Collegiate Aviation Review International

Volume 39 | Issue 1 Peer-Reviewed Article #3

3-19-2021

Women's Perceptions of the Aviation Workplace: An Exploratory Study

Lindsay Stevenson
Embry-Riddle Aeronautical University

Katie S. Kirkpatrick
Embry-Riddle Aeronautical University

Haydee Maria Cuevas
Embry-Riddle Aeronautical University

Marisa D. Aguiar
Embry-Riddle Aeronautical University

Katya K. Rivera
Embry-Riddle Aeronautical University

Jorge L.D. Albelo
Embry-Riddle Aeronautical University

The purpose of this exploratory study was to garner a better understanding of the following research question: What factors may contribute to women's retention in aviation occupations in the United States? The Aviation Occupation Survey was developed drawing from the published literature in organizational retention and diversity in aviation to explore this research question. The survey consisted of 50 Likert-scale items on nine subjects related to career retention. A total of 188 participants (women = 70, men = 118) completed the survey. Results revealed similarities between women and men on perceptions about numerous aspects of their workplace, particularly job satisfaction, professional growth opportunities, challenging work, monetary benefits, non-monetary benefits, work-life balance, management practices, and aviation passion. However, results also revealed women reported significantly greater concerns than men on sexual harassment and gender bias in the workplace. Women also reported feeling less comfortable bringing concerns to management significantly more than men. These findings are consistent with other studies indicating a major obstacle facing women in aviation occupations stems from working in an environment with a pervasive male-dominated culture.

Recommended Citation:
Stevenson, L., Cuevas, H.M., Rivera, K.K., Kirkpatrick, K.S., Aguiar, M.D., & Albelo, J.L.D. (2021). Women's Perceptions of the Aviation Workplace: An Exploratory Study. *Collegiate Aviation Review International*, 39(1), 42-63. Retrieved from http://ojs.library.okstate.edu/osu/index.php/CARI/article/view/8091/7475

In the past 90 years, the workforce has been diversified in many fields, yet gender diversity for occupations in the aviation domain (e.g., pilots, air traffic controllers, aircraft maintenance technicians, aviation educators) has grown at a much slower pace (Data USA, 2018a; Data USA, 2018b; Federal Aviation Administration, 2018; Luedtke, 1994; Lutte, 2019; McCarthy, Budd, & Ison, 2015; Stevenson, Cuevas, Kirkpatrick, Rivera, & Aguiar, 2020). Promoting gender diversity is essential to ensure a strong aviation workforce in the future. As noted by Hansen and Oster (1997), this will involve opening aviation occupations to all society members, leveraging the untapped potential in groups historically underrepresented in the industry. Although Hansen and Oster's (1997) report was published more than two decades ago, the aviation industry still has not achieved a balanced gender diversity representation. The key research question explored in this study was: What factors may contribute to women's retention in aviation occupations in the United States? The present study sought to answer the research question by developing an Aviation Occupation Survey based on existing literature. Furthermore, this study targeted only those who identify as women (e.g., cisgender, transgender, gender fluid) to participate in the Aviation Occupation Survey.

Factors Influencing Retention

Historically, gender bias in the workplace has contributed to perpetuating structural inequalities (Bridges, 2017; Coleman, 2020; Cundiff, Ryuk, & Cech, 2018; Ridgeway, 1997). Particularly, elements such as professional growth, monetary benefits, the role of management, and job satisfaction were identified as areas of interest affecting retention of women in the aviation workplace when the Aviation Occupation Survey was developed (Angle & Perry, 1981; Applebaum et al., 2003; Cabrera, 2009; Elizur & Koslowsky, 2001; Taneja, Pryor, & Oyler, 2012). Yet cultural ideals and gender inequality have affected women's overall progression in the workplace throughout the years (Dashper, 2019; Ming-Li & Boateng, 2020; Rubin, Paolini, Subasic, & Giacomini, 2019; Turesky & Warner, 2020; Webster, Adams, Maranto, & Beehr, 2018). Stamarski and Hing (2015) noted "if women are underrepresented in a particular educational program or a particular job type, and those credentials or previous job experience are required for selection, women are being systematically, albeit perhaps not intentionally, discriminated against" (p. 3). Essentially, hiring practices and policies for fields such as the aviation industry can be inherently biased against a particular group (e.g., women).

Equivalently, gender stereotypes in the workplace affect the lens through which employers describe their ideal workers. For example, Dashper (2018) claims "it is easier for men to embody the masculine traits, behaviors, and practices associated with workplace success than it is for women" (p. 543). However, through professional skills, individuals can generate a contextualized and personalized worldview of integrating themselves into their particular field. Ideally, employers should consider the employees' perceptions of their learning, experiences, and growth opportunities in an effort to promote a healthy workplace atmosphere (Coleman, 2020; Ming-Li & Boatend, 2020; Rubin et al., 2019).

Moreover, organizational retention has been studied extensively over the past few decades. For example, Applebaum et al. (2003) conducted a survey study among aerospace engineers, based on a sample size of 155 participants, and found commercial engineer women were more committed to their organizations than their male counterparts. Further, Applebaum et al. (2003) found job satisfaction was positively influenced by professional growth, challenging work, non-monetary benefits, work-life balance, remuneration, and management practices. The survey results showed an average response of 4.1 on a 5-point scale to "Do you wish to continue to work at xxx?", which is well in the positive range (Applebaum et al., 2003, p. 274). The survey results also found employees provided the lowest ratings for opportunities for challenging work and better professional growth. To address these concerns, Applebaum et al. (2003) proposed solutions including more challenging work tasks, providing clear promotion criteria, improving training, and rotating staff through various departments based on the factors that encouraged the highest organizational commitment level.

Similarly, Taneja et al. (2012) conducted a study that explored retention principles for women in the workforce across multiple disciplines, such as work-life balance; "when individuals are satisfied with their careers, those individuals will try to keep their careers because a work/life component is significantly rewarding" (p. 48). Work-life balance positively influences the retention rate of the employees and the growth of the company in the competitive market. Monetary factors also affect retention rates. As Taneja et al. (2012) point out, women made 77% of men's median weekly earnings in 2000, but in 2011 women made only 73.4 cents on every dollar men earned, based on the 2011 reportings of the Bureau of Labor Statistics. In 2011, women comprised 46.7% of the total workforce in businesses, yet of this total, 37% constituted lower and mid-level management positions, 26% were senior managers, and only 2.8% of women were CEOs at Fortune 500 companies (Taneja et al., 2012). Though Taneja et al. (2012) do not articulate the exact sample size or the specific population, their study suggests women encounter roadblocks preventing them from aspiring to higher level positions.

Saxena, Geiselman, and Zhang (2019) conducted a quantitative study to explore the social and organizational factors leading to greater retention of women and fewer incidences of workplace incivility. The primary focus was to "facilitate positive workplace experiences for women in STEM by reducing incivility" and thereby improve the retention rates (p. 590). The finding in Saxena et al. (2019) indicate that "prototypical threat" (harassment) and "lack of work" (challenging work) contributed to more incivility in the workplace and lower retention of women. Conversely, Saxena et al. (2019) recommended building social support and fostering a culture of openness and inclusion to improve women's retention in the workplace based on the psychological nuance of workplace barriers women face in STEM fields.

