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The Mediating Role of Life Satisfaction in the Relationship Between Mindfulness Level and Perceived Stress Level in Pilots

Pilotlarda Bilinçli Farkındalık Düzeyi İle Algılanan Stres Düzeyi Arasındaki İlişkide Yaşam Tatmininin Aracılık Rolü



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Abstract

Airline pilots face a high-stress profession, with demands for intense concentration, adapting to changing weather, and making quick decisions to avoid flight disruptions impacting their stress levels. Understanding these stress factors can improve working conditions and indirectly boost flight safety. The study aims to explore how cognitive and affective mindfulness, life satisfaction, and pilots' perceived stress levels interrelate, potentially leading to better working conditions and enhanced flight safety. For this purpose, 130 commercial airline pilots completed questionnaires regarding their life satisfaction, perceived stress, cognitive and affective mindfulness, and sociodemographic characteristics. Correlation analyses were performed to explore the relationships between variables, while independent sample T-tests and one-way ANOVA were utilized to examine demographic comparisons, and mediational analyses were conducted to assess the mediating role of life satisfaction. The findings indicate a significant relationship among cognitive and affective mindfulness, life satisfaction, and perceived stress. Furthermore, the research hypothesis positing a significant mediating role of life satisfaction in the relationship between cognitive and affective mindfulness and perceived stress was supported. The findings provide a basis for enhancing pilots' psychological health through the improvement of stress coping strategies and the development of specialized support programs in the civil aviation sector.

Öz

Havayolu pilotları; yoğun konsantrasyon gerekliliği, değişen hava koşullarına uyum sağlama ve uçuş aksaklıklarını önlemek için hızlı kararlar almak noktasındaki iş taleplerinin söz konusu olduğu, stres düzeyi yüksek bir meslek icara etmektedirler. Bu stres faktörlerinin anlaşılması çalışma koşullarını iyileştirebilir ve dolaylı olarak uçuş güvenliğini de artırabilir. Bu çalışma, bilişsel ve duyuşsal bilinçli farkındalık, yaşam tatmini ve pilotların algıladıkları stres seviyelerinin birbirleriyle nasıl ilişkili olduğunu araştırmayı ve böylelikle potansiyel olarak daha iyi çalışma koşulları ve daha iyi düzeyde uçuş güvenliği sağlamayı amaçlamaktadır. Bu amaçla, 130 ticari havayolu pilotuna yaşam tatmini, algılanan stres, bilişsel ve duyuşsal bilinçli farkındalık ve sosyodemografik birtakım özellikleri içeren ölçeklerin yer aldığı anket formları dağıtılmıştır. Değişkenler arasındaki ilişkileri araştırmak için korelasyon analizleri yapılırken, demografik karşılaştırmaları incelemek için bağımsız örneklem T-testleri ve tek yönlü ANOVA kullanılmış ve yaşam tatmininin aracılık rolünü değerlendirmek için aracılık analizleri yapılmıştır. Bulgular, bilişsel ve duyuşsal bilinçli farkındalık, yaşam tatmini ve algılanan stres arasında anlamlı bir ilişki olduğunu ortaya koymaktadır. Ayrıca, bilişsel ve duyuşsal bilinçli farkındalık ile algılanan stres arasındaki ilişkide yaşam tatmininin önemli bir aracı rolü olduğunu öne süren araştırma hipotezi desteklenmiştir. Bulgular, stresle başa çıkma stratejilerinin iyileştirilmesi ve özel destek programlarının geliştirilmesi yoluyla pilotların psikolojik sağlığının iyileştirilmesi için bir temel sağlamaktadır.

Keywords

Mindfulness · Perceived stress · Life satisfaction · Airline pilots · Support programmes

Anahtar Kelimeler

Bilinçli farkındalık · Algılanan stres · Yaşam memnuniyeti · Havayolu pilotları · Destek programları



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The Mediating Role of Life Satisfaction in the Relationship Between Mindfulness Level and Perceived Stress Level in Pilots

Pilots employed in the civil aviation industry are a professional group that encounters demanding and difficult circumstances. Pilots' stress levels are heightened by factors such as engaging in jobs demanding prolonged focus, adapting to unpredictable weather conditions, and making time-sensitive judgments. Thus, comprehending pilots' capacity to manage stress and their mental well-being is highly significant for both the pilots themselves and aviation safety. This study examines the impact of mindfulness on pilots' stress levels and life satisfaction. Mindful awareness refers to an individual's capacity to be completely conscious of the current moment, recognize and accept emotional events and thoughts, and sustain concentration. Pilots can enhance their ability to manage stress and make optimal decisions by employing mindfulness techniques during high-pressure moments and when confronted with difficult circumstances. Studies indicate that elevated levels of stress can have an adverse impact on employees' performance and negatively impact their psychological well-being. (Ateş & Aldawoodi, 2021). The objective of this study is to gain a deeper comprehension of the mechanisms that contribute to these effects by examining the variables that influence the stress levels of pilots. The objective of this project is to develop support programs for pilots in the civil aviation industry and enhance their ability to manage stress, therefore promoting their psychological well-being. Thus, by highlighting the significance of pilots' psychological well-being, we are also addressing another issue that has an impact on aviation safety. Additional outcome of the study is to enhance the field by understanding the connections between conscious awareness, life satisfaction, and perceived stress.

Theoretical Framework

Conscious Awareness Concept

The concept of Conscious Awareness receives significant attention and is widely utilized in modern society. In the current era, people's thoughts frequently go towards the past or future, distracting their attention from the present moment. This results in issues arising from the operation of minds in automatic mode. Individuals can show impulsive behavior, experience memory lapses, fail to recognize their physical discomfort, or commit accidental errors. (Siegel, Germer & Olendzki, 2009).

Conscious Awareness is a technique that derives from the principles of Buddhism. According to Buddhist doctrine, mindfulness refers to the conscious awareness of one's actions and the ability to accurately perceive one's mental and physical experiences. Furthermore, it is crucial to acknowledge that the physical, emotional, and mental aspects of an individual are in a constant state of transformation. (Brown & Ryan, 2003).

In contemporary society, the concept of Conscious Awareness has diverged from its ancient origins and acquired a more expansive significance. It is used in various fields, including health, psychology, and business. Mindfulness offers numerous advantages, such as reducing stress, relaxing the mind, enhancing concentration and attentiveness, promoting mental balance, fostering creativity, and heightening awareness in interpersonal connections. (Levey & Levey, 2018).

