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A Flight Path to Well-Being: The Mediating Role of Continuous Learning between Burnout and Work Performance in Aviation Professionals

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Abstract: The profession of airline pilots is characterized by high levels of stress and a significant risk of burnout. The health emergency period has exacerbated these challenges to health and well-being, with long COVID adding further strain to aviation professionals even in the post-pandemic scenario. In this context, it is essential to promote positive organizational behaviors to reconcile individual well-being with work performance. This study aimed to explore the mechanisms linking burnout to work performance behaviors (i.e., proficiency, adaptivity, and proactivity) among pilots, hypothesizing the mediating role of continuous learning behaviors. Based on the Conservation of Resources theory, we posited that burnout depletes pilots' resources, thereby hindering continuous learning and reducing performance behaviors. Moreover, this study examined the work-related stress factors that could affect burnout and the consequences of performance behaviors on actual performance measured by a flight simulator. Data were collected from 123 pilots through an online survey and analyzed using path analysis. The results revealed that continuous learning mediated the relationship between burnout and work performance behaviors. Furthermore, work-related stress factors were significantly related to burnout, and work performance behaviors were linked to flight simulator performance. Our findings underscored the critical role of continuous learning in explaining the adverse effects of burnout on performance. These insights could inform targeted interventions to promote continuous learning and stress management among aviation professionals, ensuring sustained performance and well-being in the long term.

Keywords: burnout; work performance; continuous learning; pilots; conservation of resources

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Citation: Gemmano, Cataldo Giuliano, Maria Luisa Giancaspro, Sara Galiotto, and Amelia Manuti. 2024. A Flight Path to Well-Being: The Mediating Role of Continuous Learning between Burnout and Work Performance in Aviation Professionals. *Social Sciences* 13: 513. https://doi.org/10.3390/socsci13100513

Academic Editor: Nigel Parton

Received: 29 June 2024
Revised: 17 September 2024
Accepted: 26 September 2024
Published: 28 September 2024

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1. Introduction

The profession of airline pilots is uniquely demanding, requiring expert competencies to handle complex work tasks and to deal with high-pressure situations (Demerouti et al. 2019). Pilots bear great responsibilities since their work performance can have critical implications for the safety of passengers and flight crew. Stress, fatigue, and inadequate job resources can limit pilots' judgments, ability to focus, and readiness to intervene in critical or emergency situations, such as in-flight system failures or sudden changes in weather conditions (Cullen et al. 2021). The profession is inherently stressful, and the recent global health emergency caused by the COVID-19 pandemic has exacerbated these challenges for pilots' well-being (Paisan and Wan-Chik 2023). The pandemic-related stress stemmed from concerns about personal and family health, ongoing medical issues, and social isolation. In addition, aviation workers experienced financial worries and job insecurity due to the reduction in flights, which led to decreased working hours and incomes (Cahill et al. 2020, 2021). Moreover, the phenomenon of long COVID has introduced new health concerns, adding further strain even in the post-pandemic period (Carfì et al. 2020). Pilots and aviation workers have experienced prolonged symptoms, such as fatigue, cognitive impairments, and respiratory issues, which can exacerbate

stress and burnout, leading to diminished cognitive function and quality of life, reduced job performance, and increased risk of errors (Adam et al. 2024; Kim and Choi 2024; Kioulepoglou et al. 2024; Troyer and Bidaisee 2022).

In this scenario, pilots are perpetually exposed to work-related stress factors that can lead to burnout in terms of exhaustion, mental distance, emotional impairment, and cognitive impairment (Schaufeli et al. 2020). The risk of burnout poses a significant threat to both well-being and work performance, requiring pilots to cope with stressful work situations (Demerouti et al. 2019). These evolving challenges underscore the need to focus on promoting positive organizational behaviors that can help reconcile individual well-being with optimal work performance.

Despite the critical nature of this issue, there is a notable gap in the literature regarding the mechanisms underlying the burnout–performance link among pilots. Specifically, while it is well-established that burnout can negatively influence performance (e.g., Cropanzano et al. 2003; Demerouti et al. 2014; Zia et al. 2023), less is known about the processes through which this occurs (Lemonaki et al. 2021). This gap is significant from both theoretical and practical perspectives. Theoretically, the lack of knowledge about these mechanisms limits our understanding of *why* burnout has consequences for professional performance in the aviation sector. Practically, this prevents the adequate development of interventions aimed at reinforcing specific positive organizational behaviors to sustain pilots' well-being and enhance their work effectiveness.

To address this gap, the present study proposed continuous learning as one of the mediating mechanisms which contributes to explaining the burnout–performance relationship. Continuous learning refers to the ongoing process of acquiring new knowledge, skills, and attitudes to cope with evolving job requirements and remain efficient at work (Watanabe et al. 2011). The proposal of the mediating role of continuous learning is grounded in the Conservation of Resources theory (Hobfoll 1989), which posited that individuals strive to acquire, retain, and protect their resources. Burnout represents a significant depletion of emotional and cognitive resources, which can hinder further investment in continuous learning behaviors and consequently reduce performance (Hobfoll and Freedy 2017). Continuous learning is essential for pilots to adapt to unpredictable challenges, acquire new competencies, and maintain high levels of performance in dynamic environments (Budhiraja 2023; Rowold and Kauffeld 2008). Thus, the purpose of this study was to investigate the direct and indirect effects of burnout on work performance behaviors via continuous learning.

Additionally, given the debate concerning the measurement of performance (Bal 2020; Campbell and Wiernik 2015) and the potential consequences of work behaviors on actual performance (Campbell and Wiernik 2015; Dunning et al. 2004), this study examined the relationship between work performance behaviors and performance measured on a flight simulator, in order to verify the results of performance behaviors through objective indicators. In this study, work performance behaviors referred to a general self-evaluation of executing standard procedures accurately (proficiency), responding effectively to unexpected situations (adaptivity), and initiating new activities to improve work processes (proactivity). Flight simulator performance referred to a specific assessment made by an expert on the performance of critical tasks (e.g., application of procedures and decision-making under pressure) in routine and emergency simulated scenarios. Considering also the stressful antecedents of burnout (Bakker et al. 2004; Sonnentag et al. 2017), this study intended to confirm that work-related stress factors are related to burnout. For these purposes, we tested the research model presented in Figure 1 to examine direct and indirect relationships between work-related stress factors, burnout, continuous learning behaviors, work performance behaviors, and flight simulator performance.

This study aims to make both theoretical and practical contributions within the context of the aviation profession. Theoretically, by elucidating the mediating role of continuous learning, this study aims to highlight the importance of learning variables among the dynamic processes identified by the Conservation of Resources theory (Hob-

foll 2001). It seeks to contribute to the broader literature on occupational stress and performance by offering new insights into the mechanisms that connect these constructs. Practically, the expected findings could inform the development of targeted interventions aimed at reducing burnout and promoting continuous learning in the aviation sector. By emphasizing the importance of learning dynamics, this study aims to provide a basis for organizational strategies that support ongoing professional development and stress management (Salas et al. 2012; Van Der Heijden et al. 2009). Such strategies could help airline pilots deal with stressful factors, including the long-term impacts of the COVID-19 pandemic, thereby ensuring sustained performance and well-being (Cahill et al. 2020, 2021; Chen and Eyoun 2021).

