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## PILOT WELLBEING & WORK RELATED STRESS (WRS)

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This paper presents the preliminary findings of an anonymous web-based survey addressing pilot work related stress (WRS) and wellbeing. The initial analysis indicates that pilots are under stress and experiencing wellbeing problems. Specific features of the job can result in wellbeing problems, spanning the three pillars of wellbeing. Critically, sources of WRS can increase a pilot's risk in terms of developing a mental health (MH) issue. Further, sources of WRS can impact on performance and safety. Considerable barriers still remain in relation to reporting MH issues at work. Coping mechanisms addressing sleep/fatigue, diet, exercise and communication/reporting, enable some pilots to thrive in an environment that has negative impacts for others. The vast majority of pilots indicated that issues pertaining to WRS and wellbeing are not being adequately managed in terms of airline safety management systems/processes. Potentially, airline interventions might focus on enhancing existing safety management system processes/technology to address risks associated with WRS and wellbeing, training pilots, and introducing new wellbeing briefing/reporting systems. Further, new digital tools might be advanced to support pilot self management of WRS/wellbeing and risk identification, both inside and outside work.

Work Related Stress (WRS) is defined as the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities, and which challenge their ability to cope (Leka, Griffiths & Cox, 2003). A high stress situation may not be detrimental to a person, once they have learned to cope with it in a healthy manner. As reported by Joseph (2016), stress coping is an important psychological construct which moderates/mediates the relationship between stressors and behavioural outcomes such as flying performance. Pilots experience many physiological, psychological and environmental stressors. Since the Germanwings 9525 accident (2015), the issue of pilot suicide and detecting/managing mental health issues amongst pilots has been gaining increased attention. Recent studies demonstrate that pilots are suffering with the same wellbeing issues as the general population (particularly those relating to mental health) and possibly to a greater extent (Pasha & Stokes, 2018; Wu et al, 2016). Overall these studies have attempted to measure the prevalence of wellbeing issues (and in particular, mental health issues), and to understand the factors that contribute to this. However, these studies fall short in terms of providing a rich picture of the lived experience of pilots, and the complex relationship between individual wellbeing factors as conceptualized in the biopsychosocial approach (Engel, 1977). In addition, there has been little

emphasis on understanding (1) the relationship between WRS, pilot wellbeing and safety, (2) how pilots adapt to WRS and associated coping/self-management techniques, (3) the role of other stakeholders in relation to supporting pilots and managing this problem, and (4) potential solutions at different levels.

Prior exploratory interviews undertaken by the authors suggest that aspects of the job are impacting on pilot's physical, social, and emotional/psychological health (Cullen et al, 2017). Research indicates that aspects of the job present a potential threat to flight safety, given the ensuring impairments to task performance (Cahill, Cullen & Gaynor, 2018). In general, pilots try to normalize/adapt to the job and manage wellbeing issues. However, there is much variation in relation to coping ability. Overall, six impact scenarios were identified (Cahill et al, 2018). Of these, participants suggested that the primary focus of wellbeing interventions might be on the prevention of routine suffering, suffering which may degrade performance on the day, and suffering which ends in harm to the person. Following from the above research, this paper reports on the preliminary finding of the first wave of an anonymous web-based survey pertaining to pilot wellbeing. The survey and its analysis are both ongoing. Overall, the paper provides a preliminary descriptive analysis of the findings of the first wave of feedback (N=330, 67% completion rate). First, a brief background to this research is provided. The survey methodology is then reported. The high level results are then reported. These results are the discussed and some preliminary conclusions drawn.

