

GABEK WinRelan® – a Qualitative Method for Crisis Research Engaging Crisis Management Personnel

Christine Adler

Ludwig Maximilians University
Dept. Psychology
Munich, Germany
christine.adler@psy.lmu.de

Mirjam Haus

Ludwig Maximilians University
mirjam_mona@yahoo.de

Lisa Jakob

Ludwig Maximilians University
lisa.jakob@googlemail.com

Lena Erfurt

Ludwig Maximilians University
lena.erfurt@psy.lmu.de

Marion Krüsmann

Ludwig Maximilians University
marion.kruesmann@t-online.de

ABSTRACT

Qualitative research methods like GABEK WinRelan are advantageous tools to analyze and thereby improve crisis management planning and communication systems by interrogating crisis management personnel. Contrary to quantitative methods they help to identify, explore, and structure new important aspects in this field and to formulate more specific research questions. This paper describes the usage and advantages of the qualitative method GABEK WinRelan within crisis management research, particularly within the e-Triage project which aims at the development of an electronic registration system of affected persons in mass casualty incidents. Furthermore it addresses different corresponding research fields like stress within emergency missions and the role GABEK WinRelan could play in examining these research fields.

Keywords

Qualitative Method, Crisis Management Research, Crisis Management Personnel, Stress, Usability, Mass Casualty Incident, Triage.

INTRODUCTION

Within the e-Triage project an integrated concept for electronic registration of affected persons is under development. The approach consists of four main elements: autonomous communication infrastructure, electronic data recording, distributed database system, and psychological acceptance research. In more detail, the e-Triage system comprises a satellite-based communication system with terrestrial radio cells that can be installed in the operation area, matching end devices with dedicated application software for the registration of victims, and a distributed, self-organizing and self-synchronizing database system guaranteeing maximal availability (Donner, Adler, Ben-Amar and Werner, 2010).

Noordergraaf et al. (1996) found that in case of mass casualty incidents (MCIs) electronic triage systems help documenting faster and more accurately – even over a longer period of time and independent of the medical experience of the rescue workers. Figure 1 shows the attitude of our sample of rescue workers towards electronic triage; e.g., one interviewee said that “it doesn’t matter if I write on a screen or a piece of paper” (Cu1).

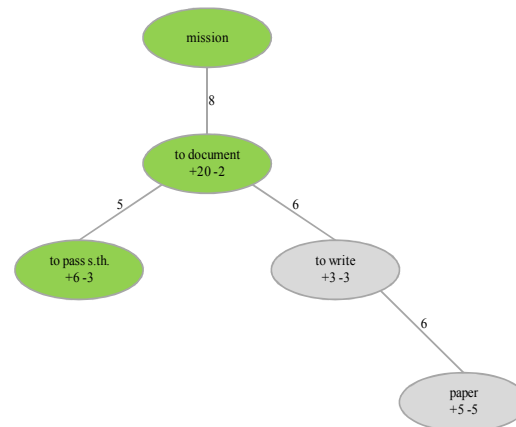


Figure 1. Network Graph of “to document” (Jakob, 2010)

For designing a new electronic-based system for medical and rescue services and devising a product as close to the needs of the costumers as possible, status quo analyses help to develop a practicable system. To understand the practice and methods of the end-users, rounds of interviews and analyzing data, representing, and discussing with end-users are necessary. A list of formalized use cases, needs, and user requirements are the outcome. This outcome has to be translated into the (technical) requirement documents (Chaves et al., 2011).

The e-Triage project is based on close interaction with end-users, decision makers and experts in emergency management. To integrate and use their knowledge (explicit and implicit) a mixed-method approach is been in use. Quantitative as well as qualitative methods are used in the designing, testing and implementation phases of the e-Triage system. Qualitative methods are emphasized because they can be used in the natural environment of daily life in the crisis management field and the data is authentic and can be recognized as true by participants of the research. GABEK® (Holistic Handling of Complexity) with its computerized data processing WinRelan® (Zelger and Schönegger, 1994-2011) is the mainly used method.

GABEK WINRELAN – A QUALITATIVE RESEARCH METHOD

Qualitative methods can be helpful in scientific research, especially when research areas are new and previous work is not sufficient for a pure theoretic approach. Then, explorative work is necessary which aims at specifying and structuring topics. Semi-structured interviews are useful for data collecting when all interviewees shall take a stand concerning concrete topics. Furthermore it is possible to respond to special topics which are stated by the interviewee. Thus assumed topics can be validated and new, so far unknown critical areas can be identified. Usually, in quantitative research the latter could not be discovered and therefore would be ignored during the whole research project.