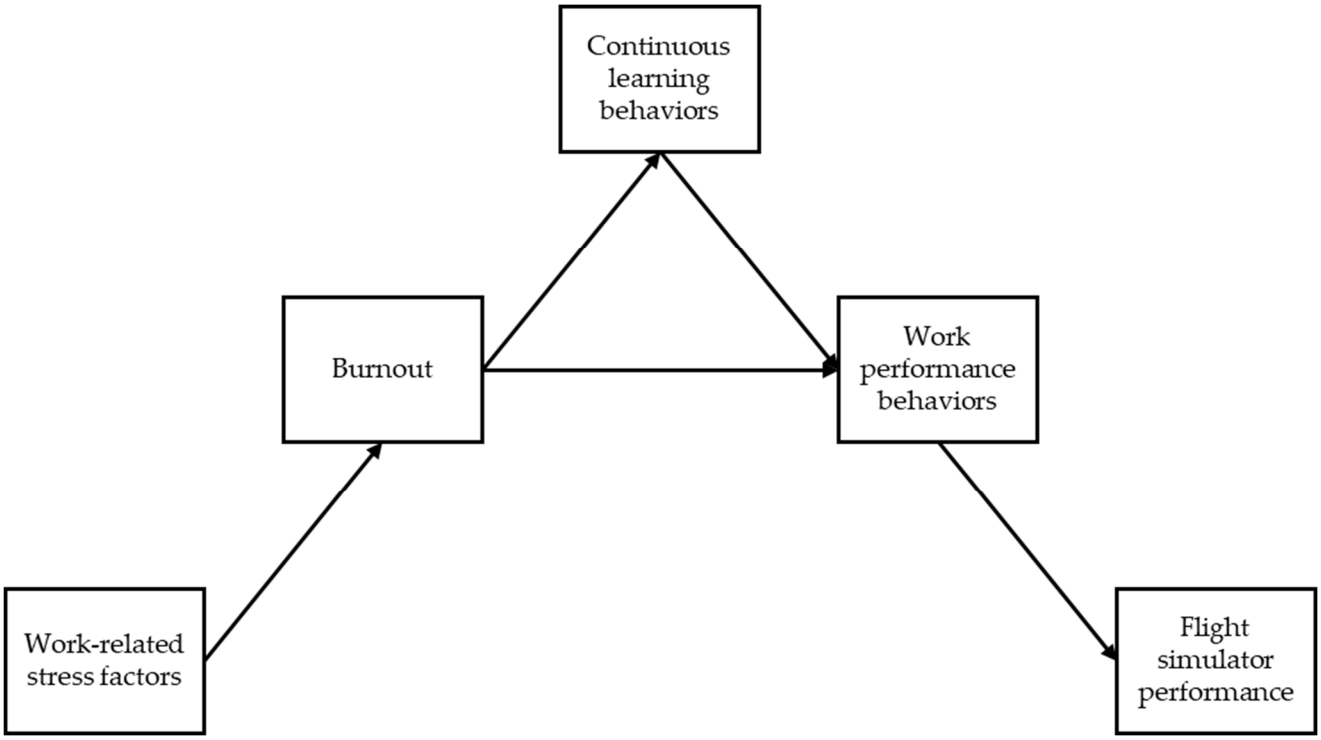


Figure 1. The research model.

2. Theoretical Background

2.1. Work-Related Stress Factors in the Aviation Sector

In the aviation context, stressors such as high job demands, irregular schedules, time pressure, and the need for constant vigilance are particularly prevalent. These stressors can undermine pilots' psychological well-being over time, contributing to the development of burnout. High job demands, such as an excessive workload and tight deadlines, can deplete pilots' energy and lead to exhaustion (Demerouti et al. 2019). This exhaustion can reduce their ability to engage effectively in their tasks, leading to diminished work performance (Demerouti et al. 2014). Irregular schedules and shift work, common in aviation, can disrupt sleep patterns and circadian rhythms, exacerbating fatigue and mental distance from work. Time pressure and the constant need for vigilance can lead to emotional impairment, making it difficult for pilots to manage their emotions and interact positively with colleagues (Cullen et al. 2021). Furthermore, the high responsibility associated with ensuring passenger safety can increase cognitive impairment, as the continuous cognitive load overwhelms pilots' mental resources. Facing conflicting expectations or job insecurity could further contribute to stress and cognitive strain (Cahill et al. 2020).

In the Italian context, the law regulating workplace health and safety (D.Lgs. 81/08) mandates specific provisions to limit stressful sources, taking into account the actual specific needs related to the service performed or the organizational peculiarities. The law requires

organizations to adopt policies and measures aimed at creating a safe and healthy work environment for their employees. These policies might involve risk assessments, health surveillance, and promoting safety awareness among staff. For airline organizations, these policies have led to changes in risk management practices related to flight activities, with a greater focus on guidelines for pilot training and performance evaluation, such as courses on occupational safety and flight simulations (European Aviation Safety Agency EASA 2018; International Civil Aviation Organization ICAO 2013). The legal frameworks aligned with different scientific studies focused on understanding the processes that sustained Italian pilots' mental health, well-being, and performance (e.g., Borghini et al. 2014; Ceschi et al. 2019; Pediconi et al. 2020).

In the present study on Italian pilots, we expected a positive relationship between work-related stress factors and burnout. The scientific literature ascertained that work-related stress factors were among the strongest antecedents of burnout among pilots (Cahill et al. 2020, 2021; Cullen et al. 2021; Demerouti et al. 2019). Burnout is a psychological syndrome emerging as a prolonged response to work-related stressors (Maslach and Leiter 2016). According to the most recent conceptualizations, it is characterized by four dimensions: exhaustion, mental distance, emotional impairment, and cognitive impairment (Schaufeli et al. 2020). Exhaustion depletes emotional and physical resources, mental distance leads to a detachment from work, and cognitive and emotional impairment compromises mental functioning at work. Work-related stressors encompass various aspects of the work environment that can strain an individual's physical and psychological resources. Among all possible risks of stress, the UK Health and Safety Executive Management Standards identified seven psychosocial work-related stress factors: demands, control, managerial support, peer support, role clarity, relationships, and change (Brookes et al. 2013; Mackay et al. 2012). Demands deal with aspects of the job that require some form of effort, such as workload. Control refers to how much individuals can decide over how they perform their tasks. Support includes social resources provided by management and colleagues. Relationships refer to conflict and negative behaviors of people at work. Role refers to employees' comprehension of their own role within an organization. Change includes the management and communication of organizational changes and transformations. Each of these factors can be an important source of stress at work, potentially leading to the risk of burnout (Brookes et al. 2013).

The impact of stress on burnout is rooted in various theoretical models. For example, the Conservation of Resources (COR) theory (Hobfoll 1989) highlighted that stress could lead to the depletion of key resources—such as emotional, cognitive, and physical energy—which could increase the likelihood of burnout. Similarly, the Job Demands–Resources (JD-R) model (Demerouti et al. 2001) posited that high job demands, such as workload and time pressure, coupled with insufficient job resources, like support and autonomy, could lead to burnout. This model emphasized the balance between demands and resources, suggesting that when demands exceed resources, workers are more likely to experience burnout. These models collectively underscored the importance of managing both positive (e.g., support and role clarity) and negative (e.g., demands and conflict) aspects of the work environment to mitigate burnout and promote well-being.