The practice of Conscious Awareness encompasses a range of techniques, including meditation, breath awareness, body scanning, sensory awareness, and attentive engagement in daily activities. Through the utilization of these techniques, individuals can uncover the inherent potency of the present moment by

disengaging from the mental chaos and distractions. Practicing mindfulness enables individuals to achieve mental peace of mind, manage stress, and enhance their general satisfaction of life. (Odabaş, 2023).

Conscious Awareness

Conscious awareness is a method that involves directing attention towards the advantages of the present moment that individuals go through and giving importance to acceptance and compassion. The concept of acceptance emphasizes the significance of individuals' dispositions and attitudes towards accepting their experiences. Mindfulness involves accepting the present moment's events with simplicity and without making evaluations. Maintaining a continually elevated degree of consciousness is a crucial element in comprehending the concept of mindfulness. Mindful awareness is the state of being consciously alert and fully engaged in the current moment of the mind, with a complete and direct experience of the present moment. This strategy enables individuals to shift their focus from preoccupying themselves with ideas about the past or future and instead become conscious of their present and immediate experiences. (Aktepe & Tolan, 2020).

Mindfulness can be cultivated through the implementation of techniques such as meditation and mindfulness exercises. Meditation is a potent technique for achieving mental peace, enhancing concentration, and cultivating mindfulness. Mindfulness exercises, conversely, promote the conscious recognition of the present moment during routine actions, such as eating, breathing, or observing sensory sensations. Mindfulness has various advantages, such as reduced stress levels, heightened emotional balance and well-being, enhanced interpersonal bonds, and greater concentration and attentiveness. Therefore, mindfulness is extensively utilized as a method that produces favorable outcomes in domains such as mental well-being, stress reduction, interpersonal bond strength, and general satisfaction with life. (Şahin, 2019).

In Western civilization, the pursuit of lifestyle improvements and the recognition that materialistic aspirations are insufficient for achieving happiness led to a search for conscious awareness. The Insight Meditation Society was established in the United States in 1976, while the Mindfulness-Based Stress Reduction Clinic (MBSR) was established in 1979 by Dr. Jon Kabat-Zinn. This clinic had a major role in teaching the practice of mindfulness to the western world. (Körükcü & Kukulcu, 2015).

Since the 1990s, the notion of conscious awareness has gained prominence in literature and academic research. Mindfulness has been broadened and incorporated into therapeutic techniques. Currently, mindfulness is widely recognized and supported as a psychotherapy approach that is grounded in scientific evidence. These advancements can be seen as significant strides in the effort of making conscious awareness all-encompassing. This concept has attracted significant interest in both eastern and western cultures and has been used across various disciplines. Mindfulness has gained significant popularity as a method to enhance individuals' awareness and overall sense of completeness in their life. (Ögel, 2015).

Fundamentals of Conscious Awareness

Conscious awareness is the ability for individuals to deliberately focus their attention on present events and concentrate on fundamental aspects such as breathing, memory, confronting unusual circumstances, physical sensations, emotions, and cognitive concepts. These components constitute the foundation of conscious awareness and enable humans to see the present moment they are experiencing. (Kaynak & Güven, 2017).

The key details regarding the fundamentals of conscious awareness are as follows: Conscious awareness involves the act of monitoring transitory events. Individuals enhance their consciousness by directing their attention towards the present moment experiences. Furthermore, the act of directing attention is intentional and purposeful. Individuals must consciously focus their attention in a specific direction. Mindful awareness

involves focusing one's attention towards non-conceptual moments, free of any attitudes or evaluations. This method prioritizes the significance of the moment and does not involve any form of evaluating framework. Mindfulness is a practice that involves directing one's attention to the present moment and fully engaging in the experience of that moment. Conscious awareness focuses attention on a particular location for specific reasons. These specific locations that individuals intentionally direct their attention towards are crucial for enhancing their level of consciousness. This technique facilitates individuals in cultivating an increased state of consciousness regarding the circumstances they find themselves in and the situations they encounter. (Akdeniz, 2021).

Conscious awareness possesses a framework that does not rely on spoken communication. Non-verbal experiences, such as emotions, mental thoughts, and respiration, are crucial components of the conscious awareness process. These components facilitate individuals in developing mindfulness and entering into their reflective experiences. Conscious awareness is determined by the experiences individuals have had or are now undergoing at various phases. This strategy enables individuals to transcend their ingrained emotional states and engage with their life in a more fundamental and purposeful manner. (Akdeniz, 2021).

The terminology used for explaining the notion of conscious awareness appears to provide insights into the basic foundations of conscious awareness. Studies on conscious awareness emphasize the individual's heightened sensitivity to environmental changes. One of the factors to examine when it comes to conscious awareness is how perception is organized. Furthermore, concepts such as maintaining an optimistic outlook towards unexpected knowledge and experiences, as well as approaching problem-solving with a comprehensive mindset, play a vital role in explanations of conscious awareness. (Bedel, 2016). Thus, the previously mentioned difficulties have become integral components of conscious awareness.

Awareness is an essential aspect of human psychological consciousness. Conscious awareness guarantees that individuals possess a heightened level of knowledge regarding current occurrences and a heightened level of anticipation regarding potential future developments. Thus, conscious awareness holds a significant position at the core of human existence. (Şahin & Yeniçeri, 2015).

Concept of Stress

Stress is a common response that occurs when an individual's mental and physical boundaries are stretched, leading to a sense of being threatened. Various difficulties and demands encountered by individuals during the course of their life could cause stress. Stress is regarded as a dynamic phenomenon that arises from interactions and connections. (Aydın, 2010).

Selye's paradigm, known as the General Adaptation Syndrome, clarifies the psychological, physiological, and behavioral reactions to stressful circumstances. The model defines the three-part sequence of physiological responses that the body undergoes when subjected to stress. This process mirrors the physiological alterations and reactions to stress. (Yıldız, 2023).

