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Commercial Airline Pilots' Psychosocial Risk Factors: Evaluating the Mechanisms Influencing Job Satisfaction

Ticari Havayolu Pilotlarının Psikososyal Risk Faktörleri: İş Tatminini Etkileyen Mekanizmaların Değerlendirilmesi



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Abstract

Airlines have expanded their flight schedules and networks, making air travel more accessible but requiring pilots to navigate dense, fluctuating schedules and complex duties. The biological and psychosocial risks facing pilots, including fatigue, disrupted circadian rhythms, and stress, directly impact flight safety and have gained attention. Yet, exploring these psychosocial risks from an Industrial/Organizational Psychology perspective remains a relatively new approach. The current study seeks to advance the field by examining the mechanisms underpinning job satisfaction among commercial airline pilots, specifically focusing on the impact of psychosocial risk factors inherent in their profession. To achieve this goal, the study tested the relationship between psychological capital, mindfulness, work-life balance, and job satisfaction. This exploratory research aimed to elucidate the mechanisms of job satisfaction among pilots employed by commercial airlines in Turkey, with data collected from 94 commercial airline pilots. Results revealed a positive relationship between psychological capital, mindfulness, work-life balance, and job satisfaction. Additionally, the findings indicated that work-life balance mediates both mindfulness-job satisfaction and psychological capital-job satisfaction relationships. According to the study findings, work-life balance has a significant role in mediating the personal strengths and pilots' satisfaction level with their jobs. The direct and indirect impacts of mindfulness, psychological capital, and work-life balance on job satisfaction suggest that enhanced work-life balance and strengthened personal resources positively influence job satisfaction, within the context of psychosocial risk factors faced by commercial airline pilots.

Öz

Hava ulaşımının yolcular için daha erişilebilir hale getirmek için havayolları uçuş frekanslarını ve ağlarını çoğaltmışlardır. Bu koşullar, ticari havayolu pilotlarının karmaşık ve zorlu uçuş görevlerini yönetirken, yoğun ve değişken uçuş programlarına ayak uydurmalarını gerektirmektedir. Ticari havayolu pilotlarının, havacılık endüstrisinin doğasından kaynaklanan yorgunluk, bozulmuş sirkadiyen ritim, artan stres gibi biyolojik ve psikososyal riskleri, uçuş emniyeti ile doğrudan ilişkisi nedeniyle dikkat çekmektedir. Ancak ticari havayolu pilotlarının psikososyal risk faktörlerinin Endüstriyel/Örgüt Psikolojisi kapsamında araştırılması halen oldukça yeni bir yaklaşımdır. Mevcut çalışma, ticari havayolu pilotlarının iş tatmininin altında yatan mekanizmaları değerlendirerek ve ticari havayolu pilotluğu mesleğinde psikososyal risk faktörleri etrafındaki modelleri bağlamsallaştırarak gelişen alana katkıda bulunmayı amaçlamıştır. Bu amaca ulaşmak için psikolojik sermaye, bilinçli farkındalık, iş-yaşam dengesi ve iş tatmini arasındaki ilişki test edilmiştir. Bu çalışma, Türkiye merkezli ticari havayollarında çalışan pilotların iş tatmini mekanizmalarının altını çizmek için keşfedici bir araştırma olarak tasarlanmıştır. Veriler 94 ticari havayolu pilotunun katılımı ile elde edilmiştir. Sonuçlar, psikolojik sermaye, bilinçli farkındalık, iş yaşam dengesi ve iş tatmini arasında pozitif bir ilişki olduğunu ortaya koymuştur. Ayrıca bulgular, iş-yaşam dengesinin hem bilinçli farkındalık-ış tatmini hem de psikolojik sermaye-ış tatmini ilişkilerine aracılık ettiğini göstermiştir. Araştırma bulguları bilinçli farkındalık, psikolojik sermaye ve iş-yaşam dengesinin iş tatmini üzerindeki doğrudan ve dolaylı etkilerini; artan iş-yaşam dengesi ve güçlü kişisel kaynakların, ticari havayolu pilotlarının psikososyal risk faktörü olarak değerlendirilen iş tatminini olumlu yönde etkileyebileceğini göstermektedir.



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Keywords Mindfulness · Psychological capital · Work-life balance · Job satisfaction · Psychosocial risks

Anahtar Kelimeler Bilinçli farkındalık · Psikolojik sermaye · İş-yaşam dengesi · İş tatmini · Psikososyal riskler

Commercial Airline Pilots' Psychosocial Risk Factors: Evaluating the Mechanisms Influencing Job Satisfaction

Flight duty is a complex and demanding process. It requires concurrently gathering and sharing information, solving problems, making decisions, and communicating with other crew members while controlling several factors. While rigorously defined procedures are used in the selection process and training of pilots, psychological resources play a major role in both safe flight operations and their satisfaction level with their jobs. Several psychological risk factors could exacerbate work-related stress and lower job satisfaction. These factors can be exemplified as irregular working hours, working anti-social hours, being away from the house, lack of certainty due to crew planning, being contacted by work while off-duty due to a changed roster, etc. (Cahill et al., 2020). Psychosocial risk factors have the potential to raise stress levels at work and lower job satisfaction.

For pilots flying commercial aircraft, fatigue is one of the biggest risk concerns, second only to the workload of each individual flight operation. In addition, the mental strain and intense focus needed for flight operations are brought on by the safety obligations, which also induce stress. In addition, pilots who work irregular schedules may be at risk for psychosocial issues as a result of their disrupted circadian rhythm, time spent away from home, restricted socialization opportunities, stress from missing significant family occasions or holidays, or uncertainty about whether to take that important day off.

The Importance of Managing Psychosocial Risks in Aviation

Airline pilots' poor psychological health was found to be linked to their actively changing rosters, lack of personal control over their work, and less sociable workplace (Cooper & Sloan, 1985). According to a systematic review conducted by Pasha and Stokes (2018), depression is more prevalent than in the general population. Mood disorders that commercial airline pilots experience may result from distress because of disrupted circadian rhythm (Pasha & Stokes, 2018). Pilots' musculoskeletal issues have been linked to feeling under-supported and excessive demands of flight, particularly for first officers (Runeson-Broberg et al., 2014).

