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*Research Article*

# Navigating the Work Passion and Safety Behavior Examining the Role of Safety Locus of Control in the Aviation Sector

İnan Eryılmaz[1], Tugay Öney[2*], Yeşim Tüm Kılıç[3], Tuğba Erhan[4]

[1] *Suleyman Demirel University, School Civil Aviation, Department of Aviation Management, Isparta, Türkiye*
*inaneryilmaz@sdu.edu.tr* - 0000-0001-8307-2402

[2] *Nevsehir Hacı Bektas Veli University, Institute of Social Sciences, Department of Business, Nevsehir, Türkiye*
*tugay128@hotmail.com* - 0000-0003-2883-5889

[3] *Nevsehir Hacı Bektas Veli University, Institute of Social Sciences, Department of Business, Nevsehir, Türkiye*
*yesim.9444@gmail.com* - 0000-0001-9897-8119

[4] *Suleyman Demirel University, Faculty of Economics and Administrative Sciences, Department of Business, Isparta, Türkiye*
*tugbaerhan@sdu.edu.tr* - 0000-0002-5697-490X

## Abstract

"Safety" is a very essential factor in human-technology interaction in the aviation industry. There are limited number of studies on determining the strong emotions and motivations that improve the safety behavior perceptions of employees under intense workload and stress in the aviation industry, that cares about the importance to compliance with developing information, communication and security technologies. The aim of the research, which focuses on filling this gap in findings, is to reveal the effect of work passion levels of aviation industry employees on their perception of safety behavior and to determine whether safety locus of control plays a mediating role in this relationship. The research sample consists of employees working in different departments in the Turkish civil aviation industry (n = 541). After confirmatory factor analysis was performed to test the model and hypotheses of the research, Medmod macro was used to test multiple regression analysis and indirect effects. Research findings demonstrate that engaging in harmonious passion is a positive predictor of safety behavior. On the other hand, it was found that obsessive passion did not affect safety behavior. Additionally, it was observed that internal locus of control had a full mediating role in the relationship between harmonious passion, obsessive passion, and safety behavior. On the other contrary, it was determined that external locus of control did not play a mediating role in the relationship between harmonious passion, obsessive passion and safety behavior. Inferences were made from the research findings, research limitations were highlighted, and suggestions for the sector and future research were presented.

## Keywords

Work Passion
Safety Locus of Control
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## Time Scale of Article

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## 1. Introduction

Work passion, which is an intense form of psychological emotions and motivation, is a primary motivational force that leads people to spend time achieving high competence and perfecting their skills in a particular activity (Vallerand, 2008) and (Ahn, Back, and Lee, 2019). On the other hand, work passion is considered a

*: Corresponding Author Tugay Öney, tugay128@hotmail.com
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motivational structure from an organizational perspective that includes both emotional and cognitive components (Kong and Ho, 2018). Vallerand et al. (2003) examine the concept of work passion as harmonious and obsessive in two dimensions. While harmonious passion is characterized by self-directed motivation, obsessive passion is defined by controlled motivation, an individual continues the job depending on unexpected situations, pressures, or consequences (Smith et al., 2023). Contemporary organizations have regular attempts and efforts to increase employees' commitment and work passion; however, it may be challenging to take action and examine the effects of work passion on employees' behavior due to the motivational structure contained in the phenomenon of passion that is important in terms of allowing new interpretations and judgments about various situations. Dokuman and Akıncı (2001: 94) state that safety and human factors, specifically in the aviation sector, can be in coordination and gain meaningful power when integrated to reduce flight-related hazards and risks and keep them at an optimum level. In addition, work passion, which emotionally impacts behavior, is an essential determinant of employees' attitudes, perceptions, and social norms, such as organizational citizenship and proactive safety behaviors. Based on these policies, in cultures where uncertainty avoidance (Gladwin, 1981), which indicates a lack of tolerance for uncertainty and ambiguity, is high, organizational employees are tense, while in cultures where uncertainty avoidance is low, organizational employees are more comfortable. Therefore, it can be said that the existence of hierarchical rules in the aviation sector facilitates safety behavior by avoiding uncertainty.

Safety behavior encompasses supporting safety protocols for newly participated employees, assisting others to do their jobs safely, and offering safety-related advice. However, safety behaviors reflect more voluntary individual behaviors by managers and employees acknowledged in job descriptions or formal reward systems. Therefore, they are often seen as unique, unusual, and challenging practices (Grant et al., 2009). Safety behavior is discussed in two dimensions: compliance and participation, consistent with the latest theoretical safety performance models (Griffin and Neal, 2000; Hofmann, Morgeson, and Gerras, 2003). Neal and Griffin (2006) describe safety compliance as the activities carried out by members of an organization to ensure workplace safety, while safety participation is defined as the actions that organizational members frequently take to develop a safe environment.

