

Effect Mechanism of Civil Aviation Flight Attendants' Resilience on the Safety Behaviors

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Abstract: In order to effectively improve the safety behavior of aviation safety personnel and better guarantee the safety of passenger cabin, the psychological flexibility is taken as the cut-in point, and the personal and organizational levels of aviation safety personnel are combined, a theoretical model of the influence mechanism of aviation safety personnel's psychological resilience on safety behavior was established, and the data collected from 256 aviation safety personnel were investigated by means of multiple regression method, empirical analysis of the theoretical model. The results show that the resilience of aviation safety personnel has a significant positive effect on their safety behavior, and emotional exhaustion plays a mediating role between resilience and safety behavior the sense of organizational justice plays a positive and significant role in the relationship between resilience and safety behavior. The research reveals the influence mechanism of aviation safety personnel's resilience on their safety behavior, which can provide theoretical support and practical guidance for aviation safety personnel's safety management.

Keywords: Aviation Safety Personnel; Mental Flexibility; Emotional Exhaustion; Sense of Organizational Justice; Safety Behavior

Introduction

Aviation safety is an important prerequisite for the sustainable and healthy development of the civil aviation industry^[2], and the human factor has the greatest impact on aviation safety. The crash of Germany wings in 2015 was caused by unsafe behavior caused by psychological problems of the co-pilot. As a result, there is a growing concern about the relationship between the psychological factors of flight crews and safety behavior. Ensuring cabin safety is the primary responsibility of civil aviation flight attendants, and their behavior has a direct impact on the life safety of aircraft and passengers. Therefore, in order to ensure aviation safety, it is important to study the safety behavior of civil aviation flight attendants. At present, there are few relevant studies. At the same time, the dual responsibilities of civil aviation flight attendants require them to adjust their psychological state as soon as possible in the midst of stress or danger. The concept of psychological resilience is in line with the work requirements of civil aviation flight attendants, so the research on the influence between psychological resilience and safety behavior of civil aviation flight attendants is of great practical significance for ensuring aviation safety.

1. Research hypotheses and theoretical models

1.1 Resilience and Safety Behavior of Civil Aviation Flight Attendants

Resilience refers to the positive psychological state of an individual stimulated by adversity and stress. Resilience consists of two core elements, namely, the individual's exposure to adversity and its successful coping with adversity^[7]. Related studies have found that resilience is positively correlated with job satisfaction^[11], Job satisfaction is negatively correlated with employees' unsafe behaviors^[15]. The safety behavior of civil aviation flight attendants is the behavior required by the organizational rules and regulations of civil aviation flight attendants in the cabin environment. Resilience is a positive psychological trait of an individual, which can help civil aviation flight attendants mitigate the negative impact of emergencies or adversity on them to take appropriate measures in a timely manner. When they have a high degree of psychological resilience, they can help civil aviation flight attendants respond to and deal with emergencies in a timely manner, actively adhere to safety responsibilities, achieve safety performance and ensure cabin safety.

Therefore, the following hypotheses are proposed:

H1: There is a significant positive impact between the resilience of civil aviation flight attendants and their safety behaviors.

1.2 The mediating role of civil aviation flight attendants in emotional exhaustion

Emotional exhaustion, as an individual's negative emotion, will continuously consume the individual's emotional resources, cause the loss of work enthusiasm, form work burnout, and make the individual psychologically in a state of exhaustion, which will have a negative impact on the individual's attitude and behavior^[1]. According to the resource conservation theory, employees in an organizational environment

try to acquire more valuable resources and slow down the depletion of existing resources. Therefore, as an individual resource, resilience will compensate for the consumption of work resources, balance the conflict between work resources and work requirements, and then slow down the generation of emotional exhaustion.

Therefore, the following hypotheses are proposed:

H2: Emotional exhaustion of civil aviation flight attendants is negatively correlated with resilience.

The dual work responsibilities and closed working environment of civil aviation flight attendants will consume their work enthusiasm and easily cause them to suffer emotional exhaustion. Under the negative influence of emotional exhaustion, flight attendants enter a state of fatigue, which will reduce the sensitivity of civil aviation flight attendants to the perception of safety risks and hidden dangers. Flight attendants with a high degree of psychological flexibility can adjust their psychological state in time and actively obtain work resources to achieve a balanced psychological state. This will reduce the frequency of emotional exhaustion, relieve the fatigue of flight attendants, and improve the safety behavior of civil aviation flight attendants.