More attention has been paid to pilots' mental health problems and ways to treat them, particularly since the Germanwings 9525 accident in 2015. The co-pilot of Germanwings Flight 9525 had a history of severe depression. His doctor had declared him unable to fly because of his suicidal thoughts, but the airline had not been notified. (BEA - Bureau d'Enquêtes et d'Analyses, 2016). After this catastrophic accident, the European Aviation Safety Agency (EASA) provided a response stating that if the flight crew's ineligible psychological and medical conditions are not identified, catastrophic consequences may ensue. Shortly after the incident, the EASA released a recommendation that centered on the flight crew's medical suitability. The report recommends that pilots be subjected to a psychological assessment before beginning employment, that random drug and alcohol testing be instituted, and that pilot support programs be established (European Commission, 2015). According to these suggestions, EASA released new rules for the assessment and management of flight crew mental health (Commission Regulation (EU) 2018/1042, 2018).



Directorate General of Civil Aviation has legislated SHT-PSP Instruction on Aviation Personnel Peer Support Program and provided a guideline for airlines to implement support programs (SHT-PSP, 2021). The aim of the regulation has been stated as "...to regulate the rules of peer support programs and their implementation procedures, to increase aviation safety by coping with factors that cause anxiety and/or stress for aviation personnel, and to prevent the loss of license or certificate of trained personnel, and to regulate the implementation procedures of public, private institutions and organizations, and to determine the characteristics, duties, powers, and responsibilities of real and legal persons, and to regulate the activities in this regard." (SHT-PSP, 2021). According to Cahill et al. (2020), The promotion of wellbeing and coping mechanisms has to receive more attention to stop these tragic occurrences. Establishing a more all-encompassing strategy to improve well-being would be consistent with the SHT-PSP's goal of helping aviation personnel manage stressors and/or anxiety-inducing causes.

Employees at safety-critical organizations (SCOs) confront serious risks (Bergheim et al., 2015). Minimum rest time is specified in regulations as a prerequisite for being fit for flight. Nonetheless, there is a dearth of advice highlighting the significance of having a balance between one's personal and professional lives and how this affects job satisfaction.

By including improvable personal resources and considering pilots' job satisfaction as a psychosocial risk, the current study aims to broaden the understanding of the psychosocial risk variables that affect commercial airline pilots. In this perspective, psychological capital variables, work-life balance, and mindfulness have all been proposed as developable sources to explain job satisfaction.

Job Satisfaction Construct as a Psychosocial Risk Factor

Job satisfaction is a concept that is frequently prioritized and studied, specifically in the areas of Organizational/Industrial Psychology, Human Resources, and Business Management. Views of job satisfaction have taken on a broad-spectrum because studies generally have approached job satisfaction as a factor that only develops depending on the work conditions and one's approach to work and that only impacts business life. Owing to its substantial influence on the quality of life and health, job satisfaction ought to be assessed as a separate psychosocial risk factor. Since reducing job dissatisfaction does not necessarily result in increasing job satisfaction, the risk factors should be distinguished from job dissatisfaction (Luthans et al., 2015). Studying negative aspects and practice are consequently limited in their capacity to yield a greater understanding of strengths, optimal performance, and attaining individual development because the two attitudes are influenced by different circumstances (Luthans et al., 2015).

There is growing evidence that current work-related circumstances might negatively impact employees' physical and mental health by undermining job satisfaction (Faragher et al., 2013). Social and environmental factors have long been studied in relation to health. Given that work takes up the majority of a one's day, it makes sense that pressure and stress from work-related causes would have a big impact on health. The demands-control-support paradigm, which is frequently used to examine the psychosocial impact of the workplace on health, contends that environments with high expectations, limited control, and low social support are the most hazardous. It was shown that one major risk factor for commercial aircraft pilots was low social support (Fu et al., 2020). The psychological environment at work affects how people feel about their health, how well they recover from work, how tired they are, and whether or not they have sleep problems, which can even be affected by the operational type of aircraft (Fu et al., 2020).

Additionally, job satisfaction is discussed along with its defensive and preventive functions. The findings showed that job satisfaction has an impact on people's health, happiness, and confidence, highlighting the need of maintaining a positive, protective opinion of one's work. The findings suggest that, when put into

practice, policies on personnel management that place a strong emphasis on job satisfaction may enhance physical function and overall health perception, lessen performance constraints resulting from physical health issues, and reduce physical discomfort, all of which increase long-term organizational performance (Satuf et al., 2018). Numerous research conducted at various times show a connection between wellbeing and work-relevant stress (Faragher et al., 2013). Improved emotional performance, social function, and vitality as well as fewer performance limitations brought on by mental health conditions were related to job satisfaction (Satuf et al., 2018).

The Relationship Between Work-Life Balance and Job Satisfaction of Commercial Airline Pilots Within the Scope of Psychosocial Risks

When one's working hours are inconsistent, juggling other facets of life takes extra labor. Establishing fatigue risk management systems that supervise rostering and flight planning is required of airlines. However, the only fatigue risk that this system addresses is the one that is managed by flying and rest periods. The correlation between flight crew members' well-being and fatigue risk may warrant the expansion of the fatigue risk management system (Cahill, Cullen, Anwer, et al., 2020). The correlation between fatigue and mental health has garnered significant attention. According to recent research, pilots who worked longer shifts were three times more likely to report having a higher degree of depression than those whose flight duration was less (O'Hagan et al., 2016).

The most important component for pilot retention, according to a study conducted with entry-level commercial airline pilots, was the "Lifestyle" category, which was followed by the "Economic" and "Attractive Rosters" categories (Faragher et al., 2013). In general, individuals assessed a set pattern as the most significant aspect for themselves. According to the authors, this finding reflects how much individuals value the predictability that stable flight patterns bring into their lives. This allows pilots to schedule family get-togethers and vacations while still getting enough sleep. According to earlier research, job satisfaction among employees is closely correlated with their perception of control (Spector, 1986).