Empirical research supported the link between work-related stress factors and burnout. For instance, Bakker et al. (2004) found that high job demands and a lack of job resources were significant predictors of burnout. Sonnentag et al. (2012) showed that chronic exposure to high job demands and low job control was associated with higher levels of exhaustion and disengagement. Demerouti et al. (2019) examined burnout among pilots, highlighting the importance of the work environment's psychosocial factors for their health and performance. Cahill et al. (2020) confirmed that pilots' well-being was negatively influenced by the stressful nature of their work. Considering these factors, in the present study, it was crucial to examine and confirm the role of work-related stress in the development of the risk of burnout in aviation professionals.

2.2. The Mediating Role of Continuous Learning between Burnout and Work Performance Behaviors

We posited that continuous learning mediated the relationship between burnout and work performance behaviors. In the context of aviation, where pilots operate under significant stress and responsibility, burnout dimensions could severely impair pilots' ability to maintain positive work performance behaviors such as proficiency, adaptivity, and proactivity (Griffin et al. 2007). Proficiency refers to the ability to carry out core tasks effectively, adaptivity involves coping with changes and unforeseen circumstances, and proactivity encompasses self-initiated behaviors aimed at improving work processes. These behaviors could be promoted and sustained by continuous learning behaviors. Continuous learning involves the ongoing acquisition of knowledge, skills, and attitudes to adapt to changing work demands and remain efficient in unpredictable work environments (Watanabe et al. 2011). It refers to personal and professional development and growth through experiences or events that expand competencies over time as more learning occurs. According to Sessa and London (2015), continuous learning at the individual level is "regularly changing behavior based on a deepening and broadening of one's skills, knowledge and worldview" (p. 40). In high-stress and skill-demanding professions like aviation, continuous learning is crucial for keeping up with technological advancements and regulatory changes (Mavin and Roth 2015).

The rationale underlying the direct and indirect relationship between burnout and work performance behaviors via continuous learning was based on the Conservation of Resources (COR) theory (Hobfoll 1989). According to this theory, individuals are motivated to protect the resources they possess and to seek to acquire new ones. Thus, the processes of resource loss and gain are fundamental for the conservation of these resources. Resource loss is a more salient and negative psychological experience compared to the positive experience of resource gain. The impact of loss is heavier, faster, and has more lasting effects over time compared to the beneficial impact of resource gain. The two types of experiences can open loss spirals and gain spirals respectively. When individuals are deprived of resources, they become more vulnerable to further resource loss, leading to a negative spiral that makes it increasingly difficult to retain their resources. Conversely, when individuals gain resources, they are in a better position to continue obtaining additional resources, leading to a positive spiral that leads to their conservation and accumulation.

We chose the COR theory because it provided insights into the link between burnout, continuous learning, and performance in the aviation context. On the one hand, burnout represents a loss of resources that hinders investment in positive experiences, on the other hand, learning activities could initiate a gain spiral to acquire resources and improve performance. In this vein, burnout could deplete pilots' emotional, cognitive, and physical resources, hindering their engagement in continuous learning. This depletion could impair their possibilities to develop new competencies that are necessary for proficient, adaptive, and proactive behaviors at work (Griffin et al. 2007). For pilots, who must constantly update their skills and knowledge to manage the complexity of flight environments, the implications of reduced learning are significant for their professional functioning and performance. Moreover, burnout undermines pilots' motivation and cognitive functioning, making it challenging for them to sustain high levels of performance (Lemonaki et al. 2021; Schaufeli et al. 2020). In the relationship between burnout and performance, continuous learning behaviors could act as a mediator because they are affected by individual well-being and they facilitate pilots' ongoing adaptation to dynamic work demands to enhance their work effectiveness (Budhiraja 2023; Rowold and Kauffeld 2008).

In this vein, empirical studies examining the relationships between burnout, continuous learning, and work performance are congruent with our arguments. For example, Taris (2006) systematically reviewed 16 studies dealing with the association between burnout and objective performance (e.g., supervisor reports), underlining significant relationships between emotional exhaustion and different types of performance such as in-role behavior, organizational citizenship behavior, and customer satisfaction. Demerouti et al. (2014)

uncovered the role of intervening variables in the burnout–performance link, highlighting that workers used selection, optimization, and compensation strategies to cope with the risk of burnout to reach adequate levels of performance. Lemonaki et al. (2021) revealed the mediating role of poor cognitive functioning in the negative associations of burnout with task and contextual performance. Cazan (2015) and Rehman et al. (2020) showed negative correlations between burnout and learning motivation dimensions, suggesting the detrimental effect of burnout on learning processes. Rowold and Kauffeld (2008) examined formal and informal dimensions of continuous learning to reveal their influence on the development of professional, method, and social competencies that are essential for work performance. Gemmano et al. (2022) investigated the link between the learning process of training transfer and different work performance behaviors (i.e., proficiency, adaptivity, and proactivity), highlighting the role of organizational learning culture in this relationship. Budhiraja (2023) showed that continuous learning was positively related to task and contextual performance, highlighting the importance of organizational learning strategies to improve employees' efficacy at work. Considering these theoretical arguments and empirical evidence, in the present study, we expected direct and indirect relationships between burnout and work performance behaviors via continuous learning.

2.3. Work Performance Behaviors and Flight Simulator Performance

Self-reported work performance behaviors provide an indication of what airline pilots do at work in terms of proficiency, adaptivity, and proactivity. Nonetheless, the accuracy and reliability of self-rating measures of job performance are controversial (Bal 2020), since they reflect workers' judgment of themselves, which can be affected by systematic cognitive distortions (Tommasi et al. 2024). In this vein, the association between self-rated and objective performance is a point of discussion in psychology (Campbell and Wiernik 2015; Dunning et al. 2004). The correlations found in the literature between self-assessed performance and objective performance ranged from modest to meager and sometimes null (Dunning et al. 2004). Therefore, different types of performance evaluation have been developed to approximate real-world performance, such as simulations (Campbell and Wiernik 2015).

During performance simulation sessions, individuals engage in tasks within artificial scenarios or with replicas of work task materials. Such simulations have been used for both developmental (Rupp et al. 2006) and performance evaluation purposes (Riggio et al. 2003). Simulators were used extensively for performance assessment, allowing for safe experimentation of emergency procedures and complex maneuvers. They offer a distinct advantage over alternative methods of assessing work performance by evaluating workers' competencies to execute crucial tasks that are otherwise challenging, unethical, or impractical to assess regularly (Kunkler 2006). Simulations, compared to self-ratings, have the potential advantage of being more valid assessments of workers' proficiency levels and are believed to avoid the contamination issues often associated with performance self-ratings (Campbell and Wiernik 2015).

In the aviation sector, flight simulations are a critical metric for evaluating pilots' performance by testing their practical skills and decision-making capabilities in a controlled environment (Demerouti et al. 2019; Vaden and Hall 2005). These devices are equipped with advanced technology to simulate real-world flight conditions and scenarios, allowing evaluators to track, analyze, and assess pilots' capabilities. They provide objective metrics for performance assessment in executing flight maneuvers, handling emergency situations, and adhering to operational procedures (European Aviation Safety Agency EASA 2018; International Civil Aviation Organization ICAO 2013). Simulators replicate a wide range of flight conditions and scenarios that may be difficult or unsafe to reproduce in actual flights. These include adverse weather conditions, system failures, and complex airspace environments.

