The Psychological Pressure Experienced by Pilots: a Sample Pilots in Algerian Airlines

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Abstract

The aim of the current study was to investigate the level of psychological pressure among pilots working for Air Algerie and to identify whether there are differences in the level of psychological pressure among the sample individuals attributed to the variables of social status and years of experience. The current study followed an exploratory descriptive approach, and the sample consisted of 230 pilots selected using stratified random sampling. The Psychological Pressure Scale by Lavenstein (1993) was employed. The study's results revealed the following:

- The presence of a moderate level of psychological pressure among pilots working for Air Algerie.

- The presence of statistically significant differences in the level of psychological pressure among the sample individuals attributed to the variables of social status and years of experience.

Keywords: Psychological pressure, pilots.

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Introduction

The current era is described as the era of psychological pressures, as they are an inevitable part of human life. However, a certain level of pressure is necessary for individuals to work efficiently or perform a specific profession. Among the professions that experience psychological pressure is the profession of pilots, which is often perceived by society as an attractive profession. This perception is based on the belief that it holds a prestigious social and economic status with short working hours and the allure of traveling around the world and staying in luxurious hotels at the expense of the employing company. However, in reality, the profession of a pilot is highly demanding. They deal with challenging work conditions and an increasing level of pressure, experiencing various levels of fatigue as part of their work. Therefore, researchers have shown interest in studying psychological pressures in order to reduce their levels to an appropriate degree and enable pilots to deal with them effectively. This is precisely what the current study aims to explore: the level of psychological pressure among pilots.

Problem statement:

Aviation has become an important and essential means of transportation for many people, as it remains one of the safest modes of transport, particularly in terms of safety and service quality

(Moussa, 2023). It is preferred by people compared to other modes of transport due to its time efficiency and passenger comfort (Kaan, 2021). NASA has confirmed that air transport is increasing, with continuous flights around the clock, both domestically and internationally (Majali, Shana, 2019). As a result of this rapid growth, it has become necessary to ensure aviation safety, with pilots playing a crucial role in maintaining the safety of the aircraft and its passengers (Corrie A, 2023). The profession of a pilot is distinct from any other profession due to its nature and environment. A pilot's workplace is located kilometers above the ground, in an extraordinary environment that carries many risks. Pilots operate complex and advanced technology on the aircraft, which entails high-risk systems (Venus, 2022). Moreover, being a pilot is an extremely demanding lifestyle. They face unique circumstances in their work, including irregular schedules, frequent absence from home and social settings, and travel across different time zones, leading to significant disruption in circadian rhythm, causing sleep problems. Pilots also face various personal and employment challenges, such as undergoing regular medical examinations, the fear of license revocation, and regular flight simulation tests. They deal with challenging work situations, which can contribute to psychological pressure (Corrie A, 2023).

The latter has become a part of every individual's life and a part of society due to the significant number of challenges and increasing requirements demanded from each person (Majali et al., 2019). Recently, the World Health Organization has described psychological pressure as the pandemic of the 21st century, with documented consequences on health. In the case of exposure to chronic pressures for long periods, it leads to the deterioration of both mental and physical health (Robert, 2017). Psychological pressure and fatigue are not new phenomena in the field of aviation due to their impact on human performance (Giulia, 2023). Pressure associated with pilots' work has been linked to more self-reported health issues such as sleep difficulties and fatigue (Omholt et al., 2017; Venus & Grosseholtforth, 2021). A study conducted by Sharma (2007) indicated that 88.85% of the flight crew members mentioned experiencing pressure related to their work (Preston, 2023). Despite continuous improvements in aircraft design, there are inherent conditions in aviation that cannot be changed, subjecting pilots to high psychological pressures (Robert, 2017).

This study aims to examine the level of psychological pressure among pilots working for Algerian airlines and identify differences in variables such as social status and years of experience. The research questions are formulated as follows:

Study Questions:

- What is the level of psychological pressure among pilots working for Algerian airlines?

- Are there differences in the level of psychological pressure among pilots working for Algerian airlines attributed to the variable of years of experience?

- Are there differences in the level of psychological pressure among pilots working for Algerian airlines attributed to the variable of social status (married/unmarried)?

Study Objectives:

- To identify the level of psychological pressure among pilots working for Algerian airlines.

- To determine whether there are differences in the level of psychological pressure among pilots working for Algerian airlines based on the variable of years of experience.

- To investigate whether there are differences in the level of psychological pressure among pilots working for Algerian airlines based on the variable of social status (married/unmarried).

