



# The impact of different natures of experience on risk perception regarding fire-related incidents: A comparison of firefighters and emergency survivors using cross-national data



Stefanie Hahm\*, Daniela Knuth, Doris Kehl, Silke Schmidt

Ernst-Moritz-Arndt-University Greifswald, Institute of Psychology, Department Health and Prevention, Robert-Blum-Str. 13, 17487 Greifswald, Germany

## ARTICLE INFO

### Article history:

Received 16 April 2015

Received in revised form 11 September 2015

Accepted 25 September 2015

Available online 22 October 2015

### Keywords:

Risk perception

Subjective probability

Fire

Emergency survivor

Firefighter

## ABSTRACT

The main purpose of this work consisted in comparing the risk perception of emergency survivors and firefighters regarding fires in domestic and public settings, since specific research on the perception of fire risks is scarce. The sample, recruited in the context of the BeSeCu study, comprised a total of 3446 subjects (survivors:  $n = 747$ ; firefighters:  $n = 2699$ ) from seven European countries: Germany, Italy, Poland, Sweden, Spain, the Czech Republic, and Turkey. Using the standardized self-report instruments BeSeCu-S (survivors) and BeSeCu-FR (firefighters), probability estimates regarding two fire-related emergency situations were gathered. The results showed that in both the survivor and firefighter sample, the estimates differed with respect to the type of fire situation: The probability of becoming a victim of a fire in a domestic setting was consistently estimated as higher than becoming a victim of a fire in a public setting, which is consistent with the ranking order of the objective risks. Furthermore, the firefighters' probability estimates concerning the two emergency situations were generally more accurate than the survivors' assessments, within the total sample and the country subsamples. This is mostly in accordance with research findings being in favor of the higher accuracy of expert judgments. The results of this study provide new insights concerning the risk perception of laypeople and experts, and the way different natures of experience influence the accuracy with which risks are perceived.

© 2015 Elsevier Ltd. All rights reserved.

## 1. Introduction

Since the late 70s, the probability to die in a fire has constantly decreased in the industrialized countries (Federal Emergency Management Agency, 2011), but the material and human damage caused by fires worldwide is still enormous (Brushlinsky et al., 2012, 2008). In Europe, 2,000,000 to 2,500,000 fires are reported each year, leading to 250,000 to 500,000 injured people and 20,000 to 25,000 casualties (Kobes and Groenewegen, 2009). Approximately 80% of all fire deaths in Europe and the United States occur in domestic settings (Karter, 2007; Kobes and Groenewegen, 2009). However, US-American survey results suggest that the way people perceive fire risks differs from their statistical probability: 70% said to feel safer from fires at home than in commercial high-rise buildings, although deaths by non-residential fires, especially in commercial high-rise buildings, only make up a fraction of all human fire losses (SFPE, 2011). What

causes this discrepancy between statistical probability and how people regard risks in their everyday lives?

In a technical and mathematical context, risk is defined as the product of the probability of an incident and the extent of its consequences (Renn, 1994; Sjöberg et al., 2004). However, people seem to perceive and interpret risks differently – Sjöberg et al. (2004) define risk perception as the subjective assessment of the probability of specific hazards and the extent to which people are concerned with their consequences (Sjöberg et al., 2004). Gierlach et al. (2010) place the focus mainly on the probability aspect by defining risk perception as “a subjective judgment about the felt likelihood of encountering hazards” (p. 1539). Risk perception can play an important role concerning societal matters such as policy making and public safety (Sjöberg et al., 2004), and, on a personal level, in the domain of health behavior (Weinstein, 1988) and taking protective actions (Lindell and Perry, 2012). Researchers have found a positive relationship between personal risk perception and the extent or probability of protective action with respect to floods (Messner and Meyer, 2006; Miceli et al., 2008). Pertaining to fire-related incidents such as domestic fires, research findings are inconsistent (Department for Communities

\* Corresponding author. Tel.: +49 (0)3834 86 3141; fax: +49 (0)3834 86 3801.  
E-mail address: [stefanie.hahm@uni-greifswald.de](mailto:stefanie.hahm@uni-greifswald.de) (S. Hahm).

and Local Government, 2008; Yang et al., 2006). Since specific research on the perception of fire risks is scarce, the perceived risks concerning fires in domestic and public settings will be examined.

Research has addressed numerous possible explanations for differences concerning risk perception, including *expertise* and *experience* (Rowe and Wright, 2001; Sjöberg, 2002, 1999; Slovic et al., 1980; Twigger-Ross and Breakwell, 1999; Wright et al., 2002). Thus, the present paper will also examine whether firefighters, who deal with fires on a professional level, perceive fire risks differently than persons who have only experienced a fire once.

## 2. Previous research regarding (fire) risk perception

Due to limitations regarding time, memory capacity, and availability of information, people generally tend to use *heuristics* – “rules of thumb” or “mental shortcuts” – when faced with problems requiring statistical inference or judgment (Gigerenzer, 2004; Tversky and Kahneman, 1974). The *availability heuristic*, for example, manifests itself in a tendency of judging risks that are easy to recall, imaginable or memorable as more frequent or likely (Tversky and Kahneman, 1974). This is demonstrated by the tendency to underestimate the occurrence of frequent causes of death and to overestimate the occurrence of rare causes of death (e.g., murder, accidents, tornadoes) due to their more “dramatic” nature and the consequently greater media attention (Combs and Slovic, 1979; Lichtenstein et al., 1978). Fires in domestic settings are considered dramatic and thus particularly newsworthy because of people being directly affected (e.g., in terms of a loss of property, injury or death; Smith et al., 2007).