## **Methodology**

The objectives of the survey include: (1) to measure routine suffering amongst pilots, (2) to understand pilots experience of WRS/wellbeing issues, (3) to understand pilot attitudes to reporting wellbeing issues (including mental health), (4) to understand the relationship between work related stress, pilot wellbeing, pilot performance and safety, (5) to understand how pilots adapt to WRS and wellbeing issues, (6) to identify pilot coping/self-management techniques, and (7) to examine pilots perceptions regarding the role of their employers/airlines in terms of managing WRS/wellbeing issues. This is a cross-sectional descriptive study. An anonymous web-based questionnaire was developed which elicits feedback pertaining to the topics indicated above. The survey incorporates several standardised instruments to measure levels of common mental health issues. These are the Patient Health Questionnaire -9 (PHQ-9) (Kroenke, Spitzer & Williams, 2001), the Oldenburg Burnout (OLBI 8) (Demerouti, Bakker, Vardakou & Kantas, 2003), and the Oldenburg Burnout (Modified Instrument) (Demerouti, Veldhuis, Coombes & Hunter, 2018). Further, the survey design draws upon prior research undertaken by the authors pertaining to a biopsychosocial model of wellbeing, the factors that can positively and negatively influence a pilot's physical, mental and social health, and the ensuing impact on pilot performance and flight safety (Cahill et al, 2018, Cullen et al, 2017). Ethics approval was granted by the School of Psychology, Trinity College Dublin (TCD). The survey was completed by commercial pilots between 7<sup>th</sup> November 2018 and 28<sup>th</sup> February 2019. Using social media channels, respondents were invited to participate in an anonymous online survey at a time of their choice. Advertising information informed participants that the survey elicits information of a sensitive nature and included a weblink to the survey. Prior to answering survey questions, respondents received background information about the study and completed the electronic

consent. Following this, respondents completed questions for each of the nine sections. The survey concluded with a debriefing which included contact information for relevant support groups. The survey was powered by the SurveyMonkey service and did not collect any identifying information about the person. Further, no internet protocol (IP) addresses were collected. It was assumed that each participant was a pilot and only completed one survey. Several questions in the survey required knowledge that would only be readily available to pilots. An active pilot (co-author in this study: PC) reviewed surveys for potential non-pilot participants. All surveys passed this screening. Descriptive statistics were used to describe the respondents and their responses on various survey items. We evaluated depressive symptoms via the Patient Health Questionnaire (PHQ-9) depression module. Tests for statistically significant group differences have not yet been undertaken.

## Results

330 respondents participated in the survey, with 220 completing it fully (66.7% rate). 265 respondents completed the PHQ-9 (80.0%). Overall, the respondents can be described as male (84.5%), full time (91.8%), married (58.2%) and based in home country (80.3%). The respondents can be split into the following age brackets; <25 (4.2%), 25-35 (33.5%), 36-45 (27.8%), 46-55 (23.0%) and 56-65 (10.0%). Respondents had worked as a pilot for the following lengths of time; <2 years (8.5%), 2-5 years (12.6%), 6-10 years (17.1%), 11-15 years (15.7%), 16-20 years (14.7%), 21-25 years (7.2%), 26-30 years (12.0%) and >30 years (12.3%). 62% of respondents held the position of Captain. Over 3/4 (77.7%) of respondents rated their physical health as good/very good, while approximately 2/3 (67.7%) rated their mental health as good/very good. In general, the Pilots surveyed were a reasonably healthy population in terms of their health behaviours. The majority of participants reported obtaining between 7 and 8 hours sleep on non duty days (35.4% reported 8 hours of sleep, while 30.0% reported 7 hours). Respondents reported obtaining considerably less sleep during duty periods (42.9% obtaining 6 hours, and 27.5% 7 hours). The vast majority exercise regularly (22.0% three times a week, 21.3% twice a week, and 16.8% once a week). Further, the majority reported eating a healthy diet (88.5%) while off duty, although a significant proportion (54.5%) reported that they ate an unhealthy diet while at work.