Significance of the Study:

- The importance of this study lies in identifying the level of psychological pressure among pilots in order to address it and provide suitable factors for practicing this profession.

- The current study may contribute to the field of psychological research related to pilots as a new academic addition to the literature of psychology in Algeria. This study represents one of the pioneering research in the local environment, which can open the door for further studies and research in this field.

Procedural Definition of Study Variables:

Psychological Pressure:

Psychological pressure is operationally defined as the sum of scores obtained by individuals in the current research sample through their responses to the psychological pressure scale employed in this study.

Previous Studies:

After reviewing the literature, the researcher did not find many studies that are directly comparable to the current study. However, among the few existing studies is:

- Study (Al Majali; Shana, 2019):

The aim of this study was to identify the level of work-related psychological pressures and their sources among aircraft crew members, as well as the strategies used by the crew to cope with psychological pressure. The study followed a descriptive methodology and included a sample of 226 individuals from the aircraft crew, including 73 pilots (66 males, 7 females) with an average age of 45 years and an average work experience of 20 years, and 153 flight attendants (53 males, 100 females) with an average age of 26 years and an average work experience of 4 years in Royal Jordanian Airlines. Two scales were used in the study: the Work Pressures Scale and the Psychological Pressure Coping Skills Scale. The results indicated that 74.33% of the aircraft crew members perceived their work pressures as moderate, 11.50% considered their work to cause high pressure, and 14.15% did not experience any work-related pressures. The study also found that crew members with less experience reported higher levels of pressure. Regarding coping strategies for psychological pressure, the study revealed that the most common strategies, ranked in order, were cognitive skills, interpersonal skills, and personal skills. However, the utilization of these skills was below average, while avoidance skills were found to be the least utilized.

Limitations of the Study:

Spatial Limitations: The current study was conducted in Algerian Airlines.

Temporal Limitations: The study was conducted during the period of 22/12/2022.

Human Limitaions: The study included pilots working in Algerian Airlines.

Theoretical Aspect:

Definition of Psychological Pressure: There are several different definitions of psychological pressure, depending on each researcher's perspective and research interests. The definition that aligns with the current study will be selected.

Lazarus defines pressure as a psychological, physiological, bodily, and social phenomenon that includes the stimulating event, the resulting response, and the interplay of variables between the stimulus and the response (Lazarus, 1966, p. 27). This definition highlights that psychological pressure encompasses all elements, such as stimuli, responses, environment, and mediating variables like personality traits and cognitive variables between the stressful event and the response to it.

Sources of Psychological Pressure:

Pilots are often described as a professional group facing extraordinary psychological challenges related to work conditions and mental pressures. Pilots must deal with these challenges, and the following are the most common sources of psychological pressure they encounter:

Fatigue: Fatigue is a major cause of psychological pressure for pilots. They are often required to remain focused and alert for extended periods of time. Insufficient sleep impairs the pilot's vigilance and ability to safely operate the aircraft or perform safety-related duties. Fatigue is nearly unavoidable for airline pilots (Stephen, Antonio, Clarence, 2017).

Irregular Work Schedules: Irregular working hours increase the level of psychological pressure for pilots. They are expected to fly at all times of the week, day, and night, and in various weather conditions (Danja, Marino, Martin, 2022).

Considerations of Time Zones: During long-haul flights heading east or west, multiple time zones are crossed, and it takes time to readjust the biological clock and adapt to the new time zone. This can lead to problems with sleep at specific times, daytime fatigue, headaches, and irritability (Monika, David, 2010).

Continuous Assessment of Pilots: It is an ongoing process throughout their professional lives, with frequent testing of their flying proficiency. They undergo medical examinations, and the results of the assessment have significant effects on the pilots. Any medical problem discovered or insufficient flying competence can lead to the suspension or loss of the pilot's license (Lempereur, Lauri, 2006).

Personal Pressures: Personal pressures refer to life events that occur outside the workplace and can affect job performance, such as family problems, health challenges, financial issues, etc. (Paul, Joan, Keith, 2021).

Expanding the understanding of the sources of psychological pressure provides the theoretical foundation and practical guidance for pilots to cope with them.

Psychological Pressure Symptoms:

People vary in their response to psychological pressure, depending on their physical abilities and psychological characteristics. When pressure exceeds their tolerance levels, it leads to the emergence of various symptoms, including:

Cognitive Symptoms:

- Lack of attention, difficulty concentrating, and diminished observation ability.

- Inability to make decisions and forgetfulness.

- Loss of the ability to accurately assess the situation.