However, combining pilots' self-reported work behaviors and flight simulator assessment was fundamental in the present study for obtaining a comprehensive view of

performance, especially when considering the issue of maximum versus typical performance (Campbell and Wiernik 2015). In general, simulators aim to measure maximum performance, which refers to an individual's ability to perform at their peak under particular conditions in a specific environment, such as in the simulated scenarios of a flight. In contrast, self-assessments often reflect pilots' typical performance, which encompasses the everyday tasks and behaviors they exhibit in their regular work settings. Whereas simulations focus on assessing capabilities under challenging or specialized conditions, self-assessments may capture a broader range of behaviors and skills demonstrated over time in routine work situations. What individuals do on a daily basis contributes to improving their competencies which will be used at their highest potential when maximum performance is required (Quiñones et al. 1995). Thus, typical work performance behaviors (self-reported by pilots) could be positively related to actual maximum performance (assessed in a flight simulator session).

Consequently, in the present study, it was relevant to investigate whether there was a positive relationship between self-reported performance behaviors and performance in a flight simulator assessed by experts using objective indices. By integrating the relationship between work behaviors and flight simulator performance with the previously hypothesized relationships, it stood to reason that work-related stress factors have an indirect effect on flight simulator performance through the mediation of burnout, continuous learning, and work performance behaviors. This sequential mediation aligns with the COR theory, suggesting that the depletion of resources due to stress and burnout hampers the resource acquisition of continuous learning, which in turn affects resource application in work performance behaviors and ultimately flight performance. Therefore, we hypothesized the following:

H1. *Work-related stress factors are directly related to burnout.*

H2. *Burnout is directly related to work performance behaviors.*

H3. *Burnout is indirectly related to work performance behaviors via the mediation of continuous learning behaviors.*

H4. *Work-related stress factors are indirectly related to flight simulator performance via the sequential mediation of burnout, continuous learning behaviors, and work performance behaviors.*

3. Materials and Methods

3.1. Procedure and Sample

The data were collected through an online survey administered to Italian airline pilots, adopting a convenience sampling method. The survey was distributed via email and professional forums, targeting pilots employed by various airlines. All respondents provided informed consent to take part in the study before responding to the survey. The study followed the guidelines established in the Helsinki Declaration and the requirements of the General Data Protection Regulation (EU n. 2016/679). The questionnaire gathered demographic information (e.g., age, gender, education, and professional role) and individual responses related to the study variables (work-related stress factors, burnout, continuous learning behaviors, work performance behaviors, flight simulator performance).

The final sample consisted of 123 Italian airline pilots, of which 91% were male. The mean age of the participants was 48.84 years (SD = 11.64). In terms of education, 40% of participants held a bachelor's degree and 60% had graduated from secondary school. Participants had an average of 25.20 years (SD = 12.92) of flight experience. They average 65.07 (SD = 14.89) flight hours per month.

3.2. Measures

Burnout was assessed using the Italian short version (Mazzetti et al. 2022) of the Burnout Assessment Tool (Schaufeli et al. 2020). This tool comprised 12 items divided into four dimensions: exhaustion, mental distance, emotional impairment, and cognitive impairment. Participants responded on a 5-point scale ranging from 1 ("never") to 5 ("always"). Sample items were "At work, I feel mentally exhausted" (exhaustion), "I struggle to find any enthusiasm for my work" (mental distance), "At work, I feel unable to control my emotions" (emotional impairment), and "At work, I have problems staying focused" (cognitive impairment). A total score of burnout was calculated by averaging the items from all four dimensions ($\alpha = 0.87$).

Continuous learning behaviors were assessed using a scale adapted in Italian from prior studies (Watanabe et al. 2011). The scale consisted of seven items on a 5-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). A sample is "I continuously improve my knowledge through work experiences". This scale captures self-perceived engagement in continuous learning activities, which are relevant in the context of aviation where pilots are often required to engage in ongoing training and professional development. Although continuous learning is a mandated aspect of pilot training, the aim of this self-report scale was to reflect the pilots' own perception of their acquisition of new competencies. In this study, Cronbach's alpha was 0.87.

Work performance behaviors were assessed using nine items from the scale of work role performance by Griffin et al. (2007). Responses were collected on a 5-point scale from 1 ("very little") to 5 ("a great deal"). This scale included three dimensions: task proficiency, task adaptivity, and task proactivity. Sample items were "Ensured your tasks were completed properly" (proficiency), "Coped with changes to the way you have to do your core tasks" (adaptivity), and "Come up with ideas to improve the way in which your core tasks are done" (proactivity). A total score of work performance behaviors was obtained by averaging the items from all three dimensions ($\alpha = 0.84$).

Work-related stress factors were measured using the Italian short version of the Health and Safety Executive Stress Indicator Tool (Balducci et al. 2015). This tool consisted of 25 items aimed at assessing various stress factors including demands, control, supervisor support, peer support, relationships, role, and change. Participants responded on a 5-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Sample items are "I am pressured to work long hours" (demands), "I have a choice in deciding how I do my work" (control), "I am subject to bullying at work" (relationships), and "I have sufficient opportunities to question managers about change at work" (change). The item scores referred to control, support, role, and change were reversed to obtain indices of stressful dimensions. A total score of work-related stress factors was obtained by averaging all the items ($\alpha = 0.94$).

Flight simulator performance was obtained by asking participants to report the performance score received during a flight simulation session of evaluation. This session was part of the annual evaluation required for pilots, which assesses their competence in key performance dimensions essential for the pilot profession. The flight simulator scores followed validated scoring systems commonly employed in professional pilot evaluation (European Aviation Safety Agency EASA 2018; Gao et al. 2023; International Civil Aviation Organization ICAO 2013). The evaluation session concerned the sum of several key performance dimensions for the pilot profession: application of procedures, communication flight, path management, knowledge, leadership and teamwork, problem-solving and decision-making, situation awareness, and workload management. These dimensions reflect key skills and behaviors that directly impact a pilot's ability to perform under various conditions, including routine operations and emergency scenarios. Each dimension was evaluated using standardized criteria based on established aviation performance benchmarks. For example, the dimension of application of procedures was measured by how accurately and efficiently participants followed standard operating procedures. The dimension of problem-solving and decision-making was assessed by their ability to

handle in-flight emergencies. These dimensions align with this study's measures of work performance behaviors because such flight performance indicators can be considered a specification and a result of proficient, adaptive, and proactive behaviors.

3.3. Data Analysis

Data were analyzed using path analysis with robust estimation techniques to account for non-normality and potential estimation biases. We opted for robust estimation because Mardia's coefficients indicated that the assumption of multivariate normality was not supported (skewness = 11.36, $p < 0.001$; kurtosis = 49.44, $p < 0.001$). Goodness-of-fit indices, including the chi-square statistic (χ^2), the comparative fit index (CFI), the Tucker–Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR), were used to assess model fit. The model was tested to examine the hypothesized direct and indirect relationships between the variables of study interest. Indirect effects were estimated using bootstrapping procedures with 5000 resamples to obtain 95% confidence intervals for the mediation effects.