While Saxena et al. (2019) provide a good generalizable foundation of social and organizational factors leading to greater retention of women in the workplace, qualitative research has shown women encounter profound challenges that cannot be quantified. For example, Annabi and Lebovitz (2018) conducted a comparative qualitative case study to better understand the organizational interventions required to improve women retention in the instructional technology (IT) workforce as described by women themselves. Given the pure qualitative nature of Annabi and Lebovitz's (2018) study, their results are hard to transfer across multiple disciplines outside IT. However, their study shows some of the retention barriers

women experience are related to management practices, professional growth opportunities, and perceived gender bias. Annabi and Lebovitz's (2018) findings raised questions about what factors may contribute to women's retention in aviation occupations.

Methodology

The Aviation Occupation Survey was created purposely for this study, drawing from the published literature in organizational retention and diversity in aviation (e.g., Angle & Perry, 1981; Applebaum et al., 2003; Cabrera, 2009; Elizur & Koslowsky, 2001; Taneja et al., 2012). The survey consisted of six demographic items (gender, current occupation, years in current occupation, previous occupation, years in previous occupation, and education). Since this exploratory study's research question explicitly focused on gender, information on other demographic variables (e.g., age, racial/ethnic background, socioeconomic status, sexual orientation, and gender identity) was not collected in the survey.

Following the demographic items, participants were presented with 50 Likert-scale items on nine categories related to career retention: job satisfaction (k = 7), professional growth opportunities (k = 8), challenging work (k = 5), monetary benefits (k = 4), non-monetary benefits (k = 4), work-life balance (k = 6), management practices (k = 3), gender-related concerns (k = 8), and aviation passion (k = 5). The survey items for the aviation passion category were adapted from Petitt (2019). Participants were asked to indicate the degree to which they agree with each statement using a five-point Likert-scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (5). The statements were randomly presented both within and across categories.

The survey was administered online using Google Forms and was available from January 2020 through March 2020. For this initial exploratory study, no minimum sample size was established. Information about the survey was disseminated via various venues, including two professional conferences (Women in Aviation International, National Training Aircraft Symposium) and a social media outlet (aviation blog). Prior to conducting the survey study, an application was submitted to the university's Institutional Review Board for review and approval. All participant responses were anonymous and analyzed in aggregate.

Results

Demographic Items

A total of 188 participants (women = 70; men = 118) completed the Aviation Occupation Survey. Descriptive statistics for the demographic items are shown in Figures 1 through 5. As shown in Figure 1, a large percentage of respondents (68.82%) reported *Aircraft Pilot* as their current occupation. Examples of responses submitted for the *Other* option included: RPAS operator executive, private pilot, flight attendant, aviation human factors specialist, educator, FAA ASI, and terminal operations. As shown in Figure 2, almost half the respondents (48.66%) reported having spent more than 10 years in their current occupation.

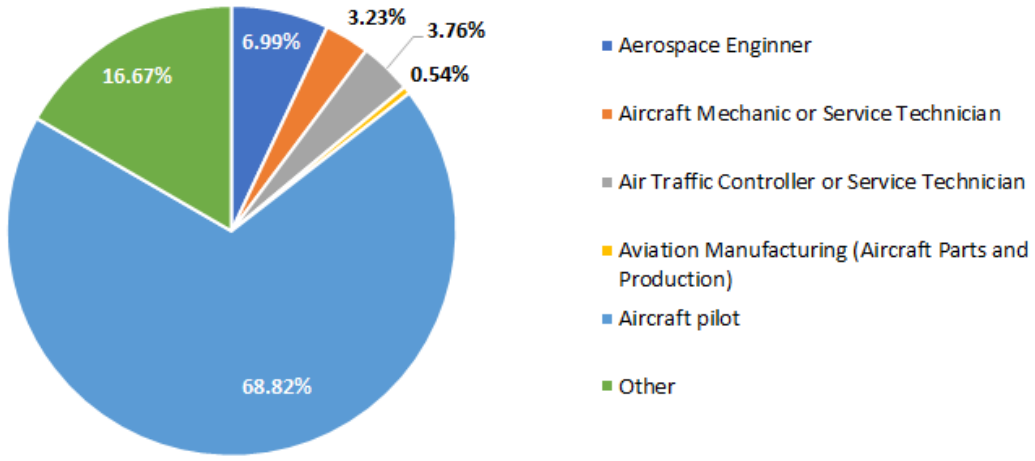

Figure 1. Participant Responses to Current Occupation (n = 186)

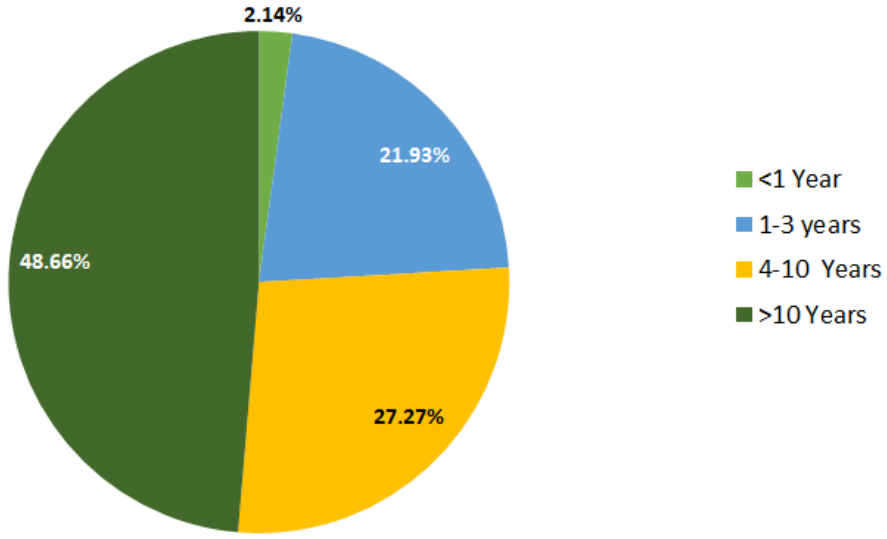

Figure 2. Participant Responses to Years in Current Occupation (n = 177)

As shown in Figure 3, for their previous occupation, a large percentage of respondents (61.05%) selected the *Other* option, with example responses including: student, military, Airline CFO, ATC/ATM engineer, professor, and NASA instructor. Further, as shown in Figure 4, almost half the respondents (47.50%) reported having spent 4-10 years in their previous occupation.

