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The Extent of Distraction of Cell Phone Conversations for Passengers in Simulated Flight

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Presenter Information

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THE EXTENT OF DISTRACTION OF CELL PHONE CONVERSATIONS FOR PASSENGERS IN SIMULATED FLIGHT

Tianhua Li, Andrew R. Dattel, Amber Davis, Andrey Babin, Stefan Melendez, Qianru Yang, Jie Chen

Abstract

Currently, passengers are forbidden from making cell phone calls during flights in the United States due to cellular electronic interference. However, related research has demonstrated that the use of cell phones has little interference with avionics. Furthermore, any potential electronic interference can be eliminated by using new technology. Although talking on the cell phone does not cause electronic interference, the distraction of a passenger caused by a cell phone may negatively impact safety. The purpose of the research was to compare the extent of safety compliance (checking seatbelts, raising tray tables) and retention of announcements among three groups: cell phone conversation, face-to-face conversation (i.e., talking with the passenger next to them), and control. Findings revealed that the cell phone group and the face-to-face group recalled less information from safety announcement and complied with safety behaviors to a lesser degree than the control group. The face-to-face group was not safer than the cell phone group on any measure. Therefore, it is recommended that lifting the ban on in-flight cell phone calls should be considered.

Introduction

- Several passengers are injured from turbulence in the United States every year while they are not wearing seatbelts. It may be due to being distracted when announcements or other safety instructions are presented, and personal conversations could be a factor that has a considerable effect on passenger attention to the announcements.
- Title 47 of the Code of Federal Regulations (47 CFR) part 22, § 22.925 states in-flight cell phone use is prohibited on the aircraft that is not equipped with new specialized onboard equipment. The Department of Transportation (DOT) announced these regulations are not effective for the communications via Wi-Fi, which is similar to a regular cell phone call.
- Passengers talking on cell phones can be less likely to respond quickly in emergency situations.
- This research identifies the extent to which passengers talking on cell phones are distracted from cabin announcement and action requests (e.g., raise tray table) compared to passenger talking with an adjacent passenger and to a control group on a simulated commercial flight.

Method and Results

Design

- 3 x 2 mixed design
 - The between-subjects variable: **Group**
 - Cell phone conversation (converse on cell phone)
 - Face-to-face conversation (converse face-to-face)
 - Control (are allowed to do anything except use a cell phone or make conversations)
 - The within-subjects variable: **Announcement**
 - General in-flight announcements (instruct passengers to lower tray tables)
 - Emergency in-flight announcements (instruct passengers to raise the tray tables and check seatbelts)

Participants

- 52 participants (38 male, 4 female)
- 18 sessions were conducted for this experiment; Each session included three participants
- Mean age was 20.79 years (SD = 2.73), from 18 to 30
- Participants were randomly assigned to one of three groups:
 - Cell phone conversation group
 - Face-to-face conversation group
 - Control group

Experimenters and Confederates

- Three confederates (pretended to be participants in the experiment)
 - One sat next to the face-to-face group and conversed with them
 - Two confederates observed participants' behaviors
- Two experimenters
 - One positioned in an adjacent room and talked with the cell phone group
 - One acted as a flight attendant and observed participants' behaviors

Procedure

- The confederate and the experimenter followed the same script to stimulate dialogue with participants.
- The general in-flight announcement started playing at the first minute of the simulation.
- The emergency announcement started playing during the third minute of the simulation.
- Soon after the emergency announcement was played, the participants was told the problem was resolved.

Data Collection

- During the simulation:
Experimenters and confederates observed participants' behaviors (i.e., lowering tray tables, raising tray tables, and visibly checking seatbelts) and recorded their response time.
- Once the simulation ended:
Each participant was given a 9-item comprehension questionnaire to complete. Questions asked participants to recall specific information in the general in-flight announcement and the emergency announcement.

Results

- Chi-square tests for independence
 - Lower the tray table – **Not significant**
 - Raise the tray table – **Significant** $\chi^2(2) = 7.369, p = 0.025 (V = 0.376)$
 - **Face-to-face conversation group < Control group** $\chi^2(1) = 5.211, p = 0.022 (\phi = 0.391)$
 - Fasten seatbelts – **Not significant**
- 3 x 2 two-way mixed ANOVA (percentage of questions correctly answered) See Figure 1
 - Group: phone, face-to-face, control
 - Announcement: general in-flight, emergency
 - Main effect of group – **Significant** $F(2, 49) = 6.908, p = .002, \eta^2 = 0.220$
Bonferroni post-hoc tests: **Control > Cell phone & Face-to-face**
 - Main effect of announcement – **Significant** $F(1, 49) = 9.692, p = .003, \eta^2 = 0.165$; **General < Emergency**
 - Group x announcement interaction – **Not significant**

