

[PRACTICE]

D8.15 Analytical report

Empirical evidence and analysis of the human behaviour data collection activities

PRACTICE WP8 deliverable

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Summary Work Package WP8

Work Package 8 (WP8) was designed to improve public knowledge and awareness of chemical, biological, radiological or nuclear (CBRN) incidents by providing a toolbox of information, procedures and processes designed to facilitate the understanding of the human and societal factors that influence the impact of, and response to CBRN incidents. WP8 was also designed reduce the impact of CBRN incidents on individuals and society as a whole. The effectiveness of the 'human and societal' contribution to the PRACTICE toolbox was tested (via WP6) with members of the public and professional responders in a live emergency exercise at a conference centre in Birmingham, UK in August 2013.

The output includes tools and measures designed to (i) inform, educate and prepare EU citizens for a CBRN event, (ii) provide guidance about protective behavior, (iii) aid the identification of relevant information sources during events, (iv) mitigate the societal impact of CBRN events on communities and individuals after an event occurs (post event), and (v) identify solutions aimed at recovery.

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Executive summary

WP8 forms an important part in achieving project PRACTICE's overall objective, namely the improvement of the preparedness and resilience of EU member states and associated countries against terrorist attacks involving chemical, biological, radiological and/or nuclear (CBRN) materials. By focusing on public responses to such incidents, WP8 provides an important complement to the technical work packages and tools developed in the context of the PRACTICE project.

Understanding public responses to CBRN incidents is important for a number of reasons: To begin with, terrorists deliberately target soft targets, such as public transport, aiming for mass casualties and disruption of everyday life in societies (INSPIRE, 2014). Members of the public are therefore often the first to respond – and their initial behaviour can make a difference for the effectiveness of the official response (e.g. staying put to prevent cross-contamination). Moreover, once the official response is under way, a well-prepared, informed and cooperative public can facilitate a more effective response to the CBRN incident.

This report presents systematic empirical research undertaken in the context of the PRACTICE project. The work was undertaken in order to improve the understanding of public responses to CBRN incidents, and to identify possible gaps in the emergency response professionals' understanding of the behaviours, knowledge, information needs and communication preferences of members of the public in relation to CBRN incidents and the official response to such incidents. On the basis of this report – along with the review of existing scholarly arguments and research undertaken in D8.8 – PRACTICE researchers developed theoretically-informed and evidence-based public information booklets (D8.11) and communication guidance for emergency response professionals (D8.12; D8.13).

PRACTICE's empirical research into public responses to CBRN incidents engaged with theoretical arguments that suggest that factors such as beliefs, emotions, attitudes, perceptions and public expectations are important variables in shaping the impact of CBRN events and the effectiveness of the response to such an incident. In particular, the research explored arguments associated with risk perception/risk communication theories; trust in authorities; and Protection Motivation Theory in order to explain the public emotional and behavioural responses to CBRN incidents.

The approaches used tested these well-established theories in the context of a CBRN event. The data collected lent substantial support to these existing approaches. For instance, it confirmed that factors such as trust in response organisations; perceptions of response measures (costs; efficacy; personal ability to follow advice, (self-efficacy)); and public information/risk communication affect public responses to CBRN incidents. In addition, the PRACTICE research delivered a number of theoretical advances.

In terms of improving our understanding of public responses to CBRN incidents:

- The data demonstrates that factors such as the public perception of threats or public perceptions of responders cannot be viewed separately as explanatory factors. The PRACTICE research offered provided support for a variety of factors (albeit in varying degrees). Importantly, the research sheds light on the way in which the factors interact with each other in order to inform the public response to CBRN incidents.

- The research moves discussions away from a constant focus on individual perceptions of risk by providing evidence of the importance of the social context in shaping public perceptions of the threat/risk, response organisations and response measures. In other words, individual public perceptions are shaped by observations of and interactions with other members of the public and the emergency response professionals.
- The research stresses the importance of communicating with the public during CBRN incidents. It demonstrates that effective communication can improve trust in responders; mitigate anxiety and uncertainty; and strengthen positive perceptions of the effectiveness of response measures and individual capabilities to follow official instructions.
- The research highlights how cultural and socio-economic factors shape public perceptions of response organisations and the effectiveness of risk communication.
- The research highlights the dynamic nature of public perceptions of CBRN events. The public perception of risk changes as an event unfolds.