Organizational Sources of Stress

Organizational or group stress causes refer to difficult elements that arise when an individual is unable to fulfill their job responsibilities and satisfy expectations. These types of stress arise in the workplace when there is an imbalance between available resources (such as support, time, information, authority) and the demands placed on individuals (such as workload, time pressure, performance expectations). The balance between resource supply and demand is a crucial determinant, and when balance cannot be attained, it leads to organizational stress. (Zabojnik, 2002)

Signs of Stress

When individuals beyond a specific threshold of stress, it has an adverse impact on their mental and physical well-being. The body employs diverse mechanisms for dealing with stress, similar to how it combats an illness. The variability of these responses is dependent upon the frequency and origin of the stress. Individuals who experience prolonged stress may develop chronic diseases and other health issues. (Dede, 2013).

Individuals that are under stress undergo various social, mental, emotional, and physical responses over a period of time. The individual may experience various effects, such as insomnia, fatigue, nervousness, melancholy, gastrointestinal issues, migraines, muscular strain, and decreased immunity. Stress can have detrimental impacts on an individual's quality of life and can contribute to the development of health issues. Therefore, it is crucial to prioritize stress management and adopt a healthy lifestyle in order to effectively handle stress, minimize its impact, and maintain overall well-being. (Helpguide, 2020).

Organizational Consequences of Stress

Stress can result in a multitude of negative changes in employees' professional lives. The effects include factors such as reduced productivity, decreased satisfaction, disconnection from work, poor performance, frequent absences, and unexpected resignations. As stress levels rise, there is an increase in the impact it has on performance. However, it has been observed that when stress becomes severe, it has an adverse effect on performance. Excessive stress can lead to several issues, including conflicts in duties, difficulties in communication, decreased morale and motivation, career challenges, and a decline in employees' dedication to their work and the business. The organizational consequences of stress include alterations in work and job performance, absence of job satisfaction, decreased dedication to the workplace and the organization, burnout, family-work conflict, lack of work connection, and an imbalance between work and life. (Sayıldı, 2020; Sökmen, 2005).

Stress-related tardiness, absences, and a heightened desire to quit work also have negative effects on the business. The strain placed on employees by employers, including excessive workloads, extended working hours, and inadequate compensation, contributes to the experience of burnout. Thus, it is essential to implement measures and establish laws in order to reduce work-related stress. (Karabacak, 2013; Teğın, 2019).

Life Satisfaction

Life satisfaction refers to the state in which an individual perceives their life as significant and useful, and their desires and expectations are fulfilled. This idea is used in conjunction with phrases such as subjective well-being, happiness, and quality of life. Life satisfaction comprises both subjective and objective elements. The objective component of living standards refers to the influence of external factors such as income, education, and health. On the other hand, the subjective component refers to an individual's personal assessment of life satisfaction. Subjective well-being has both affective aspects, which include positive and negative affect, and cognitive dimensions, such as life satisfaction. Life satisfaction and subjective well-being can be assessed through an individual's overall assessment of their life, contentment in specific domains like employment and social connections, and their emotional experiences and responses. Typically, study on these issues requires using approaches such as global dimensions, recollecting past experiences, and gathering emotional reactions over a period of time. (Kim Prieto, Diener, Tamir, Scollon & Diener, 2005)

Life satisfaction refers to the cognitive aspect of subjective well-being, when individuals make a broad assessment of their lives by comparing their living situations to the criteria they have set for themselves. Life satisfaction enables individuals to assess various aspects of their lives, including as health, prosperity, relationships, and job. Individuals can experience overall life satisfaction even if they do not have equal

levels of happiness in all aspects. Life happiness is influenced by various aspects, including the degree to which individuals achieve their goals and whether these achievements align with their expectations. People generally experience happiness when they acquire things that they consider valuable. Studies demonstrate that life satisfaction can be reliably and accurately assessed due to its cognitive aspect. (Diener et al., 2003).

Significance of Life Satisfaction

Happiness is a complex concept that has connections to several areas of life. Enhancing the overall degree of pleasure enables the identification of policies that can positively impact individuals' well-being. Research has been conducted in various areas including life happiness, health, personal-social circumstances, and finances. Having a high level of life satisfaction has the ability to enhance the immune system, decrease the occurrence of cardiological diseases, and accelerate the healing process. In the world of business, enhancing qualities such as efficiency, productivity, teamwork, and flexibility can lead to greater opportunities such as promotions and make adjustments. Additionally, it is associated with actions such as socializing, collaborating, engaging in community work, and practicing philanthropy. Individuals who have a high level of life happiness are more likely to exhibit generous behavior. (Aknin et al., 2013).

Individuals who possess a positive and hopeful perspective might show more advanced cognitive processes for resolving problems. Individuals who possess elevated levels of life satisfaction have the ability to assess adverse situations in a more positive manner and sustain their calmness. Additionally, it can provide assistance for individuals who exhibit elevated levels of life happiness, authenticity in social interactions, self-assurance, adaptability, and qualities of leadership.

Research has shown that well-being is positively correlated with relationships with others, marriages, perceived health level, keeping a high quality of life, attaining objectives, extraversion, self-esteem, perceived social support, a sense of control, self-efficacy, and coping with stress. Nevertheless, it has been noted that there is an inverse correlation between it and adverse circumstances such as violence, sadness, suicide, loneliness, and anxiety. These studies examine not just individuals' overall life satisfaction, but also their satisfaction levels in specific domains. It has been noted that each region carries a distinct level of importance in determining overall pleasure. Individuals who experience high levels of life happiness typically direct their attention towards the good aspects, whereas individuals with low levels of life satisfaction tend to direct their attention towards the negative aspects. (Diener, Lucas, Oishi, 2002).

Well-Being and Mental Health in Pilots

Pilots experience several psychological, physiological, and environmental stressors throughout their professional careers. (Cullen et al., 2017). In light of the Germanwings tragedy in 2015, it is crucial to prioritize the provision of assistance for pilots facing mental health concerns and to conduct research on stress factors associated to their employment. EASA (the European Aviation Safety Agency) has implemented fresh regulations for the handling of mental health issues among pilots (EASA, 2019).

The findings from the research conducted by Cahill et al. (2019b, 2018, 2019a) are listed below.

- Work is a source of work-related stress and contributes to burnout.
- Occupational stressors impose an adverse effect on the overall well-being, performance, and safety of pilots.
- They accepted their adverse experiences.
- Certain pilots use physical activity and sleep management techniques to facilitate stress management and improve resistance.