Although implementing safety practices and processes is crucial in the aviation sector, employees' perceptions of these processes are equally critical (Eryılmaz et al., 2019). Since the safety phenomenon in the aviation system is a dynamic feature, safety-related risks must be constantly reduced. Keeping the safety risks under control is crucial as aviation has an open and active system that can balance production and protection (ICAO, 2013). All employees working in different units of the aviation industry have essential responsibilities in keeping safety risks under optimal control level. However, employees' perceptions of safety may differ depending on many reasons. Locus of control is how individuals perceive their behaviors, situations they experience, and consequences of other life events that can be controlled with personal effort. It is related to expectations regarding future events (Jones and Wuebker, 1993) and (Özgener and Ulu, 2018). Individuals' perception of safety may have negative effects. When the statistical summary of aircraft accidents in global operations is examined, the fact that 39% of the fatal accidents that occurred between 1999 and 2008 were reported to be due to loss of control during flight (Boeing Airplane Company, 2008) reveals the need to improve the perceptions of aviation sector employees regarding the locus of control.

It is evaluated that it will contribute to the literature on compliance with safety behavior within the scope of safety-related organizational citizenship behavior against many dangerous and risky situations that employees with work passion encounter in organizations (Fugas et al., 2011). In this study, the following questions were addressed: How and in what direction do the dimensions of work passion impact safety behavior in the Turkish civil aviation sector? Does it make any difference/change in work passion dimensions on safety behavior with the safety locus of control? Hence, this research targets to investigate work passion among aviation sector employees, which is crucial for ensuring flight safety, revealing their perceptions of safety behavior. Although the relationships between passion dimensions and many organizational and individual level behaviors are extensively discussed in the literature, studies examining the relationship between work passion dimensions and safety behavior in the aviation industry are quite limited. However, the fact that the role of the safety locus of control variable, which may be effective in the relationship between these two variables, has not been examined constitutes the originality of current study.

### 1.1. Work Passion

Passion is a robust predisposition tendency toward an activity or work the person likes, values, and feels identified with spending time and energy (Houlfort et al., 2015). It regulates emotional reactions to accomplish tasks that sustain or foster constructive emotions (Pollack et al., 2020). Furthermore, passion is an intense emotional state that strengthens the mind and motivates the individual to create new ideas/goals, gives a sense of purposefulness, contributes to the commitment to the

activity, and makes a lasting and significant impact on the behavior (Pathak and Srivastava, 2020). Work passion exists within the framework of a particular activity, and it becomes a part of a person's identity, transforming motivational power that includes a constant love for a work activity and making the training valuable and meaningful (Smith et al., 2023).

The foundations of the phenomenon of work passion are based on the SDT by Deci and Ryan (1985). Competence, autonomy, and relatedness are psychological needs (Hodgins and Knee, 2002, p. 87; Ho et al., 2018, p. 114–115). Deprivation of these three basic needs harms motivation and well-being (Ryan and Deci, 2020). Precisely, the satisfaction of these three psychological needs and the behaviors that constitute the input of tendencies and development toward an activity can be in the form of intrinsic or extrinsic motivation (Deci and Ryan, 1985). The autonomy-control continuum is a central dimension that distinguishes motivation types within SDT. Behaviors described as controlled in SDT are behaviors in which the individual feels under external or internal pressure or forced to act. Intrinsically motivated behaviors, on the other hand, are performed out of interest, and the primary "reward" is the spontaneous feelings of impact and pleasure accompanying the behaviors. Intrinsic motivation differs from extrinsic motivation, which involves behaviors aimed at achieving a distinct external outcome, such as receiving an extrinsic reward or social approval, avoiding punishment, or performing a valued outcome (Ryan and Deci, 2017).

In the Dualistic Model of Passion by Vallerand et al. (2003), harmonious and obsessive passion differ significantly in their relationships with cognitive, emotional, and motivational results (Curran et al., 2015, p. 632). Individuals with harmonious passion freely and willingly consider their work as personally meaningful, regardless of circumstances, and can participate in their professional activities in an open, flexible, and conscious way that allows for positive experiences (Houlfort et al., 2015), (Ali et al., 2020) and (Astakhova et al., 2022). Obsessive passion is characterized by individuals internalizing controlled and compelling work activities, creating a relational or internal pressure to engage in these work activities. Employees exposed to such internalization or pressure feel that they "cannot stop themselves from engaging in passionate activity" because the excitement resulting from participation in the activity becomes uncontrollable. This situation increases the possibility of employees experiencing conflicts with other aspects of life, causing them to feel frustrated when they do not participate in their professional activities and which makes it impossible to revitalize and recharge one's cognitive, emotional, and behavioral repertoire (Vallerand et al., 2003), (Houlfort et al., 2015), (Ali et al., 2020) and (Tu et al., 2023). In other words, obsessive passion produces negative consequences and reduces positive emotional experiences (Gülbahar and Özkan, 2023).