4. Results

Descriptive statistics, Cronbach's alpha coefficients, and correlations between the study variables are presented in Table 1. Work-related stress factors had a significant positive correlation with burnout and negative correlations with continuous learning and work performance behaviors. Burnout was negatively correlated with continuous learning and work performance behaviors. Continuous learning behaviors were positively correlated with both work performance behaviors and flight simulator performance. Finally, the correlation between work performance behaviors and flight simulator performance was significant and positive.

Table 1. Descriptive statistics, Cronbach's alpha coefficients, and correlations between the study variables.

Variables	M	SD	α	1	2	3	4	5
1. Work-related stress factors	2.41	0.76	0.94	-				
2. Burnout	1.74	0.53	0.87	0.36 ***	-			
3. Continuous learning behaviors	4.16	0.60	0.87	−0.34 ***	−0.57 ***	-		
4. Work performance behaviors	4.16	0.44	0.84	−0.29 **	−0.50 ***	0.67 ***	-	
5. Flight simulator performance	36.12	7.08	-	−0.02	−0.05	0.22 *	0.24 *	-

Note: M—mean; SD—standard deviation; α—Cronbach's alpha coefficient. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Path analysis with robust estimation techniques was conducted to test the hypothesized model. The overall fit of the model was good, as indicated by the goodness-of-fit indices (χ^2 (5) = 7.10, $p = 0.213$, CFI = 0.99, TLI = 0.97, RMSEA = 0.06, SRMR = 0.04). The results of the estimated model showed significant direct relationships (see Figure 2). Work-related stress factors were positively associated with burnout (0.25, $SE = 0.09$, $p < 0.01$). Burnout was negatively related to continuous learning behaviors (−0.64, $SE = 0.14$, $p < 0.001$), which in turn, were positively related to work performance behaviors (0.42, $SE = 0.06$, $p < 0.001$). Work performance behaviors were positively associated with flight simulator performance (3.90, $SE = 1.56$, $p < 0.05$). Burnout also had a significant direct relationship with work performance behaviors (−0.14, $SE = 0.07$, $p < 0.05$).

Bootstrapping procedures with 5000 resamples were used to test the mediation effects. The indirect effect of work-related stress factors on flight simulator performance through burnout, continuous learning, and work performance behaviors was negative and statistically significant (−0.27, SE = 0.16, 95% CI = −0.21; −0.05). The specific mediating role of continuous learning behaviors was confirmed by the significant indirect effect of burnout on work performance behaviors (−0.26, SE = 0.05, 95% CI = −0.37; −0.17). Additionally, the indirect effect of burnout on flight simulator performance through continuous learning and work performance behaviors was negative and significant (−1.05,

SE = 0.49, 95% CI = −2.09; −0.14). The examination of the R^2 revealed that the estimated model accounted for 13% of the variance in burnout, 33% of the variance in continuous learning behaviors, 47% of the variance in work performance behaviors, and 6% of the variance in flight simulator performance.

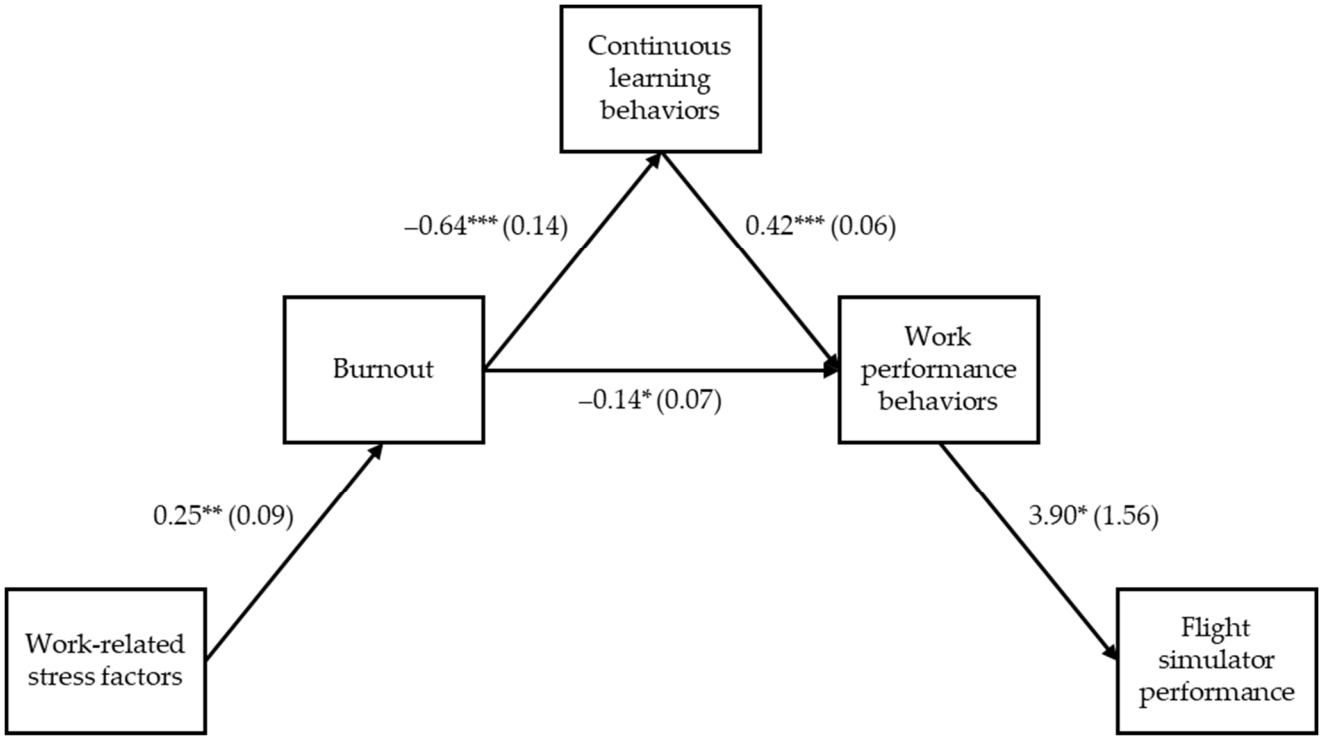


Figure 2. Parameter estimates for the mediation model. Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Coefficients are unstandardized. Standard errors are shown within parentheses.

5. Discussion and Conclusions

The present research aimed to investigate the role of continuous learning in mediating the adverse effects of burnout on work performance behaviors among airline pilots. Our findings aligned with the Conservation of Resources theory (Hobfoll 1989), suggesting that the depletion of emotional and cognitive resources due to burnout compromises pilots' capacities and willingness to invest further resources in continuous learning behaviors, thereby leading to poorer performance outcomes. Additionally, work performance behaviors were directly related to the actual performance on a flight simulator, emphasizing the importance of promoting proficiency, adaptivity, and proactivity behaviors through continuous learning to reinforce pilots' work effectiveness. Moreover, work-related stress factors had a direct effect on burnout with indirect consequences on performance outcomes, highlighting the importance of the psychosocial work environment in sustaining both health and productivity.