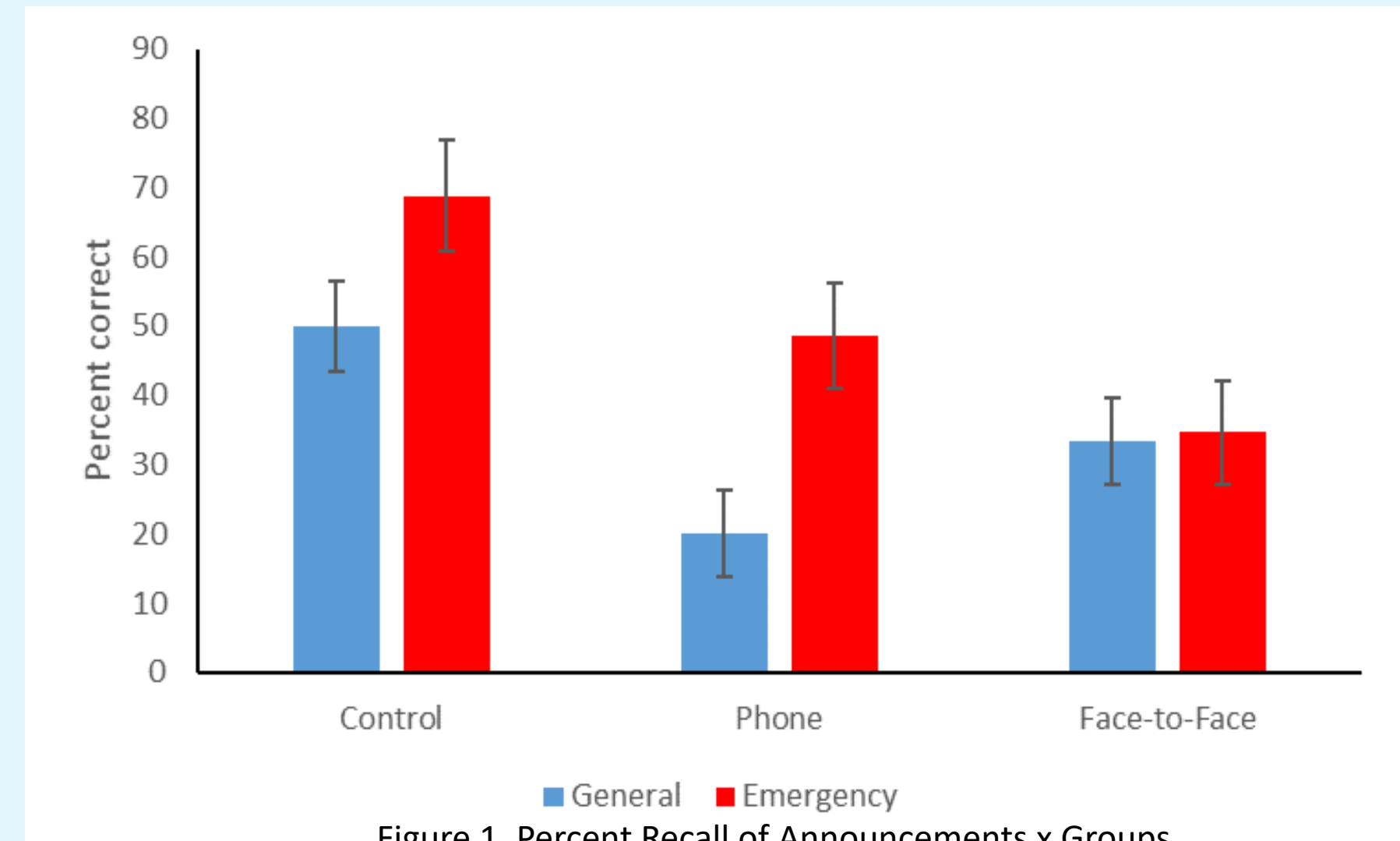


Figure 1. Percent Recall of Announcements x Groups

Discussions

- Overall, the control group performed significantly better than the cell phone conversation group and the face-to-face conversation group because the control group was not distracted by conversations.
- However, both the cell phone conversation group and the face-to-face conversation group performed equally poor.

Conclusions

The purpose of this study was to determine the difference in participants' attention to announcements when talking on a cell phone versus when talking face to face. The results showed that no significant differences between the cell phone conversation group and the face-to-face conversation group in any of these measures. The control group, unsurprisingly, did better than the other two groups on several of the measures.

A major finding was that cell phone calls had just as much of a negative impact (as it relates to compliance and announcement recall) as face-to-face conversation. Therefore, the ban on cell phone calls may not be necessary. Additional studies that may corroborate these findings are warranted. Similar findings may support consideration for lifting the bans on cell phone calls for commercial flight passengers.