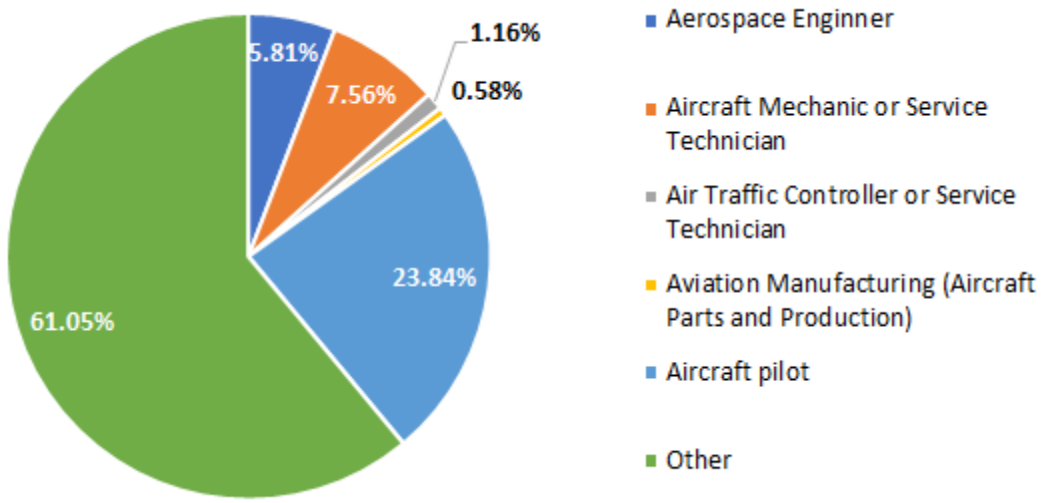

Figure 3. Participant Responses to Previous Occupation (n = 168)

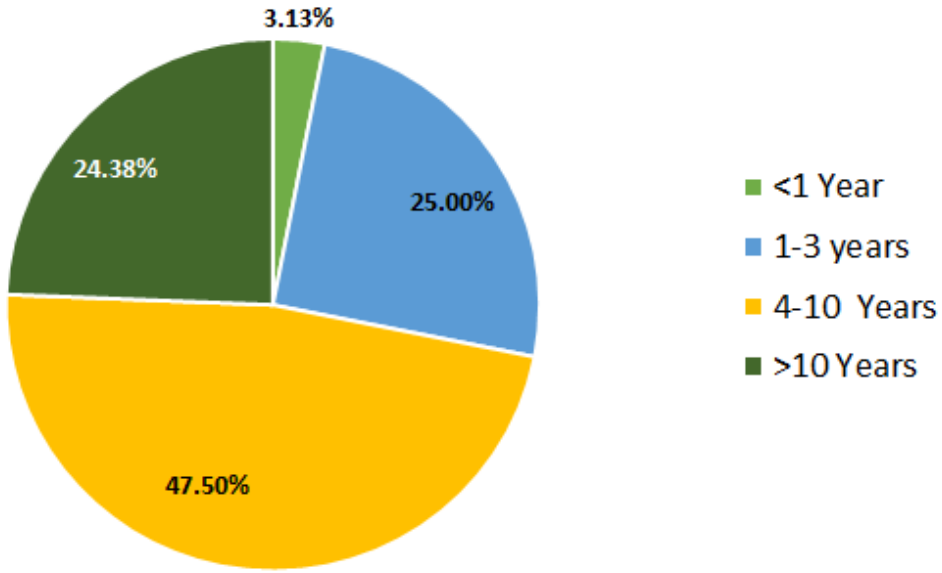

Figure 4. Participant Responses to Years in Previous Occupation (n = 147)

As shown in Figure 5, most respondents (93.62%) reported having some college education. A small number (8.51%) reported having some college credit, but no degree. Almost half the respondents (47.87%) reported having at least a bachelor's degree and about a quarter of respondents (26.06%) reporting having a master's degree.

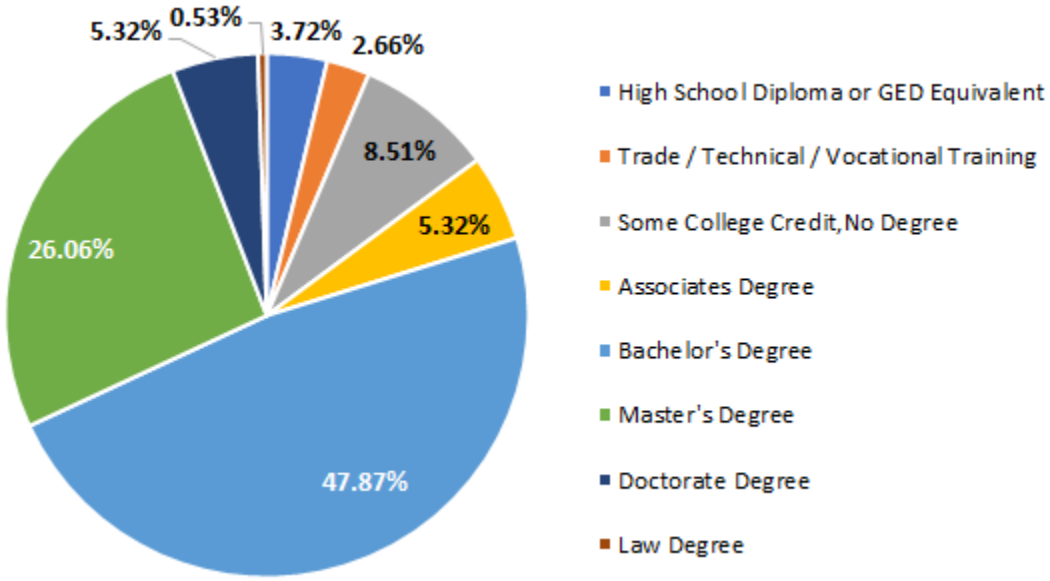

Figure 5. Participant Responses to Highest Level of Education Completed (n = 188)

Aviation Occupation Survey Items

Responses to the Aviation Occupation Survey were analyzed using a non-parametric test, which is appropriate for Likert-scale items since the responses, ranging from *Strongly Disagree* (1) to *Strongly Agree* (5), are treated as ordinal data. The Mann-Whitney Test (two independent samples) was used to analyze the survey data, with gender (female vs. male) as the grouping variable and responses to the Likert-scale items as the dependent variables. Separate tests were conducted for each survey category. Alpha was set at $p < .05$. Median values are reported for statistically significant differences between groups. Eleven survey items were negatively phrased, with a response of *Strongly Agree* viewed as negative and *Strongly Disagree* viewed as positive. The values for these items were reverse coded prior to analysis and are marked with a ^ symbol. Cronbach's coefficient alpha was used to test the internal consistency of the items in each survey category. Results are listed in Table 1.

Table 1
Cronbach's Coefficient Alpha for Aviation Occupation Survey Categories

Survey Category	α	*k*	*n* (valid)
Job Satisfaction	.798	7	188
Professional Growth Opportunities	.805	8	187
Challenging Work	.561	5	187
Monetary Benefits	.565	4	186
Non-Monetary Benefits	.612	4	187
Work-Life Balance	.475	6	188
Management Practices	.720	3	188
Gender-Related Concerns	.829	8	186
Aviation Passion	.695	5	188

Note. α = Cronbach's coefficient value; *k* = number of items; *n* (valid) = number of valid participant responses.

Job Satisfaction

Table 2 shows the mean ranks and test statistics of the between-groups comparison for the Job Satisfaction survey items. No significant differences for gender were found on any of the survey items, with responses for women and men generally falling within the *Neutral* (3) to *Agree* (4) range.

