



Aircraft passenger comfort experience: Underlying factors and differentiation from discomfort



Naseem Ahmadpour^{a, b, *}, Jean-Marc Robert^b, Gitte Lindgaard^{a, c}

^a Swinburne University of Technology, Department of Health, Arts and Design, Centre for Design Innovation, Internal Mail H31, PO Box 218, Hawthorn, Vic 3122, Australia

^b Polytechnique Montréal, Department of Mathematics and Industrial Engineering, P.O. 6079, St. Centre-ville, Montréal, QC H3C 3A7, Canada

^c Department of Psychology, Carleton University, Ottawa, ON 1S 5B6, Canada

ARTICLE INFO

Article history:

Received 22 October 2014

Received in revised form

10 July 2015

Accepted 30 July 2015

Available online 25 August 2015

Keywords:

Passenger

Comfort

Discomfort

Experience

Aircraft interior

ABSTRACT

Previous studies defined passengers' comfort based on their concerns during the flight and a set of eight experiential factors such as 'peace of mind', 'physical wellbeing', 'pleasure', etc. One Objective of this paper was to determine whether the factors underlying the passengers' experience of comfort differ from those of discomfort. Another objective was to cross-validate those factors. In the first study, respondents provided written reports of flight comfort and discomfort experiences separately and gave ratings on the impact of the eight factors on each experience. Follow up interviews were also conducted. Significant difference was found between comfort and discomfort ratings for two factors of 'pleasure', denoted by one's concern for stimulation, ambience and exceeded expectations, and 'physical wellbeing' characterized in terms of bodily support and energy. However, there were no significant differences between the comfort and discomfort ratings on the other six factors. The evidence does not support the proposition that passenger comfort and discomfort are underline by different sets of factors. It is therefore suggested that the evaluation of overall passenger comfort experience, as a whole, employ one spectrum ranging from extreme comfort to discomfort. In study two, a pool of comfort descriptors was collected. Those that were less relevant to passenger comfort were eliminated in a number of steps. Factor analysis was used to classify the remaining descriptors, using respondents' ratings on their potential impact on passenger comfort. Seven factors corresponded to the pre-determined passenger comfort factors from previous research, validating those with an exception of 'proxemics' (concerning one's privacy and control over their situation) but it was argued that this is due to the nature of the factor itself, which is context dependent and generally perceived unconsciously.

© 2015 Elsevier Ltd and The Ergonomics Society. All rights reserved.

1. Introduction

Understanding the construct of passengers' comfort experience and its implications for the design of the aircraft interior is becoming a competitive edge in the aerospace industry. Previous research implicated that cabin environment highly contributes to an airline's image among passengers and at least 35% of passengers on intercontinental flights base their choice of airline on comfort, placing it after flight schedules (Brauer, 2006). Therefore

understanding different aspects of passenger comfort experience is crucially important for the profit margin of airlines and aircraft manufacturers.

Two main issues motivate investigation on the subject of passenger comfort experience in this paper. The first is rooted in that the notion of comfort naturally entails discomfort. As a consequence, attempts to differentiate the two experience or the factors associated with each have resulted three main lines of argument. The first, an operational definition based on archival studies, holds that comfort and discomfort are two discrete states in the sense that comfort is only experienced in the absence of discomfort (Hertzberg, 1972). In other words, that view only identifies two states of 'discomfort present' and 'discomfort absent' and introduces comfort as a neutral state, which does not entail a positive effect such as pleasure. The second line of argument considers comfort a bipolar phenomenon whereby comfort is positioned at

* Corresponding author. Swinburne University of Technology, Department of Health, Arts and Design, Centre for Design Innovation, Internal Mail H31, PO Box 218, Hawthorn, Vic 3122, Australia.

E-mail addresses: nahmadpour@swin.edu.au (N. Ahmadpour), jean-marc.robert@polymtl.ca (J.-M. Robert), glindgaard@swin.edu.au (G. Lindgaard).

the extreme positive end, and discomfort at the extreme negative end of a continuum with a neutral point in between. According to that argument, different levels of comfort are achieved when there are more positive effects than expected (Vink et al., 2005). Along similar lines, Richards et al. (1978) argued in favor of developing a continuous scale for evaluating various degrees of passenger comfort. Although they provided no empirical support for the argument, Richards (1980) asserted that the fact that passengers rated comfort across the entire continuum offers evidence that comfort encompasses the positive state of a bipolar dimension.

The third line of argument holds that comfort and discomfort are two different entities, which are influenced by different variables and thus should be quantified independently (Helander and Zhang, 1997; Helander, 2003; de Looze et al., 2003). Consequently that view rejects the use of a single scale for evaluation of comfort and discomfort, proposing instead to use separate scales for each. In a series of empirical studies, Helander and Zhang (1997) showed that users perceived chair comfort in relation to factors such as aesthetics, relief, wellbeing and relaxation, while discomfort was related to fatigue, restlessness, pain and stress. Helander (2003) suggested that comfort and discomfort should be examined with a view clearly to differentiate the two in comfort studies, in particular studies that involve sitting comfort. This applies to passenger comfort since experience in the aircraft interior is highly influenced by, although not limited to, the seat. Passengers spend several hours seated in aircrafts while they are also exposed to numerous other stimuli e.g. social, environmental and physical. It is reasonable to assert that the research should be expanded to incorporate additional aspects of passenger comfort. The first objective of this paper was therefore to examine whether or not passengers evaluate comfort on the basis of the same factors as discomfort in the aircraft cabin. This is addressed in Study 1 in this paper, whereby descriptions of flight comfort and discomfort experience were separately investigated and then compared.