Therefore, based on the above analysis, the following hypotheses are proposed:

H3: Emotional exhaustion of civil aviation flight attendants plays a mediating role in the impact of resilience on safety behavior.

1.3 The moderating effect of the sense of fairness of civil aviation flight attendants

The sense of organizational fairness is a subjective and psychological experience of employees' perception of organizational fairness. As the subjective perception and psychological experience of flight attendants on the objective fairness of the organizational environment, the sense of organizational fairness will have an impact on the psychological state and behavior of civil aviation flight attendants. When civil aviation flight attendants perceive a high degree of fairness, they will arouse the positive psychological state of employees in the fairness atmosphere, give full play to their subjective initiative, improve the possibility of individuals producing in-role behaviors, and then improve their own safety behavior level.

Therefore, based on the above analysis, the following hypotheses are proposed:

H4: The sense of organizational fairness of civil aviation flight attendants positively moderates the relationship between the psychological resilience of civil aviation flight attendants and their safety behavior.

Based on the above assumptions, this paper establishes a theoretical model with psychological resilience as the independent variable, organizational fairness as the moderating variable, and flight attendant safety behavior as the dependent variable, as shown in Figure 1



Figure 1. Study design

2. Research samples

In this study, civil aviation flight attendants from different airlines were selected to conduct a questionnaire survey. A total of 293 questionnaires were distributed, and 256 valid questionnaires were effective 87.37%. Among them, 248 were females, accounting for 96.88%, and 8 were males 3.12%; 75 people under the age of 25, 138 people between 25 and 35 years old people, 36-45 years old, 34 people, 46 years old and over 9 people. There are 36 people with less than one year of working experience, 45 people with 1-3 years, and 3-49 for 5 years and 126 for more than 5 years.

3. Measuring tools

The Resilience Scale is based on the Resilience Scale for Chinese Adults compiled by Liang Baoyong, which contains 5 dimensions and 30 measurement items. Its Cronbach coefficient is 0.921, which has high measurement reliability. The Mood Failure Scale was performed using Li Chaoping. Translated and revised MB I-GS scale, with a total of 1 dimension, 5 measurement entries. It has a Cronbach coefficient of 0.882 and has a high degree of measurement reliability. The Organizational Fairness Perception Scale was translated and revised by Liu Ya, which was included 4 dimensions, 22 measurement items. It has a Cronbach coefficient of 0.863 and has a high degree of measurement reliability. The Safe Behavior Scale was used by Griffin et al. The safety behavior scale was developed, which contained 2 dimensions and 6 measurement items. It has a Cronbach coefficient of 0.848 and has a high degree of measurement reliability.

4. Findings

4.1 Homologous method bias test

In order to avoid serious homologous method bias in scale data, it is necessary to check the homologous method bias of scale data. In

this paper, the Harman one-way test is used to test it, and the results show that the variance of the first factor without rotation is explained as 37.348%, which is lower than 50% and the standard value generally accepted by the study is 40%. The results show that there is no homologous method bias that affects the research results in the valid questionnaire data collected in this paper, and the homologous method bias is within the acceptable range.

4.2 Confirmatory factor analysis

In this paper, AMOS.24 software was used to analyze the confirmatory factors of three variables: psychological resilience, organizational fairness and safety behavior of civil aviation flight attendants. In this paper, the fitting scales of the one-factor, two-factor, three-factor, and four-factor models were calculated, respectively, and by comparing the fitting scales of the above four models, the statistical results showed that the fitting scale of the four factors was the best, as shown in Table 1 show. The results of this study indicate that the four constructive variables in this study have good discriminative validity.

4.3 Correlation analysis

In this paper, SPSS.24 software was used to analyze the correlation between flight attendants' resilience, emotional exhaustion, sense of organizational fairness, and safety behavior, and the correlation coefficients between the variables are shown in the table 2. The results show that there is a significant correlation between the psychological resilience, emotional exhaustion, organizational fairness and safety behavior of civil aviation flight attendants. Moreover, the correlation between the variables is basically in line with the theoretical hypothesis of this paper, and the theoretical hypothesis is preliminary tested by correlation analysis.