Table 2
Mean Ranks and Test Statistics for Gender on Job Satisfaction

Survey Item	Gender	MR	*U*	*p*
I enjoy working at my current place of employment.	Female	100.40	3717.00	.228
	Male	91.00		
I enjoy working with my peers.	Female	96.77	3971.00	.633
	Male	93.15		
The work I do makes a difference.	Female	103.29	3514.50	.072
	Male	89.28		
I feel fulfilled by my job.	Female	93.90	4088.00	.903
	Male	94.86		
My co-workers respect me and treat me fairly.	Female	87.22	3620.50	.127
	Male	98.82		
I see myself staying at my current place of employment for at least the next five years.	Female	97.42	3925.50	.556
	Male	92.77		
I am likely to seek another job in the next three months.^	Female	91.64	3929.50	.547
	Male	96.20		

Note. n = 188; MR = Mean Rank; U = test statistic for Mann-Whitney Test; p = p-value (test significance); ^ = item reverse coded.

Professional Growth Opportunities

Table 3 shows the mean ranks and test statistics of the between-groups comparison for the Professional Growth Opportunities survey items. No significant differences for gender were found on any of the survey items, with responses for women and men generally falling within the *Neutral* (3) to *Agree* (4) range.

Table 3
Mean Ranks and Test Statistics for Gender on Professional Growth Opportunities

Survey Item	Gender	MR	*U*	*p*
Employee promotion decisions are handled fairly.	Female	102.84	3546.00	.097
	Male	89.55		
Promotions are important to me.	Female	94.61	4122.50	.982
	Male	94.44		
My employer provides me the training I need to perform my job.	Female	98.74	3833.00	.391
	Male	91.98		
My supervisor is aware of my skills	Female	97.71	3905.00	.517
	Male	92.59		
Experienced co-workers provide me with constructive criticism	Female	87.36	3630.50	.147
	Male	98.73		
I am allowed to develop additional skills when I want to.	Female	103.16	3524.00	.082
	Male	89.36		
My place of employment offers challenging opportunities to excel.	Female	98.76	3742.50	.341
	Male	91.22		
I have opportunities for advancement at work.	Female	103.05	3531.50	.084
	Male	89.43		

Note. n = 188; MR = Mean Rank; U = test statistic for Mann-Whitney Test; p = p-value (test significance).

Challenging Work

Table 4 shows the mean ranks and test statistics of the between-groups comparison for the Challenging Work survey items. Overall, women and men responded similarly to the survey items in this category, with responses generally falling within the *Neutral* (3) to *Agree* (4) range. No significant differences were found. Notably, both women and men rated highly the survey item ‘I can meet the deadlines set for me’ (*Mdn* = 5.00).

Table 4
Mean Ranks and Test Statistics for Gender on Challenging Work

Survey Item	Gender	MR	*U*	*p*
My job makes the best use of my abilities.	Female	99.86	3755.00	.284
	Male	91.32		
My workload is challenging but achievable.	Female	98.04	3882.50	.470
	Male	92.40		
I can meet the deadlines set for me.	Female	98.31	3793.00	.279
	Male	91.42		
My supervisor has clear expectations of me.	Female	96.79	3970.00	.643
	Male	93.14		
The workload on my job prevents me from doing my best every day.^	Female	99.01	3814.00	.362
	Male	91.82		

Note. n = 188; MR = Mean Rank; U = test statistic for Mann-Whitney Test; p = p-value (test significance); ^ = item reverse coded.

Monetary Benefits

Table 5 shows the mean ranks and test statistics of the between-groups comparison for the Monetary Benefits survey items. A significant difference for gender was found for the survey item 'I am paid competitively for my skills,' (U = 3313.50, p = .024). Results indicated women (*Mdn* = 4.00) reported a higher rating for this survey item significantly more often than men (*Mdn* = 3.00) (see Figure 6). No significant differences were found on the other survey items, with responses for women and men generally falling within the *Neutral* (3) to *Agree* (4) range.

Table 5
Mean Ranks and Test Statistics for Gender on Monetary Benefits

Survey Item	Gender	MR	*U*	*p*
I am paid competitively for my skills.	Female	105.16	3313.50	.024
	Male	87.32		
I would leave my current company if another company offered me more money.^	Female	102.22	3504.00	.103
	Male	89.19		
My job offers a competitive benefits package (health, pension, etc.).	Female	100.00	3745.00	.269
	Male	91.24		
Monetary compensation is important to me.	Female	89.51	3781.00	.291
	Male	97.46		

Note. n = 188; MR = Mean Rank; U = test statistic for Mann-Whitney Test; p = p-value (test significance); ^ = item reverse coded.

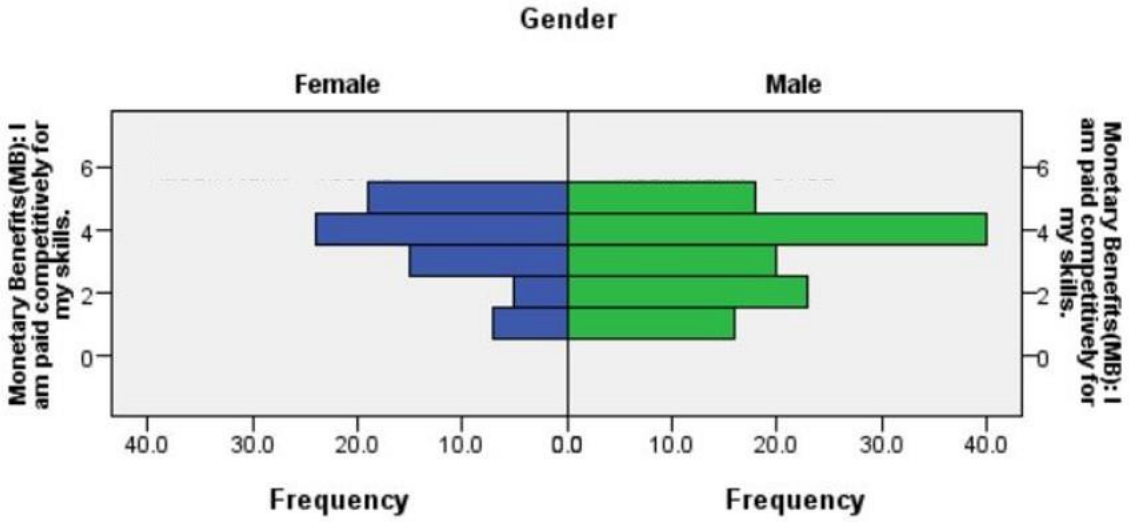

Figure 6. Distribution of Likert Responses for Survey Item 'I am paid competitively for my skills'. *Note.* MB = Monetary Benefits; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

Non-Monetary Benefits

Table 6 shows the mean ranks and test statistics of the between-groups comparison for the Non-Monetary Benefits survey items. No significant differences for gender were found on any of the survey items, with responses for women and men generally falling within the *Neutral* (3) to *Agree* (4) range. Notably, both women and men rated highly the survey item 'My job security is important to me' (*Mdn* = 5.00).

