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Presenteeism Among Ab-initio Pilots in Turkey

Bilal Kılıç[1*], **Melis Tabak**[2]

[1*]Nisantasi University, School of Aviation, Pilot Training Department, Istanbul, Türkiye. (capt.bilalkilic@gmail.com).
[2] Ozyegin University, Faculty of Aviation and Aeronautical Sciences, Istanbul, Türkiye. (melis.tabak@ozu.edu.tr).

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Corresponding Author: *Bilal Kılıç*

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Abstract

In this study, we set out to estimate the prevalence of presenteeism and to define its possible association with organizational factors, committing errors and stress among ab-initio pilots. Presenteeism is a major safety-related issue and has been extensively studied in a variety of occupation groups. As a cross-sectional study, a self-administered questionnaire was used to collect the data from ab-initio pilots. The participants assessed themselves on the Stanford Presenteeism Scale (SPS-6). Correlation analysis was performed to explore the association between organizational factors and presenteeism. Based on the findings, the prevalence of presenteeism was 29.1 percent among the ab-initio pilots (N=175). Furthermore, there was a strong association between training-related stress ($p < 0.01$) and presenteeism. The student pilots with presenteeism were found to make mistakes during flight. Better and effective supervision for ab-initio pilots was associated with lower levels of presenteeism, highlighting the need for a supportive and comfortable atmosphere in the flight deck in which ab-initio pilots may feel comfortable. The findings presented here may facilitate improvements in the field of aviation safety.

1. Introduction

In recent decades, there has been an increasing interest in research examining presenteeism (Lack, 2011; Lohaus & Habermann, 2019). This term refers to attending work despite complaints and illness (Gosselin et al., 2013). The effect of presenteeism on employees' performance has not received considerable attention (Lohaus & Habermann, 2019). Nevertheless, it may cause unwanted organizational and individual outcomes (e.g., performance deterioration, productivity losses, increased costs, near-miss, incident and accident) (Fapohunda, 2016). A large and growing body of literature has investigated presenteeism in the workplace (Jung et al., 2020; Lack, 2011; Salas-Nicás et al., 2021) Furthermore, this particular phenomenon among students has received considerable attention over the past decade (Akin et al., 2013; Matsushita et al., 2011; Mikami et al., 2013).

Presenteeism may be one of the reasons for employees to underperform their duties and experience organizational consequences in various workplace groups. It may also have severe effects on workers' performance (e.g., reduced situational awareness, mental and physical fatigue of aircrew and air traffic controller) and organizational expenditures (e.g., medical expenses, aircrew scheduling and delayed flight operation) in the context of aviation. Furthermore, reduced performance and motivation of aircrew may be detrimental to flight safety and result in near-misses, aviation accidents and incidents (Kilic, 2021a). There are quite a few studies on presenteeism in aviation (Johansson & Melin, 2018a; Üzüm & Şenol, 2019). However, no research that examined presenteeism among ab-initio pilots has been found.

Recently, the literature has produced numerous results on individual factors and work-related factors causing presenteeism. It has been reported that stress and organizational factors may be attributed to presenteeism (Karimi et al., 2015). The particularity of this study is to elicit this important phenomenon among student pilots. The aims of this study are twofold: first, our study examines the prevalence of the propensity to perform a flight duty while sick. Second, organizational factors associated with presenteeism are explored. Furthermore, the relationship between stress and presenteeism is studied.

1.1. Presenteeism

The simplest definition of presenteeism is attending work while ill (Aronsson et al., 2000). To put it another way, it is defined as presenting to work when one is sick with the result of lack of efficiency (Arslaner & Boylu, 2015)

Various sicknesses may give rise to presenteeism such as headache, muscle pain, allergy, depression, stress, high blood pressure, asthma, diabetes, sleep deprivation and cholera (Dalkılıç & Harmancı Seren, 2018), but they are not the primary reasons for presenteeism. Employees feel anxious about being absent at work due to its possible consequences. The reasons for this anxiety may be listed as work-related demands (replaceability, job insecurity, management style, control over the pace of work and time pressure) and organizational policies (absence policies, disciplinary

proceedings to come into work, return to work policies, absenteeism cost, productivity loss)(Gül & Gül, 2016).