### 1.2. Safety Behavior

Safety is one of the top priorities of the aviation sector. The reason for this is that accidents are inevitable as a result of any compromise made in safety. Human resources experts and researchers believe 70% to 80% of aviation accidents can be attributed to a human factor within the causal chain (Shappell and Wiegmann, 1996). Silitonga et al. (2022) found that in the Indonesian civil aviation institution, the primary cause of aircraft accidents was 75% due to the human element. This determination highlights the human factor, the reasons for accidents and the failure to comply with several procedural aspects, which are the primary operating systems of the aviation sector. Therefore, in reducing accidents in the aviation sector, it becomes necessary to attach importance to regulatory policies and behaviors regarding safety issues to direct the human factor effectively. On the other hand, policies, resources, and process practices related to safety behavior require particular effort and time. If this effort and time cannot be provided, employees may experience presenteeism in the workplace as they feel unsafe at work (Öney et al., 2022). Therefore, investigating the safety factor that impacts employee behavior is even more critical regarding sustainability and continuity in the workplace.

Neal and Griffin (1997) developed the concept of safety behavior in a two-dimensional model that distinguishes between task and contextual performance. Safety compliance is "adhering to safety procedures and safely performing work." Safety participation involves "assisting co-workers, promoting the safety program in the workplace, showing initiative, and making efforts to improve safety in the workplace," which helps develop supportive environment participation (Neal, Griffin and Hart, 2000).

Organizational dehumanization (Caesens and Brison, 2023), organizational security (Liu et al., 2020), organizational support (Liu, Yang, and Mei, 2021), and organizational citizenship behavior (Maryam et al., 2021) are among the topics that are studied in the organizational behavior literature associated with the concept of safety behavior. In the studies conducted on the aviation sector sample, safety behavior is related to organizational trust and organizational commitment (Liu, Yang, and Mei, 2021), organizational safety climate (Maneechaeye and Potipiroon, 2022), and self-efficacy (Chen and Chen, 2014). It is assumed that aviation sector employees with harmonious passion will proactively engage in safety-related actions, therefore it is evaluated that individuals with obsessive passion are expected to be less inclined to participate in these actions due to

their insistent attitude towards perfectionism in the assigned tasks. Ali et al. (2020), in their study examining the relationship between spiritual leadership and employees' safety performance and the role of harmonious safety passion in this relationship 305 supervisors and employees, found that harmonious safety passion mediates the positive relationships between spiritual leadership and employees' safety compliance and participation. Considering the results of the study conducted by Chen (2021: 6), which examined the effect of work passion on safety behavior in a sample of Taiwanese aircraft maintenance technicians working in five national airline companies, it has been determined that obsessive passion affects safety compliance and safety participation behaviors significantly and negatively, whereas harmonious passion affects both types of safety behaviors significantly and positively. The study conducted by Wu et al. (2023) on Chinese airline pilots revealed a positive and significant relationship between harmonious safety passion and safe behavior. Based on the relevant literature, the following hypotheses have been put forward:

**Hypothesis 1:** Harmonious passion positively predicts safety behavior.

**Hypothesis 2:** Obsessive passion negatively predicts safety behavior.

### 1.3. Safety Locus of Control

Aviation safety and security have been the center of attention and the most crucial concern perceived by the aviation industry. Safety is "the condition in which the probability of giving harm to people or property damage that is reduced to an ongoing identification and the level of risk management and how it is maintained at the same level or below that level" (ICAO, 2013).

The concept of locus of control was structured within the Social Learning Theory, first discussed in Julian B. Rotter's (1954) work titled "Social Learning and Clinical Psychology," and it was used to determine the center of responsibility in behavioral control (Gül and Beyşenova, 2018). Locus of control is people's belief about what controls the events they experience. It is related to attributing the rewards people obtain or success and failure to a result of the person's attitudes and behaviors or factors such as luck and fate beyond their control (Özgener and Ulu, 2018). Rotter (1966) developed the generalized expectancy measure, often called LOC reveals the perceived personal control structure (Hunter and Stewart, 2012,). Rotter (1966) discussed the locus of control in two sub-dimensions: internal locus of control and external locus of control. Individuals who are internally focused on control are more creative, attributing the events that happen to their own mental abilities, effort, and resilience (Küçükkaragöz, 2020). External part of control often feel mercy toward circumstances through their lives because they attribute both causes and solutions (Heinström, 2010). At the same time, individuals with an "Intrinsic" safety locus of control orientation (e.g., high safety consciousness) expect an unforeseen association between individual movements and any accidents or damages to be potentially experienced (Jones and Wuebker, 1993).

Locus of control is an essential determinant of safety-related issues. An internal orientation is often considered safer attitudes (Chittaro, 2014). Wichman and Ball (1983), looking at the results of their study of 200 general aviation pilots, showed that aviators have a significantly higher internal locus of control than the general US population and will exhibit strong self-serving biases concerning their skill level and safety. Hunter (2002) employed the safety locus of control scale to address the internality-externality structure among pilots. As a result of the research, pilots with higher internal orientation experienced less dangerous aviation events than pilots with external orientation. Similarly, Hunter and Stewart (2012) in their study examining the relationship between locus of control and accident involvement among aviation employees in the US Army, observed that aviators with a higher internal locus of control experienced fewer accidents than those with a lower locus of control. In light of these findings, it is seen that the concept of safety directly and indirectly impacts accidents and incidents in the aviation sector.