H1: *A strong correlation exists between conscious awareness and life satisfaction.*

Upon observing the regions of responsibility of pilots, it becomes evident that flights entail a challenging and intricate process. Several variables must be carefully managed during the duration of the flight. While pilots undergo tough selection processes and receive comprehensive training, their psychological well-being plays a crucial role in ensuring safe flight operations and overall life satisfaction. Life satisfaction, a measure of how individuals evaluate their overall existence (Diener and Diener 1995), is a highly researched variable in relation to mindfulness. There is plenty of proof to demonstrate the strong correlation between mindfulness and life satisfaction. (Brown and others, 2009). A study conducted with adult participants revealed a strong and positive correlation between individuals' degrees of mindfulness and their life satisfaction. The research findings indicate a positive correlation between the level of conscious awareness and life satisfaction. As conscious awareness increases, life satisfaction also increases, while a drop in conscious awareness is associated with a decrease in life happiness. (Güler & Usluca, 2021)

H2: *A strong correlation exists between conscious awareness and perceived stress level.*

When analyzed under this framework, stress assumes an essential function in assuring the individual's perseverance in their everyday activities and serves as a source of inspiration in their lives. When the level of stress above the maximum threshold, it might have atypical impacts on the person. Currently, there exist research investigating the impact of stress, which demonstrate that stress has an adverse effect on one's ability to concentrate. (Arslan, 2018). Elevated levels of stress in an individual might have adverse effects on their mental and physical well-being. Research demonstrates that incorporating mindfulness and incorporating breathing exercises into one's daily routine can lead to both physical and psychological relaxation, providing beneficial outcomes. (Arslan, 2018).

H3: *A strong correlation exists between life happiness and perceived stress level.*

In this particular context, the adverse experiences experienced by the individual in their lives and the subsequent stress might have an impact on the individual's general state of being. The impact of adverse experiences on an individual's well-being can be influenced by stress. Individuals with strong mental health employ a greater number of coping mechanisms when confronted with adverse circumstances, resulting in reduced stress levels and thus fewer indications of illness. There exists a negative relationship between life happiness and perceived stress level. Prior research has found that persons with high levels of life contentment exhibit less behavioral manifestation of stress as compared to individuals with low levels of life happiness. While the factors that influence life satisfaction are frequently studied, there are situations where life satisfaction could act as a mediator and contribute to behavioral issues. (Öztürk, 2022).

H4: *Life satisfaction acts as a mediator in the connection between mindfulness and stress.*

Maintaining a high level of awareness is beneficial for one's mental well-being. The effects of mindfulness involve taking a nonjudgmental attitude towards thoughts and feelings, demonstrating a high level of attention in regulating emotions, and reducing behaviors that are avoidant. Similarly, with the aid of conscious awareness, it is possible to avoid unfavorable circumstances such as anxiety issues, signs of obsessive-compulsive disorder, recurring thoughts, and decreased focus. Conscious awareness holds a crucial and vital role in human life within this particular situation. Individuals who possess a heightened level of mindfulness exhibit improved abilities to fully engage with the present moment, effectively regulate their emotions, diminish negative thinking patterns, and maintain optimal mental well-being. Mindfulness is a crucial technique that enhances individuals' sense of balance, peace, and happiness. (Yavuz et al., 2019).

H5: *There exists a notable difference in the perceived stress levels between captains and co-pilots.*

The roles and obligations of co-pilots and captains change along the course of the flight. Consequently, it is believed that the stress levels of captains would rise due to the greater workload and responsibility they

face when performing their flight tasks. This research aimed to investigate the differences in the reported stress levels between captains and co-pilots.

Method

Participants

The population under study comprises pilots employed by commercial airlines located in Turkey. The researchers used a convenience sampling strategy to choose the sample for this study. The minimum sample size was determined based on a reliability level of 95%, power (.80), effect size (.15) and number of independent variables (2). Consistent with the preliminary analysis, the minimum target number of individuals to be included was established at XX. A total of 130 individuals took part in the study, and the data of one participant was excluded from the analysis due to being an exception. 49.6% of the participants hold the position of captains, while 50.4% hold the position of co-pilots. Among the participants, 50.4% are individuals who work as pilots and are within the age range of 36 to 45. The percentage of participants who have an additional responsibility in their institution, in addition to their pilot employment, is 43.4%.

The demographic statistics of the pilots involved in the study are shown in [Table 1](#).

Table 1

Demographic Distribution of Participants

	Frequency	Percentage
Age		
25-30	29	22,5
36-45	65	50,4
Over 46	35	27,1
Total	129	100
Duty		
Captain	64	49,6
Co-pilot	65	50,4
Total	129	100
Additional Responsibilities		
With additional responsibilities	56	43,4
Without additional responsibilities	73	56,6
Total	129	100
Additional Experience		
0-3 years	18	14
4-10 years	56	43,4
11-20 years	38	29,5
Over 21 years of experience	17	13,2
Total	129	100

Materials

The participants in the study were given a sociodemographic information form, which consisted of both two-choice and multiple-choice items. The surveys were electronically presented to the pilots. Three different scales were given to the pilots who will be involved in the study: Life Satisfaction Scale, Perceived Stress



Scale, and Cognitive and Affective Mindfulness Scale are three different measures used to assess various aspects of an individual's well-being and mental state.

Life Satisfaction Scale (LSS)

Life Satisfaction Scale, consisting of 5 items and measuring a single dimension, was created by Diener, Emmons, Larsen, and Griffin in 1985. In 2016, Dağlı and Baysal created the Turkish version of the scale. The coefficient of 0.88 in the Turkish adaptation of the scale reveals its reliability as a tool. In this study, the internal consistency coefficient of the scale was found to be 0.83.

Perceived Stress Scale (PSS)

The Perceived Stress Scale was developed by Cohen, Kamarck, and Mermelstein in 1983, and its Turkish version was created by Eskin, Harlak, Demirkiran, and Dereboy in 2013. The Turkish scale, comprising of 10 statements and including a two-factor structure of insufficient self-efficacy and sense of stress/discomfort, exhibits a reliability coefficient of 0.82, signifying its effectiveness as a measurement tool. The study determined that the scale has an internal consistency coefficient of 0.86.