The Relationship Between Psychological Capital and Job Satisfaction of Commercial Airline Pilots Within the Scope of Psychosocial Risks

Examining the fundamental elements that contribute to employee wellbeing is beneficial because job satisfaction is so crucial to the performance of organizations and the well-being of their workforce. Building on one's skills and competencies makes it possible to resolve conflicts at work more effectively and to find greater fulfillment and enjoyment in work. Consequently, positive psychological capital functions as an internal factor influencing job satisfaction (Kwok et al., 2015). Employees with high psychological capital were more satisfied with their work and committed to the company because they had a higher expectation of success derived from an optimistic attitude and a conviction in their abilities derived from confidence (Avey et al., 2011). According to a study examining the relationship between psychological capital and employee performance and attitudes, PsyCap has a positive association with employee attitudes, particularly engagement with the company and job satisfaction. Moreover, it was demonstrated that a higher PsyCap correlates with increased devotion, high achievement, and contentment (Burhanuddin et al., 2019; Nafei, 2015). Moreover, prior research demonstrated that increased job satisfaction and lower turnover intention were related to the effective psychological capital intervention (Da et al., 2020).

Previous research has shown a significant relationship between psychological capital and both physical and mental health, in addition to its good effects on positive work outcomes. According to positive psychology, an individual's quality of life can be improved, and the incidence of psychopathology can be



decreased by having positive individual perspectives and positive personality traits (Seligman & Csikszentmihalyi, 2000).

The role of psychological capital is significant because of the influence of the current VUCA (Volatile, Uncertain, Complex, Ambiguous) climate, particularly the serious impacts of the pandemic. This is because psychological capital has the power to combat the mental disease induced by these effects (Luthans & Broad, 2020).

The Relationship Between Mindfulness and Job Satisfaction of Commercial Airline Pilots Within the Scope of Psychosocial Risks

Mindfulness is an awakened mind state in which one's attention, backed by sensitive awareness. Mindfulness allows one to bring unpleasant thoughts or projections back to reality so that experiences can be understood as what they are (Roche et al., 2014). Research indicates that mindfulness has an impact on social relationships, behavior regulation, and both mental and physical health (Brown et al., 2007). The automatic brain mechanisms that constrain thinking as a result of prior experiences, cognitive habits, and thought patterns can be inhibited by mindfulness. Consequently, secondary processes including reduced fixation and improved emotional regulation are enhanced (Glomb et al., 2011). Such successive actions show people's deliberate decisions in reaction to a situation, rather than merely reacting to inputs in a mechanical way (Roche et al., 2014).

Employees who practice mindfulness tend to achieve better work results (McNall et al., 2021). A study conducted with teachers who received mindfulness training had far reduced rates of stress, anxiety, fatigue, and burnout (Roeser et al., 2013). Similar studies also revealed both mindfulness interventions and training reduce depression, anxiety, burnout (Fortney et al., 2013), and work and family dispute (Morganson et al., 2015). According to Sirgy and Lee (2018), role engagement and role conflict are the two main ways that mindfulness theories are conceptualized. From a role engagement point of view, work-life balance is characterized by engaging multiple roles attentively, allocating time to these roles equally, and achieving equal satisfaction across life domains. From a mitigating conflict perspective, minimal dispute exists between work and life, enrichment of function occurs without any role conflict, and resource management is employed to mitigate conflicts. (Sirgy & Lee, 2018). People need to play roles in their lives outside of work in order to attain balance. Taking on multiple roles enhances role performance, which leads to satisfaction that permeates all facets of life (Clark, 2000; Greenhaus et al., 2003; Sirgy & Lee, 2018).

The Objective of the Study

Pilots are obliged to routine health controls to sustain using the privileges of their license. Health controls include psychiatric examinations to eliminate any risks arising from psychological disorders. According to this perspective, the literature from the aviation sector emphasizes adverse perspectives or behavioral abnormalities in order to help researchers identify the causes of hazardous attitudes or fatal accidents. Nonetheless, since positive psychology seeks to highlight and reinforce people's strengths, it would be beneficial to look at the positive attributes of pilots to see what characteristics contribute to their happiness and well-being and, ultimately, safer operations. Positive psychology concepts that highlight flight crew strengths and sources of job satisfaction have received limited attention in research. To attain more comprehensive perspective psychosocial risk management strategy should not be limited to prevent undesirable aspects like burnout, negative affect, and job dissatisfaction.

Positive psychology pioneers have claimed that focusing solely on developing or suppressing undesirable characteristics of an individual may limit the ability to thoroughly explore their strengths and uncover



their developable aspects. Furthermore, it was mentioned that improving unfavorable attitudes like job dissatisfaction does not ensure job satisfaction. For all of these reasons, it is believed that it is crucial to incorporate elements in the management system that can be enhanced in light of research findings when creating strategies for the management of psychosocial risks in airline pilots.

The purpose of this study is to add to the body of literature by considering the job satisfaction of airline pilots within the scope of psychosocial risk, assessing positive psychology components and developable personal resources in relation to psychosocial risks, identifying the mechanisms influencing commercial airline pilots' job satisfaction, and looking at variables like mindfulness, psychological capital, and work-life balance as potential predictors of pilots' job satisfaction.

A notion from positive psychology, psychological capital emphasizes people's assets and qualities. In the context of the organization, these resources are important. Employees with greater psychological capital score higher on work-life balance questionnaires. (Sen & Hooja, 2015). Furthermore, it was discovered that resilience, hope, optimism, and self-efficacy all positively and significantly linked with work-life balance (Siu, 2013). Work-life balance is therefore predicted to be positively correlated with the psychological capital level and its subdimensions among pilots of commercial airlines. To further explain the routes leading to greater work-life balance, the influence of psychological capital on work-life balance was proposed. In keeping with this goal, it was discovered that PsyCap significantly predicts work-life balance as a higher-order construct (Christy et al., 2021). Given the impact on work-life balance that prior research has shown, it is hypothesized that commercial airline pilots' psychological capital is a strong predictor of work-life balance. (H.1.).

H.1. Psychological capital significantly predicts work-life balance.

