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Safe travel: Passenger assessment of trust and safety during seafaring

Sigurd W. Hystad *, Oyeniyi Samuel Olaniyan, Jarle Eid

Department of Psychosocial Science, University of Bergen, P.O. Box 7807, 5020 Bergen, Norway

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ABSTRACT

Across two studies, this paper explores passengers' knowledge and perceptions of safety and risk during voyage at sea. Study 1 showed that, although overall safety knowledge can be considered good, some differences exist between groups of passengers. Younger passengers and passengers on shorter trips generally have less safety knowledge than older passengers and passengers on longer trips. Study 2 addressed the effects of two different formats of presenting safety relevant information on passengers' perception of trust, safety and risk on board. Results showed that passengers receiving an in vivo safety demonstration and teaching session reported being better informed about safety and expressed higher levels of trust in the crew compared with passengers receiving on board video-only safety instructions. Thus, although video modelling can be an easy and inexpensive way to deliver safety information our results suggest that additional personalized and live demonstration quickly builds confidence and trust from passengers that represents an important asset for commercial transportation companies.

1. Introduction

The world witnessed the deaths of about 300 people aboard the Korean passenger ship MV Sewol in 2014 (McCurry, 2014). Fortunately, accidents like this seldom happen. Knudsen and Hassler (2011) maintain that accidents within the maritime sector have been reduced (judging by total loss per vessels) drastically in these past decades. In fact, the European Transport Safety Council (2003) ranks marine transport as the fourth safest means of passenger transportation in Europe following bus, rail and air. While serious accidents involving passenger ships seldom occur, the consequences could be disastrous when they do, as exemplified by the sinking of the MV Sewol.

Collisions and groundings are the most common accidents in European waters; combined they represent 71% of all reported accidents (Allianz, 2012). Due to the associated risk of flooding and ultimately sinking, collisions and groundings are also considered among the most critical accidents involving passenger ships (Vanem, 2003). Fire also represents a major on-board risk, especially in Ro–Ro (roll-on/roll-off) ships and passenger ships with many travellers and increased hotel services (Allianz, 2012). Still, because the expected time available for evacuation in case of grounding and collision is much less than the expected evacuation time in case of fire, Vanem and Skjong (2003) maintain that the expected consequences in terms of passenger fatality are higher for the former.

* Corresponding author.
E-mail addresses: Sigurd.hystad@uib.no (S.W. Hystad), Oyeniyi.olaniyan@uib.no (O.S. Olaniyan), Jarle.eid@uib.no (J. Eid).

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When a serious accident such as a collision, grounding or fire occurs, an evacuation represents the last resort to minimize the consequences of the accident. To some extent the evacuation performance and safety of passengers are dependent on their own reactions and behaviours (Eid, Johnsen, & Thayer, 2001). Passengers' reactions and behaviours can in turn be said to be influenced by their knowledge of safety and familiarity with appropriate safety measures such as how to don a life jacket and where to muster when the emergency signal is sounded. Thus, the aim of Study 1 was to assess demographic factors associated with passengers' knowledge of and familiarity with various safety–critical measures on board passenger ships. In Study 2 we examine if different formats of safety briefings will effect passengers' perception of trust, safety and risk on board.

2. Study 1

In 1995, the high-speed catamaran passenger ship St. Malo hit a rock one mile off shore and immediately started taking in water (Lackey, Purcell-Jones, Twiston Davies, & Clifford, 1997). The Master of the ship gave the order to evacuate, and the 301 passengers were evacuated as the ship was listing and in motion. The sea conditions were favourable, it was daylight, and most passengers were in the saloon. Although the evacuation situation was comparatively good, the evacuation time for the 308 passengers was recorded as 1 h and 17 min (Lackey et al., 1997). The evacuation time recorded during the drill in static conditions was 8 min. This shows that evacuation analysis has limited relevance to practical situations if it does not take account of the rolling, pitching and listing of the ship, as well as the panic and behaviour of the passengers under such conditions.

Passenger ships today are subject to a vast array of regulations and standards covering every aspect of ship construction and operation. This includes guidelines that prescribe that an evacuation analysis should be incorporated into the design process at an early stage for all new ships (International Maritime Organization [IMO], 2002). Several evacuation models and simulation tools have been developed, such as *maritme*EXODUS, AENEAS and CityFlow-M (see, Wang, Liu, Lo, & Gao, 2014). While many of these acknowledge human behaviour under evacuation as an important factor to incorporate, evacuation modelling usually concentrates on the possible technical improvements for increasing passenger safety, with less attention being devoted to human behaviour (Ahola, Murto, Kujala, & Pitkãnen, 2014). As Lee, Kim, Park, and Park (2003, p. 865) have noted, however, "evacuations are mainly dependent on the behavior of the evacuees," and go on to define behaviour as the culmination of all influences (e.g., group affiliation and likely travel speeds).

Research within the aviation industry has shown that inaccurate cabin safety knowledge can have significant influences on passenger behaviour. In combination with the panic and stress of an emergency situation this can have fatal consequences. Chang and Liao (2009), for instance, report an aircraft accident where the single casualty was caused by the passenger having inflated the life jacket too early. Similarly, in another instance, a passenger had put three life jackets on a child, while another had inflated the life jacket before exiting the aircraft. These examples point to the importance that knowledge of the correct use of life jackets and other safety critical information can have in an emergency situation. Yet, little effort has been devoted to surveying the level of knowledge among travellers on board passenger ferries.

In one exception, Baker (2013) conducted a survey among cruise passengers in the Western Caribbean. The results of this study showed that cruise passengers in general had average to good knowledge of the location of life vests, the nearest fire exits and other safety critical information. Baker also found evidence of a relation between knowledge and cruise experience; that is, passengers on their first cruise generally had less knowledge than more experienced cruise passengers.

Based on the short discussion so far, the aim of Study 1 was to survey the safety knowledge of travellers on board passenger ships, and to explore differences between sub-groups of passengers. Specifically we wanted to explore the impact of sex, age, previous travel experience and travel duration on safety knowledge.

2.1. Method

2.1.1. Participants and procedure

Participants in Study 1 were 320 passengers on board two different Ro–Ro passenger ships belonging to a Norwegian company. It is estimated that a total of 605 passengers were on board the two ships, yielding a response rate of 52.9% for our study.[1] Questionnaires were administered by two research assistants during the summer 2014 while the ships sailed along the Norwegian coast. There were slightly more women (n = 164) than men (n = 152, four participants did not state sex), and the mean age of the participants was 57.9 (SD = 15.3). More details about the participants are available in Table 1.

2.1.2. Questionnaire

In addition to the background information presented in Table 1, the participants were asked seven questions designed to assess their knowledge of safety critical information. On a five-point Likert-type scale with anchors of 1 (*don't know at all*) and 5 (*know very well*), participants were asked to report their knowledge of (1) the rallying point in case of evacuation by life boats, (2) the evacuation route from their cabins, (3) the sound of the evacuation alarm, (4) where to find life vest and other survival gear, (5) the correct way to use a life vest, (6) where to find first-aid equipment and (7) emergency phones and other alarm systems.

[1] The estimated total number of passengers in Study 1 and Study 2 are taken from the company's registered passenger lists.