GABEK is a qualitative research method based on natural language processing of individual statements that allows for the transparent organization of knowledge (see figure 2 for a short explanation of the GABEK analysis). To collect and systematize unordered, but potentially significant knowledge of members of interest groups, organizations or societies GABEK is based on the theory of “Wahrnehmungsgestalten” (perceptive appearance) by Stumpf (1939), which has been transferred to a theory of linguistic “Gestalten” by Zelger. “Gestalt” is a network between units of meaning and semantic implications of different statements within a text group (Zelger, 2000, 2008).

WinRelan supports by computerized steps of data processing. The procedure integrates and links multi-layered contents and knowledge. The results consist of holistic pictures of complex phenomena expressed in hierarchically ordered text groups, association graphs, evaluation profiles, cause-effect structures and relevance lists (Zelger, 2000; Zelger and Oberprantacher, 2002). WinRelan helps to illustrate topics and their linkage by producing network graphs. Additionally, a qualitative appraisal of key terms can complete the resulting impression of the data interpretation. This kind of explorative procedure can support the research process and subsequently help to formulate more concrete research questions. These could then be examined using quantitative methods.

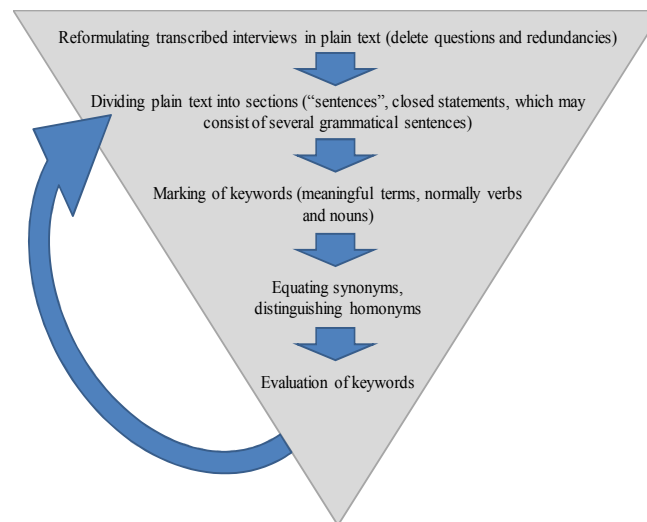


Figure 2. Analyzing Data with GABEK

Researcher: Interviewer

Interviews which are analyzed using GABEK WinRelan are conducted using guidelines. Partly, questions are asked literally, partly they are adapted to the previous interview situation and therefore reformulated. The guidelines serve as orientation for the interviewer. They and the given time frame (about 60 minutes) determine how detailed the questions can be answered by the interviewee. Therefore, challenges for the interviewer are to adapt oneself to the interviewee (e.g., own knowledge, experience, terminology, way of speaking etc.). All questions have to be adapted to the respondent in order to make the respondent report frankly. The interviewer should therefore be attentive and interested, and should avoid interrupting the respondent except for comprehension questions. The main task of the researcher is thus to figure out what is important for the respondent, without interpreting it and to code in the respondent's language (Buber and Kraler, 2000).

CRISIS MANAGEMENT RESEARCH FIELDS

Stress and related cognitive limitations

One of the most important topics which should be considered in crisis management research is stress and cognitive limitations experienced by emergency service personnel during a rescue mission, which influence the success of the mission and the first responders' well-being. The latter is influenced not only by the objective stress and cognitive limitations but also in a special manner by the first responders' perception of them. This perception and the related well-being of the first responders can be examined best with the help of qualitative research methods like GABEK WinRelan.

Within an emergency the first responders have to face several differing stressors. Therefore it is indispensable that a new electronic device supports the emergency personnel in coping with the different stressors instead of constituting an additional stressor for them. The stress experienced by the crisis management personnel influences their cognitive performance by causing certain limitations concerning the cognitive functions attention, memory and judgment/decision making (Staal, Bolton, Yaroush & Bourne, 2008).