Just under half of the respondents (48.7%) reported that they had spoken to somebody about a MH issue they were experiencing or had experienced. 42.5% of respondents indicated that they have a close-friend pilot colleagues who has experienced MH issues. 12.8% of participants meet the threshold for Clinical Depression. 7.9% had suicidal thoughts in the previous two weeks. However, although respondents reported experiencing wellbeing problems, the data suggests that Pilots are adapting and coping. Nearly half of respondents (48.1%) agreed to the statement 'Pilots are suffering, but they are also adapting and coping', while 8.7% strongly agreed.

45.6% strongly agreed that there are low levels of speaking out and/or reporting about mental health among Pilots, while 40.3% agreed. The vast majority of participants indicated that they would talk to a partner/spouse (79.5%) about a MH issue, closely followed by a friend (55.0%). Only 24.9% indicated that they would talk to a close friend colleague. 13.5% indicated that they would speak to a peer support group. A very small number (2.2%) indicated that they

would speak with their line manager. Overall, participants indicated a considerable level of stigma in relation to reporting mental health issues at work. 78.0 % indicated they would not disclose a MH issue to their employer. 55.6% reported that if they were “unfit for flight” due to a mental health issue, they would provide a different reason. When asked about their reasons for this, the vast majority of respondents (68.6%) indicated ‘fear of loss of license and loss of long-term earnings’. Other reasons included ‘fear of stigmatisation by employer’ (57.7%) and ‘potential negative impact on career progression’ (52.6%). On a more positive note, the vast majority agreed that they would look for help, if they had a MH issue (47.8% agreeing and 29.0% strongly agreeing). Further, 70.5 % strongly agreed with the statement ‘Promoting mental health awareness (recognising problems in one’s self or others) is important from a safety perspective’, while 27.2% agreed.

Just over half of participants (51.0%) indicated that they find the job stressful ‘now and again’, while 23.5% indicated that the job is ‘frequently stressful’. Pilots were asked to rate their ability to cope with WRS. The majority (69.6 %) agreed that they can tolerate the pressures of their work very well, while 13.8% strongly agreed. However, most participants (51.7% ) agreed that ‘they feel worn out and weary after work’, while 22.9% strongly agreed. Respondents reported the top 3 most common sources of WRS as working irregular hours (70.2%), working anti-social hours (57.5), and the divergence of values between management and pilots (57.5%). Overall, the data indicates that sources of WRS have a negative impact on pilot wellbeing. Sleep difficulties (78.2%) were reported as the most common wellbeing issue that respondents either attributed to the job, or believed to be worsened by the job. This is followed closely by musculoskeletal symptoms (71.6%) and then digestive symptoms (53.8%). Other impacts include social isolation (42.2%), marital/family discord (36.9%), respiratory symptoms (32.9%) and psychological distress (31.1%). Although psychological distress was ranked the lowest in terms of wellbeing impact, the vast majority of respondents indicated that the environment in which Pilots work can contribute to the onset of, or worsen an existing a mental health issue (59.8% participants agreed, while 26.2% strongly agreed).

Data analysis suggests that sources of WRS impact on performance and flight safety. The vast majority of respondents (60.4%) agreed to the statement that ‘certain sources of Work-Related Stress (WRS) have an impact on my performance’, with 18.7% strongly agreeing. Further, 52.6% of respondents agreed to the statement ‘Certain sources of WRS have an impact on my performance and by implication, have the potential to impact on flight safety’, while 21.1% strongly agreed. Respondents were invited to identify specific performance impacts in relation to different sources of WRS. 82.4% of respondents reported ‘working within the close confines of the cockpit’ as the having the strongest impact, specifically, in relation to distraction and inability to focus on current task. Working irregular hours (73.6%) and working long duties (76.4%) were rated as having most impact on decision making. Over half of the respondents (52.4%) agreed to the statement that they are ‘mostly coping well and that periodically, they may make a mistake but they will identify their own mis-take and correct their actions, thus ensuring that a safety event does not occur’, with 7.8% strongly agreeing. Equally, the vast majority (56.7%) agreed to the statement ‘if something were to give on the day, and I were to make a mistake, it is most likely that my fellow pilot would detect this and take a corrective action, thus ensuring that a safety event would not occur’, with 12.6% strongly agreeing.