However, You et al. (2013), in their study on 193 commercial airline pilots at China Southern Airlines, found that internal locus of control directly affects safe operation behaviors. Zhu et al. (2022), in their study on a sample of 597 mine workers, found that the safety locus of control affects adaptation and safety. Their findings revealed that it did not have a moderation effect. The following hypotheses are established according to the relevant literature:

**Hypothesis 3:** Internal locus of control mediates between harmonious passion and safety behavior.

**Hypothesis 4:** External locus of control mediates between harmonious passion and safety behavior.

**Hypothesis 5:** Internal locus of control mediates between obsessive passion and safety behavior

**Hypothesis 6:** External locus of control mediates between obsessive passion and safety behavior.

## 2. Method

The study includes a population of employees in the Turkish Civil Aviation sector. However, due to the lack of opportunity to reach all employees in the aviation sector in Türkiye and the time and budget constraints encountered during the data collection phase, it was evaluated as appropriate to use the sample selection

method in the research. 541 survey forms were returned from 657 surveys distributed to aviation industry employees. The response rate of the surveys was 82%. Considering similar studies, this rate seems sufficient to represent the sample (Chen, 2021), (Zhu et al., 2022).

The reason why aviation industry employees were chosen as a sample is that there is a need to examine the factors affecting the perceptions of safety behavior, which plays a key role in flight operations in the aviation industry, where human relations, information technologies, and innovative applications interact with each other. This is due to the importance of preserving a qualified workforce and effectively managing employee behavior in the aviation sector. The researchers conducted the data collection activity between 22 June and 12 October 2023 after receiving the approval of the Süleyman Demirel University Social and Human Sciences Ethics Committee dated 21.06.2023 and numbered 139/9. In the survey form prepared within the scope of the research, participants were asked questions including demographic variables considered to encompass gender, age, marital status, education level, work experience, and occupational position, as well as research scales. This research aims to examine the effect of work passion levels of aviation sector employees on their perceptions of safety behavior and investigate the mediating effect of safety locus of control.

### 2.1. Measurement Tools

In this research, in which the survey technique was adopted, the data were obtained through a questionnaire containing the work passion scale, safety locus of control scale, safety behavior scale and demographic characteristics of the participants. The data obtained from the participants were analyzed using IBM SPSS 25 and Jamovi 2.3.28 statistical programs. The detailed information about the scales used in this study are given as follows:

***Work Passion Scale*:** "Work Passion Scale" developed by Vallerand et al. (2003) was used to determine the work passion levels of employees in the aviation sector. The work passion scale is a 5-point Likert and consists of 14 items (1 = Strongly Disagree; 5 = Strongly Agree). The work passion scale has two dimensions: harmonious passion (7 items) and obsessive passion (7 items). In addition, the validity and reliability of the Turkish version of the work passion scale was tested by Kelecek and Aşçı (2013). As a result of CFA, the two-factor structure of the scale was confirmed without removing any items. The goodness of fit values for factor analysis are $\chi 2/df=4.586$, RMSEA=0.081, CFI= 0.93, TLI= 0.91. Cronbach Alpha of the harmonious passion subscale was 0.87, and it was 0.82 for obsessive passion.

***Safety Behavior Scale*:** The "Safety Behavior Scale" developed by Neal et al. (2000) revealed the safety behavior perceptions of employees in the aviation sector. This scale is a 5-point Likert type and consists of 6 items (1 = Strongly Disagree; 5 = Strongly Agree). The safety behavior scale has two subscales: Safety compliance (3 items) and safety participation (3 items). The goodness of fit values for the two-factor structure of the safety behavior scale are $\chi 2/df=2.716$, RMSEA=0.056, CFI= 0.99, TLI= 0.98. In this study, the reliability coefficient of the safety compliance scale was 0.84, and the reliability coefficient of the safety participation scale was 0.80. Cronbach Alpha (internal consistency) coefficient for the entire scale was determined to be 0.86.

***Safety Locus of Control Scale*:** "Aviation Safety Locus of Control Scale" was developed by Hunter (2002) to measure aviation sector employees' safety locus of control tendencies. The 5-point Likert scale consists of 20 items (1 = Strongly Disagree; 5 = Strongly Agree). The goodness of fit values for the factor analysis, in which the two-dimensional structure of the scale was confirmed in the same way, was found to be $\chi 2/df=4.045$, RMSEA=0.079, CFI= 0.94, AGFI= 0.90. The reliability coefficients of the subdimensions of the scale were determined as internal locus of control 0.85 and external locus of control 0.82.

### 2.2. Research Model and Data Analysis

In line with the literature, the basic assumption of the study is that harmonious and obsessive passion, which are dimensions of work passion, will impact safety compliance and participation, which are dimensions of safety behavior. It is thought that the safety locus of control sub-dimensions will mediate between work passion and safety behavior (Fig. 1).