The second issue demanding more research is that despite the studies on the construct of aircraft passenger comfort experience since the 1970s (Richards et al., 1978), only few publications have proposed a framework for its subjective and experiential aspects. For instance, Kremser et al. (2012) defined passengers' wellbeing in relation to their sitting posture based on ten subjective descriptors categorized as postural sensation, spatial perception, privacy and mood. Those were then linked to the optimum seat pitch range and the eye-height level which provide a comfortable visual impression. Rossi et al. (2012) and Gregghi et al. (2012) used survey and observation techniques to address passenger comfort in terms of postural discomfort experienced while performing different activities (e.g. eating, working, etc.) during the flights and therefore appropriating the allocation of physical space to each passenger. Vink and Brauer (2011) and Vink et al. (2012) prioritized the impact of several environmental factors on passenger comfort during the flight, and though not directly linked to comfort, Chen (2008) investigated passenger satisfaction in terms of service quality, perceived value and behavioral intention.

An overall classification of the factors underlying passenger comfort as a subjective construct, one that is influenced by perception of the environmental elements, is lacking from the above literature. An example of such descriptions is the comfort factors in using hand tools (Kuijt-Evers et al., 2004) in form of 28 descriptors classified into six factors e.g. functionality (being easy to use, reliable, etc.), aesthetics (described in terms of styling, nice color, etc.) and so on. Likewise, seat comfort experience was formalized in terms of a series of descriptors such as feelings relaxed or refreshed (Helander and Zhang, 1997; Helander, 2003). In those cases, the elicited factors were first validated in order to ascertain their effectiveness in capturing the users' experiences and

then used for developing tools (e.g. questionnaires) to assess comfort experience. Following that line of research, we introduced eight factors describing the comfort experience of passengers in an earlier study (Ahmadpour et al., 2014a), which form the basis for the present research.

In our earlier study, 155 participants reported their experience of comfort in the aircraft cabin during the flight. Content analysis was used to reduce those reports into smaller descriptions each addressing one aspect of the experience. Participants' concerns were then elicited from those and then grouped and categorized based on similarities. As the result, 19 types of concerns were isolated and then categorized into eight factors, each describing one aspect of the flight experience. Those are summarized in Fig. 1. The implication is that passengers hold certain concerns about their flight experience and depending on how those are fulfilled, certain aspects and a level of comfort are experienced.

The factor 'peace of mind' implicates a state of psychological ease and corresponds to concerns for security, tranquility and relief. 'Physical wellbeing' indicates the physical aspect of comfort concerning bodily support and energy. 'Proxemics', previously introduced by Hall (1963) in the field of environmental psychology, is defined in relation to concerns for autonomy, control, and privacy that the passengers potentially achieve within the limits of their seat in the aircraft. 'Satisfaction' represents an experience of gratification once concerns for accessibility, adequacy, and quality of design are fulfilled. 'Pleasure' is reminiscent of a joyful experience concerning cabin ambience, the stimulation offered to the passenger and the level to which their anticipations are exceeded. 'Social' is the between-person experience of passengers in the aircraft concerning their tolerance for others' behaviors and attitudes as well as empathy (i.e. connectedness) towards them. 'Aesthetics' refers to the sensory pleasantness offered to the passenger in terms of the neatness and style. Finally, 'association' is concerned with evocation of familiar memories and symbolism. The second objective of this paper was to cross-validate the above eight factors in terms of their influence on passengers' comfort experience. In order to do so, the descriptors related to passenger comfort experience from study 1 were collected and classified into factors in Study 2 of this paper. The salience of the resulted factors and their compliance with the previously determined eight factors were assessed in that study.

2. Study 1: differentiating the factors underlying passenger comfort and discomfort experience

2.1. Method

A questionnaire comprising eight questions was designed. It included five demographic questions about age, gender, height, disability, and number of previous flights in total (never/1–5 times/more than 5 times) followed by an open-ended question prompting respondents to describe (in detail) one flight experience characterized by a sense of comfort, and the other by a sense of discomfort. The question focusing on discomfort was presented first, as the pattern of responses in a previous survey study had revealed a tendency to begin reports with negative accounts of their experience. Next, a list of the eight comfort-related factors was presented along with a short (operational) definition of each. Using a 5-point scale respondents were asked to identify the degree to which each factor had influenced their respective sense of (dis)comfort in the experiences just described (1 being *slightly influential on comfort*, to 5 being *highly influential on comfort*). Finally, a blank section invited them to add and rate additional influencing factor not included in the list.

A convenience sample of 27 participants (12 female), all aged 18–55 years (18–34, $n = 20$; 35–55, $n = 7$), with average height of

Download English Version:

<https://daneshyari.com/en/article/6947945>

Download Persian Version:

<https://daneshyari.com/article/6947945>

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