Presenteeism has significant outcomes affecting the managerial side of the workplace as well as the individual. In an organizational perspective, presenteeism's adverse effects on the individual create costs for the organization (Cullen & McLaughlin, 2006). Presenteeism losses, usually associated with reduced work output, errors on the job and failure to meet company standards, have been shown to incur 5.1 times more costs than those incurred for being absent at work (Brown et al., 2014). Furthermore, presenteeism may be the origin of the existing illness to become more serious, aggression, fatigue, weak concentration, lack of motivation, and most importantly, accidents and errors due to dysfunction (Ulu et al., 2016). In this perspective, presenteeism may cause catastrophic results with loss of concentration if we consider that ab-initio pilots are inexperienced students (Kilic, 2019). It may be pointed out that presenteeism has worse effects than being absent at work on both the individual and the workplace. There is a considerable number of studies on presenteeism in various sectors such as tourism (Cullen & McLaughlin, 2006), education (Pérez-Nebra et al., 2020), textile (Yılmaz & Günay, 2020), health (Lui et al., 2018) and organizational sectors (Fapohunda, 2016). However, there is only a small number of studies related to presenteeism and aviation (Johansson & Melin, 2018a; Üzüm & Şenol, 2019). Therefore, we set out to study presenteeism in aviation.

1.2. Presenteeism and Aviation

Presenteeism is a contemporary concept which is common among employees in occupations with extensive interpersonal interaction (Lui et al., 2018). In the field of aviation, presenteeism among pilots is considered a safety-related problem because of the fundamental corollaries of this phenomenon (e.g., productivity loss, distraction, stress increase and adverse mental and physical states) (Καυγάς, 2015). There are several factors that lead pilots to go to work despite being sick, such as anxiety about job security, negative peer censure or judgment or strong pressure from management for employees (Καυγάς, 2015) (Kilic, 2021b).

Pilots are prone to making errors when they are ill (Johansson & Melin, 2018a) (Kilic, 2020a). There is an association between errors and adverse psychological and mental states of aircrew (e.g., sickness, stress, fatigue, loss of situational awareness and lack of vigilance) (Kilic & Gumus, 2020) (Kilic & Soran, 2019)(Kilic, 2022)

Adverse physiological and mental states of the aircrew were attributed to 29% of training flight accidents (Kilic, 2019), 7% of air cargo accidents (Kilic & Gündogdu, 2020) and 16% of hot-air balloon accidents (Kilic, 2020b).

Interestingly, deteriorated situational awareness and fatigue of flight crew were reported as the most important factors causing gross navigation errors during transatlantic flights (Havle & Kılıç, 2019). The prevalence of presenteeism among airline pilots has been widely investigated. It has been demonstrated that 63% of pilots performed a flight duty when they were sick. Pilots with reported presenteeism mentioned that they made more errors (Johansson & Melin, 2018a). Therefore, pilots' awareness of health issues plays an important role in ensuring flight safety (Kilic & Soran, 2020).

Student pilots may be more prone to failures due to lack of experience and presence of stressors (Kilic, 2021a; Kilic & Ucler, 2019) (Kilic, 2021c). It is highly likely that student pilots may feel stressed and anxious about instructors' criticism, classmates' censure and judgment and competitiveness among them (Saipanish, 2003). These factors may give rise to presenteeism among ab-initio pilots. When a student pilot performs a training flight with health issues (e.g., headache, stomachache, inner ear infection, flu, vestibular neuritis and motion sickness), there may be deterioration in concentration and an increase in stress level that may impede flight safety (Orford & Silberman, 2008). It has been already reported that impaired concentration poses a greater safety risk for student pilots, their colleagues and for their flight schools (Kilic, 2019). Furthermore, sick students may endanger their peers due to spread of disease and decline in performance (Kilic & Tabak, 2022).

2. Methods

2.1. Participants and Procedure

The questionnaire was delivered to 520 student pilots across five flight training organizations in Turkey. In the population of the study, 175 students completed the questionnaires. The response rate was %33,65. Participation was voluntary and anonymous. The study was approved by Özyeğin University's Human Research Ethics Board (2020/16/02).

2.2. Measures

The data were collected from 175 ab-initio pilots on general demographics including gender, age (17-23 years, 24-30 years or 31 years), type of pilot license (student pilot license, private pilot license or commercial pilot license), flying hours (0-50 hours, 51-100 hours, 101-200 hours or 201 hours). Regarding variables related to organizational factors, the attitudes of flight instructors, the relationship between student pilots and instructors and support of instructors were taken into account. Workplace stress was included as a confounding factor in our study. The prevalence of presenteeism was measured through the question "During the last 12 months, have you begun a flight even though your health status made it reasonable to take sick leave?" If the participants answered yes to this question, they were requested to answer the following six questions developed in the SPS-6 scale (Koopman et al., 2002).

2.3. Statistical Analysis

In data analysis, as descriptive statistics, frequency, percentage, mean and standard deviation values were calculated. Reliability analysis and factor analysis were applied in examining the presenteeism scale and presenteeism-related organizational factors scale. Examination of these two scales based on the characteristics of the participants, their stress status and error-making status involved t-test, analysis of variance, and in examining the group causing the differences, Sidak test. To investigate the levels of relationship between the dimensions, correlation analysis was carried out. In the study, $p<0.05$ was accepted as statistically significant. The analyses were conducted by using the SPSS (Statistical Package for the Social Sciences) 25.0 package software.