The data of this research was obtained from employees working in public and private organizations in the Turkish civil aviation sector. In this study, missing data was first imputed. Following this, since the number of surveys was over 200, Skewness and Kurtosis values were checked to test the normal distribution assumption of the data. According to the research findings, skewness values are in the range of -.909/.932, and kurtosis values

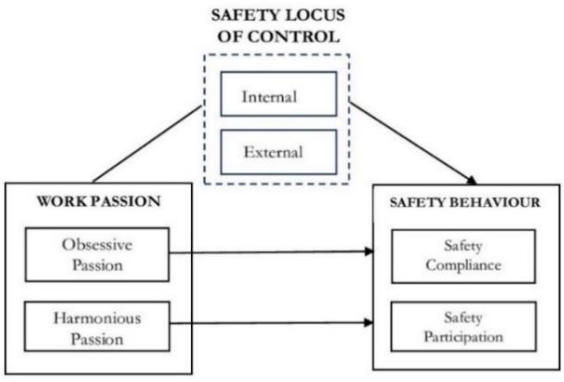


**Fig. 1**. Research Model

are in the range of .035/1.813. Since the skewness values are below ±3 and the kurtosis values are below ±7, it can be stated that the data set is normally distributed (Kline, 2011), (Tabachnick and Fidell, 2013).

Confirmatory factor analysis (CFA) and multiple linear regression analysis were used to test these models and hypotheses, and the Medmod macro in the Jamovi program was used to reveal the effects of the mediator variable.

## 3. Results and Discussion

The data of the demographic characteristics of the sample included in the study (n=541) demonstrating gender, age, marital status, education level, work experience, and position are as follows.

106 (19.6%) of the aviation sector employees were female, and 435 (80.4%) were male. When the participants' marital status is analyzed, it is seen that 59.9% are married, 39.2% are single, and 0.9% do not specify their marital status. When the education level of the participants is analyzed, it is seen that 72.2% of them have undergraduate and postgraduate education. When the age class distribution of the employees in the aviation sector is analyzed, it is observed that 68.2% of the respondents are between the ages of 26-41. The average work experience of the respondents is approximately 9 years. It is observed that almost half of the respondents have work experience between 1-5 years. Finally, when the participants' positions in the study are examined, it is seen that 62.2% of them consist of pilots, cabin attendants, aircraft maintenance technicians, flight operations officers, ARFF officers, and air traffic controllers, who have a direct relationship and influence on flights.

When the correlation analysis results in Table 2 are examined, it was observed that there were significant relationships between harmonious passion (r=,500; p<0.01) and obsessive passion (r=,344; p<0.01).

In addition, it has been revealed that there is a statistically positive and significant relationship between harmonious passion, one of the work passion dimensions, and safety compliance (r=,465; p<0.01) and safety participation (r=,439; p<0.01), which are the safety behavior dimensions. Similarly, a positive and significant relationship was found between obsessive passion, one of the work passion dimensions, and safety compliance (r=,231; p<0.01) and safety participation (r=,378; p<0.01), which are the safety behavior dimensions. Finally, it was determined that there was a positive and significant relationship between internal locus of control and safety behavior (r=,242; p<0.01).

As seen in Table 3, the model in which work passion dimensions (harmonious passion, obsessive passion) included is statistically significant ($R^2$ =0.252; $F_{(2-538)}$=91.800; p<.001). This model explains 25.2% of the total variance in safety behavior. In the model, it was observed that harmonious passion had a statistically positive and significant effect on safety behavior (β = .314 p<.001), while obsessive passion had a positive but non-significant effect (β = .052 p>.05), thus, $H_1$ hypothesis was supported, while $H_2$ hypothesis was rejected.

**Table 1.** Findings Related to the Demographic Characteristics of the Participants Once

| Demographic Characteristics | f | (%) | Demographic Characteristics | f | (%) |
|---|---|---|---|---|---|
| **Gender** | | | **Work Experience** | | |
| Female | 106 | 19.6 | 1 to 5 years | 241 | 44.6 |
| Male | 435 | 80.4 | 6 to 10 years | 107 | 19.8 |
| **Marital Status** | | | 11 to 15 years | 83 | 15.3 |
| Married | 324 | 59.9 | 16 years and over | 110 | 20.3 |
| Single | 212 | 39.2 | **Your Position at Workplace** | | |
| Do not want to specify | 5 | 0.9 | Apron Traffic Officer | 25 | 4.6 |
| **Education Level** | | | Flight Operations Officer | 34 | 6.3 |
| High School | 14 | 2.6 | Administrative Affairs Clerk | 10 | 1.8 |
| Vocational School | 136 | 25.2 | Aircraft Maintenance Technicians | 77 | 14.3 |
| Faculty | 328 | 60.6 | Air Traffic Controller | 53 | 9.8 |
| Master's Degree/Doctoral Degree | 63 | 11.6 | Passenger (Guest) Services Officer | 51 | 9.4 |
| **Age** | | | ARFF Officer | 53 | 9.8 |
| 25 years and below | 53 | 9.8 | Dispatcher | 29 | 5.4 |
| 26-33 years old | 221 | 40.7 | Pilot | 61 | 11.3 |
| 34-41 years old | 149 | 27.5 | Load Master | 15 | 2.8 |
| 42-49 years old | 98 | 18.1 | Cargo Officer | 18 | 3.3 |
| 50 years and over | 22 | 3.9 | Security Officer | 11 | 2.0 |
| | | | Cabin Attendant | 58 | 10.7 |
| | | | Other | 46 | 8.5 |