Work-life balance and mindfulness have been positively correlated in a number of settings. According to an experimental study, participants who took part in the mindfulness intervention reported considerably greater work-life balance, which resulted from higher detachment, and far less strain-based work-family conflict (Fortney et al., 2013). It follows that the current study's hypothesis that mindfulness strongly predicts work-life balance is that pilots with higher mindfulness scores will also have higher work-life balance scores. (H.2.).

H.2. Mindfulness significantly predicts work-life balance.

The goal of work-life balance research is to identify and characterize the necessary adjustments to resolve the conflict between job and personal life in order to provide better outcomes for both individuals and businesses. In order to reduce any discomfort brought on by disagreements, it's critical to strike a balance between the job and personal lives. The way people manage work and other aspects of their lives has been linked to their job satisfaction, and the sense of a work-life balance has been found to be a strong predictor of job satisfaction. (Azeem & Akhtar, 2014). Owing to the nature of job that commercial airline pilots perform, work-life balance is an important topic of study. It has been suggested in the research that work-life balance significantly affects job satisfaction (H.3.).

H.3. Work-life balance significantly predicts job satisfaction.

The goal of this study is to identify the underlying mechanisms that contribute to commercial airline pilots' job satisfaction. The direct and indirect effects of variables on job satisfaction should be emphasized in order to achieve this goal. Prior research indicated that rather than providing a clear route to job satisfaction, personal strengths and resources leverage organizational resources such work-life enrichment, work-life balance, or reduced work-family conflict. Work-life balance acted as a mediator in the association between personal resources and job satisfaction, as indicated by earlier research (Orkibi & Brandt, 2015), therefore it is hypothesized that work-life balance mediates relationships between both mindfulness-job



satisfaction and psychological capital-job satisfaction relationship of commercial airline pilots (H.4. and H.5. respectively).

H.4. Work-life balance has a mediator role between the relationship of mindfulness and job satisfaction.

H.5. Work-life balance has a mediator role between the relationship of psychological capital and job satisfaction.

To enable interventions that directly address the job satisfaction of commercial airline pilots, the direct, individual influence of work-life balance components is being explored in addition to the underlying processes of job satisfaction. Research focusing on the psychosocial risk factors and retention factors of commercial airline pilots reveals that predetermined rosters, vacation schedules, family-friendly policies, fixed flight schedules, flexible duty changes, and time spent away from home rank among the major problems facing airline pilots in their careers. These elements pertain to conceptions of work-life balance. It is hypothesized that subdimensions of work-life balance can independently predict job satisfaction (H.6a, H.6b, H.6c, H.6d).

H.6. Sub-dimensions of work-life balance significantly predict job satisfaction.

H.6a Work dominating life sub-dimension significantly predicts job satisfaction.

H.6b The work-life compatibility sub-dimension significantly predicts job satisfaction.

H.6c Taking time for self-sub-dimension significantly predicts job satisfaction.

H.6d Negligence of life sub-dimension significantly predicts job satisfaction.

Method

This section describes sample, materials, procedure, and data analysis. A cross-sectional design was employed. Correlation, hierarchical regression, and mediation analyses were used to test the hypotheses.

Participants

Turkish pilots who currently work as flight crew members for Turkiye-based commercial airlines compose the study's participant pool. The Ethics Committee of the Istanbul Bilgi University has approved this research. Informed consent was obtained from the participants. The convenience sample method was used in this study, which involved ninety-four pilots from commercial airlines. Four participants' scores were eliminated because they were found to be outliers. Additionally, because of the significant variation in the number of participants in each group, the gender variable was excluded from the analysis. Four female participants' responses were eliminated because there was insufficient data to make a generalization. The frequency table of demographic variables are shown in [Table 1](#).

Table 1

Demographic Variables

Variables	Categories	Frequencies	Percent
Age	25-31	8	45360
	32-38	27	31.4
	39-45	29	33.7
	46 and above	22	45468
Marital Status	Single	12	14
	Married	74	86
Status as pilot	Captain	64	74.4



Variables	Categories	Frequencies	Percent
Additional Duty	First Officer	22	25.6
	Yes	44	51.2
	No	42	48.8
Experience as a commercial airline pilot	0-5	15	17.5
	6-10	18	20.9
	11-15	35	40.7
	16 and above	18	20.9

Materials

Five instruments (Psychological Capital Short Form, Work-Life Balance Scale, Job Satisfaction Scale, The Cognitive and Affective Mindfulness Scale, Demographic Form) have been employed for the study.

Psychological Capital Short Form

Self-efficacy, resilience, optimism, and hope are incorporated in PsyCap to create a positive construct that supports employees' motivation to accomplish their goals. For organizations to gain enduring advantages in dynamic and competitive markets, individuals' potential must be recognized (Oruç, 2018), and measuring psychological capital is a way to accomplish this. Luthans and colleagues created the 24-item Psychological Capital Scale (Luthans et al., 2007). Avey, Avolio, and Luthans (2011) conducted validity and reliability tests for the 12-item form. Oruç (2018) examined the short 12-item version's validity and reliability ratings in the Turkish setting. Survey respondents were asked to rate on a 6-point Likert scale, ranging from "1-Strongly Disagree" to "6-Strongly Agree.". At the beginning of the section, "Please consider all aspects of your occupation (flight duty, training, practical-theoretical evaluations, and extra duty if applicable) while responding to following items." sentence informed participants to create a shared perspective. The model fit index of the scale was stated as $\chi^2/df = 1,56$, indicating good fit. High internal consistency score was found with the .93 Cronbach's alpha level. In compliance with the working conditions of airline pilots, one item has been adapted. The edited "I am confident in contributing to the process of determining the strategies of the airline, where I work." item from the self-efficacy sub-scale has been discarded due to low item-total correlation. Additionally, "I don't dwell on stressful situations I face at work." from the original item of resilience sub-scale was eliminated due to low item-total correlation. In the final version, the reliability scores of hope, optimism, self-efficacy, and resilience subscales are .72, .82, .77, and .70, respectively. The Psychological Capital scale has a reliability value of .86.