Hypothesis H1 was confirmed because the results of the estimated model showed that work-related stress factors had a significant direct effect on burnout. This finding indicated that the characteristics of the psychosocial work environment represented the basis for processes of well-being, emphasizing the stressors–burnout association. This was consistent with several theoretical models and empirical evidence that traced the causes of burnout in work-related stress dimensions (e.g., Bakker and Demerouti 2007; Demerouti et al. 2001; Sonnentag and Fritz 2015). Specifically, our findings contributed to confirming such an association in the aviation sector (e.g., Cahill et al. 2020, 2021; Demerouti et al. 2019), where pilots operate in high-pressure environments characterized by abundant job demands (e.g., complex work tasks, excessive workload, and long working hours) and limited job resources (e.g., few opportunities for relational exchanges and social support). Moreover,

even though our study was conducted a year after the end of COVID-19 as a global health emergency, the stressful effects of this period still had repercussions on individuals' health in these years (Perlis et al. 2023). Thus, the contextual situation, characterized by the widespread presence of long COVID symptoms during the data collection period, may have contributed to exacerbating work-related stress factors among pilots (Adam et al. 2024; Kim and Choi 2024; Kioulepoglou et al. 2024; Troyer and Bidaisee 2022).

Hypothesis H2 was confirmed because the estimated model showed a significant direct relationship between burnout and work performance behaviors in terms of proficiency, adaptivity, and proactivity. The detrimental effect of burnout on these performance dimensions highlighted the significant threat that exhaustion, mental distance, emotional, and cognitive impairment posed to pilots' ability to perform effectively and safely. This finding was consistent with prior research that provided systematic empirical support to the burnout–performance association (e.g., Demerouti et al. 2014; Lemonaki et al. 2021; Taris 2006). In the aviation context, this relationship is critical due to the consequences of pilots' professional functioning on the safety of passengers and crew (Cullen et al. 2021; Demerouti et al. 2019). Pilots are required to maintain high levels of vigilance, decision-making accuracy, and adaptability to ensure adequate performance at work. The symptoms of burnout could lead to slower reaction times, decreased situational awareness, and impaired decision-making abilities, which could compromise not only the effectiveness of work operations but also flight safety.

Hypothesis H3 was confirmed because the indirect effect of burnout on work performance behaviors through the mediation of continuous learning behaviors was significant and negative. By integrating this mediation with the stressors–burnout relationship and the consequences on actual performance, the estimated model showed that work-related stress factors had a significant indirect effect on flight simulator performance via the sequential mediation of burnout, continuous learning, and work performance behaviors, confirming hypothesis H4. Specifically, the path analysis showed that, beyond the association between work-related stress factors and burnout described in H1, burnout was negatively related to continuous learning behaviors, which in turn had a positive effect on work performance behaviors, which were associated with flight simulator performance. Thus, pilots experiencing burnout were not inclined to engage consistently in learning activities, and the consequent lack of competencies development prevented the improvement of their work effectiveness. This finding aligned with the Conservation of Resources theory (Hobfoll 1989), suggesting that when burnout (caused by a stressful work environment) depleted pilots' emotional and cognitive resources, their capacity to engage in continuous learning behaviors was compromised. This reduction in learning activities subsequently led to poorer performance outcomes. Our results were consistent with previous studies that highlighted the associations between burnout, learning processes, and performance (e.g., Budhiraja 2023; Lemonaki et al. 2021; Rehman et al. 2020). On the other hand, uncovering the mediating role of continuous learning was an original contribution to the literature. To our knowledge, this was the first study that provided empirical evidence of an underlying learning mechanism that explained why burnout was related to performance. According to our findings, burnout decreased work performance because it hampered continuous learning, which was a relevant driver of good performance. Beyond a detrimental perspective of the relationships that emerged, the negative indirect effects suggested that when burnout levels were low, pilots were more likely to engage in formal and informal learning activities, which reinforced their competencies to lead to better work performance. Thus, well-being at work could be considered a prerequisite for continuous learning because pilots who experienced low levels of burnout had adequate cognitive and emotional resources to learn and develop their competencies, thereby adopting adequate work behaviors to increase their efficacy at work.

From a practical standpoint, the results concerning the relationships between work-related stress factors, burnout, continuous learning, and performance outcomes suggested several actionable strategies for airline organizations. Our findings underscored the impor-

tance of implementing and enforcing comprehensive workplace health and safety policies to limit the sources of work-related stress and provide coping resources. These policies should aim to ensure manageable workloads, adequate rest periods, autonomy over work tasks, role clarity, and supportive and respectful relations in the work environment. In this vein, airline companies should invest in mental health support programs to prevent and address burnout. This could include access to counseling services, stress management workshops, and resilience training. Providing these resources could help pilots manage their stress levels and maintain their cognitive and emotional well-being, thereby improving their overall performance.

Moreover, given the role of continuous learning in mediating the effects of burnout on performance, organizations should prioritize continuous learning and professional development. This could be achieved by offering regular training sessions, simulation exercises, and opportunities for skill enhancement. Encouraging a culture of continuous learning could help pilots stay updated with the latest technological advancements and regulatory changes. Additionally, training programs focused on raising awareness about psychosocial risks and their impact on mental health and performance could be beneficial. Pilots and management should be educated on recognizing the symptoms of burnout and the importance of maintaining a healthy work environment. This could enhance their proficient, adaptive, and proactive behaviors to maintain high levels of performance even in the face of stress.

Finally, our findings related to the indirect association between burnout and performance highlighted the importance of evaluating both health and professional competencies. Airline organizations should implement regular assessments combining self-reported responses and objective measures. The self-reported perspective can provide insights into pilots' perceived behaviors in their daily tasks, whereas the objectivity of flight simulations can inform about their actual performance under controlled and challenging conditions. Additionally, monitoring pilots' well-being through the evaluation of stress levels and mental health is crucial in terms of flight safety and operations' efficiency. These comprehensive evaluations could help identify early signs of work-related problems concerning pilots' well-being and performance, allowing for timely interventions to support employees and maintain high standards of safety and efficiency.

Despite its contributions, the present study had some limitations. First, the cross-sectional design limited the possibility of drawing causal inferences from our findings. While we identified significant associations between burnout, continuous learning, and performance, the directionality of these relationships could not be conclusively determined. Longitudinal studies are needed to explore the temporal dynamics of these variables and to establish causality. Second, the reliance on self-reported measures could be subject to biases such as social desirability and recall bias, which may affect the accuracy of the information provided. We partially addressed this limitation by adding the performance evaluation of flight simulators. However, using only self-report scales for assessing continuous learning may not fully capture the learning processes of pilots. Objective measures, such as participation in formal training sessions or hours of training, would provide a more comprehensive view of learning dynamics in the aviation context. Future research should aim to combine different sources of assessment to complement self-reported data, thereby providing a more robust assessment of pilots' well-being, learning activities, and work behaviors. Third, the sample size and specific demographic characteristics of the participants limits the generalizability of the findings. Our study used a convenience sampling method, focusing on a specific group of airline pilots. This non-probabilistic sampling approach may limit the representativeness of the sample, and as such, the conclusions drawn from this study should be interpreted with caution. The results may not be fully applicable to pilots working in other contexts, nor to different high-stress professions. Future research should aim to include a more diverse and larger sample, using probabilistic sampling methods to enhance the generalizability of the findings.

In conclusion, this study advanced our understanding of the complex interplay between burnout, continuous learning, and work performance among pilots. By highlighting the mediating role of continuous learning, our findings underscored the importance of addressing burnout and promoting continuous learning to enhance performance and well-being in the aviation industry. These insights provided a foundation for developing targeted interventions that could support pilots in managing stress and maintaining high levels of performance, ultimately contributing to the overall safety and effectiveness of the airline sector.