**Table 2.** Descriptive Statistics and Intercorrelations Among Study Variables

| Variables | Mean(x̄) | Sd. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|
| 1. HP | 4.01 | .665 | (0.87) | | | | | | |
| 2. OP | 2.85 | .765 | .574** | (0.82) | | | | | |
| 3. ILOC | 3.88 | .514 | .158** | .148** | (0.85) | | | | |
| 4. ELOC | 2.61 | .608 | .087* | .108* | -.095* | (0.82) | | | |
| 5. SC | 4.60 | .473 | .465** | .231** | .183** | -.023 | (0.84) | | |
| 6. SP | 4.26 | .556 | .439** | .378** | .248** | -.014 | .627** | (0.80) | |
| 7. SB | 4.43 | .464 | .500** | .344** | .242** | -.020 | .242** | .885** | (0.86) |

HP: Harmonious Passion, OP: Obsessive Passion, SC: Safety Compliance, SP: Safety Participation, SB: Safety Behavior
ILOC: Internal Locus of Control, ELOC: External Locus of Control
*p<0.05, **p<0.01, Values in parentheses are Cronbach Alpha coefficients.

In the study, indirect effects were analyzed with the Medmod macro in the Jamovi statistical analysis program. This research used the Jamovi statistical analysis program Medmod plug-in to conduct a mediator effect analysis. For the regression (mediator effect analysis) analysis performed with the indirect effect approach based on this bootstrap technique, bootstrap coefficients were calculated with 1,000 resampling options at a 95% confidence interval (Hayes, 2009). Table 4 presents the results of the research's total, direct, and indirect effects as the independent variable's harmonious passion, the dependent variable's safety behavior, and the internal locus of control of the mediating effect.

When the mediating effect of internal locus of control between harmonious passion and safety behavior is examined in Table 4, it was determined that the 95% confidence interval Bootstrap estimates for the indirect effect were between 0.00788 and 0.0315. When there is no zero (0) in the 95% confidence interval, it is accepted that the indirect effect differs significantly from zero (0) at the p<0.05 significance level. Therefore, it is understood that the internal locus of control mediates between harmonious passion and safe behavior, and the $H_3$ hypothesis is supported (β = 0.0185; 95% CI [0.00788 to 0.0315). However, it is also seen that there is a mediating effect of 5.29%. Table 5 presents the results of the independent variable's total, direct, and indirect effects on harmonious passion, the dependent variable on safety behavior, and the external locus of control of the mediating effect.

When the mediating effect of external locus of control between harmonious passion and safety behavior is examined in Table 5, it was determined that the 95% confidence interval Bootstrap estimates for the indirect effect were between -0.00519 and 0.0205. When the 95% confidence interval is zero (0), the indirect effect is considered non-significant at the p>0.05 significance level.

**Table 3.** Regression Analysis Results

| Dependent Variable | Independent Variables | Beta | t | p | F | Model (p) | R2 | Adjusted R2 |
|---|---|---|---|---|---|---|---|---|
| Model | | | | | 91.800 | .000** | .255 | .252 |
| Safety behaviour | Constant | 3.020 | 28.488 | .000** | | | | |
| | Harmonious Passion | .314 | 9.910 | .000** | | | | |
| | Obsessive Passion | .052 | 1.881 | .060 | | | | |

*p<0.05, **p<0.001 locus of control of the mediating effect.

**Table 4.** Indirect Effects of Internal Locus of Control on the Relationship between Harmonious Passion and Safety Behavior

| | | Mediation Effect of ILOC | | |
|---|---|---|---|---|
| **Dependent Variable: Safety Behaviour** | | **Indirect** | **Direct** | **Total** |
| 95% Confidence Interval | Lower | 0.00788 | 0.27000 | 0.28818 |
| | Upper | 0.0315 | 0.3964 | 0.4147 |
| | Z | 2.98 | 10.31 | 10.92 |
| | p | 0.003 | < .001 | < .001 |
| | (β) | 0.0185 | 0.3304 | 0.3488 |
| | % Mediation | 5.29 | 94.71 | 100.00 |

*p<0.05; ILOC: Internal Locus of Control

**Table 5.** Indirect Effects of External Locus of Control on the Relationship between Harmonious Passion and Safety Behavior

| Mediation Effect of ELOC | | | | |
|---|---|---|---|---|
| **Dependent Variable: Safety Behaviour** | | **Indirect** | **Direct** | **Total** |
| 95% Confidence Interval | Lower | -0.00519 | 0.26839 | 0.27648 |
| | Upper | 0.0205 | 0.4615 | 0.4641 |
| | Z | 0.873 | 7.644 | 7.840 |
| | p | 0.383 | < .001 | < .001 |
| | (β) | 0.00559 | 0.36207 | 0.36766 |
| | % Mediation | 1.52 | 98.48 | 100.00 |

*p<0.05; ELOC: External Locus of Control.