Cognitive and Affective Mindfulness Scale (CAMS)

The Cognitive and Affective Mindful Awareness Scale, comprising of 10 statements and four components, was established by Feldman, Hayes, Kumar, Greeson, and Laurenceau in 2007. This scale covers various qualities of conscious consciousness, including acceptance, focus, attention, and awareness. The Cognitive and Affective Mindful Awareness Scale has an internal consistency score of 0.77, which suggests that the Turkish adaptation of the scale is a reliable tool for measuring. The investigation revealed that the scale's internal consistency coefficient was 0.78.

Sociodemographic Form

The participants were surveyed to gather data on their age, present responsibilities, additional task details, and length of employment.

Procedure

A survey comprising four components was designed to gather the research data. The initial page of the survey has an informed consent document, which highlights to participants that their involvement is optional and private, and that they are not required to disclose any identification details. The Ethics Committee of the Halic University has approved this research project. The online research link was disseminated through the social media platform LinkedIn to connect with the business network in the aviation industry. The intended amount of participants was successfully achieved within a month.

Data Analysis

The data gathered in this research was analyzed using the IBM SPSS Statistics version 24 package tool. The normality of the data was assessed by calculating the ratio of the coefficients for kurtosis and skewness values to their respective standard errors. Given the data's normal distribution, a paired independent sample T-Test was utilized to compare two groups, while a one-way ANOVA test was used to analyze more than two groups. Pearson A correlation study was conducted to ascertain the association between mindfulness, perceived stress, and life satisfaction levels among pilots. The mediating function of life satisfaction in the link between the amount of conscious awareness and the level of felt stress was examined using SPSS's PROCESS macro plug-in. The resulting analysis results were assessed using a 95% confidence interval.

Results

The acquired data from the research was evaluated to ascertain the analysis techniques to be employed in examining the hypotheses and to discover any absent or outlier data. A total of 130 pilots took part in the study, and the responses of one person were identified as an outlier and hence excluded from the analysis. Normality control was conducted by examining the kurtosis and skewness values.

Relationships between variables, reliability coefficients and descriptive statistics values were examined with Pearson Correlation analysis and the results are presented in [Table 2](#).

Table 2

Connections among variables, measures of consistency, and values that summarize data Pearson correlation analysis

Variables	Mean	SD	Min	Max	1	2	3
1. Life Satisfaction	18,64	3,05	11	25	1 (.83)		
2. Cognitive and Affective Mindful Awareness	36,75	3,96	25	45	,48*	1 (.78)	
3. Perceived Stress	22,97	6,68	10	41	-,49*	-,49*	1 (.86)

Note. *p < .05, **p < .01. The values in parentheses are Cronbach's Alpha coefficients.

[Table 2](#) contains descriptive statistical statistics for the Life Satisfaction, Perceived Stress, and Cognitive and Affective Mindful Awareness scales utilized in the research. The reliability assessment of the scales utilized involved verifying if the Cronbach Alpha scores above 70. The scales demonstrate reliability consistent with the results indicated in [Table 2](#). A Pearson correlation analysis was conducted to examine the association between Life Satisfaction, Perceived Stress, and Cognitive and Affective Mindfulness. According to the data shown in [Table 2](#), it was found that all variables exhibited a substantial correlation with one another. There was a statistically significant negative correlation between life satisfaction and perceived stress ($r=-.49$, $p=.00$). Additionally, there was a statistically significant positive correlation between life satisfaction and cognitive and emotional awareness ($r=.48$, $p=.00$). Lastly, there was a statistically significant positive correlation between perceived stress and cognitive awareness. An important inverse correlation was observed between emotional mindfulness and emotional awareness ($r=-.49$, $p=.00$). The results confirmed hypothesis H1, H2, and H3.

The findings from the analysis examining the mediating role of life satisfaction are displayed in [Table 3](#).

Table 3

Analysis of the Mediating Role of Life Satisfaction

Independent variables	Multi-Linearity Verification	
	Tolerance	VIF
Life Satisfaction	.77	1,3
Cognitive and Affective Mindful Awareness	.77	1,3

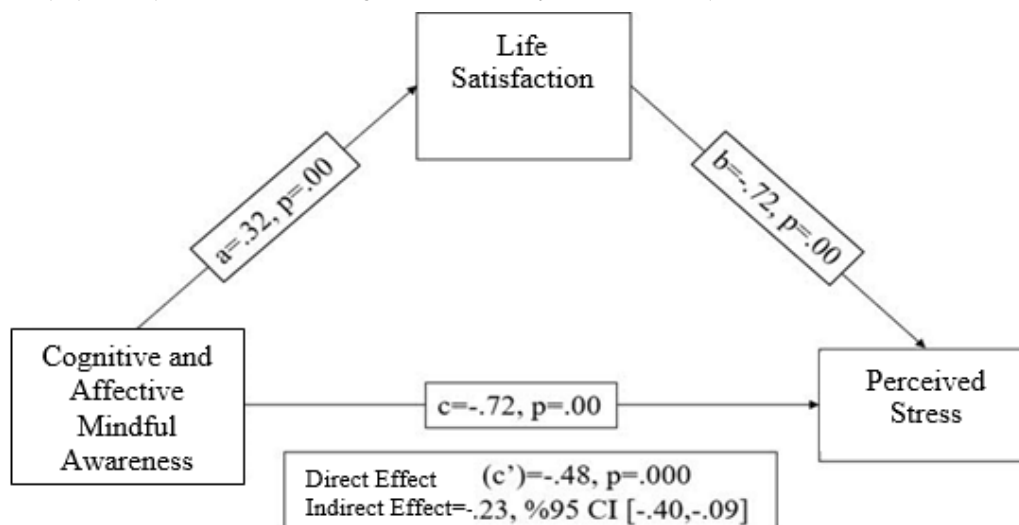
Mediator variable analysis was conducted using Process Macro version 4 to investigate the function of Life Satisfaction in mediating the connection between Cognitive and Affective Mindfulness and Perceived Stress. Prior to analysis, multicollinearity was assessed by obtaining tolerance and VIF scores. The values presented in [Table 3](#) indicate that there is no presence of multicollinearity among the variables, (Tolerance>0.01, VIF <10).

[Figure 1](#) illustrates the role of life satisfaction in mediating the relationship between mindfulness and stress.



Figure 1

The role of life satisfaction in mediating the relationship between mindfulness and stress



The findings of the mediator variable analysis are displayed in Table 4.