Pilots were asked to select from list of common methods of coping with (1) non WRS (stress outside work) and (2) WRS (stress inside work). 60.2% reported adopting coping strategies for non WRS, while 53.9% reported using coping strategies for WRS. In relation to coping strategies for non WRS, 30.8% reported using positive diet each day. Only 1.6% used relaxation devices/tools on a daily basis. On a several times per week basis, respondents reported using sleep and rest (54.6%), exercise (53.6%) positive diet (48.8%) and relaxation (13.0%). In relation to daily activities to manage WRS, the strongest focus appears to be on sleep and rest (28.0%), diet (27.6%) and exercise (14.0%). In terms of activities performed several times a week, respondents reported exercise (51.2%), positive diet (46.4%), sleep/rest (47.1%) . 21.9% respondents reported talking with colleagues while 17.6% reported talking with family and friends. The data analysis indicates that pilots do not use relaxation methods as frequently as other methods (3.1% every day, 11.8% several times a week and 8.1% once a week). In addition, it indicates that pilot use of professional supports is infrequent (2.0% several times a week, 0.7% once a week).

Overall, it seems that pilot engagement is quite low. Only 18.0 % agreed with the statement ‘my employer and I share the same set of values’, while 1.7% strongly agreed. 38.3 % of participants rated the level of engagement between themselves and their employer as very poor, while 39.6% rated it as poor. The majority of respondents indicated that ensuring and maintaining positive mental health for Pilots should be a key priority for all airlines (82.2% strongly agreed, while 16.9 agreed). However, it appears that this is not being taken seriously at an airline level. Only 10.2% of respondents agreed with the statement ‘Ensuring and maintaining positive mental health for pilots is a key priority for my airline’, while 7.6% strongly agreed. Most participants agreed that the process for supporting positive mental health and managing mental health problems in Pilots should be clearly defined at an airline level (62.5% strongly agreed while 34.8 % participants agreed). However, a very small number (8.5 %) agreed that this process is clearly defined at their airline, while 2.7% strongly agreed. Further, a small number of respondents (6.7%) agreed with the statement ‘The Safety Management practices at my airline adequately address issues concerning the support & management of Pilot mental health & wellbeing’, with 0.4% strongly agreeing.

## **Discussion & Conclusion**

The wellbeing of pilots is being negatively affected by certain sources of WRS. Critically, wellbeing impacts span the three pillars of wellbeing, and are not limited to MH. Further, sources of WRS have implications from a human performance and flight safety perspective. In accordance with safety management system approaches, specific wellbeing issues and associated performance/safety risks need to be identified, measured and managed. Certain strategies enable some pilots to cope in a work environment that is detrimental for others. If these strategies can be better understood, lessons might be learned in terms of enabling pilots to increase their resilience to wellbeing challenges (including MH challenges). Also, these might be considered in relation to the design of solutions/interventions at different levels (for example, pilots, airlines and the regulator). Specifically, this research indicates that airlines are not adequately managing these issues. Overall, airline organizations might increase their support for preventative mental health treatment. Potentially, airline interventions might focus on enhancing

existing safety management system processes/technology to address risks associated with WRS and wellbeing, training pilots (i.e. in relation to wellbeing awareness, coping strategies and self-assessment), and introducing new wellbeing briefing/reporting systems. In addition, future research might address the introduction of digital tools to support pilot management of specific sources of WRS both inside and outside work. The results of this study should be interpreted with potential limitations in mind. Next steps will involve detailed analysis of survey data. A further analysis is planned following a second wave of data collection (February to October 2019). Participatory co-design activities will also be undertaken with different stakeholders to address wellbeing interventions at different levels.

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