### 2.1. Influence of personal characteristics, nationality and risk factors

*Sociodemographic factors* influence how people perceive risks. A significant and consistent effect of gender on risk perception was found in a variety of studies. Findings indicate that *female* participants perceive most risks as more threatening or likely (Cutter et al., 1992; Flynn et al., 1994; Savage, 1993) and tend to overestimate their mortality risks (Andersson, 2011). A higher risk perception is also associated with a *low socioeconomic status* (Hakes and Viscusi, 2004; Savage, 1993; Sjöberg, 2003; Slimak and Dietz, 2006). Furthermore, the findings of some studies (Flynn et al., 1994; Savage, 1993) suggest that *ethnic minorities* perceive higher risks. Higher age was associated with elevated (Siegrist et al., 2005; Slimak and Dietz, 2006) and sometimes a more accurate risk perception due to greater life experience (Hakes and Viscusi, 2004). Cross-national studies regarding potentially hazardous activities, technologies or substances have demonstrated *national differences* with respect to the level of perceived risk and the meaning of particular risks (Boholm, 1998; Gierlach et al., 2010; Goszczynska et al., 1991; Teigen et al., 1988). National differences regarding risk perception and the meaning of risks are partly based on the exposure to specific risks due to specific technological, social, geographical and climatic conditions (Boholm, 1998).

Apart from characteristics of the individual person and national differences, attributes of the potential hazard itself are important for explaining the perceived risk of fires. The *psychometric approach* (Fischhoff et al., 1978; Slovic, 1987; Slovic et al., 1980) postulates that the perceived risk regarding technologies and activities varies in relation to qualitative dimensions (e.g., voluntariness, controllability, and catastrophic potential of a risk). The influence of these qualitative risk factors might explain why people feel less safe in public buildings (SFPE, 2011), although the majority of fire deaths occurs in domestic settings (Karter, 2007; Kobes and Groenewegen, 2009). Fire incidents in high-rise office buildings or hotels are perceived as more catastrophic than fires

in single-family homes, since the lives of many more people are at risk. Also, the extent of perceived personal control of fire safety in hotel or an office buildings is lower than in single-family homes – People might not be familiar with fire safety measures (e.g., emergency exits) at their workplace or at a hotel (Meacham, 2004; Thompson and Bank, 2007). On the basis of these considerations, it is hypothesized that:

**H1.** The perceived risk concerning fires in domestic settings is lower than the perceived risk of fires in public settings.

### 2.2. Influence of expertise and experience

Subjective and intuitive risk judgments of laypeople seldom comply with scientific risk assessments (Renn, 1994; Sandman, 1988; Schütz and Wiedemann, 2003; Slovic and Weber, 2002). The allegedly different risk perception of laypeople and experts poses a controversially discussed topic within risk perception research (Rowe and Wright, 2001; Sandman, 1988; Sjöberg, 2002; Slovic et al., 1980). It is widely assumed that *experts* perceive risks differently than laypeople (Slovic et al., 1980) and that their judgments are more truthful than those made by laypeople (Rowe and Wright, 2001).

The perceived risks of experts are considered to be mostly identical to annual mortality rates, i.e., objective and quantitative measures, whereas judgments of laypeople are more influenced by the aforementioned qualitative risk factors (Sandman, 1988; Slovic, 1987; Slovic et al., 1980). However, the seemingly clear findings concerning the difference between laypeople and experts (Fischhoff et al., 1978; Slovic et al., 1980) have been subject to criticism due to methodological deficiencies regarding their definition of expertise (Rowe and Wright, 2001; Wright et al., 2002), the lack of representativeness of the expert sample (Rowe and Wright, 2001), the inadequate interpretation of the statistical results (Sjöberg, 2002) and the small size of the expert sample (Rowe and Wright, 2001). A study by Wright et al. (2002) taking the limitations of early risk perception studies into account, tested the accuracy of laypeople’s and experts’ (i.e., insurance underwriters) estimates with regard to assessing the risks of life-threatening incidents (Wright et al., 2002). The experts’ assessments were more *accurate*, although similarly biased in terms of overestimating the likelihood of dying from rare conditions.

Possible explanatory factors for lay-expert differences are *perceived control* and *familiarity* with risks (Sjöberg, 1999): Regarding hazards of their workplace, experts might perceive higher levels of control over these risks and might have gotten used to them due to experience. This is in accordance with the psychometric paradigm, since high *familiarity* and *perceived control* are associated with lower perceived risks (Fischhoff et al., 1978; Slovic, 1987). Perceived levels of control and familiarity are also positively associated with the *voluntariness* of risks (Twigger-Ross and Breakwell, 1999). Concerning firefighters and survivors, one can assume that their experiences with fire-related emergency situations are quantitatively and qualitatively different: Whereas survivors experience a fire from the perspective of a victim and not on a regular basis, firefighters deal with them relatively often and in a professional way – They have the proper knowledge and equipment to manage the situation. Firefighters might perceive higher levels of control regarding the dangers of their workplace or have gotten used to those risks because of many years of experience. Also, by choosing their line of work, firefighters subject themselves to dangerous situations with a certain amount of voluntariness.

Since the comparison of firefighters and survivors regarding their risk perception can be considered as a comparison of *experts* and *laypeople*, the following hypothesis was derived:

Download English Version:

<https://daneshyari.com/en/article/6975600>

Download Persian Version:

<https://daneshyari.com/article/6975600>

[Daneshyari.com](https://daneshyari.com)