Table 4

Results of the mediator variable analysis

	Result Variables					
		M (Life Satisfaction)		Y (Perceived Stress)		
Forecast Variables		b	S.H.	b	S.E..	
X (Conscious Awareness)	a	.32***	.05	c'	-.48***	.12
M (Life Satisfaction)	-	-	-	b	-.72***	.18
Stable	i _m	6.25**	45384	i _y	55.18***	4.35
		R ² =.23		R ² =.32		
		F(1,127)=37,47; p<.001		F(2,126)=29,87; p<.001		

Note. *p<.05, **p<.01, ***p<.001

S.E.: Standard error.

Unstandardized beta coefficients (b) are shown.

The analysis used cognitive and emotional awareness as independent factors, felt stress as the dependent variable, and life satisfaction as the mediator variable. The study used Hayes' (2018) Process Macro Model 4 to investigate the mediating role of life satisfaction and the indirect impact of cognitive and emotional mindfulness on stress. Additionally, the study examined the influence of cognitive and emotional mindfulness on life satisfaction, as well as the impact of life satisfaction on stress, using regression analysis with the bootstrap method. The term "Path a" in Figure 1 represents the impact of cognitive and emotional mindfulness on life satisfaction. "Path b" represents the impact of life satisfaction on perceived stress. The term "Direct effect" represents the impact of cognitive and emotional mindfulness on perceived stress, while taking into account the influence of life satisfaction. The cumulative impact is demonstrated by "path c". The total effect term represents the cumulative impact of both the direct effect between two structures and the indirect effect through the mediator variable ($c = c' + a*b$). The term "indirect effect" describes the connection that exists between cognitive and emotional awareness, the mediator variable of life satisfaction, and the independent variable of perceived stress ($a*b$). The studies were conducted using the Bootstrap approach and 5000 resampling choices. Gürbüz and Bayık (2021) propose a method to determine the presence of a



mediation effect, also known as an indirect effect, by analyzing the 95% confidence interval values obtained by bootstrap analysis. To validate the hypothesis in the mediation effect study conducted with Bootstrap, we assessed whether the 95% confidence interval (CI) values generated from the analysis encompassed the value of 0. The findings of the regression analysis undertaken for this purpose are presented in Table 4. The study utilized the bootstrap technique to estimate the indirect impact of cognitive and emotional mindfulness on perceived stress, based on the confidence intervals obtained. The study found that there was a substantial indirect influence of cognitive and emotional mindfulness on felt stress. Specifically, life satisfaction played a mediating role in the link between cognitive and emotional mindfulness and perceived stress ($b=-.23$, 95% CI $[-.40, -.09]$). The H4 theory was supported based on these findings.

An independent samples t-test was applied to investigate whether there was a statistically significant disparity in the felt stress levels between the captains and co-pilots who took part in the study. The test results presented in Table 4 indicate that there was no notable distinction between the perceived stress levels of the captain pilots (mean=22.94, standard deviation=6.93) and the perceived stress levels of the co-pilots (mean=23.00, standard deviation=6.47) ($t(127)=-.05$, $p=.96$). The analysis results did not support the H5 theory.

“The results of the independent sample t-test for the Captain and Co-pilot are displayed in Table 5”.

Table 5

Results of an Independent Sample T-Test Comparing the Perceived Stress Level, Life Satisfaction Level, and Cognitive and Emotional Conscious Awareness Levels of Captains and Co-Pilots

Variable	Groups	n	\bar{x}	ss	sh	t Test		
						t	sd	p
Perceived Stress	Captain	64	22,94	6,93	0,87	-0,05	127	0,96
	Co-Pilot	65	23	6,47	0,8			
Life Satisfaction	Captain	64	19.39	2,49	.31	2,84	127	.01
	Co-Pilot	65	17.91	3,38	.42			
Cognitive and Affective Mindful Awareness	Captain	64	38,95	4,39	0,55	0,57	127	0,57
	Co-Pilot	65	38,49	4,72	0,59			

The study also investigated whether there were differences in life satisfaction and degrees of cognitive and emotional awareness between the captain and co-pilots, which are additional variables addressed. There is a noticeable difference in the average scores earned by the captain and co-pilots on the life satisfaction measure. The study found that captain pilots had significantly higher life satisfaction levels (mean=19.39, standard deviation=2.49) compared to co-pilots (mean=17.91, standard deviation=3.38) ($t(127)=-2.84$, $p=.01$). There is no noticeable alteration in the degrees of cognitive and emotional awareness. There is no statistically significant distinction between the cognitive and emotional awareness levels of captain pilots (mean=38.95, standard deviation=4.39) and the cognitive and emotional awareness levels of co-pilots (mean=38.49, standard deviation=4.72) ($t(127) = .57$, $p=.57$). There is no noticeable alteration in degrees of cognitive and emotional awareness. According to the data presented in Table 4.10, there is no statistically significant distinction between the cognitive and emotional mindfulness levels of captain pilots (mean=38.95, standard deviation=4.39) and the cognitive and emotional mindfulness levels of co-pilots (mean=38.49, standard deviation=4.72). The statistical test resulted in a t-value of 127, which corresponds to a p-value of 0.57.

“Independent Sample ANOVA Results of Captain and Co-pilots are presented in Table 6.”

Table 6

The Results of a One-Way ANOVA Analysis Showing Relationship between Participants' Life Satisfaction, Perceived Stress Level, and Cognitive and Affective Mindful Awareness Levels Based on their Airline Experiences and Age Groups

Variable	Groups	n	\bar{x}	ss	F	sd	p
Life Satisfaction	Age						
	25-30 age	29	18,07	3,21	7,39	2	0,001
	36-45 age	65	18,03	3,05			
	46 and over	35	20,26	2,32			
	Airline Experience						
	0-3 years	18	18,39	2,83	3,15	3	0,03
	4-10 years	56	17,89	3,31			
	11-20 years	38	19,18	2,67			
21+ years	17	20,18	2,53				
Perceived Stress Level	Age						
	25-30 age	29	23,34	6,45	2,93	2	0,06
	36-45 age	65	24,02	6,24			
	46 and over	35	20,71	7,27			
	Airline Experience						
	0-3 years	18	21,28	6,97	0,63	3	0,6
	4-10 years	56	23,68	6,05			
	11-20 years	38	22,97	6,98			
21+ years	17	22,41	7,8				
Cognitive and Affective Mindful Awareness	Age						
	25-30 age	29	37,28	4,64	4,25	2	0,02
	36-45 age	65	38,45	4,24			
	46 and over	35	40,43	4,64			
	Airline Experience						
	0-3 years	18	39,22	4,25	2,14	3	0,1
	4-10 years	56	37,98	5,08			
	11-20 years	38	38,53	3,75			
21+ years	17	41,06	4,13				