Work-Life Balance Scale

The Work-Life Balance Scale was used to assess individuals' perception on the balance between their work and personal lives. The Work-Life Balance Scale, created by Apaydin (2011), has four components and twenty items. "Work-Life Compatibility" sub-dimension refers to effective prioritization and equally allocated time to both work and other areas of one's life. "Negligence of Life", on the other hand, refers to disregarding basic needs due to work requirements, and the extent to which individuals perceive the time they allocate to the non-work areas is insufficient. "Work Dominating Life" sub-dimension measures what extent work-related tasks are spread over off-work, what extent the time spent at work is reflected in activities that are not related to work. "Taking Time for Self" sub-scale refers to the quality of the interaction between time allocated to the social and work lives of individuals, the level of satisfaction with the activities they do outside of work, and the extent to which work-related tensions affect the activities in private life. 6-point Likert-type ranging from "1-Strongly Disagree" to "6-Strongly Agree" was used. To ensure a common perspective,

“Please consider all aspects of your occupation (flight duty, training, preparation for practical-theoretical evaluations, and extra duty if applicable) while responding to following items.” note was included at the beginning of the scale. Validity scores indicated $\chi^2/df= 1.99$ fit index. Work-life compatibility, negligence of life, taking time off for self, work dominating life subdimensions have .88, .81, .77, and .79 Cronbach's alpha scores respectively. The internal consistency coefficient of the scale is .91, which indicates a high-reliability score. Some of the items have been edited in accordance with the working nature of airline pilots. For example, the “I continue to work non-stop on weekends.” item has been edited as “I keep busy with my job-related endeavors on my off days.”. Internal consistency was calculated again to control any possible effect of edited items. In our sample, the reliability scores of work-life compatibility, negligence of life, taking time for self, work dominating life were .91, .80, .79, and .67, respectively. The Cronbach's alpha score for the overall Work-Life Balance scale was .93.

Job Satisfaction Scale

Job satisfaction is the satisfaction of employees with their jobs and arises when the features of the work settings and employees' aspirations and wishes intersect (Keser & Bilir, 2019). Given the importance of the idea of job satisfaction in I/O psychology, one of the most often used instruments in the field is the job satisfaction scale. Items show many facets of the profession to determine an individual's level of job satisfaction. Keser & Bilir (2019) evaluated the short form's psychometric properties. One factor structure was confirmed in the study. An adequate fit index of $\chi^2/df= 4.6$ is shown by CFA, and the internal consistency score (Cronbach's alpha = 0.85) indicates strong reliability. The current study's Cronbach's alpha level is .81, indicating strong internal consistency.

Cognitive and Affective Mindfulness Scale

Feldman, Hayes, Kumar, Greeson, and Laurenceau (2007) developed the 12-item Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). The scale illustrates the complex idea of mindfulness, which includes acceptance, present-focus, awareness, and attention. Catak (2012) adapted the CAMS-R scale for use in Turkish. On the advice of the original scale's authors, two questions that were linked to concern and rumination were removed, and the investigation verified a one-factor structure consisting of 10 items. With its brief framework, CAMS-R offers a number of benefits and doesn't require prior mindfulness practice knowledge. All the items attempt to communicate internal experiences, particularly feelings and thoughts. The Turkish version of the CAMS-R is defined as a valid scale for evaluating mindfulness. The Root Mean Square Residual statistic was reported as 0.08, showing a marginal fit; with .94 GFI (Goodness of Fit Index) and .91 CFI (Comparative Fit Index) values indicating good index. The scale's internal consistency was reported as .77, indicating an adequate level. The scale's reliability score in the current investigation was determined to be .81.

Sociodemographic Form

Demographic Form includes age, marital status, status as a pilot, additional duty information, and experience as an airline pilot.

Procedure

To reach those working in the aviation sector, an online survey was shared on social media. In three weeks, all the data were acquired. The worries of pilots about their job security have received a lot of attention, particularly during the Covid-19 outbreak that left many airline pilots unemployed. Because of this, stressing anonymity helped to allay worries. The participants were made aware that any information they gave would be treated with the utmost confidentiality and would not be shared with any individual or organiza-



tion. At every level of the research, the study's anonymity and the respondents' confidentiality have been maintained.

Data Analysis

The data screening process was made by controlling normality and outliers in addition to missing data. Standardized scores were compared with critical values in an attempt to identify univariate outliers. Univariate outliers were defined as data that were greater than the critical value of $z = +3.29$ ($p < .001$, two-tailed test). Four participants' answers were removed from the analysis since their scores were higher than the critical threshold and they also appeared to be outliers in the histograms. Additionally, because of the significant variation in the number of participants in each group, the gender variable was excluded from the analysis. The study's normality was evaluated using skewness & kurtosis scores in addition to histograms. According to Fidell and Tabachnick (2003), if the results do not exceed $z = \pm 3.29$ ($p < .001$, two-tailed test), there are no serious issues with the normal distribution. The skewness and kurtosis statistics should be divided by their standard error. The critical value is not exceeded by the skewness and kurtosis scores' results when divided by their standard errors. Table 2 presents a descriptive analysis of the research variables.

Table 2
Descriptive Analysis

	<i>n</i>	min	max	\hat{x}	<i>s</i>
<i>Psychological Capital Scale</i>					
Self-Efficacy	86	7	12	10.56	1.15
Hope	86	14	24	20.19	2.29
Resilience	86	6	12	10.05	1.40
Optimism	86	4	12	9.16	1.99
<i>Work-Life Balance Scale</i>					
Work-Life Compatibility	86	11	36	26.10	5.38
Negligence of Life	86	6	29	17.47	5.55
Taking Time for Self	86	4	21	9.71	4.02
Work Dominating Life	86	4	21	12.53	3.66
<i>Job Satisfaction Scale</i>					
Job Satisfaction	86	7	30	22.98	4.94
<i>Cognitive and Affective Mindfulness Scale</i>					
Cognitive and Affective Mindfulness	86	35	58	47.44	5.53

Prior to analysis, multicollinearity and singularity were controlled. The tolerance value, which is a measure of the total variability of a specific independent variable, is not explained by the model's other independents. Consideration should be given to the likelihood of multicollinearity if the tolerance value is less than .10. Conversely, a VIF (Variance Inflation Factor) value of less than 10 is anticipated. Furthermore, correlations for both high and low intercorrelations were controlled.

