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THE IMPACTS ON THE FLIGHT CREW WITH THE IMPLEMENTATION OF THE AIRBORNE IMAGE RECORDER SYSTEM (AIRs) IN THE COCKPIT.

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The technological resources used in aviation are widely used in the occurrence investigations process. However, they present technical-operational limitations, mainly regarding the reliable reproduction of the information that the flight crew really has. The implantation proposal of the Airborne Image Recording System (AIRs) arises to overcome these technical limitations presented by other technologies. Thus, this study aimed to verify if the implantation of AIRs in the cockpit could affect the pilot's perception, behavior and performance during flight. Preliminary results with ten volunteer pilots performing in a flight simulator in Brazil pointed to a series of behavioral and performance changes when the cockpit environment was being filmed. On-site observations allowed us to identify behaviors such as delay in response time, improvisation of procedures, lack of perception of stimuli, errors of judgment and communication failure.

Keywords: Human Factors, Psychophysics, Human performance, aerospace, pilots, AIRs and safety.

Through Cockpit Voice Recorders - CVR and Flight Data Recorders - FDR aviation has technological resources to record flight data. However, such voice and data recording tools are not always sufficiently reliable to clarify the contributing factors of aeronautical events. Such tools have technical-operational limitations, especially regarding their ability to reproduce accurately the information actually disclosed to operational crewmembers (pilots).

The proposal for the implementation of the Airborne Image Recorder System - (AIRs) in the cockpit by the International Civil Aviation Organization (ICAO.2016) emerged as a possible alternative for the provision of complementary data to the CRV and FDR. It would allow for the recovery of a pilot's actions and physical reactions by cameras and their interactions with buttons and switches on the instrument panels, in order to clarify aeronautical occurrences. It is noteworthy that AIRs are currently not required on any aircraft by any ICAO member state.

Thus, this study aimed to verify if the implantation of the AIRS in the aircraft cockpit would affect a pilot's perception, behavior and performance in flight.

Discussion

The presence of cameras to record images of the professional in a work situation, even if these recover only part of the professional's body, technically symbolizes a way of monitoring and surveillance of the work context. In researches related to surveillance in the work context, the effects of this monitoring on work-related attitudes are still poorly studied. However, in the context of aviation, in which the cockpit is already monitored by CVR and

FDR, it is reasonable to assume that the inclusion of cameras as just another monitoring tool would be easily accepted.

It is part of the activity to make the sequence of movements, gestures, and the subjective management of a work situation more flexible according to the technical capacity, professional experience, requisite of the operating environment and operational procedures related to the job. The actual working condition often impose requirements that overlap or are beyond the standard operating procedures (Guérin et al, 2001; Ferreira, 2012).

The presence of a camera that records movements and actions could inhibit a pilot's natural behavior, adding permanent tension and concern, possibly making the pilot's work even more complex, enhancing cognitive and psychomotor limits of the operational activity, inducing a decrease in crew performance, contrary to the interests of flight safety (Belletier et al., 2015).

Methods

We used the psychophysical method of the theory of signal detection as a methodological basis in this study, in which discriminability was measured as well as the response criterion of the pilot .We established a reaction time criterion of ten (10) seconds, and measured the response time between the presented stimulus and the executed response (Mori et al. 2002) for each pilot.

As a comparative basis, we utilized the task prescribed for simulator training (Oliveira, P.A.B. 2011) and the pilot's performance during piloting activity recorded by the camera. We highlight that discriminability in this context was the ability to detect or not the stimulus (Costa, M.F. 2011) and the stimuli presented to the pilots were sounds and lights for a determined period of time and situation. In order to compare the pilot's discriminability and the criterion during the flight, the AIRs started recording at the beginning of the training but the pilots were only informed in a pre - determined stage of the flight and during the state of emergency of the flight.

Results

As preliminary results, the on-site observations of the flight simulator training of ten (10) pilots at Azul Airline' training center in Brazil pointed out a series of behavioral and performance changes during the filming of the cabin environment. We highlight behaviors such as delay in response time, improvisation of procedures, lack of perception of stimuli, errors of judgment and failure in communication. This analysis allowed for the verification of the pilots' mediation and adaptation strategies to the real work conditions when facing different stimuli and threats.

Final Consideration

This study highlights and provides important empirical evidence that invite the scientific and aviation community to reflect on the theme and foretells an important scientific contribution to world aviation.

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