One-way ANOVA was used to categorize the variables of the study based on experience and age. Given that the variances are homogeneous and gender equality is not necessary, the Bonferroni Post-Hoc test is conducted. According to the information presented in table7, life satisfaction levels are categorized based on the experience of pilots and their age. Pilots with 4-10 years of experience have lower life satisfaction levels compared to those with 21 years or more of experience. Additionally, it is observed that women aged 46 and above have significantly higher life satisfaction scores compared to the differences between the ages of 25-30 and 36-45. There were no notable variations identified based on perceived stress level, age distribution, and experience. There was no notable disparity in cognitive and emotional condition based on the pilots' experience in the normal state. However, when analyzed by age groups, individuals aged 25-30 exhibited poorer scores compared to those aged 46 years and above.

"The results of the independent sample t-test for the research variables, based on the status of an additional task, are displayed in [Table 7](#)."

Table 7*Results of an Independent Sample T-test for the Research Variables Based on the Status of an Additional Responsibilities*

Variable	Groups	n	\bar{x}	ss	sh	t tests		
						t	sd	p
Prevalence of additional responsibilities								
Life Satisfaction	Yes	56	19,13	2,78	0,37	1,58	127	0,12
	No	73	18,27	3,21	0,38			
Perceived Stress Level	Yes	56	23,36	6,96	0,93	0,58	127	0,57
	No	73	22,67	6,48	0,76			
Cognitive and Affective Mindful Awareness	Yes	56	39,11	4,41	0,59	0,84	127	0,4
	No	73	38,42	4,66	0,55			

The study employed an Independent Sample T-Test to investigate if participants had extra responsibilities (such as management, teaching, office work, etc.) at their airline, in addition to their flight tasks, and whether this had an impact on the research variables. Based on the findings presented in [Table 8](#), there was no notable disparity detected when comparing individuals based on their additional duty status.

Evaluation of hypotheses is presented in [Table 8](#).

Table 8*Evaluation of Research Hypotheses*

Hypotheses	Results
H1: A strong correlation exists between conscious awareness and life satisfaction.	Supported.
H2: A strong correlation exists between conscious awareness and perceived stress level.	Supported.
H3: A strong correlation exists between life happiness and perceived stress level.	Supported.
H4: Life satisfaction acts as a mediator in the connection between mindfulness and stress.	Supported.
H5: There exists a notable difference in the perceived stress levels between captains and co-pilots.	Not supported.

[Table 8](#) contains a collection of hypotheses, both supported and unsupported, that were identified through various investigations.

Discussion

An investigation was conducted to explore the correlation between the levels of conscious awareness and experienced stress among captains and co-pilots employed in aviation companies. Additionally, the study explored the impact of life satisfaction as a mediator in this relationship. The level of conscious awareness is believed to have an impact on the level of perceived stress, and it is also believed that happiness with life is likewise connected to the level of perceived stress. This study initially investigated the correlation between conscious awareness and life satisfaction. The investigation revealed a strong correlation between the cognitive and emotional awareness level of airline pilots and their life satisfaction. There is a correlation between higher levels of cognitive and emotional awareness and higher levels of life satisfaction. Conversely, lower levels of conscious awareness are associated with lower levels of life happiness.

Eskici (2022) discovered a strong positive correlation between mindfulness and levels of life satisfaction in his study. The study conducted by Kong, Wang, and Zhao (2014) found a substantial correlation between mindfulness and life satisfaction when examining the link between these factors together with basic self-evaluation. This study involved 177 female and 133 male participants residing in China, who primarily had completed their undergraduate, graduate, and doctoral education. The findings indicate that individuals with a heightened level of conscious awareness tend to possess higher levels of basic self-evaluations,



which in turn leads to increased levels of life satisfaction. Upon analyzing the score distributions among different age groups in this study, it was noted that airline pilots aged 46 and above had higher levels of life satisfaction compared to the other age groups.

One of the goals of this study was to assess the pilots' perceived stress level. The objective is to provide development recommendations by analyzing the aspects that have an impact. Upon reviewing the literature, a study was conducted with university students to investigate the correlation between mindfulness and anxiety, depression, and stress. The findings revealed that as individuals' mindfulness levels increased, their levels of stress and symptoms of depression decreased. (Ülev,2014). Our research findings correspond with those reported in the literature, indicating a significant inverse correlation between pilots' cognitive and emotional awareness and their perceived stress levels. As cognitive and emotional awareness levels rise, perceived stress levels fall. Conversely, when cognitive and emotional awareness levels decline, perceived stress levels tend to increase. Pilots employed in the civil aviation industry encounter significant levels of stress and anxiety within their work settings. Based on the findings of this research, cognitive and emotional mindfulness is an effective strategy for pilots to manage the high-pressure situations they face in their careers and evaluate their decision-making methods.

According to Uzun and Kral (2021), pilots need to possess heightened situational awareness in the cockpit due to the numerous stimuli they encounter. This is crucial for effectively implementing danger and error management. Based on a study with pilot participants in the field of literature, it has been found that when multiple tasks need to be accomplished, it becomes challenging to concentrate on the main activity. Conscious awareness allows a pilot to utilize their existing skills at the right moment (Miller, 2021). According to Miller (2021), pilots must possess the ability to differentiate between objective reality and the subjective reality that they generate inside. Individuals must also possess the ability to consciously redirect their attention back to their breathing when their focus goes to other internal processes. In the field of aviation, pilots who possess a heightened level of conscious awareness are able to direct their attention towards the correct focal point and effectively shift their attention away from unfavorable circumstances. (Ji et al, 2018).

Our research revealed that life satisfaction played a mediation function in the connection between mindfulness and perceived stress level. Upon reviewing the relevant studies, life satisfaction is assessed as an inclination to adopt a more optimistic outlook when evaluating one's experiences, hence influencing the individual's overall well-being. Stress, caused by adverse life experiences, can impact an individual's overall well-being (Basım & Çetin, 2011). Therefore, the stress that emerges from adverse circumstances can have an adverse effect on an individual's overall well-being. Research has shown that individuals who possess strong psychological resilience are more likely to employ effective coping mechanisms in response to adverse circumstances (Kavi, Karakale 2018).