It was determined whether work-life balance acted as a mediator in the relationships between psychological capital and job satisfaction and mindfulness and job satisfaction. Andrew F. Hayes' Process Macro v4 extension was used. The study employed an indirect effect and bootstrapping statistics to examine the mediator function of work-life balance in the relationship between psychological capital and job satisfaction and mindfulness.

Results



Correlation Analysis of Variables

To determine the degree of linear relations, Spearman rho was utilized. Job satisfaction, work-life balance and its subdimensions, mindfulness, psychological capital and its subdimensions, and demographics were included. Table 3 presents the findings.

Table 3
Correlation Analysis

Spearman's rho	1	2	3	4	5	6	7	8	9	10	11
1. Status as Pilot	1										
2. Marital Status	-.38**	1									
3. Additional Duty	1.00**	-.38**	1								
4. Age	.60**	-.31**	.60**	1							
5. Experience	.73**	-.26**	.73**	.62**	1						
6. Mindfulness	.13	-.11	.13	.20	.13	1 (.81)					
7. Work-Life Balance	.05	-.12	.05	.13	.10	.49**	1 (.92)				
8. Work-Life Compatibility	.13	-.19	.13	.19	.13	.63**	.86**	1 (.91)			
9. Negligence of Life	-.02	.04	-.02	-.08	-.11	-.31**	-.89**	-.66**	1 (.80)		
10. Work Dominating Life	.02	.08	.02	-.03	.01	-.31**	-.78**	-.56**	.63**	1 (.67)	
11. Taking Time for Self	-.08	.10	-.08	-.13	-.11	-.48**	-.87**	-.68**	.75**	.60**	1 (.79)

Note. *p <.05, **p <.01, status as pilot codings: 0 = first officer, 1 = captain; marital status codings: 0 = married, 1 = single; presence of additional duty codings: 0 = no, 1 = yes. Internal consistency reliability estimates (i.e., alpha values) for the scales are presented in bold at the diagonal.

Examining Table 3's results reveals a positive and significant correlation between psychological capital, work-life balance, mindfulness, and job satisfaction. Furthermore, it was discovered that job satisfaction was significantly associated with every sub-dimension except self-efficacy.

Predictors of Job Satisfaction

After adjusting for the impact of the demographic variables—status, age, and experience—hierarchical multiple regression analysis was used to find significant predictors of job satisfaction. The goal of the study is to look into the factors that affect job satisfaction separately. According to earlier research, it is predicted that aspects of work-life balance are important indicators of job satisfaction. The work-life balance subdimensions of Work-Life Compatibility, Negligence of Life, Work-Dominating Life, Taking Time for Self, Hope, Resilience, Self-Efficacy, Optimism, and Mindfulness are all included in the analysis to track the distinct contributions of these subdimensions when other research variables are integrated. The hierarchical regression analysis's findings are shown in Table 4.

Table 4
Results of Hierarchical Regression Analysis for Job Satisfaction

Variables	Step 1				Step 2			
	B	SE B	β	t	B	SE B	β	t
Status	-2.23	2.33	-.20	-.96	-2.98	2.04	-.27	-1.50
Age								
1) 32-38	1.99	2.25	.19	.88	2.60	1.90	.25	1.37



Variables	Step 1				Step 2			
2) 39-45	3.24	2.62	.31	1.24	3.98	2.14	.38	1.86
3) 46 and above	3.79	2.70	.34	1.40	3.27	2.20	.29	1.49
Experience								
1) 6-10	-.75	2.06	-.06	-.36	-.42	1.91	-.03	-.22
2) 11-15	.18	2.55	.02	.07	-.18	2.31	-.02	-.08
3) 16 and above	1.72	2.75	.14	.63	1.78	2.34	.15	.76
MN					-.11	.13	-.12	-.81
WLC					.34	.15	.37	2.30
NL					.04	.13	.004	.32
WDL					.01	.19	.02	.16
TT					-.49	.18	-.40	-2.77
SE					-.39	.52	-.09	-.75
HP					.40	.28	.19	1.41
RS					-.19	.48	-.05	-.39
OPT					.18	.31	.07	.60
R		.29				.69		
R ²		.09				.48		
F for change in R ²		.78				6.13		

Note. *p<.05, **p<.01, ***p<.001. WLC: Work-Life Compatibility, NL: Negligence of Life, WDL: Work-Dominating Life, TT: Taking Time for Self, SE: Self-Efficacy, HP: Hope, RS: Resilience, OPT: Optimism, MN: Mindfulness. Status: captain=1, first officer=0. The reference values for age and experience are 25-31, 0-5 respectively.

As seen by Table 4's results, Step 1 included status, age, and experience, which accounted for 6.6% of the variation in job satisfaction. After entry of Work-Life Compatibility, Negligence of Life, Work-Dominating Life, Taking Time for Self, Self-Efficacy, Hope, Resilience, Optimism, and Mindfulness variables, the total variation explained by the whole model was 48.1%, $F(16, 69) = 3.99, p < .001$. All measures explained an additional 41.5% of the variance in job satisfaction; after controlling status, age, and experience, R^2 change = .41, $F(9, 69) = 6.13, p < .001$. In the final model, only the two control measures were statistically significant, with the "Taking Time for Self" recording a higher beta value ($\beta = -.40, p < .01$) than the Work-Life Compatibility ($\beta = .37, p < .05$). Demographic variables did not make a unique contribution to the analysis.

The Mediator Role of Work-Life Balance Between Mindfulness and Job Satisfaction

This section tested the mediating influence of work-life balance between affective and cognitive mindfulness and job satisfaction using bootstrap-based regression analysis. Analysis was conducted by including mindfulness to analysis as the independent variable, job satisfaction as the dependent variable, and work-life balance as the mediator variable. The model was tested using Process Macro Model 4 (Hayes, 2013). The number of bootstrap samples for percentile bootstrap confidence interval was selected as 10,000. The values in the 95% confidence interval generated as a consequence of the analysis should not include a 0 value in order to support the research hypothesis. Table 5 shows the mediator role of work-life balance.