Author Contributions: Conceptualization, C.G.G., M.L.G. and A.M.; methodology, C.G.G., M.L.G., S.G. and A.M.; formal analysis, C.G.G.; data curation, C.G.G., M.L.G., S.G. and A.M.; writing—original draft preparation, C.G.G., M.L.G., S.G. and A.M.; writing—review and editing, C.G.G., M.L.G. and A.M.; visualization, C.G.G.; supervision, A.M; project administration, C.G.G., M.L.G. and A.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of the University of Bari (protocol code ET-23-06, date of approval April 19 2023).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy restrictions.

Conflicts of Interest: The authors declare no conflicts of interest.

References

Adam, Tim, Stefan Sammito, Edward Nicol, and Norbert Guettler. 2024. Return to flying duties of German military pilots after recovery from COVID-19. *BMJ Military Health* 170: 130–34. [CrossRef] [PubMed]

Bakker, Arnold B., and Evangelia Demerouti. 2007. The job demands-resources model: State of the art. *Journal of Managerial Psychology* 22: 309–28. [CrossRef]

Bakker, Arnold B., Evangelia Demerouti, and Willem Verbeke. 2004. Using the job demands-resources model to predict burnout and performance. *Human Resource Management* 43: 83–104. [CrossRef]

Bal, P. Matthijs. 2020. Why we should stop measuring performance and well-being. *Zeitschrift für Arbeits-und Organisationspsychologie* 64: 196–200. [CrossRef]

Balducci, Cristian, Luciano Romeo, Margherita Brondino, Gianluigi Lazzarini, Francesca Benedetti, Stefano Toderi, Franco Fraccaroli, and Margherita Pasini. 2015. The validity of the short UK health and safety executive stress indicator tool for the assessment of the psychosocial work environment in Italy. *European Journal of Psychological Assessment* 33: 149–57. [CrossRef]

Borghini, Gianluca, Laura Astolfi, Giovanni Vecchiato, Donatella Mattia, and Fabio Babiloni. 2014. Measuring neurophysiological signals in aircraft pilots and car drivers for the assessment of mental workload, fatigue and drowsiness. *Neuroscience & Biobehavioral Reviews* 44: 58–75.

Brookes, Keely, Caroline Limbert, Christopher Deacy, Allison O'Reilly, Stuart Scott, and Katie Thirlaway. 2013. Systematic review: Work-related stress and the HSE management standards. *Occupational Medicine* 63: 463–72. [CrossRef]

Budhiraja, Sunil. 2023. Continuous learning and employee performance: A moderated examination of managers' coaching behavior in India. *Personnel Review* 52: 200–17. [CrossRef]

Cahill, Joan, Paul Cullen, and Keith Gaynor. 2020. Interventions to support the management of work-related stress (WRS) and wellbeing/mental health issues for commercial pilots. *Cognition, Technology & Work* 22: 517–47.

Cahill, Joan, Paul Cullen, Sohaib Anwer, and Keith Gaynor. 2021. The impact of the COVID 19 pandemic on aviation workers and the aviation system. Paper presented at the 21st International Symposium on Aviation Psychology, Virtually, May 18–21; pp. 164–71.

Campbell, John P., and Brenton M. Wiernik. 2015. The modeling and assessment of work performance. *Annual Review of Organizational Psychology and Organizational Behavior* 2: 47–74. [CrossRef]

Carfì, Angelo, Roberto Bernabei, and Francesco Landi. 2020. Persistent symptoms in patients after acute COVID-19. *JAMA* 324: 603–5. [CrossRef] [PubMed]

Cazan, Ana-Maria. 2015. Learning motivation, engagement and burnout among university students. *Procedia-Social and Behavioral Sciences* 187: 413–17. [CrossRef]

Ceschi, Andrea, Arianna Costantini, Vivian Zagarese, Eleonora Avi, and Riccardo Sartori. 2019. The NOTECHS+: A short scale designed for assessing the non-technical skills (and more) in the aviation and the emergency personnel. *Frontiers in Psychology* 10: 902. [CrossRef] [PubMed]

Chen, Han, and Khalid Eyoun. 2021. Do mindfulness and perceived organizational support work? Fear of COVID-19 on restaurant frontline employees' job insecurity and emotional exhaustion. *International Journal of Hospitality Management* 94: 102850. [CrossRef] [PubMed]
Cropanzano, Russell, Deborah E. Rupp, and Zinta S. Byrne. 2003. The relationship of emotional exhaustion to work attitudes, job performance, and organizational citizenship behaviors. *Journal of Applied Psychology* 88: 160–69. [CrossRef]
Cullen, Paul, Joan Cahill, and Keith Gaynor. 2021. A qualitative study exploring well-being and the potential impact of work-related stress among commercial airline pilots. *Aviation Psychology and Applied Human Factors* 11: 1–12. [CrossRef]
Demerouti, Evangelia, Arnold B. Bakker, and Michael Leiter. 2014. Burnout and job performance: The moderating role of selection, optimization, and compensation strategies. *Journal of Occupational Health Psychology* 19: 96–107. [CrossRef]
Demerouti, Evangelia, Arnold B. Bakker, Friedhelm Nachreiner, and Wilmar B. Schaufeli. 2001. The job demands-resources model of burnout. *Journal of Applied Psychology* 86: 499–512. [CrossRef]
Demerouti, Evangelia, Wouter Veldhuis, Claire Coombes, and Rob Hunter. 2019. Burnout among pilots: Psychosocial factors related to happiness and performance at simulator training. *Ergonomics* 62: 233–45. [CrossRef]
Dunning, David, Chip Heath, and Jerry M. Suls. 2004. Flawed self-assessment: Implications for health, education, and the workplace. *Psychological Science in the Public Interest* 5: 69–106. [CrossRef]
European Aviation Safety Agency EASA. 2018. *Certification Specifications for Aeroplane Flight Simulation Training Devices*; Cologne: European Union Aviation Safety Agency.
Gao, Shan, Yuanyuan Xian, and Lei Wang. 2023. An Evaluation Framework on Pilot's Competency-Based Flying Style. In *International Conference on Human-Computer Interaction*. Cham: Springer Nature Switzerland, pp. 190–99.
Gemmano, Cataldo Giuliano, Amelia Manuti, and Maria Luisa Giancaspro. 2022. "It's just a matter of culture": An explorative study on the relationship between training transfer and work performance. *Journal of Workplace Learning* 34: 532–48. [CrossRef]
Griffin, Mark A., Andrew Neal, and Sharon K. Parker. 2007. A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal* 50: 327–47. [CrossRef]
Hobfoll, Stevan E. 1989. Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist* 44: 513–24. [CrossRef] [PubMed]
Hobfoll, Stevan E. 2001. The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology* 50: 337–421. [CrossRef]
Hobfoll, Stevan E., and John Freedy. 2017. Conservation of resources: A general stress theory applied to burnout. In *Professional Burnout*. Edited by Wilmar B. Schaufeli, Christina Maslach and Tadeusz Marek. London: Routledge, pp. 115–29.
International Civil Aviation Organization ICAO. 2013. *Manual of Evidence-Based Training, Doc 9995, AN/497*. Montréal: International Civil Aviation Organization.
Kim, Jung-Ha, and Seunghye Choi. 2024. Effects of Post-COVID-19 Syndrome on Quality of Life Among Airline Crew. *Workplace Health & Safety* 72: 374–83.
Kioulepoglou, Panagiotis, Spyridon Chazapis, and James Blundell. 2024. A comparative analysis of job satisfaction among military and airline pilots: During, and post COVID-19. *Research in Transportation Business & Management* 53: 101103.
Kunkler, Kevin. 2006. The role of medical simulation: An overview. *The International Journal of Medical Robotics and Computer Assisted Surgery* 2: 203–210. [CrossRef] [PubMed]
Lemonaki, Rodanthi, Despoina Xanthopoulou, Achilles N. Bardos, Evangelos C. Karademas, and Panagiotis G. Simos. 2021. Burnout and job performance: A two-wave study on the mediating role of employee cognitive functioning. *European Journal of Work and Organizational Psychology* 30: 692–704. [CrossRef]
Mackay, Colin, David Palferman, Hannah Saul, Simon Webster, and Claire Packham. 2012. Implementation of the Management Standards for work-related stress in Great Britain. In *Improving Organizational Interventions for Stress and Well-Being*. Edited by Cooper Biron, Maria Karanika-Murray and Cary L. Cooper. London: Routledge, pp. 285–312.
Maslach, Christina, and Michael P. Leiter. 2016. Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry* 15: 103–11. [CrossRef]
Mavin, Timothy John, and Wolff-Michael Roth. 2015. Optimizing a workplace learning pattern: A case study from aviation. *Journal of Workplace Learning* 27: 112–27. [CrossRef]
Mazzetti, Greta, Chiara Consiglio, Ferdinando Paolo Santarpia, Laura Borgogni, Dina Guglielmi, and Wilmar B. Schaufeli. 2022. Italian validation of the 12-item version of the Burnout Assessment Tool (BAT-12). *International Journal of Environmental Research and Public Health* 19: 8562. [CrossRef] [PubMed]
Paisan, Noor Ikma Syazwana, and Rita Zaharah Wan-Chik. 2023. Stress factors and the impacts of COVID-19 pandemic: A review on the aviation industry. In *Industrial Revolution in Knowledge Management and Technology*. Edited by Azman Ismail, Fatin Nur Zulkipli, Jimisiah Jaafar and Andreas Öchsner. Berlin: Springer, pp. 51–59.
Pediconi, Maria Gabriella, Sarah Bigi, Michela Brunori, Glauco Maria Genga, and Sabrina Venzi. 2020. In the sky between expertise and unexpected feelings and resources of pilots' resilient ego: A psychoanalytic point of view. In *Human Mental Workload: Models and Applications*. Paper presented at the 4th International Symposium, H-WORKLOAD, Granada, Spain, December 3–5.
Perlis, Roy H., Kristin Lunz Trujillo, Alauna Safarpour, Mauricio Santillana, Katherine Ognyanova, James Druckman, and David Lazer. 2023. Association of post–COVID-19 condition symptoms and employment status. *JAMA Network Open* 6: e2256152. [CrossRef] [PubMed]