Within the e-Triage project, it was examined how the operation of an electronic device for triage affects the stress and the cognitive limitations experienced by emergency personnel during a rescue mission. The device was tested with 24 emergency assistants in simulated scenarios of operation with randomized environmental conditions such as darkness, noise and bright (sun)light. A GABEK analysis of the participants' experiences showed that in addition to the obstructive environmental conditions noise, darkness, and impassable terrain, the new, unfamiliar and often difficult handling of the electronic device constituted the biggest stressor. Due to operating difficulties, a displacement of attention towards the electronic device caused by stress was reported. With the help of the GABEK analysis it became evident, that a technically mature, faultlessly functioning, intuitive triage device is crucial for a successful implementation (see also Chaves et al., 2011).

GABEK FOR CRISIS MANAGEMENT RESEARCH

GABEK WinRelan can be characterized as stressing the rational and emotional involvement of all people concerned, using their knowledge and their creative capacities while motivating and encouraging personal involvement (Löckenhoff, 2000). The computerized data processing steps enable the researcher to obtain a holistic integrated view of individual, organizational, and societal aspects of opinions, attitudes, and the knowledge about crisis management.

Crisis/Emergency Management

According to Ronald Holloway, a specialist in emergency medicine, catastrophes are situations, where “many people trying to do quickly what they do not ordinarily do, in an environment with which they are not familiar” (Tierney, 1985, p.77). This demonstrates a major problem that emergency personnel and mission control have to handle. Furthermore “many of the logistical problems faced in disasters are not caused by shortages of medical resources, but rather from failures to coordinate their distribution” (Auf der Heide, 1996, p.454). Consequently, an efficient coordination during a catastrophe determines how effective the situation can be managed.

Additionally, an exact situation analysis is necessary to assess needs and resources. As both can change very quickly, especially in case of a catastrophe, it is important to gain this information quickly and distribute them in real-time. For example one interviewee said that “a mission control is needed... some kind of information center where information is evaluated whether it fits into the electronic system or not. An information overflow with surplus data would make the system useless” (Au8) (Jakob, 2010)

Crisis Management Communication Systems

Using appropriate communication systems improves the coordination of rescue operations a lot. In the e-Triage project an IT-supported management system for MCIs is under development. The paper-based systems of triage and registration of affected persons should be replaced by an IT-supported communication system to triage and register victims and affected persons. Therefore the attitudes of end-users (mainly medical services) have to be taken into account and close interactions with end-users are helpful. GABEK WinRelan was used to find out more about user-requirements, usability and attitudes towards new technological development. The key outcomes among several usability aspects were scalability, dynamicity, ease of use, security and reliability. GABEK interviews after tests and first trials underpin the necessities of the requirements and show that reducing complexity of the graphical interface and the intuitive use is prerequisite for the success of a crisis management communication system. GABEK analyses also show that iterative processes facilitate the identification of the end-users with the “new” product and are conducive to dialogue between researcher results and end-users.

Crisis Management Personnel

Research within the crisis management area examines amongst others critical and difficult topics like stress, problems and difficulties within emergency missions. Especially within the research with crisis management personnel, it is important to consider the particularities of this group of persons before, during and after the data collection, as first responders like fire men, police men and paramedics are likely to have problems reporting critical issues like their experiences with difficulties, emotional pressure, stress and excessive demands within rescue missions. Crisis managers and first responder are assumed to expect of themselves to be physical and psychical strong, forceful and robust, which makes it difficult for them to commit feelings of weakness and helplessness (Wagner et al., 2001).

The use of qualitative interviews analyzed with the help of GABEK WinRelan is also reasonable in examining crisis management personnel as this allows taking account of the specific enunciation of this group of persons. A researcher, who is conversant with the crisis management vocabulary and the specific enunciation of crisis management personnel, will be able to identify corresponding topics within possibly different sounding statements.

CONCLUSION

One limitation of GABEK is that results cannot be generalized due to the small sample sizes. But one clear advantage is the efficient analysis of qualitative data. Additionally, an insufficient heterogeneity of the sample (e.g., greater experience in disaster relief operation) may become clear during the first interviews not only at the end of data collection. The coding within the software WinRelan and the results of the GABEK analysis reflect the specific enunciation of the interrogated people. For those this can constitute evidence of their influence on

the subject of the research, which will enhance their acceptance for the results and facilitate the implementation. Especially in the e-Triage project it is crucial to integrate the end-user to raise their acceptance using new technologies to provide efficient application of electronic triage devices. Therefore GABEK is one method of choice as it additionally enables iterative processes in the implementation phase. Keeping these advantages in mind, it is reasonable to consider qualitative methods in crisis management research to a higher degree.