Table 1. Confirmatory Factor Analysis Results

Model fitting indicators	χ^2/df	RMSEA	NFI	CFI
Four factor model	1.457	0.038	0.864	0.917
Three factor model	1.831	0.045	0.845	0.870
Two factor model	2.240	0.057	0.790	0.834
Single	2.927	0.075	0.737	0.796

Table 2. Correlation analysis results

	Resilience	Emotional exhaustion	Sense of organizational justice
Resilience	1		
Emotional exhaustion	-0.537**	1	
Sense of organizational justice	0.651***	-0.640***	1
Safety behavior	0.638**	-0.560**	0.625***

*Note: * denotes $p < 10\%$ and ** denotes $p < 5\%$, *** means $p < 1\%$.*

5. Hypothesis testing

5.1 Main effect test

In this paper, the safety behavior of civil aviation flight attendants is taken as the dependent variable, and the control variables such as gender and age are introduced into the regression equation as independent variables, and the regression equation is named Model 1 and Model 1. The degree of fit was only 11.4%. Finally, the demographic variables and psychological resilience of the flight attendants were introduced into the regression equation as independent variables, and the equation was named Model 2. The results of the regression equation are shown in Table 3. The degree of fit for model 2 is determined by the 11.4% increased to 36.5%, and the explanatory power of the regression equation was higher than that of model 1. There has been a big improvement. In Model 2, the regression coefficient for flight attendant resilience is 0.587 and in 1% was statistically significant at the level. According to the statistical results, the psychological resilience of civil aviation flight attendants has a significant positive impact on safety behavior. Suppose H1 is true.

5.2 Mediator effect test

From the model 2 in Table 4, it can be seen that the resilience of civil aviation flight attendants has a significant negative effect on emotional exhaustion, hypothesis H2 is verified. In order to verify the mediating effect of emotional exhaustion, this paper takes the safety behavior of civil aviation flight attendants as the dependent variable, introduces the independent variable psychological resilience and the mediating variable emotional exhaustion into the regression equation, and names it as model 3 and Model 4. According to the statistical results, compared with model 3, the influence of resilience on safety behavior in model 4 was weakened but still significant, which met the conditions of partial mediation. Suppose H3 holds.

Table 3. Main effect test

	Conduct safely	
	Model 1	Model 2
Sexuality	0.051	0.044
Age	0.156*	0.127*
Number of years of service	0.278*	0.206*
Resilience		0.587***
R2	0.137	0.401
Adjust R ²	0.114	0.365
F	7.986**	10.882***

*Note: * denotes p<10% and ** denotes p<5%, *** means p<1%.*

Table 4. Mediation effect test

	Emotional exhaustion	Conduct safely	
	Model 2	Model 3	Model 4
Sexuality	-0.095	0.044	0.037
Age	0.130*	0.127*	0.113*
Number of years of service	-0.003	0.206*	0.174*
Resilience	-0.527**	0.587***	0.429**
Emotional exhaustion			-0.561***
R2	0.352	0.401	0.593
Adjust R ²	0.315	0.365	0.546
F	9.537***	10.882***	13.822***

*Note: * denotes p<10% and ** denotes p<5%, *** means p<1%.*

5.3 Moderating effect test

In this paper, the interaction between the psychological resilience of civil aviation flight attendants and the sense of organizational fairness is introduced to test the moderating effect of organizational fairness in the relationship mechanism of psychological resilience of civil aviation flight attendants on safety behavior. The control variable, the independent variable psychological resilience, the moderator variable organizational fairness, and the interaction item variable (standardized psychological resilience) were taken as the dependent variables. Standardized sense of organizational fairness is introduced into the regression equation, and the results are shown in Table 5. Model 2 introduces the control variables, independent variables, psychological resilience, moderating variables, sense of organizational fairness, and interaction variables of civil aviation flight attendants. The safety behavior of civil aviation flight attendants is taken as the regression equation of the outcome variable. In this model, the interaction term variable of resilience and organizational fairness has a significant positive impact on the safety behavior of civil aviation flight attendants, and R²=0.493, R² was significant.

The moderating effect of organizational fairness is established and significant, and the organizational fairness of civil aviation flight attendants positively moderates the relationship between the psychological resilience and safety behavior of civil aviation flight attendants. Suppose H4 holds.

Table 5. Moderating effect test

	Conduct safely	
	Model 1	Model 2
Sexuality	0.027	0.013
Age	0.152*	0.131*
Number of years of service	0.204*	0.197*
Resilience	0.497***	0.486***
Sense of organizational justice	0.429**	0.423***
Resilience×Sense of organizational justice		0.175**
R2	0.381	0.493
Adjust R ²	0.302**	0.433***
F	7.641**	9.325***

*Note: * denotes p<10% and ** denotes p<5%, *** means p<1%.*

6. Discussion

The psychological resilience of civil aviation flight attendants has a significant positive impact on safety behavior, and the emotional

exhaustion of civil aviation flight attendants plays a mediating role between psychological resilience and safety behavior, and the sense of organizational fairness of civil aviation flight attendants can positively regulate psychological resilience and safety. Relationships between behaviors. Therefore, airlines in the management of civil aviation flight attendants, to improve the psychological flexibility of civil aviation flight attendants and the sense of organizational fairness as the starting point, in order to reduce aviation with the emotional exhaustion of safety officers as the starting point, improving the safety behavior of civil aviation flight attendants will become a key step in the safety performance management of civil aviation flight attendants in the future.