When analyzing previous studies and exploring the fundamental components of the idea of conscious awareness, it is evident that directing individuals' attention to the present moment and facilitating their focus on proper breathing, emotions, and consciousness serve as the foundation of conscious awareness (Kaynak & Güven, 2017). As an individual becomes more aware, they will become more selfless towards their surroundings. This will lead to more harmonious relationships in their interactions with others, their professional life, and their home life, ultimately enhancing their overall quality of life (Erus & Deniz, 2020). A study was undertaken with university students to investigate the association between mindfulness and life satisfaction using Pearson correlation. This study discovered a strong and meaningful correlation. This demonstrates that elevating an individual's level of conscious awareness is correlated with a rise in overall life satisfaction (Şahin, 2019). The data gathered from the literature confirms the hypothesis of this research, which states that there is a positive correlation between life satisfaction and mindfulness. A study on stress

reveals that those undergoing pilot school, similar to airline pilots, are similarly subjected to demanding circumstances. The research lasted two academic years and involved 41 students from a pilotage school participating in 75 simulator sessions. During these sessions, a wristband was utilized to capture the electrodermal activities of the student pilots, providing the real-time collection of data. The wristband used measures physiological responses such as changes in heart rate, temperature, and similar metrics. The electrodermal reactions of student pilots in diverse activities were compared using the one-way Mann-Whitney test in the simulator. Following the investigation, it was noted that despite the participants' strong performance in challenging tasks, there was an increase in electrodermal activity, which serve as a sign of stress (Vallès-Català et al., 2020).

However, a notable difference was observed in terms of life satisfaction. Additionally, an examination was conducted based on age and the number of hours worked in this particular situation. Research revealed that individuals in the roles of captains and co-pilots who were 46 years old or older showed greater levels of life satisfaction. Recent studies have analyzed how individuals' stress coping techniques vary based on their professional backgrounds. The statement suggests that the stress variables in the workplace differ based on situational variety and professional categories. Consequently, the assessment of stress levels and coping strategies varies among different occupational groups (Kiesler, 1966). A study was undertaken with teachers to evaluate the sub-dimensions of the perceived stress scale. Upon analyzing the element of insufficient self-efficacy based on seniority groupings, a notable disparity was observed between teachers with 21-30 years of professional experience and those with 1-10 years of experience. It was noted that instructors in the early years of their career felt more confident in their abilities (self-efficacy) compared to teachers with 21-30 years of experience. When analyzing the stress/discomfort perception dimension, a sub-dimension of the perceived stress scale, it is evident that teachers with 1-10 years of professional experience have a higher level of self-efficacy compared to teachers with 21-30 years of professional experience. However, teachers with 1-10 years of professional experience have a more positive perception of their own self-efficacy. It was determined that teachers' experience of stress/discomfort was elevated (Şanlı, 2017). Based on this information, it is anticipated that there is no notable disparity in the perceived stress levels between captains and co-pilots. However, future studies that incorporate a wider range of sociodemographic data and explore the various sub-dimensions of the perceived stress scale may yield different outcomes for the study's hypothesis.

According to Şahin (2019), previous studies have identified several aspects that influence life satisfaction, including physical well-being, economic situation, contentment in social life, perception of achievement in accomplishing goals, and happiness with daily living. Upon evaluating the findings of our research, it becomes apparent that pilots aged 46 and above exhibit high levels of life satisfaction in their professional careers. The study conducted by Şahin (2019) suggests that the ideas associated with life happiness may align with the research findings. Therefore, it is expected that incorporating the aforementioned characteristics in future research could be beneficial. The "Mindfulness to Meaning" theory proposes a novel process model of conscious emotion regulation, which suggests that mindfulness enhances well-being through the mechanisms of attention, appraisal, and emotions (Garland et al., 2015). A recent study conducted by Li, Ma, and Li (2022) demonstrates a direct correlation between mindfulness and life satisfaction. Perceived stress is commonly regarded as a predictor of life satisfaction in several research in the literature. This study found a notable correlation between the cognitive and emotional mindfulness of participants, their life satisfaction, and their reported stress levels. Research has shown that life satisfaction has a mediation role in the connection between cognitive and emotional mindfulness and perceived stress.



Limitations and Recommendations

As a result of the limitations of this study, participants provided responses to the research questions through an online platform, ensuring confidentiality of the data collected. However, the study did not investigate distinction between airlines. Therefore, it was not possible to analyze the impact of corporate culture. It is considered beneficial to utilize qualitative methods in future studies. Given that corporate culture has an impact on working conditions, it is hypothesized that it could influence the variables being studied. Considering this issue and increasing the number of participants in future studies is believed to be advantageous. One additional constraint of this study is its limited scope, as it only focuses on airline pilots. Consequently, the comparison of research findings and the development of hypotheses were based on a restricted amount of existing literature.

This study involved collecting data from participants regarding their age, current responsibilities, supplementary task details, and length of employment. In future research, the sociodemographic information form will include a wider range of questions. The variable of experience will be examined in greater depth. It is anticipated that further insights will be gained regarding flight hours, military or civilian training background, the duration of a person's current position, cognitive and emotional awareness, life satisfaction, and perceived stress levels of pilots in the civil aviation industry. In future studies, it is believed that the lack of experience among captains and co-pilots in the civil aviation industry, in both positions, is another potential factor that could impact the perceived degree of stress.

Developing conscious awareness-focused support programs for pilots in the civil aviation industry is believed to have potential benefits in enhancing pilots' psychological well-being by strengthening their stress coping abilities. Developing cognitive and emotional awareness-focused content and conducting studies on life satisfaction can help professionals in the civil aviation sector manage pilots' perceived stress levels. Furthermore, it may assist in enhancing the educational elements of the peer support program for pilots.

To contribute to the aviation industry, airlines and educational institutions should focus on enhancing pilots' general well-being by creating content that addresses their life satisfaction and perceived stress. This can be achieved through the development of seminar and training materials that aim to strengthen pilots' psychological health. Additionally, it is predicted that support programs should be established to increase pilots' conscious awareness levels.



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