

# Sensehacking: Passenger wellbeing in the air

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## Introduction

Air travel is undoubtedly a stressful activity for many passengers meaning airlines are increasingly focused on how to optimise in-flight wellbeing. Prof. Charles Spence of the Crossmodal Research Laboratory at the University of Oxford considers how the passenger experience might be 'hacked' through more intelligent stimulation of travellers' senses in an exclusive report for WTCE.

The post-pandemic focus on customer wellbeing is nowhere more obvious than whilst travelling. While constant disinfecting and face masks are thankfully a thing of the past, airlines are now shifting their attention to other means of enhancing passenger inflight wellbeing via 'sensehacking' - using sensory stimulation to help improve social, cognitive, and emotional wellbeing during journeys. This new focus is a direct response to the perceived threat passengers feel, whether from viruses, terrorism or plane crashes.

Aside from these perceived threats, there are also psychological factors: passenger stress and anxiety, fear, even boredom, plus other sensory factors, such as the deleterious effects of background noise, dry cabin air, lowered cabin air pressure and vibration, which are all environmental factors that can contribute to a decrease in inflight wellbeing.



## ABOUT THE AUTHOR

Professor Charles Spence is a world-famous experimental psychologist with a specialisation in neuroscience-inspired multisensory design. He has worked with many of the world's largest companies across the globe since establishing the Crossmodal Research Laboratory (CRL) at the Department of Experimental Psychology, Oxford University in 1997. Prof. Spence has published over 1,100 academic articles and edited or authored, 16 books. His latest book Sensehacking was published in 2021.



# 01: NATURE TAKES THE STRAIN

One way in which the industry has worked to alleviate passenger stress in recent years is to create a greater connection between air travel infrastructure and nature. Biophilia – the connection of the built environment to direct and indirect nature – is known to have health and wellbeing benefits.

Not surprisingly, biophilic design has made its way into a number of airports, such as green spaces at Amsterdam's Schiphol airport or the nature soundscape played at Glasgow airport a few years ago. Biophilic design is also incorporated into airport lounges, such as at Venice airport currently (see *Image 1*).

While it is unlikely that we are going to see the introduction of flora/plants on planes any time soon, some of the same benefits could potentially be achieved simply by presenting nature-themed videos on in-flight screens. Indeed, one carrier already shows a video of a mountain forest waterfall on seat-back screens during boarding and prior to take-off. Also, listening to 30 minutes of nature sounds is proven to improve sleep quality on the ground. Could the same be true for passengers in the air?



Image 1: Example of Biophilic design at Venice airport

Of course, nature also has a smell. Floral ambient scents may help to promote passenger wellbeing. Previous research has found that airports with a pleasant scent led to a positive influence on traveller enjoyment. Some of the more innovative airlines are considering how to create distinctive sensory branding, such as signature scents, something that Singapore Airlines has done for years with its Stefan Floridian Waters applied to the moist handtowels handed to premium passengers and sprayed in cabins. Sound is another factor in creating a less stressful passenger environment. Evidence

suggests that background noise can be mitigated by introducing water soundscapes. Could it work inflight too?

So, by understanding that something needs to be done to manage the stress increasingly associated with air-travel, it may be helpful to consider key inflight passenger activities: eating and drinking, and, on longer flights, sleeping, and how the multisensory atmosphere on board most planes is simply not conducive to these activities, given the range of physical, physiological and psychological considerations.



## 02: HACKING THE SENSES

In a bid to mitigate any negative effects by sensehacking the inflight passenger experience, there are several key activities/elements to consider.

Seat (dis-)comfort is a common complaint of many passengers. The concept of comfort is itself a multisensory construct, influenced by wide-ranging factors including everything from aircraft noise and vibration to ergonomics, legroom (or lack of it), not to mention the characteristics of the passengers themselves.

This is underlined by Kent Craver, the former Director Cabin Experience & Revenue Analysis at Boeing, who is now the Senior Director of Marketing & Communications at Panasonic Avionics. While at Boeing, he said research led them to conclude that there was “no one single element that drives passenger satisfaction. Everything involved contributes to that experience.”

The latest research points to how simply allowing passengers to control background noise levels, via noise-cancelling headphones, can result in higher comfort levels than those with no control. In short, engine noise negatively affects passenger comfort, and the ability to control the background noise levels helps.



**There is no one single element that drives passenger satisfaction. Everything involved contributes to that experience**



Thermal comfort is another tricky issue, given that men and women usually prefer different ambient temperatures. For instance, European and North American men tend to prefer an ambient temperature that is on average 3.1 °C lower than the 25.2 °C preferred by Japanese women.

It's also suggested that aircraft noise might play a role in thermal comfort and that visual cues can potentially be used to modulate comfort levels: ambient temperature (in a simulated airplane cabin) was felt to be warmer under yellow lighting than under blue. Air quality was also perceived as higher and those taking part in the study felt more alert when exposed to blue light. However, different lighting still fell short of being able to fully address the thermal comfort gap between the sexes.

There appears to be increasing awareness of, and interest in, eating in the air as a means of supporting wellbeing. Food and beverage provision is undoubtedly important to airline passengers, but many are disappointed with, and have low expectations of, the quality of airplane food. It's a fact that food and drink tastes different in the air, but it's also likely that passengers' low expectations also play a role. Put differently, airline food likely isn't always satisfactory because passengers don't expect it to be.