Quińones, Miguel A., J. Kevin Ford, and Mark S. Teachout. 1995. The relationship between work experience and job performance: A conceptual and meta-analytic review. *Personnel Psychology* 48: 887–910. [CrossRef]
Rehman, Abaid Ur, Tariq Mehmood Bhuttah, and Xuqun You. 2020. Linking burnout to psychological well-being: The mediating role of social support and learning motivation. *Psychology Research and Behavior Management* 13: 545–54. [CrossRef]
Riggio, Ronald E., Bronston T. Mayes, and Deidra J. Schleicher. 2003. Using assessment center methods for measuring undergraduate business student outcomes. *Journal of Management Inquiry* 12: 68–78. [CrossRef]
Rowold, Jens, and Simone Kauffeld. 2008. Effects of career-related continuous learning on competencies. *Personnel Review* 38: 90–101. [CrossRef]
Rupp, Deborah E., Alyssa Mitchell Gibbons, Amanda M. Baldwin, Lori A. Snyder, Seth M. Spain, Sang Eun Woo, Bradley J. Brummel, Carra S. Sims, and Myungjoon Kim. 2006. An initial validation of developmental assessment centers as accurate assessments and effective training interventions. *The Psychologist-Manager Journal* 9: 171–200. [CrossRef]
Salas, Eduardo, Scott I. Tannenbaum, Kurt Kraiger, and Kimberly A. Smith-Jentsch. 2012. The science of training and development in organizations: What matters in practice. *Psychological Science in the Public Interest* 13: 74–101. [CrossRef]
Schaufeli, Wilmar B., Steffie Desart, and Hans De Witte. 2020. Burnout Assessment Tool (BAT)—Development, validity, and reliability. *International Journal of Environmental Research and Public Health* 17: 9495. [CrossRef]
Sessa, Valerie I., and Manuel London. 2015. *Continuous Learning in Organizations: Individual, Group, and Organizational Perspectives*. London: Psychology Press.
Sonnentag, Sabine, and Charlotte Fritz. 2015. Recovery from job stress: The stressor-detachment model as an integrative framework. *Journal of Organizational Behavior* 36: S72–S103. [CrossRef]
Sonnentag, Sabine, Eva J. Mojza, Evangelia Demerouti, and Arnold B. Bakker. 2012. Reciprocal relations between recovery and work engagement: The moderating role of job stressors. *Journal of Applied Psychology* 97: 842–53. [CrossRef]
Sonnentag, Sabine, Laura Venz, and Anne Casper. 2017. Advances in recovery research: What have we learned? What should be done next? *Journal of Occupational Health Psychology* 22: 365–80. [CrossRef] [PubMed]
Taris, Toon W. 2006. Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress* 20: 316–34.
Tommasi, Francesco, Riccardo Sartori, Andrea Ceschi, Evie Michailidis, and Stephan Dickert. 2024. Evidence of systematic cognitive errors in job performance self-ratings. *Testing, Psychometrics, Methodology in Applied Psychology* 31: 25–39.
Troyer, Hannah L., and Satesh Bidaisee. 2022. The impact of COVID-19 on the aviation industry: A literature review. *International Public Health Journal* 14: 3–12.
Vaden, Eric A., and Steven Hall. 2005. The effect of simulator platform motion on pilot training transfer: A meta-analysis. *The International Journal of Aviation Psychology* 15: 375–93. [CrossRef]
Van Der Heijden, Beatrice, Jo Boon, Marcel Van der Klink, and Ely Meijs. 2009. Employability enhancement through formal and informal learning: An empirical study among Dutch non-academic university staff members. *International Journal of Training and Development* 13: 19–37. [CrossRef]
Watanabe, Shinichiro, Mohammad Tareq, and Yuichiro Kanazawa. 2011. When openness to experience and conscientiousness affect continuous learning: A mediating role of intrinsic motivation and a moderating role of occupation. *Japanese Psychological Research* 53: 1–14. [CrossRef]
Zia, Muhammad Qamar, Julian Decius, Muhammad Naveed, Shiraz Ahmed, and Shagufta Ghauri. 2023. Committed, healthy, and engaged? Linking servant leadership and adaptive performance through sequential mediation by job Embeddedness and burnout. *Journal of Leadership & Organizational Studies* 30: 327–40.

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