These findings lead the authors to argue that a better understanding of public responses to CBRN incidents requires a holistic, context-sensitive and dynamic approach. PRACTICE researchers initiated the work on a conceptual model in D8.8 in the form of the Four Factor Model (4FM) (see also Krieger et al., 2014). Moreover, the importance of the social context also opens the analysis to recent crowd behaviour research that stresses the importance of group norms in shaping public behaviour (Carter et al., 2014). In particular, perceptions of common fate are an important foundation for cooperative behaviour. Finally, the findings highlight the importance of getting public communication right.

In addition to investigating the determinants of public responses to CBRN incidents, PRACTICE research also explored the expectations and perceptions of emergency response professionals with regard to public behaviour, knowledge, information needs and communication preferences in the context of CBRN incidents. PRACTICE research offers further support that expectations and knowledge of emergency response professionals can be improved. Specifically, PRACTICE findings;

- Show an increasing recognition among emergency response professionals across Europe that communicating with the public during a CBRN incident is important.
- Identifies growing awareness among many emergency response professionals that communication with members of the public needs to be undertaken by trustworthy spokespeople (normally individuals with some formal function in emergency response/civil protection) and go beyond the basic instructions about what to do.
- Points to limitations in the professionals' recognition of the importance of risk communication. These limitations vary across target audience; phase of emergency response/event; message content; and country of origin of the emergency responders.
- Demonstrates uncertainty and contradictory assumptions regarding public behaviour in response to CBRN incidents.

- Shows that expectations regarding public behaviour and public communication practices vary across Europe.

These findings indicate that there is a need for training and guidance for emergency response professionals in relation to public responses to CBRN incidents. Moreover, the mixed picture of the quality of communication practices compared to what PRACTICE research shows members of the public need and prefer in terms of information and communication points to the challenges of creating perceptions of common fate between members of the public and emergency response professionals – an important prerequisite for cooperative public behaviour in emergency situations.

Some of these theoretical insights and advances resulted from methodological innovations designed for and deployed during unique data collection opportunities in the context of the PRACTICE project. The majority of evidence about public perceptions and responses to CBRN events is collected through interview studies, focus group studies, and surveys involving hypothetical incidents, as well as the analysis of case studies. In comparison to such approaches, PRACTICE research has been methodologically innovative for a number of reasons:

- First, researchers collected data before, during and after a live simulation involving public volunteers that were unscripted and emergency responders (Exercise ARDEN).
- Second, researchers gathered data at different stages of an unfolding live emergency exercise.
- Fourth, researchers obtained feedback through group discussions in different countries based on the interview guide.
- Fifth, researchers used the same reference incident scenario to collect data from different groups, in different countries and with different methods.

As a result, researchers were able to recognize the importance of group dynamics in shaping public perceptions; the dynamic nature of public perceptions; the context-sensitivity of perceptions; the varying information needs and communications preferences of members of the public belonging to different social groups and in different countries; and the varying existing and intended communication practices of emergency professionals in different countries.

Based on these innovations, PRACTICE researchers developed three communication manuals.

- D8.11 is a public information manual that provides information about CBRN threats, emergency responders and emergency response measures. This public information included in the manual was identified – on the basis of PRACTICE’s theoretical review and novel empirical research – as important in increasing levels of knowledge and positively influencing public perceptions of threats, response organisations and response measures.

- D8.12 is a guidance manual aimed at emergency responders at the operational level. It contains information about public behaviour, information needs and communication preferences. This guidance addresses the key gaps of emergency response professionals' understanding of public behaviour, information needs and communication preferences in relation to CBRN incidents, as identified on the basis of data collected from members of the public and emergency response professionals during the PRACTICE project.
- D8.13 is a guidance manual aimed at emergency response professionals at the strategic level. It contains information about how to prepare, execute and learn from communication with the public during a CBRN incident in terms of organisations, information and cooperation with other organisations such as the media. This guidance is an important complement to D8.11 and D8.12 because it embeds D8.12's advice for those at the operational level with awareness among strategic leaders to create adequate institutional conditions for undertaking, preparing and training the responders on the ground.

Acknowledging the importance of cultural and institutional contexts, PRACTICE researchers recommend that the manuals are adapted to the local context.

In short, this report presents WP8's systematic and comprehensive empirical research approach designed to identify and test key theories used to explain public responses to extreme events; qualify and enrich these theories by deploying a multi-method approach and taking advantage of the unique opportunity for data collection provided by the live Exercise ARDEN; and develop evidence-based and theoretically-informed communication and information tools for three different target groups.

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