Table 5

The Results for the Mediator Role of the Work-Life Balance Between Mindfulness and Job Satisfaction

Outcome Variables	
M (Work-Life Balance)	Y (Job Satisfaction)



Predictors	Outcome Variables					
		b	S.E.		b	S.E.
X (Mindfulness)	a	1.50**	.26	c'	.05	.09
M (Work-Life Balance)	-	-	-	b	.17**	.03
Constant	iM	13.27	12,4	iy	6.58	3,74
			R ² =.27			
			F(1; 84)=33.32, p<.001	F(2; 83) = 21,42, p<.001		

Note. *p<.05, **p<.01, ***p<.001, S.E.: Standard Error. Unstandardized beta values were (b) reported.

Since mindfulness has a significant indirect impact on job satisfaction, it has been found that work-life balance mediates the relationship between mindfulness and job satisfaction.

The Mediator Role of Work-Life Balance Between Psychological Capital and Job Satisfaction

Work-life balance was included as a mediator variable in this section, psychological capital was included as an independent variable, and job satisfaction was included as a dependent variable.

Table 6

The Results for the Mediator Role of the Work-Life Balance Between Psychological Capital and Job Satisfaction

Predictors	Outcome Variables					
		M (Work-Life Balance)			Y (Job Satisfaction)	
		b	S.E.		b	S.E.
X (Psychological Capital)	a	1.22***	.28	c'	.15	.08
M (Work-Life Balance)	-	-	-	b	.16***	.03
Constant	iM	23.61	13.95	iy	2.51	3.92
			R ² =.18	R ² =.35		
			F(1; 84) = 19.20, p<.001	F(2; 83) = 23.55, p<.001		

Note. *p < .05, **p < .01, ***p < .001, S.E.: Standard Error. Unstandardized beta values were (b) reported.

First, the direct effect of the psychological capital on work-life balance was tested, and the results represented in Table 6 indicated that psychological capital predicts work-life balance significantly (b=1.22, t(84)= 4,38, p<.001). Secondly, the direct effects of work-life balance and psychological capital on job satisfaction were tested. Work-life balance was found to be significant predictor of job satisfaction (b=0.16, t(83)= 5,25, p<.001), whereas psychological capital does not significantly predict job satisfaction (b=0.16, t(87)= 1.78, p>.05). Psychological capital's impact on job satisfaction through work-life balance was tested. Work-life balance mediates the relationship between psychological capital and job satisfaction indirect effect =0.21, SE=0.08, 95% CI [0.08, 0.38].

Discussion

By examining the underlying mechanisms of commercial airline pilots' job satisfaction and contextualizing models around psychosocial risk factors in the occupation, the current study aims to make a contribution to the developing subject. The relationship between psychological capital, mindfulness, work-life balance, and job satisfaction was examined in order to achieve this goal. Work-life balance was thought to be the means by which psychological capital and mindfulness as individual resources would influence job happiness. The findings indicated that the associations between psychological capital and job satisfaction as well as mind-



fulness and job satisfaction are mediated by work-life balance. Individual work satisfaction predictors were also examined.

It is anticipated that the research findings will make significant theoretical and practical contributions to the fields of industrial/organizational psychology and the aviation sector. It is important to look into how and why personal resources contribute to favorable work outcomes like job satisfaction. Prior research supported the idea that mindfulness, as a psychological resource, helps employees achieve more good work-life outcomes by enhancing their positive affectivity and work-life balance.

The Work-Life Balance Scale's subdimension of work-life compatibility measures how well people can divide their time between their personal and professional lives, how well they can set priorities and manage their time, and how satisfied they are with their business and personal endeavors. It stands for contentment and harmony in the workplace and other spheres of an employee's life, broadly speaking. According to the results of the hierarchical regression analysis, commercial airline pilots' job satisfaction is significantly predicted by the work-life compatibility dimension.

The Work-Life Balance Scale's "taking time for self" subdimension measures how well people balance their time between their personal and professional lives, how satisfied they are with their leisure pursuits, and how much work-related stress interferes with their personal lives. A commercial airline pilot's profession comprises flight tasks as well as recurring training and controls. Strict training is usually the first step, and then protracted selection and recruitment procedures follow. In certain instances, the selection of inexperienced applicants is the first step in the process, after which they receive initial flight training in order to be considered by companies as first officer candidates. Training for initial flight and type ratings is a rigorous and difficult process. Distress is also brought on by the strain of the theoretical and practical examinations that are part of the program. According to the current study's hierarchical regression analysis results, the Work-Life Balance Scale's taking time for self subdimension is a strong predictor of job satisfaction. The degree of job satisfaction is impacted by work-related stress and conflict that result from the expansion of work-related duties throughout life. Pilots have work-related obligations beyond flying schedules since, as previously said, their professional path involves strict training and control procedures.

Owing to its exceptional benefits for both personal and professional development, mindfulness has been extensively researched in the field of organizational and industrial psychology. Previous research has examined the benefits of mindfulness in work environments and found a favorable correlation between job satisfaction, job performance, and productive social connections. (Raza et al., 2017). Research has also been done on the beneficial effects of mindfulness on work-life balance. It combines the weaving and overlapping of consciousness, attention to, and acceptance of present-moment experience as an individual skill. It is defined as a dispositional quality or an experienced condition. (Badham & King, 2019). Affective Events Theory states that work experiences are the source of an employee's emotional response, which in turn affects job satisfaction (Hülshager et al., 2012). Being mindful allows one to experience the moment in a transparent, nonjudgmental way, which allows one to evaluate challenging circumstances more objectively and avoid attributing any subjective interpretation or evaluation. By doing this, people are prevented from being misled by cognitive biases, which in turn prevents them from exaggerating their assessment of the circumstances (Hülshager et al., 2012). In addition, mindful people are more resource-efficient, have better emotional regulation, and are more aware of, focused on, and attentive to their responsibilities. These skills support duties in both the work and non-work realms (McNall et al., 2021).

