**Expectations vs. observations: how eye-tracking can support pilot training**

**BONET R.**

Safety Research Air France, robonet@airfrance.fr

**DEHAIS, F.**

ISAE-SUPAERO Toulouse, frederic.dehais@isae-supaero.fr

**BEHREND J.**

Safety Research Air France, jubehrend@airfrance.fr

In aviation, eye-tracking has been of great interest to provide insights into pilots’ competences. Yet, few studies have focused on the discrepancies that exist between prescribed tasks (procedures) and observed activity in airlines’ pilots. This paper aims at establishing whether the eye-tracking technology could help identifying such potential differences. We hypothesize that it could provide objective measures of the pilots’ visual scanning and behaviour, making it possible to suggest corrective actions or new training methods.

In study 1, we interviewed ten flight instructors on their expectations on procedure application and visual behaviour during one flight phase: the go-around. During this phase, the flight crew initiates a procedure while they decide to abort the final approach for a new attempt at the initial destination or an alternate airport. In addition, flight instructors reported potential benefits, limitations and possible use cases of the eye-tracking technology for pilot training.

In study 2, we confronted flight instructors’ expectations with pilots’ behaviour observed during simulated flights. We analysed 32 eye-tracking recordings of go-arounds during full-flight simulator sessions by using the Tobii Pro 2 Glasses. Analyses focused on pilot’s behaviour, whether it be application of procedure items, crew communication or ocular movements. Despite the application of standard operating procedures, flight instructors’ expectations concerning pilots’ visual behaviour differed from common practices within the participating pilots.

From a trainee and trainer perspective, we discuss the observed differences between theoretical expectations and standard pilots’ practices. For instance, are the trainer’s expectations adapted to the pilots’ available resources at a specific moment or are checks becoming unnecessary considering the reliability of automatisms? Future research could focus on other flight phases to perform the same type of comparisons.