7. Conclusions of the study

The resilience of civil aviation flight attendants has a significant positive impact on safety behavior, therefore, through the training of psychological resilience of civil aviation flight attendants, their safety behaviors can be promoted, so as to improve the safety performance of individual civil aviation flight attendants to better ensure cabin safety.

To reveal the mechanism of the influence of psychological resilience on the safety behavior of civil aviation flight attendants, psychological resilience as a necessary positive psychological state of civil aviation flight attendants can first alleviate the negative impact of emotional exhaustion, and then improve it. Safety behavior clarifies the mediating role of emotional exhaustion of civil aviation flight attendants between psychological resilience and safety behavior.

The sense of organizational fairness of civil aviation flight attendants plays a positive moderating role in the relationship between psychological resilience and safety behavior, and it is significant. A good atmosphere of objective organizational fairness and the positive perception of organizational fairness by individual civil aviation flight attendants can significantly improve the positive relationship between the psychological resilience and safety behavior of civil aviation flight attendants and amplify this relationship.

References

- [1] Li Y. Analysis and Forecast of Global Civil Aviation Accidents for the Period 1942-2016[J]. *Mathematical Problems in Engineering*, 2019(13):1-12.
- [2] Wang Yonggang, Sheng Bingnan, Xu Chao An empirical study on the competency characteristics of civil aviation flight attendants[J]. *China Safety Science Journal*, 2017, 27(1):134-139
- [3] Wang Yanqing, Zhang Sijia Research on psychological quality index of civil aviation flight attendants[J]. *Journal of Safety and Environment*, 2018, 18(2):623-627
- [4] Wang Defeng, Wu Wenpei Research on Resilience from the Perspective of Positive Psychology[J]. *Psychology Monthly*, 2019, 14(8):42
- [5] Zhao Shu. A review of psychological resilience research[J]. *Shang*, 2016(22):142-143
- [6] Wang Jingjing Correlation between psychological resilience and occupational stress and work ability of nurses in military hospitals[D]. Changsha: Hunan Normal University (Master's Thesis), 2017
- [7] Xu Fangfang, Liu Chang, Li Wenfu, et al Effect of psychological resilience of prison workers on job burnout and subjective well-being[J]. *Chinese Journal of Occupational Medicine*, 2019, 46(3):340-344
- [8] Xu Fangzhong, Cui Zhiyun, Yu Ge, et al Research on the compilation of resilience assessment scale[C] The 12th Academic Annual Conference of Zhejiang Mental Health Association and the 3rd Psychology of Zhejiang Province
- [9] Li Xia, Zhang Ling, Xie Jinyu An Empirical Study on the Effect of Occupational Flexibility on Work Performance and Career Satisfaction[J]. *Psychological Science*, 2011, 34(3):680-685
- [10] Joanna Su Xin Chue, Hoi Shan Cheung. Mental resilience enhances the well-being of Singaporean college students through reducing burnout[J]. *Current Psychology*, 2021(2):5-15.
- [11] Tian Siyu, Xu Shanshan, Ma Zhiyao, et al. Mediating Effect of Psychological Resilience on Physical Activity Level And Negative Emotions In College Students: 924[J]. *Medicine & Science in Sports & Exercise*, 2021, 53:305.
- [12] Wang Meifeng, Lu Xi, Liu Meihong. The mediating effect of psychological resilience on the level of mindfulness and general well-being in patients with inflammatory bowel disease[J]. *Annals of Palliative Medicine*, 2021, 10(8):9215-9222.
- [13] Wang Jiakun, Wang Xinhua, Wang Chen Research on unsafe behavior of coal mine employees based on work satisfaction[J]. *China Safety Science Journal*, 2018, 28(11):14-20
- [14] Barnes C M, Lucianetti L, Bhawe D P, et al. You wouldn't like me when I'm sleeping: leaders' sleep, daily abusive supervision, and work unit engagement[J]. *Academy of Management Journal*, 2015, 58(5):1419-1437.
- [15] Freudenberger J. Staff burn-out[J]. *Journal of Social Issues*, 1974, 30(1):159-165.