Table 6
Mean Ranks and Test Statistics for Gender on Non-Monetary Benefits

Survey Item	Gender	MR	*U*	*p*
My job security is important to me.	Female	93.34	4049.00	.878
	Male	94.39		
I feel that my job is secure.	Female	103.91	3471.50	.058
	Male	88.92		
I get recognized for my contributions.	Female	92.89	4017.50	.748
	Male	95.45		
I get rewarded for my efforts.	Female	95.64	4050.00	.819
	Male	93.82		

Note. n = 188; MR = Mean Rank; U = test statistic for Mann-Whitney Test; p = p-value (test significance).

Work-Life Balance

Table 7 shows the mean ranks and test statistics of the between-groups comparison for the Work-Life Balance survey items. Overall, women and men responded similarly to the survey items in this category, with no significant differences found. Responses for women and men

generally fell within the *Neutral* (3) range. Notably, both women and men reported high ratings for the survey item 'Having a flexible work schedule is important to me' (*Mdn* = 5.00).

Table 7
Mean Ranks and Test Statistics for Gender on Work-Life Balance

Survey Item	Gender	MR	*U*	*p*
Working at my place of employment allows me to have a greater quality of life.	Female	96.68	3977.50	.657
	Male	93.21		
I struggle to balance my work and home life effectively.^	Female	92.26	3973.00	.653
	Male	95.83		
My employer cares about the health of their employees.	Female	96.21	4010.00	.733
	Male	93.48		
My job interferes with my responsibilities at home.^	Female	93.71	4074.50	.875
	Male	94.97		
Access to employer-sponsored childcare is important to me.	Female	98.82	3827.50	.383
	Male	91.94		
Having a flexible work schedule is important to me.	Female	98.19	3871.50	.396
	Male	92.31		

Note. *n* = 188; MR = Mean Rank; *U* = test statistic for Mann-Whitney Test; *p* = p-value (test significance); ^ = item reverse coded.

Management Practices

Table 8 shows the mean ranks and test statistics of the between-groups comparison for the Management Practices survey items. No significant differences were found on any of the survey items, with responses for women and men generally falling within the *Neutral* (3) range.

Table 8
Mean Ranks and Test Statistics for Gender on Management Practices

Survey Item	Gender	MR	*U*	*p*
Managers at my place of employment are adept at resolving conflicts.	Female	100.50	3710.00	.229
	Male	90.94		
Management portrays strong leadership skills.	Female	98.67	3838.00	.406
	Male	92.03		
My place of employment promotes diversity in leadership positions.	Female	86.95	3601.50	.131
	Male	98.98		

Note. *n* = 188; MR = Mean Rank; *U* = test statistic for Mann-Whitney Test; *p* = p-value (test significance).

Gender-Related Concerns

Table 9 shows the mean ranks and test statistics of the between-groups comparison for the Gender-Related Concerns survey items. For the purpose of this study, Gender-Related Concerns encompassed the following subjects: sexual harassment, gender bias, and management

support. Note six survey items were negatively phrased and were reverse coded prior to analysis. Thus, a lower rating indicates a negative view on this statement.

A significant difference for gender was found for six of the eight survey items. Results indicated women (*Mdn* = 4.00) more often reported being concerned about sexual harassment in the workplace than men (*Mdn* = 5.00, *U* = 2788.00, *p* < .001) (see Figure 7). Women (*Mdn* = 4.00) also more often reported feeling uncomfortable reporting sexual harassment in their workplace than men (*Mdn* = 5.00, *U* = 2935.00, *p* < .001) (see Figure 8). Women (*Mdn* = 5.00) more often reported they have considered quitting their job because of sexual harassment at their workplace, compared to men (*Mdn* = 5.00, *U* = 3262.00, *p* = .001) (see Figure 9).

With regard to gender bias, women (*Mdn* = 4.00) more often reported having received fewer opportunities in their workplace because of their gender, compared to men (*Mdn* = 5.00, *U* = 2494.50, *p* < .001) (see Figure 10). Men (*Mdn* = 4.00) more often reported employees are treated equally in their workplace regardless of gender, compared to women (*Mdn* = 4.00, *U* = 3038.00, *p* = .004) (see Figure 11). Women (*Mdn* = 3.00) also more often reported feeling uncomfortable bringing concerns to management, compared to men (*Mdn* = 4.00, *U* = 3312.00, *p* = .020) (see Figure 12). No significant differences were found on the two survey items 'Management at my place of employment takes sexual harassment seriously' and 'I rarely feel supported by management,' with responses for women and men generally falling within the *Neutral* (3) to *Agree* (4) range.

Table 9
Mean Ranks and Test Statistics for Gender on Gender-Related Concerns

Survey Item	Gender	MR	*U*	*p*
I am concerned about sexual harassment in my workplace.^	Female	75.33	2788.00	<.001
	Male	105.87		
I feel uncomfortable reporting sexual harassment at my workplace.^	Female	77.43	2935.00	<.001
	Male	104.63		
Management at my place of employment takes sexual harassment seriously.	Female	86.77	3589.00	.115
	Male	99.08		
I have considered quitting my job because of sexual harassment at my workplace.^	Female	82.10	3262.00	<.001
	Male	101.86		
I have received fewer opportunities in my workplace because of my gender.^	Female	71.14	2494.50	<.001
	Male	108.36		
Employees are treated equally in my workplace regardless of gender.	Female	79.03	3038.00	.004
	Male	102.03		
I rarely feel supported by management.^	Female	102.96	3538.00	.092
	Male	89.48		
I feel uncomfortable bringing concerns to management.^	Female	82.81	3312.00	.020
	Male	101.43		

Note. *n* = 188; MR = Mean Rank; *U* = test statistic for Mann-Whitney Test; *p* = p-value (test significance); ^ = item reverse coded.

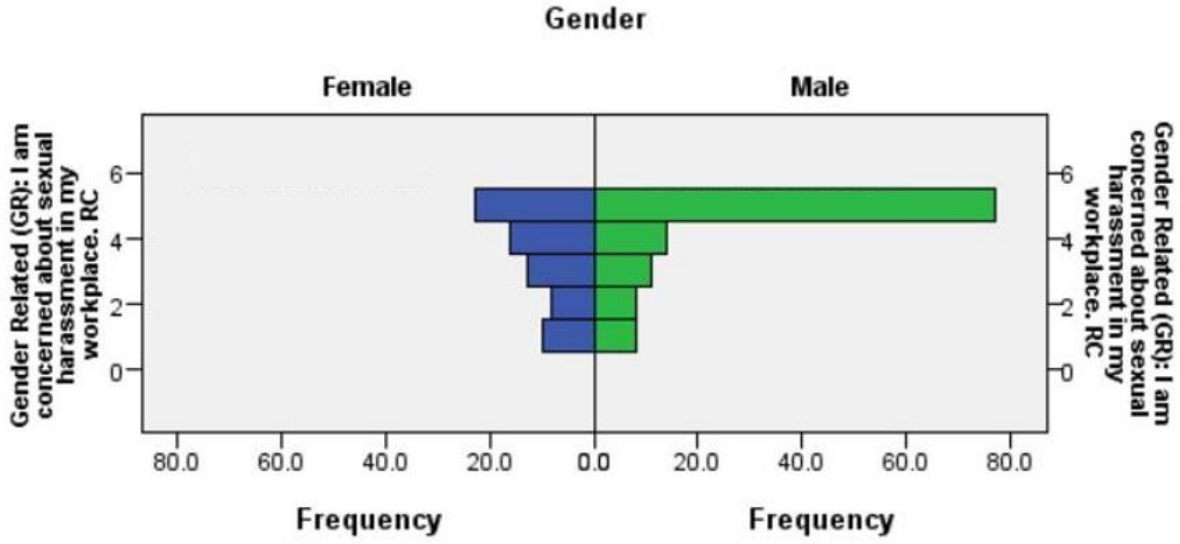

Figure 7. Distribution of Likert Responses for Survey Item 'I am concerned about sexual harassment in my workplace'. *Note*. GR = Gender-Related Concerns; RC = reverse coded; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