**Table 6.** Indirect Effects of Internal Locus of Control on the Relationship between Obsessive Passion and Safety Behavior

| Mediation Effect of ILOC | | | | |
|---|---|---|---|---|
| **Dependent Variable: Safety Behavior** | | **Indirect** | **Direct** | **Total** |
| 95% Confidence Interval | Lower | 0.00677 | 0.13409 | 0.15091 |
| | Upper | 0.0310 | 0.2465 | 0.2635 |
| | Z | 2.80 | 6.40 | 7.11 |
| | p | 0.005 | < .001 | < .001 |
| | (β) | 0.0176 | 0.1913 | 0.2089 |
| | % Mediation | 8.42 | 91.58 | 100.00 |

*p<0.05; ILOC: Internal Locus of Control

**Table 7.** Indirect Effects of External Locus of Control on the Relationship between Obsessive Passion and Safety Behavior

| Mediation Effect of ELOC | | | | |
|---|---|---|---|---|
| **Dependent Variable: Safety Behavior** | | **Indirect** | **Direct** | **Total** |
| 95% Confidence Interval | Lower | -0.00105 | 0.14571 | 0.15273 |
| | Upper | 0.0169 | 0.3091 | 0.3155 |
| | Z | 1.15 | 5.31 | 5.53 |
| | p | 0.251 | < .001 | < .001 |
| | (β) | 0.00550 | 0.22789 | 0.23339 |
| | % Mediation | 2.35 | 97.65 | 100.00 |

*p<0.05; ELOC: External Locus of Control.

Therefore, it is understood that external locus of control does not mediate between harmonious passion and safety behavior, and the $H_4$ hypothesis is not supported (β = 0.00559; 95% CI [-0.00519 to 0.0205).

Table 6 shows the mediating effect of internal locus of control between obsessive passion and safety behavior. It was determined that the 95% confidence interval Bootstrap estimates for the indirect effect were between 0.00677 and 0.0310. When there is no zero (0) in the 95% confidence interval, it is accepted that the indirect effect differs significantly from zero (0) at the p<0.05 significance level. Therefore, it is seen that the internal locus of control mediates between obsessive passion and safe behavior, and the $H_5$ hypothesis is supported (β = 0.0176; 95% CI [0.00677 to 0.0310). However, it is also seen that there is a mediating effect of 8.42%.

Table 7 presents the results of the total, direct, and indirect effects of the independent variable as obsessive passion, the dependent variable as safety behavior, and the mediating effect as external locus of control are presented.

The mediating is presented in Table 7. It was determined that the 95% confidence interval Bootstrap estimates for the indirect effect were between -0.00105 and 0.0169. When the 95% confidence interval is zero (0), the indirect effect is considered to have a non-significant effect at the p>0.05 significance level. Therefore, it is found that the external locus of control does not mediate between obsessive passion and safety behavior, and the $H_6$ hypothesis is not supported (β = 0.00550; 95% CI [-0.00105 to 0.0169).

## 4. Conclusion

In the aviation industry, since the human factor provides an important input in the entire process, from the design phase to the completion of operations and even post-flight checks, it is very important to anticipate and manage potential human errors and their impact levels

(Demirtaş and Kaya, 2023). When the hull loss accidents that occurred worldwide from 2012 to 2021 are examined, the flight crew is responsible for 26% (Boeing Airplane Company, 2021). When the flight safety agency's aircraft accidents that occurred between 2017 and 2022 are examined, a total of 15 accidents are reported. It has been reported that 6 of them are caused by loss of control (Flight Safety Foundation, 2022), and it is reported that the human factor causes errors and violations. Again, Heinrich (1959) revealed that 88% of workplace accidents were caused by unsafe behavior. For this reason, it is essential to examine all kinds of emotions, attitudes, and impulses that lead to unsafe behavior that may endanger flight safety for aviation sector employees in terms of ensuring aviation safety. In this, the research endeavors to uncover how the passion for work among aviation sector workers influences their perception of safety behavior. Additionally, the study explores whether the locus of control regarding safety plays a mediating role in this impact.

The study's findings indicate that harmonious passion, a facet of work passion, positively and significantly influences safety behavior. Similar findings have been found in the literature (Ali et al., 2020; Chen, 2021; Wu et al., 2023). In fact, Chen (2021) states that aircraft maintenance technicians with a harmonious passion for work will be willing to engage in both safety compliance and participation behavior, and when they perceive a harmonious balance between their work and other activities in life, their work will integrate well with their lives. On the other hand, obsessive passion, one of the dimensions of work passion, was found to have a positive but insignificant effect on safety behavior. However, there are studies in the literature that obsessive passion has negative effects on many types of behavior other than safety behavior (Carbonneau and Vallerand, 2013), (Junot, et al., 2017), (Luu, 2019) and (Wan et al., 2022). Therefore, these findings differ from the literature.