Emotional Symptoms:

- Quick temper, irritability, and increased anxiety.

- Nighttime insomnia and inability to sleep.

- Loss of appetite or excessive eating.

Physical Symptoms:

- Fatigue and loss of energy.

- Pains and aches in different parts of the body.

- Tremors or excessive sweating.

Behavioral Symptoms:

- Withdrawing from friends and staying at home.

- Aggression towards colleagues and family.

- Decreased frequency of engaging in physical exercise (Flight Safety Foundation, 2006, p.1).

In the aviation field, any detail holds special importance as it can help avoid serious consequences. Furthermore, in-depth knowledge of psychological pressure symptoms among pilots can lead to improved procedures for risk reduction and enhanced safety.

Method and Procedures:

- Study Design:

A descriptive approach was employed in an exploratory and comparative manner in this study, as it is the appropriate method to achieve the study's objectives and answer its research questions.

- Study Population:

The study population consists of all pilots working in Air Algerie in the year 2022/2023, totaling 547 pilots.

- Study Sample:

The study sample was determined from a group of pilots working in Air Algerie. The sample included 230 pilots, distributed according to their marital status and years of experience, representing 42.04% of the total population. The primary study sample was selected using stratified random sampling with equal distribution. An electronic questionnaire was distributed to the sample members.

- Tables 1 and 2 illustrate the distribution of sample participants based on marital status and years of experience.

Table 1: Shows the distribution of sample members by marital status (married - unmarried)

Total sample of pilots / n = 230			
Total	Unmarried	married	Marital status
230	115	115	**Number**
100%	%50	%50	**% Rate**

The table indicates that the number of married pilots is 115, accounting for 50% of the total sample, which is equal to the number of unmarried pilots (115) at a rate of 50%.

Table 2: Shows the distribution of sample members by years of work (1-5, 10-5)

Total sample of pilots / n = 230			
Total	(5-10)	(5-1)	**Years of work**
230	115	115	**Number**
%100	%50	%50	**% Rate**

It can be observed from the table that the number of pilots with work experience ranging from (5-1) is 115 pilots, accounting for 50% of the total sample, which is equal to the number of pilots with work experience ranging from (10-5), also 115 pilots, at a rate of 50%.

Study Instrument:

After reviewing relevant studies and measures related to the variable of psychological pressure, the Lavenstein scale was adopted. This scale was developed in a study titled "Development of the perceived stress questionnaire: a new tool for psychosomatic research" by [Author's Name] in [Year, e.g., 1993].

The scale consists of 30 items, each matched with four alternatives (never, sometimes, often, always), corresponding to a rating scale of (4, 3, 2, 1) for the direct items representing 22 items of the scale. Additionally, the indirect items representing 8 items of the scale are matched with a

rating scale of (1, 2, 3, 4). This scale is compatible and applicable to the characteristics and objectives of the current study.

- Validity: The internal consistency validity of the instrument was calculated between the items and the total score, yielding the following results:

Table 03: Results of the validity of the internal consistency of the psychological pressure scale between the paragraphs Total score

Correlation Coefiicient	paragraph	Correlation Coefiicient	paragraph	Correlation Coefiicient	paragraph	Correlation Coefiicient	paragraph	Correlation Coefiicient	paragraph
0.50	29	0.15	22	0.71	15	0.69	8	0.15	1
0.38	30	0.52	23	0.38	16	0.71	9	0.69	2
/	/	0.26	24	0.02	17	0.38	10	0.71	3
/	/	0.02	25	0.61	18	0.02	11	0.38	4
/	/	0.43	26	0.15	19	0.52	12	0.53	5
/	/	0.43	27	0.52	20	0.61	13	0.19	6
/	/	0.24	28	0.61	21	0.69	14	0.61	7

Table number (3) shows that the correlation coefficients ranged from (0.71-0.15). Comparing these results with the significance level, it is evident that they are statistically significant at the (0.01) and (0.05) levels, which confirms the validity of this scale. Therefore, the instrument demonstrates internal consistency.

- **Reliability:** To estimate the reliability of the scale, the Cronbach's alpha coefficient was used, resulting in a value of (0.78). This high coefficient indicates adequate reliability, and the scale can be relied upon in the primary study application.

- **Statistical Methods:**

The statistical software package SPSS (Statistical Package for the Social Sciences) was utilized in this study, and the following statistical methods were applied:

- Mean and standard deviation calculations.

- Pearson correlation coefficient.

- t-test.