3. Result and Discussion

3.1. Results

Among the participants, 80.6% were male, and 19.4% were female. The ages of the participants were 17-23 by 62.3%, 24-30 by 16.6% and 31 or older by 21.1% The licenses that the participants had were Commercial Pilot License (CPL) by 8%, Private Pilot License (PPL) by 64 % and Student Pilot License (SPL) by 28%. The flight experience of the participants was as 0-50 flying hours by 32.6%, 51-100 flying hours by 42.9%,

101-200 flying hours by 17.1% and 201 flying hours or longer by 7.4%.

Table 1 shows that the reliability level of the presenteeism scale (sp1-sp6) was 0.77, which showed a generally reliable level. As a result of the factor analysis, it was determined that the Presenteeism Scale had one dimension as the Presenteeism dimension. The KMO sample adequacy coefficient calculated in the study was 0.72. The explanation rate of the total variance was observed as 44%. The aforementioned coefficient showed that 51 questionnaire forms were adequate for factor analysis. Additionally, according to the result of the Bartlett's test on the significance of the factor structure ($p=0.01$, $p<0.05$), the obtained construct was significant.

Among the participants, 29.1% took part in flights despite being sick in the last 12 months. The participants stated that they never (10.9%), occasionally (71.4%), sometimes (8.6%), frequently (7.4%) or highly frequently (1.7%) took part in flights despite being sick and made mistakes. The participants also reported that they never (1.1%), occasionally (12%), sometimes (25.1%), frequently (42.9%) or highly frequently (18.9%) found flight training stressful.

Table 2 shows that there was a significant, weak and negative relationship between the participants' Presenteeism and Organizational Factors scores ($r=-0.36$, $p=0.01$). The education provided within the flight training to the students, the students' practices and the practices of the trainers were found to significantly reduce the students' presenteeism levels. There was a statistically significant relationship between strong support from the supervisor and low presenteeism.

Table 3 shows that the presenteeism levels of the participants differed based on their genders. The presenteeism levels of the men were significantly higher than those of the women ($p=0.04$).

It was observed that the presenteeism levels of the participants differed based on their ages. In the study, it was seen that the presenteeism levels of the students at the ages of 24-30 were significantly higher than those at the ages of under 23 or over 31 ($p=0.01$).

It was found that the presenteeism levels of the participants differed based on the types of their pilot licenses. The presenteeism levels of the students with a CPL license were significantly higher than those with an SPL license ($p=0.01$). It was determined that the presenteeism levels of the participants differed based on their flight experience. It was seen that the presenteeism levels of those with an experience of 201 flight hours or longer were significantly higher than all others with an experience of 200 flight hours or shorter ($p=0.01$). It was identified that there was a difference in the presenteeism levels of the participants based on their statuses of taking part in flights despite not being suitable for flight and making mistakes. It was observed that those who reported presenteeism made higher levels of errors ($p=0.01$). The presenteeism levels of the participants differed based on their statuses of finding the flight training stressful. In the study, those who never or occasionally found the flight training stressful had lower presenteeism levels ($p=0.01$).

3.2. Discussion

This study set out with the aim of examining the prevalence of presenteeism and examine possible associations with organizational factors, stress and committing errors among ab-initio pilots. The results of this study showed that presenteeism was prevalent among ab-initio pilots, and there was an association between organizational factors (e.g., supervisory support) and presenteeism. It is interesting to note that low support from the supervisor gave rise to presenteeism. This was consistent with previous results (Leineweber et al., 2011). Another important finding was that the ab-initio pilots who considered pilot training as stressful reported presenteeism. The most interesting finding was that the ab-initio pilots with reported presenteeism made more errors, suggesting presenteeism to be a significant threat to flight safety. This was well in-line with previous findings (Johansson & Melin, 2018b). These findings suggested that supervisory support (e.g., encouragement by flight instructor) is of great importance for preventing presenteeism among student pilots. The ab-initio pilots with longer hours of flying experience exhibited higher presenteeism compared to the less experienced ab-initio pilots over the past year. It may be therefore assumed that higher level of flying experience may give rise to overconfidence among trainee pilots and tendency to go flying when they are sick.

4. Conclusion

Presenteeism may give rise to unwanted occurrences in aviation. Ab-initio pilots are especially prone to committing errors in the cockpit even under normal circumstances due to their limited flight experience (flight hours). Henceforth, we set out to examine presenteeism among ab-initio pilots.