The purpose of the current study was to look at the underlying mechanisms that contribute to commercial airline pilots' job satisfaction. The study's findings demonstrate that there is no significant direct relationship between cognitive and affective mindfulness and job satisfaction, suggesting that these variables



do not independently predict job satisfaction. However, they do have an indirect effect on job satisfaction through work-life balance. Put differently, mindfulness has the potential to influence how well work-life balance is perceived, which could ultimately result in higher job satisfaction. The results of earlier research are in line with the findings of the indirect impact of mindfulness on job satisfaction. The mediating impact of work-family balance in the link between trait mindfulness and intentions of turnover and job satisfaction was one of the findings of the study carried out by Raza and his colleagues (2017). The findings showed a relationship between trait mindfulness and work-family balance, which in turn was associated with lower intentions to leave and higher levels of job satisfaction. Furthermore, no significant direct effect of mindfulness on job satisfaction was found in a study examining the links and mechanisms between mindfulness and positive work outcomes; however, the serial mediation model concluded that the relationship between mindfulness and job satisfaction was significantly mediated by positive affectivity and work-life enrichment, which shows that the quality of one domain increases or decreases the quality of other domains (McNall et al., 2021).

The notions of human (what is known) and social (who is known) capital that were formerly associated with economic capital addressing “what we have” have been expanded by the advent of psychological capital (Larson & Luthans, 2006). The potential additional value of PsyCap on job satisfaction was proposed and experimentally investigated in a study by Larson and Luthans (2006), which came to the conclusion that PsyCap explains more of the variation than human and social capital. In order to maximize organizational and individual potential and achieve organizational success, psychological capital studies the psychological capabilities and qualities of positively oriented human resources (Çetin, 2011). Psychological capital refers to the unique qualities and assets that contribute to an individual's capabilities. Conservation of Resource Theory (COR) states that psychological capital focuses on the components needed to generate pleasant feelings that increase people's mental strengths and lists four specific personality traits to develop positive power within (Salam, 2017). Employee psychological states are positive states that vary according to the situation, as opposed to features or attributes that show consistency in all scenarios (Çetin, 2011). Consequently, it's critical to look at psychological capital constructs for various job qualities and to think of the idea as a resource that may be developed. The goal of the current study is to examine the underlying processes of job satisfaction as a psychosocial risk factor for pilots working for commercial airlines. In order to do this, work-life balance and psychological capital—an improvable human resource—were used to explain why pilots were satisfied with their jobs. The findings suggested that the association between psychological capital and job satisfaction is mediated by work-life balance. The results suggest that higher psychological capital levels among pilots may provide them with strong tools to manage professional and personal spheres, which raises job satisfaction. The findings align with the research by Orkibi and Brandt, which highlights that people with a positive outlook and available resources may be better able to handle resource gain when it comes to resolving conflicts between work and personal life and vice versa (Orkibi & Brandt, 2015). Those with more resources may be able to manage their personal and professional lives, state Orkibi and Brandt. This positive experience may lead to an increase in the job satisfaction of commercial airline pilots. By removing the interference of work in personal life, psychological capital can improve work-life balance and job satisfaction. This can be achieved through

a variety of means, including

- a) pilots' self-perception of their ability to meet work requirements,
- b) their motivation to try new things and effectively use all available resources to achieve work-related goals,
- c) Good expectations for the task to be completed in the future, and



- d) Coping strategies by strengthening the capacity to recover from conflicts at work, unpleasant experiences there, or any overpowering procedures.

Contributions and Limitations of the Study

The current study contributes to the identification of the elements that influence airline pilots' job satisfaction by examining the effects of mindfulness, psychological capital, and work-life balance levels on their job satisfaction. The assessment of pilots' developable resources and job satisfaction within the context of psychosocial risk management is intended to provide insight into the procedures involved in identifying and mitigating the psychosocial hazards unique to airline pilots. The assessment of mindfulness, psychological capital, work-life balance, and job satisfaction specifically for airline pilots, as well as the creation of an analysis model for the factors influencing job satisfaction, were the contributions made to the Aviation Psychology literature in addition to the Industrial/Organizational Psychology literature. It is important to recognize the study's limitations in addition to its possible advantages. The small number of participants in the study is its primary limitation. The generalization of research findings may be limited by low participation. Additionally, the airline information of the pilots was not obtained in order to collect the data anonymously and without distressing the participants. This made it impossible to include the variation in corporate culture as a control variable, even if it might have an effect on the study's findings. Overall, the study's findings should be interpreted with caution due to the effect of Covid-19, even if the data gathering process took place while the pandemic's effects were minimal, and flights were operating.

Practical Implications

Establishing a preventive and enhancing culture, particularly with regard to the health and well-being of pilots, is one way that airlines can improve flight safety through the techniques they choose to address psychological risks.

The management of developable personal resources may be a useful for assessing psychological risk factors, rather than concentrating solely on aspects that directly impact pilots' job satisfaction. A comprehensive risk management approach may be aided by building the psychosocial risk factors management system similar to the safety management system by developing training, and integrating reporting system. The pilots' knowledge of their own resources is raised and their well-being is enhanced by including psychosocial risks, psychological capital, and mindfulness—all of which are important indicators of work-life balance—in the initial and periodic trainings. Peer support programs, which are required by aviation legislation to be created for pilots, may also include concepts related to job satisfaction, work-life balance, mindfulness, and psychological capital in the peer trainings. This will enable the pilots to handle cases with a deeper level of understanding.

Implications for Future Research

Airline pilots have particular working conditions. As a result, research on the evaluation of psychosocial risk factors that are company-, period-, and region-specific is expected to be highly influential in the field. Furthermore, research incorporating developable elements and positive psychology topics may offer the possibility of a more thorough psychosocial risk management viewpoint.



[Ethics Committee Approval](#)
[Informed Consent](#)
[Peer Review](#)

The Ethics Committee of the Istanbul Bilgi University has approved this research. (31.05.2021)
Informed consent was obtained from the participants.
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