Discussion of Results:

After applying the study tools to the sample individuals, the data from the primary study were collected and analyzed. They will be presented and discussed as follows:

1. Results related to the first question: which is as follows: "What is the level of psychological pressure among pilots working in Air Algerie?"

To answer this question, the mean and standard deviation were used to assess the performance of the sample individuals on the psychological pressure scale. The following table illustrates this:

Table No. (4) shows the arithmetic mean and standard deviation of the performance of the sample members on the psychological stress scale

Level	Standard deviation	Arithmetic mean	Total Scores	Scale
medium	4.14	74.004	17251	Stress

Based on the table results, it is evident that the performance level of the sample individuals, based on the total score of the psychological pressure scale, was average. This result indicates that the level of psychological pressure among pilots working in Air Algerie was average. This finding is consistent with the results of a study conducted by Majali and Shne (2019), where they stated that 22.6% of pilots experienced average psychological pressure. It is natural for pilots to experience average psychological pressure due to the nature of their profession, unique working conditions, and risk factors such as flight disruptions, irregular working hours, dealing with frequently changing schedules, long working hours, continuous evaluation throughout their professional lives (including professional competence and medical examination) to ensure their fitness for flying. The recurring absence from home can make it challenging for pilots to establish and maintain marital and social relationships. These combined factors contribute to an average level of pressure among pilots.

2. Results related to the second question: which is as follows:

Are there differences in the level of psychological pressure among pilots working in Air Algerie attributed to the social status variable (married - unmarried)?". The results obtained are presented in the following table:

Table (5): Significance of Differences in the Level of Psychological Pressure among Pilots Employed by Algerian Airlines Based on the Social Status Variable (Married - Unmarried).

Resolution	Significance level "T"	value "T"	Standard deviation	Arithmetic mean	Sample number	Stress
function	0.000	11.513	3.42	72.208	115	married
			3.26	77.287	115	Unmarried

Based on the table results, it is evident that the mean score for the unmarried pilots' sample, estimated at 77.28, is higher than the mean score for the married pilots' sample, estimated at 72.20. Furthermore, the standard deviation for the first sample, estimated at 3.26, is lower than the standard deviation for the second sample, estimated at 3.42.

The calculated t-value for testing the significance of differences between the means of the two samples is 11.51. This indicates that there are statistically significant differences in the level of psychological pressure among pilots working in Air Algerie attributed to the social status variable (married - unmarried).

These findings align with the results of a study conducted by David (2000), Edna, and Pam, emphasizing the importance of family life in reducing psychological pressure. They found that 100% of the pilots confirmed the utmost importance of having a stable relationship with a spouse and a smooth and stable family life. Following that in terms of utmost importance is the ability to communicate with an understanding spouse, as confirmed by 89% of the pilots. It is natural for social support to impact the reduction of psychological pressure, as Slon et al. (1985) found in an in-depth study on the various sources of psychological pressure and coping mechanisms among British pilots. They found that stability in relationships and family life are the most important factors that help pilots alleviate psychological pressure. This confirms that family support (spouse) is an important factor in a pilot's ability to effectively deal with psychological pressure.

- Results Related to Research Question Three, which states: "Are there differences in the level of psychological pressure among pilots attributed to the variable of years of experience?" The following results have been obtained as indicated in the following table:

Table (6) illustrates the significance of differences in the level of psychological pressure among pilots employed by Algerian Airlines based on the variable of years of experience.

Resolution	Significance level "T"	value "T"	Standard deviation	Arithmetic mean	Sample Number	Stress
function	0.000	9.863	3.87	77.008	115	5-1
			3.06	72.460	115	10 5

It can be observed from the table results that the mean score for the sample of pilots with work experience of 1-5 years, estimated at 77, is higher than the mean score for the sample of pilots with work experience of 5-10 years, estimated at 72.46. Furthermore, the standard deviation for the first sample, estimated at 3.87, is higher than the standard deviation for the second sample, estimated at 3.06.

The calculated t-value for testing the significance of differences between the means of the two samples is 9.86. This indicates that there are statistically significant differences in the level of psychological pressure among pilots working in Air Algerie attributed to the variable of work experience (1-5 years, 5-10 years). This could be attributed to the actual practice of the profession

over the years, which gives them more experience. In addition, continuous training during their years of work on potential hazards faced by pilots and how to deal with them correctly helps them alleviate psychological pressure.

Recommendations:

Based on the findings, the following recommendations can be made:

1. Develop counseling programs targeting the reduction of psychological pressure among pilots.

2. Implement psychological counselors within the airline company to improve the mental health of pilots.

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