ACKNOWLEDGMENTS

The authors want to thank all project stakeholder and end-users for the valuable discussions. The e-Triage project is sponsored by the German Federal Ministry of Education and Research under contract/grant number 13N10542, while the sole responsibility for the content for this paper is with the authors.

REFERENCES

1. Auf der Heide, E. (1996). Disaster Planning, Part II. Disaster Problems, Issues, and Challenges Identified in the Research Literature. Section A: Problems, Issues, and Challenges. *Emergency Medicine Clinics Of North America*, 14(2), 453-480.
2. Buber, R. and Kraler, C. (2000). How GABEK and WinRelan Support Qualitative Research. In R. Buber and J. Zelger (Eds.), *GABEK II. Zur Qualitativen Forschung* (p. 111-139). Innsbruck: StudienVerlag.
3. Chaves, J. M., Donner, A., Tang, C., Adler, C., Krüsmann, M., Via Estrem, A. and Greiner-Mai, T. (2011). An interdisciplinary approach to designing a mass casualty incident management system. Accepted for presentation at 14th International Symposium on Wireless Personal Multimedia Communications (WPMC), Workshop on Emergency Telecommunications – “From User Perspective To Field Products”, Brest, France, Oct. 2011.
4. Donner, A., Adler, C., Ben-Amar, M. and Werner, M. (2010). IT-supported management of mass casualty incidents: The e-Triage project. In *Proceedings 5th Future Security Research Conference*, Berlin, Germany, Sept. 2010.
5. Jakob, L. (2010). Die Einstellung von Rettungskräften bei der Anwendung von neuen Technologien zur elektronischen Triagierung von Patienten. Eine qualitative GABEK[®]-Analyse. Unpublished diploma thesis Dept. Psycholgy Ludwig Maximilians-University Munich.
6. Löckenhoff, H. (2000). GABEK in Dialogue, Task Accomplishment, Conflict Resolution. Encouraging and Guiding Social Change. In R. Buber and J. Zelger (Eds), *GABEK II. Zur Qualitativen Forschung* (p. 93-110). Innsbruck: StudienVerlag.
7. Noordergraaf, G. J., Bouman, J. H., Van Den Brink, E. J., Van De Pompe, C. and Savelkoul, T. J. F. (1996). Development of Computer-Assisted Patient Control for Use in the Hospital Setting During Mass Casualty Incidents. *American Journal of Emergency Medicine*, 14(3), 257-261.
8. Staal, M. A., Bolton, A. E., Yaroush, R. A., & Bourne Jr., L. E. (2008). Cognitive Performance and Resilience to Stress. In B. J. Lukey & V. Tepe (Eds.), *Biobehavioral resilience to stress* (pp. 259–299). Boca Raton: CRC Press.
9. Stumpf, C. (1939). *Erkenntnislehre*. Barth, Leipzig
10. Tierney, K. J. (1985). Emergency Medical Preparedness and Response in Disasters: The Need for Interorganizational Coordination. *Public Administration Review*, 45, 77-84.
11. Wagner, D., Heinrichs, M., Kerber, U., Wingenfeld, K., Hellhammer, D. H. and Ehlert, U. (2001). Wirkfaktoren der Prävention sekundärer posttraumatischer Belastungsstörungen bei Hochrisikopopulationen. In A. Maercker and U. Ehlert (Eds.), *Jahrbuch der medizinischen Psychologie: Vol. 20. Psychotraumatologie* (p. 201-225). Göttingen [u.a.]: Hogrefe, Verl. für Psychologie.
12. Zelger, J. (2000). Twelve Steps of GABEK WinRelan. In Buber R. and J. Zelger (Eds.), *GABEK II. Zur Qualitativen Forschung* (p.205–220). Innsbruck: StudienVerlag.
13. Zelger, J. (2008). The representation of verbal data by GABEK[®]-Nets. In J. Zelger, M. Raich and P. Schober (Eds.), *GABEK III. Organisations and their Knowledge Nets*. Innsbruck: StudienVerlag.
14. Zelger, J. and Obernprantacher, A. (2002). Processing of Verbal Data and Knowledge Representation by GABEK[®]-WinRelan[®]. *Forum Qualitative Research*, (3(2)).
15. Zelger, J. and Schönegger, J. (1994-2011). *GABEK WinRelan Ganzheitliche Bewältigung von Komplexität.: Ein PC-unterstütztes Verfahren zur Wissensorganisation*.