The findings revealed that the internal locus of control, one of the dimensions of safety control focus, plays a full mediating role in both the relationship between harmonious passion and safety behavior and the relationship between obsessive passion and safety behavior. Similar study findings have been found in the literature (Zigarmi, et al., 2018), (Turksoy and Tutuncu, 2021). Obsessive work passion is more complex in terms of its inherent combination of positive and negative characteristics than harmonious work passion. Vallerand et al. (2003) state that people with obsessive passion allow internal conditions to take control, even though they love their jobs. This shows that obsessive work passion has a complex relationship with job performance (Kong and Ho, 2018). On the other hand, it was determined that the external locus of control, one of the dimensions of safety control focus, did not play a mediating role in both the relationship between harmonious passion and safety behavior and the relationship between obsessive passion and safety behavior.

This study also has some suggestions that will provide contributions to the literature and organizations.

In this study, it was found that harmonious passion increases or improves safety behavior. Therefore, aviation sector businesses should seek to increase harmonious passion. The first one of these pursuits is to provide organizational support for employees in aviation sector businesses to be more passionate, innovative, creative and productive (Karimi and Alipour, 2011). Secondly, Chen (2022) argues that designing a work-family harmony model for aviation industry employees and ensuring that rewards are compatible with the needs of the family can reduce stress and increase work passion, because increasing harmonious passion in the aviation industry involves developing deep and sustainable passion within the work while maintaining a healthy balance in the lives of employees. Therefore, airline companies can help increase the well-being of their employees by determining an organizational culture that supports work-life balance, practices and policies in this direction, and designing flexible work programs that will help promote work-life balance. Such management practices are expected to positively affect employees' work passion and ultimately increase safety motivation.

Another finding of this study is that harmonious passion together with internal locus of control will increase safety behavior. So, first of all, aviation organizations should adopt practices that will encourage internal locus of control. In this context, the aim is to develop policies specifically for the selection of employees with emotional intelligence, empathy, decision-making and behavioral development skills during recruitment processes. Secondly, in the aviation industry, where safety is important, mechanisms of reward, promotion, and acceptance and value within the group that will contribute to employees' orientation towards safety behavior should be implemented. Thirdly, considering the limited attention capacity and the intense, stressful workload in the aviation industry, it is inevitable to think within certain patterns after a while. For this reason, aviation sector businesses should organize conscious awareness-based cognitive therapy and stress reduction programs at regular intervals so that their employees can both get out of this ruminative thinking restriction and develop the internal locus of control motivation that can have positive effects on their perception of safety behavior (Atalay, 2022). Fourthly, since shift work schedules are widely implemented in the aviation industry, it is also suggested by Chen (2021) that more attention should be paid to task design and schedules to

reduce the potential for employees to become obsessed with their work. Forest et al. (2011) suggested that a management style that supports autonomy can both encourage harmonious passion and prevent obsessive passion for work. Finally, it is evaluated that the accurate and complete transfer of knowledge and experience by managers in trainings that can raise awareness on employees' feelings, attitudes and behaviors in the workplace will have a positive impact on both employees' work passion and safety behavior.

The current research has some limitations. The research sample, the choice of snowball sampling method, the online application of the survey, and its cross-sectional nature are some of the limitations. As in all studies using the survey method, in the current study, social desirability anxiety and common method bias may occur to a certain extent, and misleadingly statistically significant relationships may be observed (Crowne and Marlowe, 1964). Thus, conducting studies with a larger sample size and including organizational variables in the model will provide more profound results for future studies on safety in aviation.

## CRediT Author Statement

**İnan Eryılmaz**: Conceptualization, Methodology, Formal Analysis, Visualization, Investigation, Supervision, Writing – original draft, Writing-Reviewing and Editing, Project Administration. **Tugay Öney**: Conceptualization, Methodology, Formal Analysis, Visualization, Investigation, Supervision, Writing – original draft, Writing-Reviewing and Editing. **Yeşim Tüm Kılıç**: Conceptualization, Methodology, Formal Analysis, Visualization, Investigation, Supervision, Writing – original draft, Writing-Reviewing and Editing. **Tuğba Erhan**: Conceptualization, Methodology, Formal Analysis, Visualization, Investigation, Supervision, Writing – original draft, Project Administration.

## Nomenclature

ARFF : Aircraft Rescue and Fire Fighting

CFA : Confirmatory Factor Analysis

ELOC : External Locus of Control

HP : Harmonious Passion

ILOC : Internal Locus of Control

OP : Obsessive Passion

SDT : Self-Determination Theory

SC : Safety Compliance

SP : Safety Participation

SB : Safety Behavior

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