This study has shown that the prevalence of presenteeism was 29% among the ab-initio pilots. Presenteeism among student pilots may cause various negative effects, such as reduced attention, deteriorated situational awareness and making errors. One of the more significant findings to emerge from this study was that the ab-initio pilots with presenteeism made more errors. Therefore, pilots with acts of presenteeism are a potential risk to flight safety. Organizations (e.g., aviation authorities, universities and flight training organizations) need to prepare ab-initio pilots to cope with presenteeism.

It was also shown that stress and supervisory support were strongly associated with presenteeism. Therefore, it is essential that supervisors (e.g., flight instructors, academic advisors and faculty members) should listen to ab-initio pilots' stress and difficulties and share their personal experience to improve training and reduce stress. Emotional and technical support should be provided by supervisors. Based on the rules and regulations implemented by civil aviation authorities, pilots shall be refrained from the duty when they are not fit (e.g., adverse mental or physical state), which may jeopardize flight safety.

The findings in this study are subject to at least two limitations. First of all, the ab-initio pilots might have hesitated to participate in the questionnaire. Secondly, the participants might have not objectively answered the questions. Further research regarding the role of mental health would be worthwhile.

This is the first study examining presenteeism among ab-initio pilots. The results of this study make a major contribution to the field of aviation safety.

Table 1. Reliability and Validity Tests for dimensions

Dimension	Statement	Factor Loads	Explained Variance	Reliability	KMO
Presenteeism (n=51)	sp1	0.51	44%	0.77	0.72
	sp2	0.52			
	sp3	0.54			
	sp4	0.50			
	sp5	0.52			
	sp6	0.56			
Organizational factors (n=175)	OF1	0.62	52%	0.85	0.83
	OF2	0.63			
	OF3	0.65			
	OF4	0.66			

Table 2. Examination of the relationship between Presenteeism and Organizational Factors

Dimensions		Organizational Factors
Those reporting presenteeism	R	-0.36
	P	0.01*
	n	51

Table 3. Presenteeism and Participant Characteristics

Student Characteristics and Views		Presenteeism (Yes n=51) X±SD	p
Gender	Male	3.23±0.55	0.04*
	Female	3.10±0.65	
Age	17-23	3.26±0.53	0.01*
	24-30	3.56±0.31	
	31 or older	2.96±0.64	
License Type	CPL	3.50±0.44	0.01*
	PPL	3.24±0.61	
	SPL	3.01±0.47	
Flight Experience	0-50 hours	3.19±0.42	0.01*
	51-100 hours	3.11±0.58	
	101-200 hours	3.36±0.90	
	201 hours or longer	3.72±0.09	
I have made an error during flight as I took part in flight despite being unsuitable for flight in the last 12 months	Never	2.58±0.73	0.01*
	Occasionally	3.23±0.37	
	Sometimes	3.43±0.19	
	Frequently-Highly Frequently	3.50±0.54	
I find the flight training stressful	Never-Occasionally	2.64±0.66	0.01*
	Sometimes	3.08±0.39	
	Frequently	3.22±0.54	
	Highly Frequently	3.77±0.18	

Appendix

1. Gender
   a. Female
   b. Male
   c. Prefer not to say

2. Age
   a. 17-23
   b. 24-30
   c. 31 and older

3. Holding type of license
   a. SPL
   b. PPL
   c. CPL

4. How many flying hours experience do you have?
   a. 0-50
   b. 51-100
   c. 101-200
   d. 201 and more

5. I consider my work (flight training) stressful
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree

6. During the last 12 months, have you begun a flight even though your health status made it reasonable to take sick leave? If yes, please answer the following questions. If no, please do not answer the following questions.
   a. Yes
   b. No

7. Because of my (health problem), * the stresses of my job were much harder to handle.
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree

8. Despite having my (health problem), * I was able to finish hard tasks in my work (flight duty).
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree

9. My (health problem) * distracted me from taking pleasure in my work (flight duty).
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly Agree

10. I felt hopeless about finishing certain work tasks, due to my (health problem).
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly Agree

11. At work (flight duty), I was able to focus on achieving my goals despite my (health problem).
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree

12. Despite having my (health problem), * I felt energetic enough to complete all my work (flight duty).
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree

13. I have made errors in the cockpit due to flying in unfit states (Presenteeism) during the last 12 months?
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly Agree

14. My immediate supervisor (flight instructor) gives me the encouragement I need
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly Agree

15. When the workload is heavy, my immediate supervisor (flight instructor) makes sure that my burden is lessened
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly agree

16. I am confident enough to express critical opinions without fear of reprisals from my immediate supervisor.
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly Agree

17. My immediate supervisor (flight instructor) makes sure that I do not begin a flight while feeling tired, fatigued, or unfit for other reasons
   a. Strongly disagree
   b. Disagree
   c. Neutral
   d. Agree
   e. Strongly Agree

Ethical approval

The study was approved by Özyeğin University's Human Research Ethics Board (2020/16/02).

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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