Alongside the negative effect of low expectations, dry air, lowered cabin air pressure and/or high levels of ambient noise also affect olfactory and gustatory function. Studies show that the perception of saltiness falls by up to 30% on a plane, while the sense of sweetness falls by 20%, meaning that even if a dish is perfectly cooked and seasoned on the ground, it could still taste like rubber (or cardboard) during the flight. Noise is also identified as affecting taste. Loud noise in particular tends to impair sensitivity to sweet and salt, while seemingly enhancing the perception of umami.



**There appears to be increasing awareness of, and interest in, eating in the air as a means of supporting wellbeing.**



Image 2: Meal box that actively promotes passenger wellbeing

Food and beverages are occasionally formulated specifically for altitude, including a beer served on Cathay Pacific Airways a few years ago, while British Airways collaborated with Twinings to formulate a tea specifically designed for high altitude. Given most of what we think is taste is actually what we can smell, increased use of fruity aromas can enhance perceived sweetness.

A few years ago, I worked alongside chef Jozef Youssef of Kitchen Theory to develop a meal box for Monarch Airlines that would actively promote passenger wellbeing (*see image 2*).

Prior to take off, passengers were treated to an echinacea and liquorice ice cream to boost immunity (39% of Brits surveyed said they get ill when travelling or on holiday). Then roughly half an hour into the flight, they were treated to an herbal fusion containing chamomile, fennel seed and kelp – all ingredients proven to combat bloating and help digestion (which affects almost 20% of travellers).

There was also a touch of lemon balm, whose aromatic properties can aid relaxation, plus a seaweed biscuit for a sweet yet salty taste and a chewy element to help reduce stress; Finally, prior to landing, passengers were given an energy bar with nuts, and an umami shake for enhanced flavour.

Aside from what we eat being important to the inflight experience, much is also dependent on extrinsic factors, such as place setting, the quality and feel of the tableware, and the company we keep: Boeing found that passengers flying on two almost identical planes (Norwegian's 737 NG and its 737 Boeing Sky Interior Aircraft) were significantly happier when the aircraft had a wider entrance and better lighting. They also reported that their seats and meals were better when in fact it was just their surroundings that had changed. Perhaps simply allowing premium passengers to eat more naturally, such as at a table together with their companions, might do more to improve the taste of the food than anything else.



## 03: SONIC SEASONING

Given the detrimental effects of noise on taste, noise-cancelling headphones offer an innovative possibility of enhancing the flavour of airline food.

In a project with British Airways, we selected music to complement the food – offering an element of 'sonic seasoning', with tinkling high-pitched tracks to bring out sweetness, and The Proclaimers to bring out the authenticity of a Scottish fish dish.

And in 2017, Finnair brought out a menu of 'sonic seasonings', inviting passengers to enhance the richness of, say, their meatballs by eating along to a pre-recorded track of a crackling fire played through headphones.



**Noise-cancelling headphones offer a possibility of enhancing the flavour of airline food.**





## 04: SLEEP SOOTHERS

Helping stressed passengers to sleep can undoubtedly also enhance inflight wellbeing. Simple sensehacks, such as a night-light setting on in-seat screens or emulating hotels by offering aromatherapy scents, are possible solutions.

Premium cabin amenity kits currently focus on skin care, but what about pivoting to offer a wellbeing kit? Aromatherapy facial wipes or creams might help to provide a somewhat more personalised, sensory wellbeing regime.

**Emulating hotels by offering aromatherapy scents could help stressed passengers to sleep on-board**





## 05: ASMR AND THE 'FIRST NIGHT EFFECT'

A growing number of people use ASMR (Autonomous Sensory Meridian Response) to help them to relax before going to sleep.

This may be particularly important given that passenger sleep is likely to be impaired due to the well-known 'first night effect' – the term for impaired sleep when people sleep in a new location for the first time.

One hotel chain tries to reduce the impact of this by offering repeat customers the same room on their second and subsequent stays. Similar personalisation might help frequent long-haul passengers.

**Passenger sleep is likely to be impaired due to the well-known 'first night effect'**



## 05: CONCLUSION

**The airline and airport industries clearly understand the need for stress-soothing service strategies and that the multisensory atmosphere while flying is not conducive to promoting inflight passenger wellbeing. However, despite this understanding, none of the airlines currently appear to own what might be described as the 'wellbeing in the skies' space.**

I believe many of the strategies discussed above could be adopted by airlines to tackle the growing problems of passenger stress and anxiety, and the boredom that often lies at the root of other unhealthy behaviours in the air, such as an excessive consumption of alcohol, and/or food: It's suggested that boredom – one of the top complaints of many long-haul passengers – promotes food consumption.

However, should any/all of these recommendations to enhance passenger wellbeing be taken on board, another key challenge will be how to differentiate wellbeing experiences for different classes/cabins.

Different service levels, not to mention the food and drink offerings, are already well-established by the various airlines, but it's less clear how to work out the relative value and importance to passengers of different wellbeing solutions or services. Another inflight challenge for airlines to solve.

### *To learn more*

For Professor Spence's full Sensehacking paper, including full research references go to [worldtravelcateringexpo.com/sense](http://worldtravelcateringexpo.com/sense).

Or to hear him discuss this research in more detail, visit Passenger Experience Conference (PEC), taking place on the 5th June.

**PEC takes place the day before WTCE (6-8 June 2023) in Hamburg, and you can register to attend both events at [www.worldtravelcateringexpo.com](http://www.worldtravelcateringexpo.com)**





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