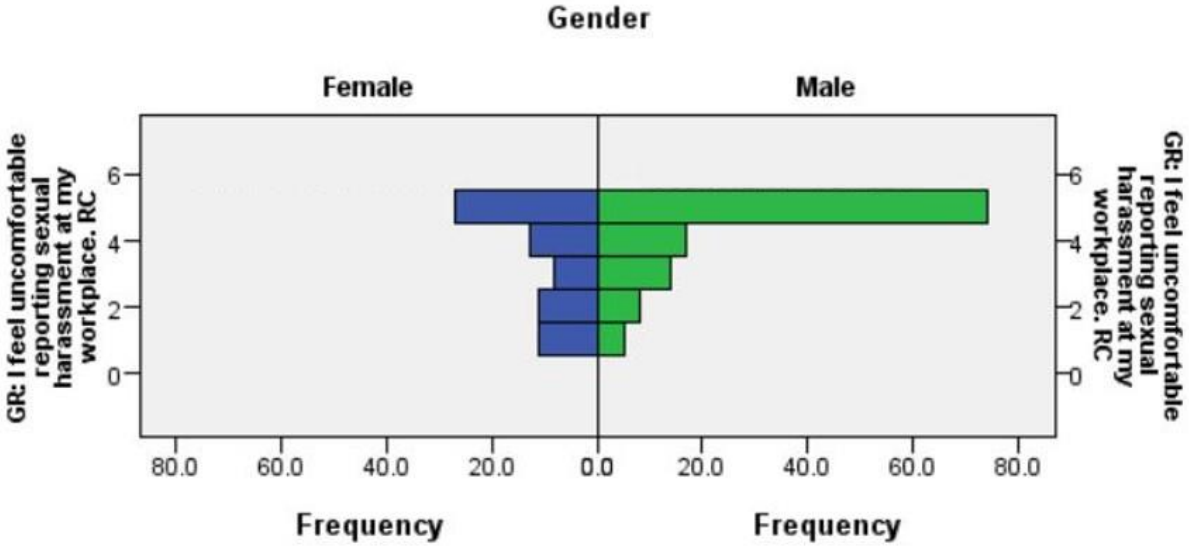

Figure 8. Distribution of Likert Responses for Survey Item 'I feel uncomfortable reporting sexual harassment at my workplace*'. Note*. GR = Gender-Related Concerns; RC = reverse coded; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

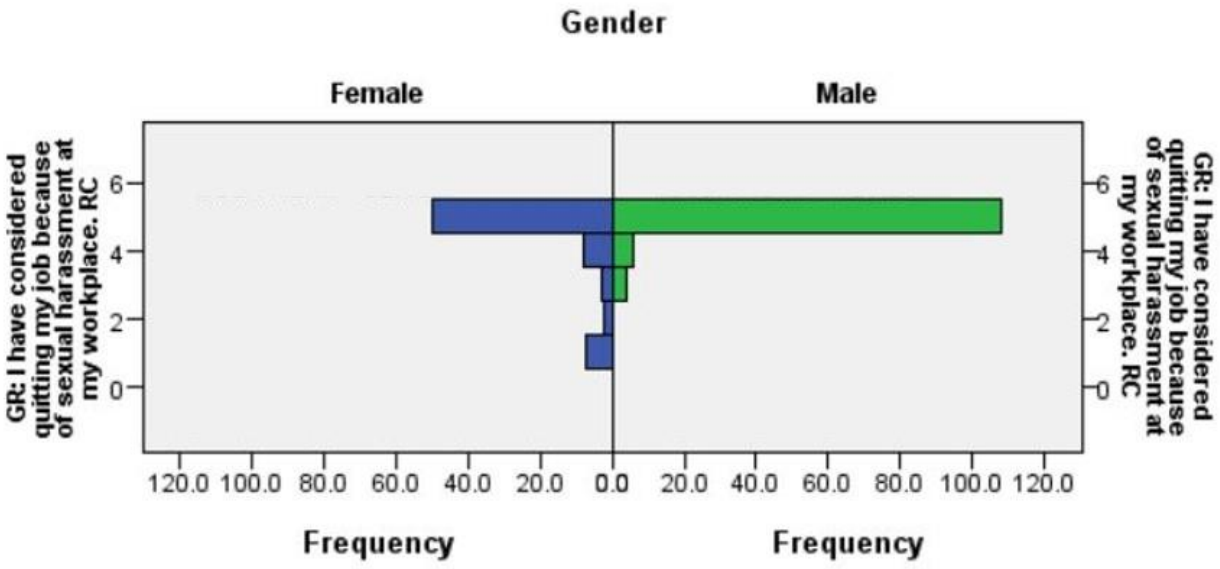

Figure 9. Distribution of Likert Responses for Survey Item 'I have considered quitting my job because of sexual harassment at my workplace'. *Note*. GR = Gender-Related Concerns; RC = reverse coded; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

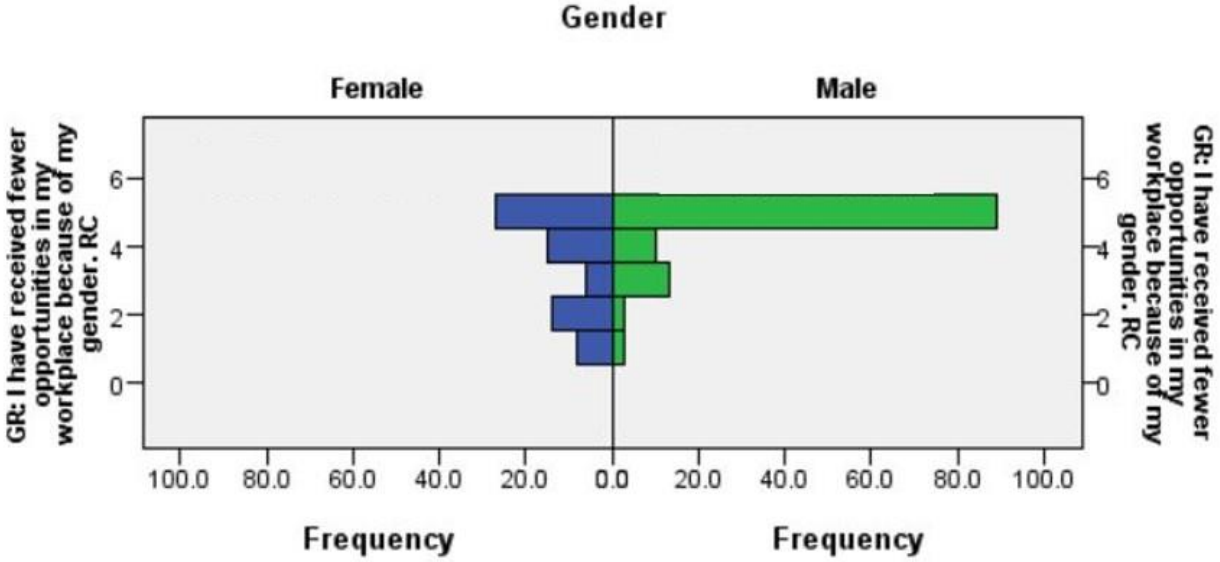

Figure 10. Distribution of Likert Responses for Survey Item 'I have received fewer opportunities in my workplace because of my gender'. *Note*. GR = Gender-Related Concerns; RC = reverse coded; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

