration*, *42*, 645–661.

Gardiner, J. (2010). *The Blitz: The British under attack*. London: Harperpress.

Goltz, J. D. (1984). Are the news media responsible for the disaster myths? A content analysis of emergency response imagery. *International Journal of Mass Emergencies and Disasters*, *2*, 345–368.

Hoggett, J., & Stott, C. (2010). The role of crowd theory in determining the use of force in public order policing. *Policing and Society*, *20*, 223–236. doi: 10.1080/10439461003668468.

Jacob, B., Mawson, M. A., Payton, M. D., & Guignard, J. C. (2008). Disaster mythology and fact: Hurricane Katrina and social attachment. *Public Health Reports*, *123*, 555–566.

Johnson, N. R. (1987). Panic and the breakdown of social order: Popular myth, social theory, empirical evidence. *Sociological Focus*, *20*, 171–183.

Jones, E., Woolven, R., Durodié, B., & Wessely, S. (2006). Public panic and morale: Second world war civilian responses re-examined in the light of the current anti-terrorist campaign. *Journal of Risk Research*, *9*, 57–93.

Mawson, A. R. (2007). *Mass panic and social attachment: The dynamics of human behavior*. Aldershot: Ashgate Publishing Limited.

McDougall, W. (1920). *The group mind*. New York: G.P. Putnam's Sons.

Mitchell, J. T., Thomas, D. S. K., Hill, A. A., & Cutter, S. L. (2000). Catastrophe in reel life versus real life: Perpetuating disaster myth through Hollywood films. *International Journal of Mass Emergencies and Disasters*, *18*, 383–402.

NATO. (2008). *Psychosocial care for people affected by disasters and major incidents*. Brussels: NATO.

Newland, J. (2010). Collective resilience in the storms of life. *The Nurse Practitioner*, *35*, 5.

O'Connor, D. (2009). *Adapting to protest: Nurturing the British model of policing*. London: Her Majesty's Inspectorate of Constabulary.

Prati, G., & Pietrantoni, L. (2009). Elaborating the police perspective: The role of perceptions and experience in the explanation of crowd conflict. *European Journal of Social Psychology*, *39*, 991–1001.

Proulx, G., & Sime, J. D. (1991). To prevent "panic" in an underground emergency: Why not tell people the truth? *Fire Safety Science*, *3*, 843–852. doi: 10.3801/IAFSS.FSS.3-843.

Quarantelli, E. L. (1960). Images of withdrawal behavior in disasters: Some basic misconceptions. *Social Problems*, *8*, 68–79.

Quarantelli, E. L. (2001). Panic, sociology of. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioral sciences* (pp. 11020–11023). New York: Pergamon Press.

Quarantelli, E. L., & Dynes, R. (1972). When disaster strikes (it isn't much like what you've heard and read about). *Psychology Today*, *February*, 67–70.

Reicher, S., & Potter, J. (1985). Psychological theory as intergroup perspective: A comparative analysis of "scientific" and "lay" accounts of crowd events. *Human Relations*, *38*, 167–189.

Ripley, A. (2008). *The unthinkable: Who survives when disaster strikes—And why*. London: Random House.

Schultz, D. P. (Ed.). (1964). *Panic behavior: Discussions and readings*. New York: Random House.

Sheppard, B., Rubin, G. J., Wessely, S., & Wardman, J. (2006). Terrorism and dispelling the myth of a panic prone public. *Journal of Public Health Policy*, *27*, 219–245.

Smelser, N. J. (1962). *Theory of collective behavior*. London: Routledge and Kegan Paul.

Solnit, R. (2009). *A paradise built in hell: The extraordinary communities that arise in disaster*. New York: Viking.

Stott, C., & Reicher, S. (1998). Crowd action as intergroup process: Introducing the police perspective. *European Journal of Social Psychology*, *28*, 509–529.

Stott, C. J., Adang, O. M., Livingstone, A., & Schreiber, M. (2008). Tackling football hooliganism: A quantitative study of public order, policing and crowd psychology. *Psychology, Public Policy, and Law*, *14*, 115–141.

Strauss, A. L. (1944). The literature on panic. *Journal of Abnormal and Social Psychology*, *39*, 317–328.

Tierney, K. (2003). Disaster beliefs and institutional interests: Recycling disaster myths in the aftermath of 9–11. In L. Clarke (Ed.), *Research in social problems and public policy, volume 11: Terrorism and disaster: New threats, new ideas* (pp. 33–51). Burlington, MA: Elsevier Science.

Tierney, K. J., Bevc, C., & Kuligowski, E. (2006). Metaphors matter: Disaster myths, media frames, and their consequences in Hurricane Katrina. *The Annals of the American Academy of Political and Social Science*, *604*, 57–81.

Webb, G. R. (2002). Sociology, disasters, and terrorism: Understanding threats of the new millennium. *Sociological Focus*, *35*, 87–95.

Wenger, D. E., Dykes, J. D., Sebok, T. D., & Neff, J. L. (1975). It's a matter of myths: An empirical examination of individual insights into disaster response. *Mass Emergencies*, *1*, 33–46.

Wessely, S. (2005a). Editorial: Don't panic! Short and long term psychological reactions to the new terrorism: The role of information and the authorities. *Journal of Mental Health*, *14*, 1–6.

Wessely, S. (2005b). Victimhood and resilience. *The New England Journal of Medicine*, *353*, 548–550.

Williams, R., & Drury, J. (2010). The nature of psychosocial resilience and its significance for managing mass emergencies, disasters and terrorism. In A. Awotona (Ed.), *Rebuilding sustainable communities for children and their families after disasters: A global survey* (pp. 121–148). Newcastle-upon-Tyne, UK: Cambridge Scholars Publishing.