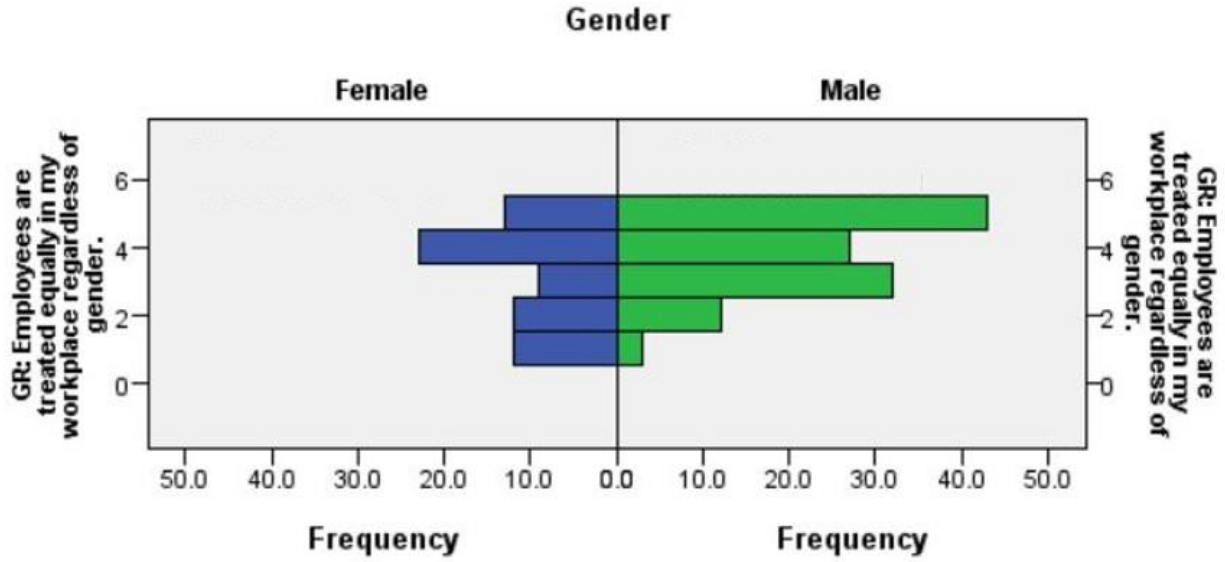

Figure 11. Distribution of Likert Responses for Survey Item 'Employees are treated equally in my workplace regardless of gender'. *Note*. GR = Gender-Related Concerns; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

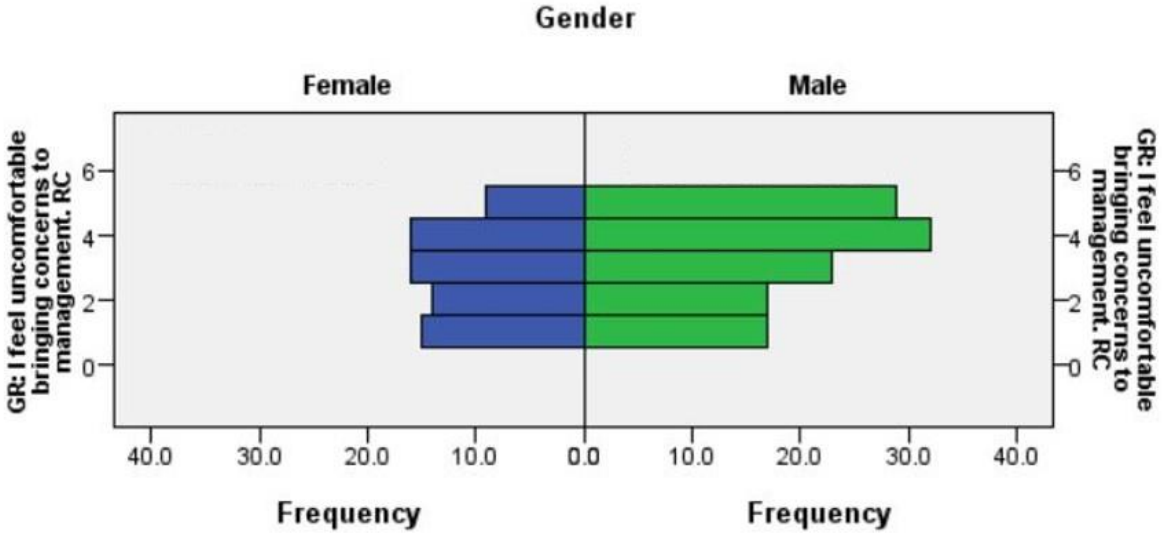

Figure 12. Distribution of Likert Responses for Survey Item 'I feel uncomfortable bringing concerns to management'. *Note*. GR = Gender-Related Concerns; RC = reverse coded; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

Aviation Passion

Table 10 shows the mean ranks and test statistics of the between-groups comparison for the Aviation Passion survey items. A significant difference for gender was found for only one survey item. Women (*Mdn* = 5.00) more often reported owning aviation-themed products than men (*Mdn* = 4.00, *U* = 3448.00, *p* = .038) (see Figure 13). No significant differences were found on the other four survey items, with responses for women and men generally falling within the

Neutral (3) to *Agree* (4) range. Notably, both women and men reported high ratings for the survey item 'I feel great pride in working in the aviation domain' (*Mdn* = 5.00).

Table 10
Mean Ranks and Test Statistics for Gender on Aviation Passion

Survey Item	Gender	MR	*U*	*p*
I own aviation-themed products, such as aircraft models, t-shirts, artwork, or coffee mugs.	Female	104.24	3448.00	.038
	Male	88.72		
I read aviation books or magazines for enjoyment.	Female	96.40	3997.00	.703
	Male	93.37		
I frequent social media sites to connect with others in the aviation profession.	Female	98.84	3826.00	.385
	Male	91.92		
I feel great pride in working in the aviation domain.	Female	101.19	3662.00	.113
	Male	90.53		
My aviation occupation defines who I am.	Female	94.74	4113.50	.963
	Male	94.36		

Note. n = 188; MR = Mean Rank; U = test statistic for Mann-Whitney Test; p = p-value (test significance).

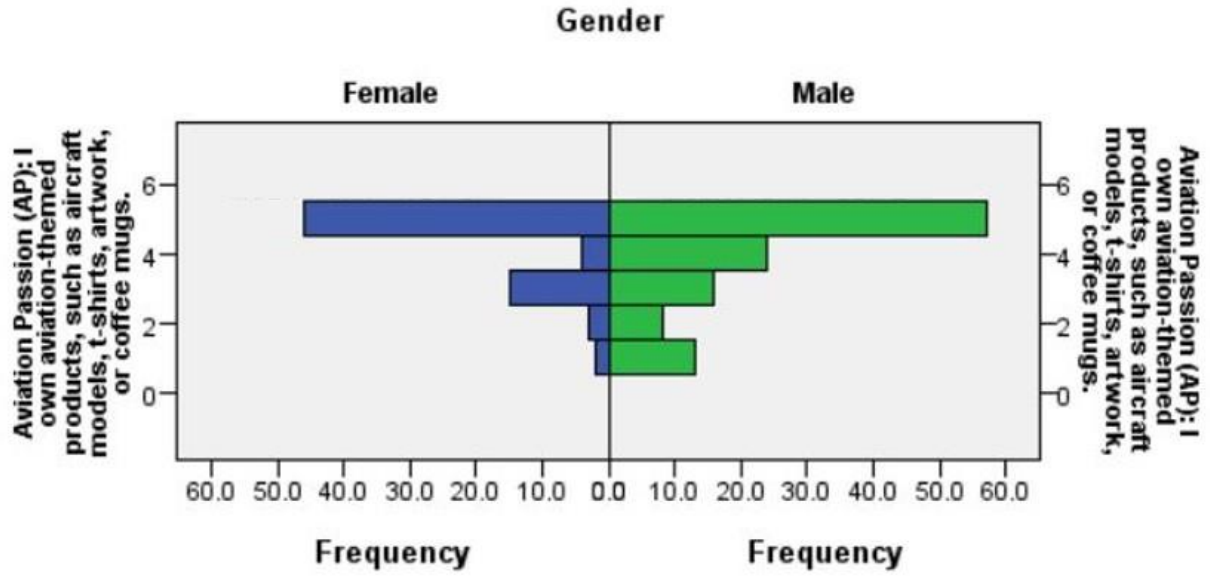

Figure 13. Distribution of Likert Responses for Survey Item 'I own aviation-themed products, such as aircraft models, t-shirts, artwork, or coffee mugs'. *Note*. AP = Aviation Passion; range from *Strongly Disagree* (1) to *Strongly Agree* (5).

Discussion

The purpose of the Aviation Occupation Survey developed for this exploratory study was to provide insights into the research question: What factors may contribute to women's retention in aviation occupations in the United States? Overall, results revealed similarities between women and men on perceptions about numerous aspects of their workplace related to retention,

particularly job satisfaction, professional growth opportunities, challenging work, monetary benefits, non-monetary benefits, work-life balance, management practices, and aviation passion. Notably, both women and men agreed on the importance of monetary compensation, job security, and a flexible work schedule. Also, both women and men reported feeling they can meet the deadlines set for them as well as feeling great pride in working in the aviation domain.

However, results also revealed women reported significantly greater concerns than men on sexual harassment and gender bias in the workplace. Women also reported feeling less comfortable bringing concerns to management significantly more than men. These findings are consistent with other studies indicating a major obstacle facing women in aviation occupations stems from working in an environment with a pervasive male-dominated culture (Bridges, Neal-Smith, & Mills, 2014; Germain, Herzon, & Hamilton, 2012; Hansen & Oster, 1997; Luedtke, 1994; McCarthy et al., 2015).

To illustrate, Mitchell, Krisovics, and Vermeulen (2006) conducted a gender study of 1114 pilots (female = 143; male = 971) in Australia. The survey was given to both women and men, and they were asked to answer both qualitative and quantitative questions about the same and opposite gender. Comments reported by male respondents to the survey ranged from "I think standards have been lowered for feminine [sic] commercial pilot entry" to "gender should not be an issue" to the more degrading, "women's lives are dominated by their ovulation, menstruation and emotions" (Mitchell et al., 2006, p. 45). In comparison, female responses included, "a good woman pilot is capable of outclassing the male equivalent," "I think it is the skill of the individual rather than the gender," and "*another empty kitchen* comment is still made" (Mitchell et al., 2006, p. 45).

Similarly, Walton and Politano (2014) conducted a study with a sample of 83 pilots (female = 31; male = 52) on gender-related perceptions among female and male pilots. Results supported prior research suggesting female pilots are at greater risk for negative perceptions and sexism by male pilots, as evident by some comments expressed by male pilots toward female pilots in the course of the study, such as "I'm sure most of us would agree, female pilots would be better served sticking to acts of distaff [a woman's domestic work] than aviating," and the disturbing off-color comment, "Beavers are for *after* flying" (Walton & Politano, 2014, p. 71).

In a recent study, Lutte (2020) reported the results of a survey administered to members of Women in Aviation International. Of the 1,323 respondents who completed the survey, the perceived existence of a 'good old boy' network was one of the top three factors negatively influencing their decision to pursue a career in aviation (35%) or to remain in the aviation industry (41%). As noted by Lutte (2020), workplace culture continues to be "a deterrent to the ability to recruit and retain women in aviation" (p. 17).

Study Limitations and Implications for Future Research

The exploratory nature of this research limits drawing definitive conclusions about the study's findings. Further, the small sample size, compared to the aviation workforce population, and the unequal number of women and men who responded to the survey, precluded a rigorous validation of the survey. The internal consistency of some of the survey categories (Challenging

Work, Monetary Benefits, and Work-Life Balance) was lower than ideal. Thus, future research is necessary to revise the items and validate with a larger sample to increase these survey categories' internal consistency. Finally, the implication of COVID-19 was not considered in this research, as the study was conducted before the pandemic took hold of the country.

With consideration for these limitations, research is warranted to more systematically investigate the concerns highlighted in this study, both in terms of garnering a better understanding of why these negative perceptions and attitudes exist as well as increasing awareness of the harmful consequences of sexual harassment and gender bias disproportionately affecting women in aviation. In addition, over the past few decades, gender has become a broad term encompassing biological gender, gender identity, gender fluidity, transgender, and so forth. Further research is warranted to examine the factors influencing the retention of these distinct groups. Beyond gender, future research must also investigate other key demographic variables such as age, racial/ethnic background, socioeconomic status, and sexual orientation.

Conclusion

Findings from this exploratory study highlighted areas where women and men shared similar perceptions on factors related to retention, suggesting that organizational policies and practices could increase the retention of women by providing them with equitable access to these benefits. However, consistent with prior research, findings highlighted critical areas for improvement to increase the retention of women. Although recruitment is key to attracting more women to aviation careers, retaining women already working in the aviation industry is equally important. In both the private and public sectors, organizational stakeholders must work together to identify viable solutions to restructure the system to accelerate gender parity and create a safe work environment open to all employees regardless of gender, whether cisgender, transgender, or gender fluid.

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